1) **"Study on the vegetative propagation of guava (*Psidium guajava* L.) Through air and stool layering" - Mr. *Heiplanmi Rymbai*.**

ABSTRACT

The present experiments were carried out at Horticultural Research Station, Sangareddy, Medak district, Andhra Pradesh, from the first week of May to first week October for stool layering and 15th June to 15th December, 2008 for air layering on guava cv. L-49.

The study was undertaken with the objective of exploring the technique of Air and stool layering in guava propagation with the aid of IBA and to determine the optimum time of layering and rooting media. For air layering the operation was done in 3 months *i.e.* 15th June, 15th July and 15th August and the period of observations were 75 days after layering. In stool layering, heading back was done in the first week of May and mounding with moist soil was done in August first week. The observations were made at 60 days after mounding. In both the experiments observations for establishment percentage was taken at 45 days after transplanting.

Treatment with IBA at 4000 ppm in 15th August and wet sphagnum moss as rooting media resulted highest percentage of successful layers, maximum number of primary and secondary roots and their mean length of longest roots, maximum fresh and dry roots weight, and maximum percentage of establishment of rooted air layers both under Open and poly house conditions.

In stool layeing, IBA at 7000 ppm treated shoots recorded the maximum percentage of successful layers, more number of primary and secondary roots, maximum mean length of longest roots, highest fresh and dry roots weight, and maximum percentage of establishment of rooted air layers both under Open and poly house conditions.

2) **"Studies on the performance of china aster [*Callistephus chinensis* L.) Ness] varieties under hyderabad conditions" - *J.H.Zosiamliana.***

ABSRACT

China aster [*Callistephus chinensis* (L.) Ness] belongs to one of the largest families of flowering plants, 'Asteraceae'. China aster is a free blooming half hardy, easy growing winter annual grown for cut as well as for loose flowers. The cut flowers have good vase life and are used in flower arrangements, vases, bouquets, for interior decorations etc. The loose flowers are widely used for making garlands, for decorations, for worship and are also used in social functions.

A field experiment was conducted during *Kharif*, 2008-09 to study the "Studies on the performance of China aster [*Callistephus chinensis* (Linn.) Ness] varieties under Hyderabad conditions" grown on red sandy loam soil at All India Coordinated Research Project on Floriculture, Agricultural Research Institute, Rajendranagar, Hyderabad. The experiment was laid out in randomized block design with seven treatments replicated thrice.

All the cultivars performed with wide and significant differences for all the parameters studied i.e. their growth, quality and yield.

The cultivar 'Phule Ganesh Violet' recorded a maximum plant height of 66.50 cm which was on at par with 'Phule Ganesh White' (65.75 cm). The lowest plant height was observed in 'Local' (43.14 cm). The cultivar 'Phule Ganesh Violet' produced maximum number of primary and secondary branches per plant (21.40 and 32.80 respectively). The cv. 'Local' produced lowest number of primary branches (15.93) per plant while Phule Ganesh Pink' records the lowest secondary branches (16.80).

The cv. 'Phule Ganesh Pink' was first to show its visible flower bud (57.20 DAT), first flowering (66.73 DAT) and 50% flowering (85.67 DAT). The cultivar 'Phule Ganesh White' produced the largest flowers (7.37 cm), longest stem length (34.78 cm), maximum flower yield

(23.20 t/ha) and longest shelf life (9.13 days and 4.73 days) both as cut and loose flowers respectively.

Yield of flower per plant was significantly and positively associated at both phenotypic and genotypic levels with plant height (0.723 and 0.748), plant spread (0.804 and 0.852), number of flowers per plant (0.689 and 0.705), flower diameter (0.790 and 0.823), stalk length (0.681 and 0.696) and vase life both as cut flower (0.716 and 0.759) and loose flower (0.880 and 0.920).

3) **"Studies on effect of different fertigation levels on growth, yield and floral preservatives on vase life of gerbera cultivars grown under polyhouse conditions"- *Zehra Salma*.**

ABSTRACT

A field experiment, "Studies on effect of different fertigation levels on growth, yield and floral preservatives on vase life of gerbera cultivars grown under polyhouse conditions" was conducted at Agricultural Research Station, College of Horticulture, Andhra Pradesh Horticulture University, Rajendranagar, Hyderabad during the year 2008-09.

The experiment was carried out with various fertigation treatments comprising of water soluble fertilizers (WSF) and straight fertilizers (SF) each at three levels 100%, 80%, 60% of RDF(NPK @ 20:20:20 g/m^2/month at vegetative stage and 15:10:30 g/m^2/month at reproductive stage) with two gerbera cultivars V_1- Amelia and V_2- Galelio totally comprising of twelve treatments. The treatments were laid in factorial randomized block design and replicated thrice. Further, a second experiment was conducted with the cut gerbera flowers harvested from each of the fertigation experimental plots (Experiment1) and were kept for post harvest studies using 3 floral preservatives *viz.*, control (distilled water), 4% sucrose + 300ppm $Al_2 (So_4)_3$ and 4% sucrose +50ppm Dichlorophen comprising of thirty six treatments. The treatments were laid out in factorial completely randomized design.

The results enumerated from the first experiment revealed that among the different fertigation treatments, growth parameters viz., plant height (50.43cm), number of leaves(24.12), leaf area (5334.72 cm^2) were highest with 100% WSF treatment and was on a par with 100% SF. Among the cultivars, cv.Amelia proved to be superior in the above parameters tested. But the interaction effect of fertigation with cultivars was found to be non significant. Further in the studies enumerated for quality parameters, it was observed that fertigation with 100% WSF showed earlier bud opening (9.67 days), longer stalk length (60.33 cm), longer ray floret length (4.45 cm), maximum stalk diameter (0.76 cm), flower diameter (10.48 cm) and disc diameter (2.58 cm). This treatment was on a par with 100 % SF. Among the cultivars, quality parameters viz., stalk diameter (0.70 cm) and disc diameter (2.40 cm) were significantly maximum in cv. Galelio while, cv. Amelia was found superior in stalk length (54.40 cm) and ray floret length (3.72 cm). No significant effect of cultivars was observed on days to bud opening and flower diameter parameters.

Regarding yield parameters, flower yield per plant (5.13) and flower yield per square meter per month (36.15) recorded highest with 100% WSF fertigation treatment and was on a par with 100% SF. Among the cultivars, Cv. Amelia recorded highest flower yield per plant (3.88). But, flower yield per square meter in a month was not significantly influenced by the cultivars. With regard to interaction effects of fertigation with cultivars, flower yield per plant was highest in 100% WSF and 100% SF with cv. Amelia. However, quality parameters and flower yield per square meter per month was not significantly influenced by the interaction effect of fertigation levels with cultivars.

For the investigation to the post harvest studies, vase life and water uptake recorded was highest with 100% WSF (10.61 days, 49.94 ml respectively) and was on a par with 80% WSF and 100% SF. Minimum stalk bending recorded in 80% WSF and 80% SF. No effect of cultivars was observed on vase life. But cv. Amelia recorded highest water uptake (45.37 ml) and cv.Galelio recorded minimum stalk bending. Comparatively, floral preservative containing 4% sucrose + 300 ppm $Al_2 (So_4)_3$ recorded highest vase life (9.50 days), minimum stalk bending and maximum water uptake (46.53 ml) over the rest of the treatments.

Interaction effect of fertigation levels and cultivars showed highest vase life (10.78 days) and water uptake (56.33 ml) with 100% WSF in cv. Amelia and was on a par with 80% WSF and 100% SF in both the cultivars. Whereas, interaction effect of fertigation with floral preservatives revealed that treatment combination of 100% WSF, 80% WSF and 100% SF with 4% sucrose+300 ppm $Al_2 (So_4)_3$ recorded highest vase life. Water uptake was highest in 80% WSF with 4% sucrose + 300 ppm $Al_2 (So_4)_3$ (57.33 ml).However, interaction of cultivars with floral preservatives was non significant on vase life (mean days) and water uptake (ml).

4) "Effect of integrated nutrient management on growth, flowering, corm and cormel production in gladiolus (*Gladiolus grandiflorus* L.)" - *P.Maya Madhavan.*

ABSTRACT

A field experiment, "Effect of integrated nutrient management on the growth, flowering, corm and cormel production in gladiolus (*Gladiolus grandiflorus* L.)" was conducted at AICRP on floriculture, Agriculture Research Institute, College of Horticulture, Andhra Pradesh Horticulture University, Rajendranagar, Hyderabad during the year 2008-09. The experiment was laid out in Randomized Block Design with nine treatments consisting of T_1-100% recommended dose of inorganic fertilizers (RDF) 100:60:60 kg of N P K ha^{-1}, T_2-75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}), T_3- 75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}), T_4-75%RDF + Neem cake (2 t ha^{-1}), T_5-75%RDF + Neem cake (2 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) +PSB (5 kg ha^{-1}), T_6-50%RDF+ FYM (20 t ha^{-1}) + Vermicompost (6 t ha^{-1}), T_7-50% RDF + FYM (20 t ha^{-1}) +Vermicompost (6 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}), T_8-50% RDF + Neem cake (4 t ha^{-1}), T_9- 50% RDF + Neem cake (4 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}) replicated thrice.

The results of the experiment revealed that among the different treatments, plant height (60.74 cm), number of leaves per plant (8.20), leaf area (687.30 cm^2) and dry matter accumulation at harvest (27.24 g $plant^{-1}$) were the highest with the application of T_3 comprising of 75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}). Further, it was observed that application of 75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}) resulted in early flowering (56.53 days), 50% flowering (67.58 days), increased spike length (78.84 cm), maximum number of florets per spike (16.73), maximum corm diameter (4.98 cm), fresh weght of corms (37.79 g) and cormels (7.30 g). No significant effect of the treatments was observed on the floret size.

Non significant difference were observed for the characters like yield of spikes $hectare^{-1}$ and yield of corms $hectare^{-1}$ however, yield of spikes $hectare^{-1}$ (248000), yield of corms $hectare^{-1}$ (250000) were highest with T_3 treatment, 75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}). No significant effect of the treatments was observed on the post harvest perameters such as vase life and durability of basal floret

The highest uptake of nutrients suchas N (0.904 g/plant), P (0.114 g/plant) and K (1.022 g/plant) were recorded in T_3 treatment comprising 75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}) followed by 75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}).

Economics of production revealed that the higher net returns (Rs.990165 ha^{-1}) were obtained in T_3 treatment, 75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}). Highest benefit cost ratio (1.49) was obtained with 75% RDF + FYM (10 t ha^{-1}) + Vermicompost (3 t ha^{-1}) + Azospirillum (5 kg ha^{-1}) + PSB (5 kg ha^{-1}).

5) "Influence of dates of planting on growth, yield, biochemical changes and post harvest keeping quality in different gladiolus (*Gladiolus gradiflorus* L.) Varieties" - *U.Pavani.*

ABSTRACT

A field experiment, "Influence of dates of planting on growth, yield, biochemical changes and post harvest keeping quality in different gladiolus (*Gladiolus grandiflorus* L.) varieties" was conducted at College of Horticulture, Andhra Pradesh Horticulture University, Rajendranagar, Hyderabad during the year 2008-09. The first experiment was laid out in Split plot design comprising sixteen treatments, with main treatment as varieties consisting of four varieties – Advance, Spic and span, White knight and Peter pears; sub-treatments as dates of planting consisting of four dates of planting- 15th September, 15th October, 15th November and 15th December. In the subsequent experiment spikes obtained from the first experiment were used for vase life studies using distilled water as control (T_0), sucrose 4% + Aluminium sulphate 300ppm (T_1) and sucrose 4% + Dichlorophen 50ppm (T_2). It was laid out in completely randomised design with factorial concept. The entire field and lab treatments were replicated thrice.

The results of the experiment revealed that among the cultivars, Advance recorded earliest sprouting and White knight the late sprouting. 15th September planting resulted in earliest sprouting of corms while 15th December in late sprouting. The Advance produced tallest plants with more number of leaves and leaf area among the varieties. Among the planting dates, planting on 15th September recorded highest plant height, number of leaves and leaf area. Corm weight per plant and size was highest in Advance and it was comparable with White knight. September 15th planting resulted in maximum weight and size of corms. Maximum number and weight of cormels per plant was also recorded by Advance and least by White knight. 15th September and 15th December recorded maximum and minimum number and weight of cormels respectively. Maximum dry matter accumulation was recorded at harvest with Advance and with 15th September planting.

Earliness in basal floret opening, spike initiation and 50% flowering was observed in Spic and span and in 15th September planting. Duration of flowering was maximum in White knight. Late planting increased the duration of flowering. Spike quality attributes like spike length, weight of spike, number of florets per spike and number of florets remained open at a time were also more for the Advance among the cultivars and 15th September planting among the planting dates.The same trend was recorded for biochemical changes like carbohydrate content, Nitrate reductase activity and N, P, K content.

The three factors viz., cultivars, planting dates and vase chemicals also influenced the post harvest performance of gladiolus spikes. Spike from 15th December planting have shown better performance for all observations. Among the vase solutions, sucrose 4% + Aluminium sulphate 300ppm (T_1) recorded maximum vase life of spikes.

6) **"Studies on genetic divergence in tomato (*Lycopersicon esculentum* Mill.)" – *Rajeev Kumar Narolia.***

ABSTRACT

The present investigation was undertaken to estimate the genetic divergence in tomato and to carry out yield component analysis through correlation and path analysis. Fifty five genotypes were sown in a randomized block design with two replications, during *rabi* 2008-2009 at Vegetable Research Station, Agriculture Research Institute, APHU, Rajendranagar, Hyderabad. The objective of the experiment was to identify divergent genotypes to use as donor parents in hybridization programmes.

The D^2 analysis was carried out for thirteen characters which partitioned the fifty five genotypes into twelve clusters. The maximum genetic divergence was observed between clusters IX and XII followed by between clusters V and IX. The maximum intra cluster distance was shown by cluster V. The characters *viz.*, acidity content followed by shelf life, plant height, TSS, ascorbic acid content, average fruit weight and number of fruits per plant contributed greatly towards diversity. The clusters showed high genetic divergence that could be effectively utilized in heterosis breeding programme. If a breeding programme is used at improving nutritional characters, then cluster VII showing maximum ascorbic acid that can be utilized in breeding programme. Therefore, a plant breeder may keep in mind the above aspects to obtain superior hybrids and good recombinants.

The analysis of variance revealed significant difference for thirteen characters studied suggesting considerable amount of variability exists among the genotypes. Wide range of variability was observed for plant height, number of flower clusters per plant, number of fruits per plant, average fruit weight, ascorbic acid and fruit yield per plant indicating the scope for selection of suitable initial breeding material for further improvement.

GA as percent of mean, GCV and PCV values are on par with each other for most of the characters that the influence of the environment on the trait (s) was very very negligible. The values observed are not confounding with the environment. It is a true to the reflection of the homeostasis effect or buffer reaction of the gene. Thus, the true reflection of the trait is exhibited.

In a true agreement with the GCV and PCV values in the present investigation for the 12 characters was noticed, indicating additive genetic variance governing the high heritability with genetic advance as percent of mean. Thus a breeder can employ a simple selection process which will be a rewarding one to improve the characters *viz.*, plant height, number of primary branches per plant, number of flowers per cluster, number of fruits per plant, number of flower clusters per plant, average fruit weight, number of locules per fruit, acidity, total soluble solids, ascorbic acid, shelf life and fruit yield per plant. For days to 50 per cent flowering, high heritability with low GA as per cent of mean indicates non additive action controlling the traits. Thus, selection for days to 50 per cent flowering may not be rewarding.

From correlation studies it was observed that fruit yield per plant has exhibited highly significant positive association with average fruit weight and shelf life. Path analysis revealed that maximum positive direct effect on fruit yield per plant was exhibited by average fruit weight followed by number of fruits per plant. Therefore, it is emphasized to lay attention on these traits like average fruit weight, number of fruits per plant and shelf life in crop improvement programme of tomato in future.

On the basis of the mean performance of the genotypes among traits studied, the following were identified as promising lines for further crop improvement in tomato *viz.*, EC-163611, EC-257580, EC-162508, EC-165749, EC-157568, EC-145622, EC-164863, EC-177393, LE-54, LE-55, LE-59, LE-60, LE-61, LE-63, LE-65 and LE-67.

7) Studies on the effect of integrated nutrient management on growth, yield and vase life of china aster (*Callistephus chinensis* L. Nees) - *K.Swathi*

ABSTRACT

A field experiment, "Studies on the effect of integrated nutrient management on growth, yield and vase life of china aster (*Callistephus chinensis* L. Nees)" was conducted at All India Coordinated Research Project on Floriculture, Agricultural Research Institute, Andhra Pradesh Horticultural University, Rajendranagar, Hyderabad during the year 2008-09.

The experiment was carried out with eleven treatments comprising of inorganic fertilizers, organic manures such as vermicompost, neem cake and biofertilizers (*Azospirillum* and Phosphate Solubilizing Bacteria). The treatments were laid in Randomized Block Design and replicated thrice.

The results of the experiment revealed that among the different treatments, growth parameters *viz*., plant height (60.87 cm), number of branches per plant (22.50), plant spread (27.17 cm), leaf area (586.41 cm^2), and total dry matter production (44.57 g) were highest with the combined application of 5 t ha^{-1} vermicompost, PSB and *Azospirillum* each at 5kg ha^{-1} along with 75 per cent Recommended Dose of Fertilizers (RDF).

Further in the studies enumerated for floral characters, it was observed that application of 5 t ha^{-1} vermicompost, PSB and *Azospirillum* each at 5 kg ha^{-1} along with 75 per cent Recommended Dose of Fertilizers (RDF) showed early flower bud initiation (60.96 DAT), 50 per cent flowering (80.02 DAT), early flower opening (69.12 DAT), maximum stalk length (29.77 cm), maximum flower diameter (6.57 cm) and maximum vase life (8.23 days).

Regarding yield parameters, maximum number of flowers per plant (48.72), flower yield per plant (128.59g) and flower yield per hectare(11.74 t ha^{-1}) were achieved by the application of 5 t ha^{-1} vermicompost, PSB and *Azospirillum* each at 5 kg ha^{-1} along with 75 per cent Recommended Dose of Fertilizers (RDF).

Plants receiving 5 t ha^{-1} vermicompost, PSB and *Azospirillum* each at 5kg ha^{-1} along with 75 per cent Recommended Dose of Fertilizers (RDF) recorded significantly higher uptake of nutrients (N -186.03 kg ha^{-1}, P-26.71 kg ha^{-1}, K-103.87 kg ha^{-1}). Similarly, significantly higher available nutrients in soil such as nitrogen (326.48 kg ha^{-1}), phosphorus (59.93 kg ha^{-1}) and potassium (300.90 kg ha^{-1}) were recorded in the same treatment consisting of 75 per cent Recommended Dose of Fertilizers (RDF), 5 t ha^{-1} vermicompost, PSB and *Azospirillum* each at 5 kg ha^{-1}.

The economic results clearly indicated that net returns per hectare and benefit-cost ratio was highest in the plots treated with 5 t ha^{-1} vermicompost, PSB and *Azospirillum* each @ 5 kg ha^{-1} along with 75 per cent Recommended Dose of Fertilizers (RDF) and this finding can be used in making china aster production more profitable.

8) "Effect of plant growth regulators on yield and quality of pomegranate (*Punica granatum* L.) Cv. Ganesh" - *P.Adireddy*

ABSTRACT

A field experiment was conducted from December 2008 to September 2009 at Model Orchard, College of Horticulture, Rajendranagar, Hyderabad to study the Effect of plant growth regulators on yield and quality of pomegranate (*Punica granatum* L.) cv. Ganesh.

The experiment was laid out in a Randomized Block Design. The treatments consisted of three levels of NAA (20, 30 and 40 ppm), three levels of 2, 4-D (20, 30 and 40 ppm) and three levels of GA_3 (25, 50 and 75 ppm) and one control. Altogether there were ten treatments and were replicated thrice. The growth regulators were applied thrice *i.e.*, first spray was given at the time of flowering and again at 45 and 90 days after fruit set. Observations on fruit length, fruit diameter, fruit volume, fruit weight, aril weight, aril percentage, number of arils per fruit, number of fruits per tree and yield were recorded. Chemical analysis was done to determine quality parameters of the fruit.

2, 4-D was proved to be the most effective in increasing fruit size in terms of fruit length, diameter, volume and fruit weight and the best results were obtained with 2, 4-D 40 ppm followed by GA_3 75 ppm. NAA also improved the size but less effective than the other two growth regulators. Aril weight, aril percentage and number of arils per fruit were also increased with all the growth regulator treatments. The best results were obtained with 2, 4-D 40 ppm followed by GA_3 75 ppm, 2, 4-D 30 ppm and NAA 40 ppm. All the three growth regulators increased the aril percentage significantly over the control but the increase was in association with the increased concentration of the growth regulators.

The number of fruits per tree was increased significantly with all the treatments over control and the best results were obtained with 2, 4-D 40 ppm followed by NAA 40 ppm and NAA 30 ppm. The yield per tree was also increased with all the treatments but, best results were obtained by 2, 4-D 40 ppm followed by GA_3 75 ppm, NAA 40 ppm and 2, 4-D 30 ppm.

Juice content, TSS and total sugars content were increased markedly with 2, 4-D and GA_3 treatments, best results were obtained with higher concentrations. Similarly titratable acidity was also reduced significantly over control with GA_3, 2, 4-D and NAA at higher concentrations.

Maximum net returns were obtained with 2, 4-D 40 ppm followed by NAA 40 ppm and the lowest with control. The decrease in the net returns in case of GA_3 may be due to the higher cost than the other two growth regulators. 2, 4-D 40 ppm recorded highest benefit cost ratio followed by NAA 40 ppm and the lowest with control. GA_3 gave good returns but recorded lesser benefit cost ratio than the other two growth regulators due to its higher cost.

From the present study it was concluded that 2, 4-D 40 ppm could be used under the agro-climatic conditions of Hyderabad to increase yields and improve quality of pomegranate fruits. The next better treatment to 2, 4-D was GA_3 75 ppm to increase yields and improve quality. In economic point of view also 2, 4-D was superior to NAA and GA_3 because of its higher net returns and lower cost when compared with other two growth regulators.

9) "Processing of pomegranate (cv.bhagwa) fruits for value addition"- *P.Chandana*

ABSTRACT

Pomegranate is one of the most favourite table fruits grown in India. It was not given due importance for preparing value added products. Blending is a convenient alternative to have value added fruit drinks which are of high quality in respect of sensory and nutritional aspects. The present study was conducted for the preparation of fruit juice RTS blended with the combination of pineapple, guava and grape. Arils are highly perishable and have a shelf life of less than 24 hours. Hence, the low temperature storage in combination with Radiation Processing is taken up to prolong their shelf life.

Initially nine blends of pomegranate with pineapple, guava and grape were prepared in addition to RTS beverage. Based on organoleptical scores three blends were selected and storage studies were conducted. The products were analyzed at every 15 days interval for their physicochemical, organoleptic characteristics and microbial load.

The increase in TSS, pH, Total sugars was observed in all the blends at ambient and low temperature. Ascorbic acid and titrable acidity decreased in blends and RTS at both ambient and low temperatures. The RTS stored well up to 60 days at ambient and 90 days at low temperature. Increase in microbial load with the storage was observed in all the RTS beverages .The overall results indicated that RTS beverages can be stored up to 3 months at low temperature and 2 months at ambient temperature.

In case of radiation processed arils the TSS initially increased up to 6 days and thereafter declined. There was a decline in ascorbic acid content, titrable acidity and total sugars during storage. The antioxidant activity decreased with increase in radiation dose and storage period. The microbial growth appeared from 6^{th} day of storage in all the arils except those irradiated at 4kGy. Irradiation at 2kGy and storage at 5°C was found to be good compared to other treatments in terms of quality. The overall acceptability of processed arils decreased with increase in storage period.

10) Evaluation of grape (*Vitis vinifera* L) Varieties for raisin making"- *K.Gopi Kumar*

ABSTRACT

The present investigation was conducted in two experiments i.e. by shade drying and cabinet drying methods at Grape research station, APHU, Hyderabad. The experimentation was replicated thrice in factorial completely randomized design to find out the raisin making quality of six grape varieties viz., Thompson Seedless, 2A-Clone, Manik Chaman, Tas-A-Ganesh, Arkavati and Merbein Seedless. The grapes were subjected to pre-drying treatments viz., Golden bleach hot dip method, Golden bleach cold dip method, Soda oil dip method and Dipping oil method. The treated grapes were dried separately under shade drying in a well ventilated room and cabinet drying at constant temperature of 45^0C. Shade drying method took 14.08 to 19.08 days (338 to 458 hr) and cabinet method took 2.54 to 4.04 days (61 to 97 hr) for specified level of moisture. Time saving in cabinet drying was 81 per cent over shade drying. The grapes dried early in cultivar Merbein Seedless with golden bleach methods and took maximum time in Tas-A-Ganesh with oil emulsion methods. The raisins prepared by these two drying methods were estimated for moisture content and recovery of raisins and stored for three months at room temperature in loose packing with 400 gauge polythene bags. Merbein Seedless treated with dipping oil method in shade drying (25.48 %) and in cabinet drying (26.15 %) and Thompson Seedless treated with golden bleach hot dip method in shade (25.81 %) and cabinet (24.49 %) drying had recorded highest raisin recovery.

The stored raisins were then analyzed for their chemical quality properties. The raisin moisture was high in Tas-A-Ganesh in shade and cabinet dryings. Minimum moisture was found in Manik Chaman followed by Merbein Seedless. In both the drying methods, the small sized raisin with minimum weight was found in Merbein Seedless (0.39 g) and Manik Chaman (0.41 g) and highest raisin weight was obtained in Thompson Seedless (0.48 g). Acidity content of raisins was less in Merbein Seedless with golden bleach cold dip method and more in Arkavati and Manik Chaman with golden bleach hot dip method in both dryings.

Total soluble solids in raisins of Merbein Seedless and Thompson Seedless with golden bleach methods were found superior in two drying methods. Minimum TSS was found in Arkavati. The total sugars were found maximum in Merbein Seedless and Thompson Seedless. Minimum total sugars were found in Manik Chaman of golden bleach hot dip method. The reducing sugars found high in Merbein Seedless and low in Tas-A-Ganesh. The treatments golden bleach methods had high reducing sugars than oil emulsion methods. Non-reducing sugars content was found high in the cultivars Merbein Seedless and Thompson Seedless.

In golden bleach methods, the SO_2 was high in raisins of Merbein Seedless, Manik Chaman and in Thompson Seedless. Low amount of SO_2 was found in Arkavati in both the drying methods. In two drying methods, the treatment golden bleach hot dip method (114.49 ppm) was superior to golden bleach cold dip method (101.69 ppm) in SO_2 content. The non-enzymatic browning was minimum in cultivars Manik Chaman, Merbein Seedless and Thompson Seedless raisins. The treatment, golden bleach hot dip method in shade and cabinet dryings effectively inhibited raisin browning and had low NEB values.

The cultivar Manik Chaman has obtained high organoleptic score and had brighter colour and appearance followed by Merbein Seedless, 2A-Clone and Thompson Seedless. Manik Chaman was found given acceptable green colour with soda oil dip treatment. The varieties, Manik Chaman, Merbein Seedless and Thompson Seedless had given good textured raisins in both drying methods. The taste of raisins was scored to good in Manik Chaman, Thompson Seedless, Merbein Seedless and 2A-Clone. All the raisins had an equivalent flavour irrespective of browning and drying methods. High overall acceptance was acquired by Manik Chaman, Thompson Seedless and Merbein Seedless. The variety Arkavati was least accepted.

The results revealed that Merbein Seedless is superior for raisin making followed by Manik Chaman and Thompson Seedless with their rich contribution of high raisin recovery, small sized raisins, bright colour and excellent raisin qualities. Golden bleach hot dip method was effective in obtaining high quality and organoleptic acceptability of raisins better than Golden bleach cold dip method and other treatments. Manik Chaman with soda oil dip method has acquired green coloured flavorsome raisins. In rate of drying grapes, the cabinet drying is superior to shade drying, but there is no difference in physico-chemical qualities of raisins between two drying methods.

11) "Studies on the effect of chemicals and plant growth regulators on dormancy, growth, flowering, corm and cormel production in gladiolus *(Gladiolus grandiflorus* L.)" - *K.Suresh Kumar*

ABSTRACT

The present investigations entitled "STUDIES ON THE EFFECT OF CHEMICALS AND PLANT GROWTH REGULATORS ON DORMANCY, GROWTH, FLOWERING, CORM AND CORMEL PRODUCTION IN GLADIOLUS *(Gladiolus grandiflorus* L.)" were carried out during 2008-2009 in herbal garden at College of Horticulture, Andhra Pradesh Horticulture University, Rajendranagar, Hyderabad.

For this study, two experiments were conducted, with the corms of Gladiolus cultivars American Beauty and White Prosperity. There are 20 treatments each replicated thrice in

Factorial RBD Experiment 1: Studies on the effect of plant growth regulators on dormancy, growth, flowering, corm and cormel production in gladiolus cvs. American Beauty and White Prosperity. Experiment **2:** Studies on the effect of chemicals on dormancy, growth, flowering, corm and cormel production in gladiolus cvs. American Beauty and White Prosperity

Cultivar American Beauty in combination with GA_3 at 125 ppm recorded less number of days to sprout (17.00) and 50 percent sprouting (29.00) of gladiolus corms. In all the plant growth regulator treatments, minimum number of days to sprouting and 50 percent sprouting of corms were observed with higher concentrations. GA_3 at 125 ppm recorded highest percentage of sprouting (100.00) in both the cultivars. Cultivar American Beauty in combination with BA at 100 ppm recorded highest number of sprouts per corm.

Cultivar White Prosperity had maximum vegetative growth over cv. American beauty. Cultivar White Prosperity in combination with GA_3 at 125 ppm recorded maximum values for plant height, number of leaves, leaf length, leaf width and leaf area over cv. American Beauty. Among all the plant growth regulator treatments, higher concentrations had shown promotory effect on vegetative characters in both the cultivars.

Among the Plant growth regulator treatments, cv. American Beauty in combination with NAA at 150 ppm recorded minimum number of days to first floret appearance (70.00), 50 percent flowering (80.67) and number of days to first flower spike harvest (75.33). BA at 100 ppm recorded maximum number of spikes per corm in cv. American Beauty (1.67). Cultivar White Prosperity in combination with GA_3 at 125 ppm recorded significantly higher mean spike length (65.00 cm) as well as maximum number of florets per spike (11.33).

The plant growth regulator treatment BA at 100 ppm recorded maximum number of replacement corms (1.28) and number of cormels produced per corm (5.29) with cv. American Beauty where as cv. White Prosperity with BA at 100 ppm recorded maximum cormel weight per corm (8.02 g) and highest propagation coefficient (193.68). NAA at 150 ppm recorded maximum corm size (4.66 cm) and corm weight (23.15 g) in cv. White Prosperity

In second experiment, the chemical treatment Salicylic acid (SA) at 150 ppm recorded minimum values for number of days for sprouting of corms (16.16), days to 50 percent sprouting of corms (26.33) and maximum number of sprouts per corm with cv. American beauty. Among the chemical treatments studied, Potassium nitrate at 1.5 % recorded highest percentage of sprouting in both the cultivars.

Cultivar White Prosperity recorded maximum values for vegetative growth parameters over cv. American beauty. Among the chemical treatments studied, Salicylic acid and Potassium nitrate at higher concentrations recorded higher values for plant height, number of leaves, leaf length, leaf width and leaf area.

Among the chemical treatments, minimum number of days to first floret appearance (70.00), 50 percent flowering (79.00), maximum number of spikes per corm (1.33) and minimum number of days to first harvest of gladiolus spikes(74.00) was with Salicylic acid at 150 ppm in cv. American beauty. The cultivar White Prosperity with Salicylic acid at 150 ppm recorded highest mean spike length (65.00 cm) and maximum number of florets per spike (10.93) followed by Potassium nitrate at 1.5%.

The cultivar American beauty, with chemical treatment Potassium nitrate at 1.5 % recorded highest number of replacement corms per corm (1.45), however with Salicylic acid at 150 ppm it recorded maximum number of cormels per corm (4.72). Among the chemical treatments, cultivar White Prosperity in combination with Salicylic acid at 150 ppm recorded maximum corm size (4.41 cm), maximum corm weight (21.56 g), maximum cormel weight produced per corm (6.59 g) and highest propagation coefficient (184.72).

12) "Effect of gamma irradiation and antioxidants on shelf life of guava (*Psidium guajava* L) Cv. Allahabad safeda" - *T.Sukumar Reddy*

ABSTRACT

A set of four experiments were conducted in the Post Harvest Technology Laboratory, College of Horticulture, Rajendranagar, Hyderabad from November 2008 to January 2009. Investigations were carried out to understand the Effect of various post harvest treatments like Gamma irradiation and Antioxidants on shelf life of guava cv. Allahabad Safeda by exposing the fruits to irradiation of different doses and treating the fruits with antioxidants at both ambient and low temperature conditions.

All the experiments were carried out in CRD with factorial concept and the treatments were replicated thrice. Physico-chemical characters were recorded at 3 days intervals to study the shelf life of guava fruit under ambient conditions with different irradiation doses. Further the synergy of antioxidants & irradiation doses in enhancing the shelf life of guava fruit both at ambient and low temperature conditions was also studied.

It was observed that the physiological loss in weight, colour index, spoilage rates increased and fruit firmness decreased in all the experiments irrespective of the treatments with the advancement of duration. Total Soluble Solids, brix acid ratio, reducing sugars and total sugars increased initially and then decreased towards the end of the storage period.

In the first experiment, the fruits were exposed to irradiation doses of 0.20 kGy, 0.40 kGy, 0.60 kGy, 0.80 kGy and 1.0 kGy with the help of gamma chamber 5000. Among these treatments, lower doses at 0.20 kGy followed by 0.40 kGy recorded lower physiological loss in weight, colour development, spoilage, acidity and higher firmness, Total Soluble Solids, ascorbic acid, brix acid ratio, reducing sugars, total sugars and thereby recorded more shelf life (11.33 and 10.33 days) over control. Antioxidant activity decreased with the increase in irradiation dose and storage period. Control recorded higher antioxidant activity and was followed by 0.20 kGy. With increase in doses of irradiation titrable acidity increased, where as Total soluble solids, ascorbic acid, brix acid ratio, reducing sugars and total sugars decreased. Total soluble solids, brix acid ratio, reducing sugars and total sugars increased initially and decreased towards the end of the storage period.

In the second experiment, the fruits were treated with antioxidants ascorbic acid (500&1000ppm), benzyl adenine (50&100 ppm) and sodium benzoate (500&1000ppm). Among antioxidants, BA 100 ppm followed by BA 50 ppm recorded lower physiological loss in weight, colour index, spoilage, acidity and higher firmness, Total Soluble Solids, ascorbic acid, brix acid ratio, reducing sugars, total sugars and thereby increased shelf life (11 days) of guava and proved to be the best antioxidant treatments.

The best two treatments from the experiment I (0.20 & 0.40 kGy) and experiment II (BA 50 & 100 ppm) were combined to study their synergy at ambient temperature and 10^0C in the third and fourth experiments respectively. The combination treatment of benzyl adenine 100 ppm+0.20 kGy increased the shelf life upto 13 days compared to control (5.33 days) at ambient temperature and 28 days compared to control (20.33 days) at 10^0C .In all the combination treatments of benzyl adenine(50&100 ppm)+ irradiation dose(0.20&0.40 kGy), fruit firmness, total soluble solids, ascorbic acid, brix acid ratio, reducing sugars and total sugars were found to be higher when compared to control both at ambient and 10^0C storage conditions.

13) **"Development of rapid regeneration protocol in brinjal (*Solanum melongena* L.)" - *Vivek Hegde***

ABSTRACT

Brinjal is the one of the most important vegetable crop in India as well as tropical countries of the world. In the present study the rapid regeneration protocol of brinjal was conducted. In which the hypocotyl and shoot tip explants from the *in vitro* grown sterile seedling were used to obtain callus and adventitious buds. The MS culture medium with BAP at 2.5 mg/l + IAA at 0.3 mg/l induced highest callus growth in hypocotyl (1.43 cm) as well as in shoot tip (1.14 cm) and also highest shoot regeneration was observed in both the explants from shoot tip (2.13) and hypocotyl (1.88). The highest shoot length (1.67 cm) and also more number of leaves (2.83) recorded in shoot tips cultured in the MS medium containing same concentration of BAP and IAA i.e. 2.5 mg/l and 0.3 mg/l respectively after 28 days of culture period.

The callus obtained from both the explants (shoot tip and hypocotyl) were sub-cultured on responding treatments i.e. MS medium containing BAP at 2.5 mg/l + IAA at 0.2 mg/l and BAP at 2.5 mg/l + IAA at 0.3 mg/l. After sub-culturing, the highest number of shoots (3.59), shoot length (3.16 cm) and more number of leaves (3.66) were recorded on the medium containing BAP at 2.5 mg/l + IAA at 0.3 mg/l after 28 days of culture period.

Root induction frequency was highest in full strength MS medium with IAA at 0.5 mg/l. The full strength MS medium supplemented with IAA at 0.5 mg/l recorded more number of roots (14.06), root length (6.99 cm), as well as more number of leaves (6.27).

Hardening of rooted plantlets were carried out initially (14 days) under lab condition in plastic cups containing different potting mixtures (substrates). The highest survival percentage (100 per cent), shoot length (7.23 cm) and more number of leaves (6.52) were observed in cups filled with cocopeat, FYM and vermiculite in 1:1:1 ratio. The development of rapid regeneration protocol in brinjal reported here that took less time, i.e. 3 to 4 months from initiation to establishment. The acclimatized plantlets were planted under shade house after 28 days of hardening. They have reached to mature stage and fruits have been harvested and was also observed that all plants were morphologically similar.

14) **"Genetic diversity and character association in brinjal (*Solanum melongena* L)" - *B.Lokesh***

ABSTRACT

A set of sixty germplasm accessions of brinjal (*Solanum melongena* L.) were evaluated in a Randomized Block Design with two replications at Vegetable Research Station, ARI, Rajendranagar during *rabi* 2008-09 to study genetic diversity, variability, heritability, genetic advance, character association and direct and indirect effects on yield. Each germplasm line was grown in a single row plot of 4.5 m length at spacing of 60 x 45 cm. The data were recorded on five randomly selected plants for plant height, plant spread, number of branches per plant, days to 50% flowering, number of flower clusters per plant, number of flowers per cluster, number of fruits per cluster, fruit length, fruit diameter, fruit weight, while on whole plant basis for number of fruits per plant, shoot and fruit borer incidence and fruit yield per plant. The mean biometric data were analysed following the standard statistical procedures.

Multivariate analysis following mahalanobis D^2 statistics revealed that the entire germplasm were grouped into 8 distinct clusters. The intercluster distance was maximum between cluster III and VIII indicating that the genotypes of these clusters are highly divergent. Fruit weight and plant spread had more contribution to total divergence. Hence selection of one

or two genotypes from cluster III and VIII based on fruit weight and plant spread and crossing would result in high heterosis and throw useful trangressive segregants.

The analysis of variance of RBD revealed highly significant differences among the genotypes for all the 14 characters studied. The values of PCV and GCV for plant height, plant spread, number of branches per plant, number of fruits per cluster, fruit diameter, fruit weight, shoot and fruit borer incidence on shoot and fruit and fruit yield per plant were high indicating that the variability observed in 60 genotypes was high.

High heritability coupled with high genetic advance for plant height, plant spread, fruit weight, shoot and fruit borer incidence on shoot indicated the involvement of additive gene action and thus the chances of fixing by selection are more to improve such traits through pureline selection, mass selection,progeny selection and hybridization and selection with pedigree breeding.

Correlation coefficient analysis revealed highly significant positive association of number of flowers per cluster, number of fruits per cluster, fruit weight, number of fruits per plant and negative association of shoot and fruit borer incidence on fruit with fruit yield per plant and thus these characters were identified as component characters on which selection can be relied upon for genetic improvement of brinjal.

Path coefficient analysis revealed that fruit weight and number of fruits per plant had high positive direct effect on fruit yield per plant, while the remaining characters had negligible to low indirect effect through other component characters. Therefore fruit weight and number of fruits per plant are the reliable characters for the improvement of fruit yield. The residual effect of 0.1063 is low since all the 14 characters contributed 89.37% to total variation in yield. It indicated that some other possible characters which have not been studied here need to be included in this analysis to account fully for the variation in fruit yield of brinjal.

The mean performance of genotypes indicated that the genotypes IC-99649, IC- 90930, IC-345309,IC-089905 and MR/04-26 were found to be elite for tallness, earliness, prolificity, less incidence of shoot and fruit borer and fruit yield per plant respectively. The elite genotypes from different clusters may be chosen for further breeding programme. Further one or two elite genotypes from different clusters may be chosen for further genetic studies either by way of diallel or Line X Tester analysis.

15) "Studies on fermentation of custard apple pulp with *Saccharomyces cerevisiae* var. *ellipsoideus* at different dilutions for wine preparation" - *Vikas Kumar*

ABSTRACT

An experiment entitled "Studies on Fermentation of Custard apple Pulp with *Saccharomyces cerevisiae* var. *ellipsoideus* at Different Dilutions for Wine Preparation" was conducted at College of Horticulture, Rajendranagar, Hyderabad from November 2009 to February 2010. It consisted of six treatments where in custard apple pulp was diluted to 1 : 2, 1 : 3 and 1 : 4 dilutions with and without 0.1% DAHP. It replicated thrice with Completely Randomized Design with factorial concept.

The objective of experiment was to standardise the dilution of Custard apple pulp for wine preparation, to study the effect of DAHP on the rate of fermentation and to study the compositional changes of must during fermentation and aging of wine. The fermentation of must was completed on 12th day in 1 : 2 and 1 : 3 dilution with DAHP. The treatment 1 : 4 dilution with DAHP recorded higher alcohol production (8.14%) during the fermentation.

The treatments 1 : 4 dilution with DAHP recorded low of reducing sugars(1.91%), total sugars (5.53%), less of titrable acidity (0.56%), minimum of phenols (231.66 µg/ml) and lower pH (3.72) during fermentation.

During aging there was decrease in alcohol content (10.96% to 10.72%) because of auto-oxidation of ethyl alcohol to aldehydes and/or combination with volatile acids to form esters. The other compositional changes like decrease of TSS, reducing sugars, total sugars, titrable acidity, phenols and tannins was noticed.

The overall acceptability of wine was recorded maximum with 1 : 4 dilution with DAHP scoring to a scale of good. On comparison of custard apple wine with that of standard (grape) wine, it recorded to a scale of "good" as against a scale of "excellent" for standard (grape) wine.The calculated cost of custard apple wine was about Rs. 21.00 for 200ml of bottle.

16) "Studies on integrated nutrient management on growth, flowering and seed yield of african marigold (*Tagetes erecta* L.)" - *Omi Tayeng*

ABSTRACT

A field experiment, **"Studies on integrated nutrient management on growth, flowering and seed yield of African marigold (*Tagetes erecta* L.)"** was conducted at All India Coordinated Research Project on Floriculture, Agricultural Research Institute, College of Horticulture, Andhra Pradesh Horticultural University, Rajendranagar, Hyderabad during the year 2008-09. The experiment was laid out in Randomized Block Design with eleven treatments and replicated thrice.

The treatments consist of 100% recommended dose of inorganic fertilizers (RDF) 120:90:100 kg of N P K ha^{-1} (T_1), 100% FYM (25 t ha^{-1}) (T_2), Biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}) (T_3), 100% RDF + 100% FYM (T_4), 75% RDF + 75% FYM (T_5), 50% RDF + 50% FYM (T_6), 100% RDF + Biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}) (T_7), 100% FYM + Biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}) (T_8), 100% RDF + 100% FYM + Biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}) (T_9), 75% RDF + 75% FYM + Biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}) (T_{10}) and 50% RDF + 50% FYM + Biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}) (T_{11}).

The results of the experiment revealed that among the different treatments, maximum growth attributes viz., plant height (100.66 cm), stem girth (5.62 cm), number of branches $plant^{-1}$ (22.89), plant spread (72.93 cm), and total dry matter production at harvest (83.89 g $plant^{-1}$) was recorded in T_9 treatment comprising of 100% RDF (120:90:100 kg NPK ha^{-1}) + 100% FYM (25 t ha^{-1}) + biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}). Further, it was observed that the different floral attributes viz., early flower bud appearance (32.53 days), 50% flowering (58.23 days), longer duration of flowering (45.15 days) and maximum diameter of flower (7.38 cm) was recorded with the same treatment.

Among the flower yield attributes, maximum number of flowers $plant^{-1}$ (39.47), number of flower pickings (7.95), weight of single flower (6.72 g), highest flower yield $plant^{-1}$ (265.27 g) and flower yield ha^{-1} (14.85 t ha^{-1}) were found with treatment T_9 (100% RDF + 100% FYM + biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}).

Non significant result was recorded for the vase life of flowers with the different treatment combinations.Better seed yield attributes viz., number of seeds $flower^{-1}$ (284.85), seed yield $flower^{-1}$ (1.37 g), seed yield $plant^{-1}$ (25.86 g) and test weight (2.90 g) were achieved with the application of 100% RDF + 100% FYM + *Azospirillum* and PSB each @ 5 kg ha^{-1}) (Treatment T_9). The highest uptake of nutrients such as nitrogen (177.78 kg ha^{-1}), phosphorus (27.38 kg ha^{-1}) and potassium (106.83 kg ha^{-1}) were recorded in treatment T_9 comprising of 100% RDF + 100% FYM + biofertilizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}). Similarly, the highest available nitrogen (300.34 kg ha^{-1}), phosphorous (53.49 kg ha^{-1}) and potassium

(288.04 kg ha^{-1}) in soil was recorded by the application of 100% RDF + 100% FYM + *Azospirillum* and PSB each @ 5 kg ha^{-1}) (Treatment T_9).

The results from the present study clearly showed that the application of treatment T_9 i.e., 100% RDF + 100% FYM + biofertiizers (*Azospirillum* 5 kg ha^{-1} + PSB 5 kg ha^{-1}) resulted in the maximum net returns (Rs. 95,792 ha^{-1}) with a benefit-cost ratio of 1.82.

17) "Studies on the performance of tomato (*Lycopersicon esculentum* Mill.) Hybrids under southern telangana zone of Andhra Pradesh" - *Y.Mohan*

ABSTRACT

A field experiment was conducted at the student's farm, College of Agriculture, Rajendranagar, Hyderabad during rabi 2008, with the object of studying the performance of fourteen hybrids *viz*., Suruchi, US-618, JK Desi, Annapurna, Benita, Tulasi, Heemsohna, 9005-Siri, NS-585, Maruti, Jasper, Archana, Sridevi and Lakshmi in respect of growth, yield and quality characters and their suitability to this zone. The experiment was laid out in randomized block design with fourteen treatments replicated thrice.

The hybrid Heemsohna recorded the highest plant height (98.60 cm) and number of branches (15.27) followed by Maruti (91.93 cm and 14.20) significantly superior to check hybrid Lakshmi (68.60 cm and 11.87) where as JK Desi recorded the lowest plant height (56.20 cm) and number of branches (7.47).

The hybrid 9005-Siri was early flowering (35.67 days) hybrid followed by Lakshmi (36.00 days). The hybrids Maruti (38.00 days) and Tulasi (38.67 days) are intermediate. Archana and NS-585 are late (48.00 days) among the all hybrids.

The maximum number of flowers $cluster^{-1}$(5.93) and fruits $cluster^{-1}$ (5.13) were recorded in JK Desi followed by check hybrid Lakshmi (5.40 and 4.93) where as it was minimum in Tulasi (4.20 and 3.60). Highest number of fruits $plant^{-1}$ was found in Heemsohna (54.2) followed by Maruti (52.8) which was significantly superior to the check hybrid Lakshmi (49.13).The hybrid Tulasi recorded the highest yield $plant^{-1}$ (3.98 kg) and was on par with Maruti (3.93 kg) which were statistically superior to the check hybrid Lakshmi (2.49 kg). The lowest yield $plant^{-1}$ was recorded in JK Desi (1.95 kg). Maximum fruit weight was observed in hybrid Tulasi (80.73g) followed by Maruti (74.40g) significantly superior over the check hybrid Lakshmi (50.60g) where as it was minimum in hybrid JK Desi (43.33g).

Maximum number of locules $fruit^{-1}$ was observed in the hybrid Annapurna (5.67) followed by Suruchi (4.93) and on par with the check hybrid Lakshmi (4.87).

Longest shelf life was observed in hybrid US-618 (41.67days) followed by Jasper (39.33days) where as the shortest shelf life was observed in check hybrid Lakshmi (22.33days).

The highest TSS was observed in hybrid Maruti (5.87°Brix) followed by Benita (5.50°Brix) and Tulasi (5.30°Brix) which was significantly superior over check hybrid Lakshmi (4.17°Brix). The least T.S.S was recorded in JK Desi (3.73°Brix).

The highest percentage of acidity was observed in the fruits of the hybrid JK Desi (0.41%) significantly superior over the check hybrid Lakshmi (0.36%). The lowest acidity was observed in the hybrid Annapurna (0.27%). The maximum brix/acid ratio was observed in the hybrid Maruti (20.47) followed by Annapurna (18.54) which was significantly superior over the check hybrid Lakshmi (11.57), where as it was least in JK Desi (9.12).The highest ascorbic acid content was observed in the hybrid JK Desi (31.57 mg/100g) followed by Heemsohna (27.90 mg/100g) which was on par with the check hybrid Lakshmi (27.13 mg/100g), where as lowest ascorbic acid content recorded in hybrid Maruti (17.60 mg/100g).

Hybrid Tulasi and Maruti showed better in respect of yield and quality among the hybrids studied and hence they can be recommended for cultivation under Southern Telangana zone of Andhra Pradesh during rabi season.

18) "Effect of plant growth regulators and spicy on growth, flow yield and carotenoid content of african marigold (*Tagetas erecta* L) cv resa narangi gainda" - *R.Hima Bindu*

ABSTRACT

Studies on "Effect of plant growth regulators and spacing on growth, flower yield and carotenoid content of African marigold (*Tagetes erecta* L.) cv. Pusa Narangi Gainda" was conducted at Herbal garden, College of Horticulture, Rajendranagar, Hyderabad during 2008-09. The study was carried out with two experiments. Expt-I - To study the effect of two spacings 40 x30 cm and 50 x 30 cm and also the effect of exogenously applied Plant growth retardants *i.e.* CCC and TIBA at concentrations of 500 ppm, 750 ppm 1000 ppm, and 1250 ppm respectively on growth, flower yield and carotenoid content in African marigold cv. Pusa Narangi Gainda with 18 treatments replicated thrice in RBD with factorial concept. Expt-II - To study the effect of two spacings 40 x30 cm and 50x30 cm and also the effect of exogenously applied growth regulators *i.e.* GA3 and Ethrel at concentrations 100 ppm, 200 ppm 300 ppm, and 400 ppm respectively on growth, flower yield and carotenoid content in African marigold cv. Pusa Narangi Gainda with 18 treatments replicated thrice in RBD with factorial concept. Among the growth regulators studied, GA3 had promotive effect on vegetative characters like plant height and internodal length. Ethrel, TIBA, and CCC suppressed plant height, internodal length and enhanced plant spread and number of laterals. LAI recorded by Ethrel, TIBA, and CCC treatments was less than control. GA3 at 300 ppm advanced flowering, increased flower weight, flower size, flower yield and carotenoid content. Ethrel at 300 ppm increased number of flowers per plant and reduced flower size and flower weight. CCC at 500 ppm enhanced number of flowers and CCC at 750 ppm recorded maximum flower yield per plant and hectare. TIBA at 1000 ppm recorded maximum flower size, flower weight and carotenoid content in gms /Kg of petals. Ethrel at all concentrations recorded low carotenoid content in petals compared to control. Ethrel increased carotenoid yield per hectare compared to control due to increased flower yield. Among the spacings adopted, 50x30 cm reduced plant height, enhanced plant spread, number of branches and leaf area index and enhanced the floral characters *i.e.* number of flowers, flower size, flower weight and flower yield per plant and carotenoid content in petals. Spacing of 40 x 30 cm enhanced plant height, advanced flower initiation, increased flower and carotenoid yield per hectare. The treatment combination of GA3 at 300 ppm with 40x30 cm spacing recorded more flower yield and carotenoid yield per hectare.

19) "Effect of integrated nutrient management on growth, flowering & yield in rose (*Rosa indica L.*) Cv sophia loren" - *Pratiksha Gavali*

ABSTRACT

An investigation was carried out on "Effect of integrated nutrient management on growth, flowering and yield in rose (*Rosa indica* L) cv. Sophia Loren" at College of Horticulture, Andhra Pradesh Horticulture University, Rajendranagar, Hyderabad during the year 2009-10. The experiment was laid out in Randomized Block Design with nine treatments replicated thrice.

The treatments consisted of 100% recommended dose of inorganic fertilizers (RDF) (500:400:300 Kg of N P K ha^{-1}) (T_1), FYM 30 t ha^{-1} + Remaining RDF through chemical fertilizers (T_2), Neem cake 2 t ha^{-1} + Remaining RDF through chemical fertilizers (T_3), Vermicompost 2 t ha^{-1} + Remaining RDF through chemical fertilizers (T_4), FYM 30 t ha^{-1} + Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers (T_5),

Neem cake 2 t ha^{-1} + Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers (T_6), Vermicompost 2 t ha^{-1} + Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers (T_7), FYM 15 t ha^{-1} + Vermicompost 1 t ha^{-1} + Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers (T_8), FYM 15 t ha^{-1} + Neem cake 1 t ha^{-1} + Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers (T_9).

The results of the experiment revealed that among the different treatments, maximum growth attributes viz., plant height (146.56 cm), number of branches $plant^{-1}$ (16.40), plant spread (85.83cm), and total dry leaf bioamass at harvest (4.53 g $plant^{-1}$) was recorded in T_8 (FYM 15 t ha^{-1} + Vermicompost 1 to ha^{-1} + Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers) treatment. Further, it was observed that the different floral attributes viz., Bud diameter (2.57 cm), days taken to flowering (22.66), number of petals per flower (48.90) and maximum diameter of flower (10.40 cm) was recorded with the same treatment. Non significant result was recorded for the bud length of flower with the different treatment combinations.

Among the flower yield attributes, maximum number of flowers $plant^{-1}$ (38.27), number of flower pickings (6.48), weight of single flower (14.32g), number of flowers per m2 (103.32) flower yield ha^{-1} (10.66 lakhs) and vase life (8.96 days) were found with treatment T_8 (FYM 15 t ha^{-1} + Vermicompost 1 to ha^{-1} + Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers). The highest nutrient content in leaves such as nitrogen (2.95%), phosphorus (0.265%) and potassium (1.61%) were recorded in treatment T_8 comprising FYM 15 t ha^{-1} + Vermicompost 1 to ha^{-1}+ Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers.

The results from the present study clearly showed that the application of T_8 comperising FYM 15 t ha^{-1} + Vermicompost 1 t ha^{-1} + Azotobactor 10 kg ha^{-1} + PSB 10 kg ha^{-1} + Remaining RDF through chemical fertilizers resulted in the maximum net returns (Rs.3,64,676) with a benefit-cost ratio of 2.18.

20) "Effect of plant growth regulators on growth, flowering, yield and quality of french bean (*Phaseolus vulgaris* L.) Cv. Arka komal." - *D.Rajani*

ABSTRACT

The present investigation entitled "Effect of plant growth regulators on growth, flowering, yield and quality of french bean (*Phaseolus vulgaris* L.) cv. Arka Komal." was carried out during Rabi (2009-2010) in student farm at College of Agriculture, Rajendranagar, Hyderabad. There are 10 treatments, each replicated thrice in RBD. The treatments consists of Gibberellic acid (150, 200 and 250 ppm), Naphthalene Acetic Acid (10, 15 and 20 ppm), Cycocel (250, 300 and 350 ppm) and Control (water spray).

The data collected at 60 days after sowing had revealed that the maximum plant height (55.66 cm), internodal length (10.56 cm) and number of branches per plant (15.08) were recorded with GA_3 250 ppm while maximum number of leaves per plant (34.40) were recorded in NAA 20 ppm. Among the plant growth regulator treatments studied, foliar spray of Cycocel 350 ppm recorded minimum number of days to flower bud initiation (31.50 days), days to 50% flowering (36.46 days) and days to first pod appearance (35.95 days).

Maximum leaf area index (0.79) and dry matter production (17.50 g) was observed in GA_3 250 ppm. Maximum chlorophyll content (47.18 SPAD units) was recorded in CCC 350 ppm.Foliar spray of GA_3 250 ppm recorded maximum number of pickings (3.50) and maximum number of pods per plant (12.53), maximum pod length (11.68 cm). GA_3 250 ppm

recorded maximum pod length (11.68 cm). Maximum pod diameter (1.07 cm) was observed in Cycocel 350 ppm.

GA_3 250 ppm recorded maximum weight of 10 pods (52.33g), yield per plant (67.21 g), yield per plot (3.52 kg) and yield per ha (40.44 q), while control recorded 37.33 g of weight of 10 pods, 37.18 g of yield per plant, 2.05 kg of yield per plot and 28.17 q of yield per ha.

GA_3 250 ppm recorded minimum fiber content (3.18 g per 100 g of fresh pod) and maximum ascorbic acid content (12.40 mg/100g of fresh pod), Maximum protein content (3.02 g per 100 g of fresh pod) was observed in NAA 20 ppm. Even though the gross returns was maximum in GA_3 250 ppm, net returns was maximum in NAA 20 ppm. This may be because of high cost of GA_3 which worked out low benefit cost ratio when compared to NAA, which is cheaper than GA_3.

21) "Influence of leaf age on gel recovery and heating on quality and shelf life of aloe (*Aloe barbadensis* Miller)" - *B.Amareswari*

ABSTRACT

Aloe is a succulent, sessile, perennial herb. It is as old as human civilization. It was introduced for ornamental and medicinal purposes. Aloe is widely recognized for containing a number of unique organic phytochemicals in its leaves that favour human health. In the most recent years, many studies have been conducted to evaluate its role to control or cure many human diseases. An experiment was conducted to study the "Influence of leaf age on gel recovery and heating on quality, shelf life of Aloe gel". The treatments consisted of three accessions of Aloe *viz.,* yellow flowering accession-1, yellow flowering accession-2 and orange flowering accession-3 and three leaf maturity ages *i.e.,* 10 months, 12 months and 14 months. The treatments are replicated thrice in Completely Randomized Design with factorial concept.

In all the three accessions of Aloe, 14 months leaf age has performed better regarding all the physical and physico-chemical parameters like leaf size (553.45 cm^2), leaf weight (480.22 g), gel weight (321.56 g), pH (4.79), TSS (0.78°brix), acidity (0.16%), reducing sugars (0.050%), total sugars (1.84%), antioxidants (64.08% inhibition of peroxidation) and moisture content (90.23%) of gel. The best leaf age in the first experiment *viz.,* 14 months leaf age was selected for conducting the second experiment in all the three accessions. The gel obtained from the 14 months aged leaves of three accessions was subjected to heating at three temperatures *i.e.,* 50°C, 75°C and 100°C. The treatment samples were analysed at every 10 days during storage for the study of quality parameters, storage stability and microbial count in the gel. During storage, increase in pH, reducing sugars and total sugars was observed in all the treatments while the acidity, TSS, non-reducing sugars, moisture and antioxidants were decreased at all storage intervals up to 30^{th} day of storage.

Yellow flowering accession-1 heated at 75°C has recorded better results in pH (4.67), acidity (0.23%), TSS (1.30°brix) and antioxidant activity while the highest reducing sugars (1.853%), total sugars (2.55%) and moisture content (91.07%) was recorded by yellow flowering accession-1 heated at 50°C followed by the same accession heated at 75°C. Increase in microbial growth was observed with the storage period in all three accessions at all the temperatures. But, comparatively less microbial growth was observed when the Aloe gel was heated at 75°C. The Aloe gel was stored up to 30 days when heated at 75°C with less microbial count while they could be stored up to 20 days at both 50°C and 100°C temperatures in three accessions with less microbial count.

The overall results indicated that yellow flowering accession-1 with 14 months leaf age heated at 75°C has showed good quality and storage stability of Aloe gel followed by yellow flowering accession-2 and orange flowering accession-3.

22) **"Effect of growth regulators on flowering, fruitset, yield and quality in phalsa (*Greewia sub-inaegualis*)" - *Abhijet Debnath.***

ABSTRACT

A field experiment entitled "Effect of plant growth regulators on flowering, fruitset, yield and quality in Phalsa (*Grewia sub-inaequalis* DC)" carried out during 2009-2010 in Model Orchard at College of Horticulture, Rajendranagar, Hyderabad.

The experiment was laid out in a Randomized Block Design with nine treatments and replicated thrice. The treatments consists of two levels each of Naphthalene acetic acid 25 and 50 ppm, Gibberellic acid 50 and 100 ppm, Kinetin 15 and 50 ppm, Ethrel 250 and 500 ppm and control. The growth regulators were applied twice *i.e.*, first spray at pre bloom and second spray at post bloom stage. Data was recorded on number of flowers per shoot, days to 50 percent flowering, fruit set, number of fruits per bush, days to first picking, fruiting duration, crop duration, fruit weight and yield characters. Chemical analysis was done to determine quality parameters of the fruit.

The results revealed that application of NAA 25 ppm was effective in increasing the number of flowers per shoot (394.26), increasing fruitset 41.22 per cent over control, higher number of fruits per node (25.29), less number of days to 50 per cent flowering (51.17), flowering to fruit set (14.00 days) followed by GA_3 50 ppm.

Earlier days to first picking (96.00), less fruiting duration (18.17 days) and crop duration (115.17days) was recorded with GA_3 50 ppm treatment followed by NAA at 25 ppm and GA_3 100 ppm. GA_3 100 ppm was most effective in improving yield per plant (3.05 kg), yield per hectare (7.63 t ha^{-1}) and hundred fruit weight (61.48g) compared to NAA, kinetin, ethrel and control treatments. All the growth regulators significantly improved fruit quality i.e., TSS, acidity, TSS to acid ratio, reducing sugar, pulp weight, stone weight, pulp to stone ratio and shelf life of the fruit.

Ethrel 500 ppm recorded maximum total soluble solids content (25.72 %) and minimum was recorded in control (19.80%). Maximum reducing sugar (18.91%), TSS to acid ratio (10.98), Pulp weight (51.45g), pulp to stone ratio (5.85g) and minimum titratable acidity (2.26 %) and stone weight (8.83g) was recorded with GA_3 100 ppm compared to NAA, kinetin, ethrel and control. Kinetin 30 ppm recorded maximum shelf life (51.46 hrs) and minimum shelf life was recorded in control (36.12 hrs). Application of GA_3 100 ppm was found to be good for increasing the yields and improve quality of Phalsa fruits under the agro-climatic conditions of Hyderabad. The next better treatment was GA_3 50 ppm followed by NAA 25 ppm to increase yield and improve quality of Phalsa.

23) **"Studies on heterosis, combining ability and identification of hybrids with resistance to yellow vein mosaic virus in okra (*Abelmoschus esculentus* (L.) Moench)" - *K.Jagan***

ABSTRACT

The present investigation was undertaken with the objective of identifying the high yielding parents and F1 hybrids with resistance to yellow vein mosaic disease by conducting appropriate studies in the extent of heterosis and combining ability of the parents and the resultant F1 combinations and also study the Character association and direct and indirect effect of yield attributes on fruit yield in Okra (*Abelmoschus esculentus* L.Monech). The study was conducted by raising four lines and fifteen testers as parents and their sixty F_1 hybrids at Student Farm, Acharya N. G. Ranga Agricultural University, Rajendranagar, Hyderabad in a randomized block design with three replications during *Kharif* 2008-09. The data recorded for

fruit yield and its thirteen component characters were subjected to analysis to work out mean performance, genetic parameters, heterosis and combining ability, Character association, direct and indirect effect of yield components, identification of high yielding parents and F1 hybrids with resistance to yellow vein mosaic disease.

The analysis of variance revealed significant differences for characters *viz.*, days to 50 per cent flowering, number of branches per plant, number of fruits per plant, and fruit yield. The lines, Arka Anamika and Varsha Uphar the testers, IC-433670, IC-433645, IC-331217 and IC-433673 and the cross combinations, Arka Anamika x IC-331217, Arka Abhay x IC-331217, Arka Anamika x IC-326893, Arka Anamika x IC-433670, Arka Abhay x IC-332454, Arka Abhay x IC-433675, Varsha Uphar x IC-433673, Parbhani Kranti x IC-433672, Varsha Uphar x IC-331067 and Parbhani Kranti x IC-331217 were found to be superior for yield and its contributing characters.

The F1 hybrids, Arka Anamika x IC-331217, Arka Abhay x IC-331217, Arka Anamika x IC-326893, Arka Anamika x IC-433670, Arka Abhay x IC-332454 and Arka Abhay x IC-433675 recorded high degree of standard heterosis for yield and its contributing characters. Combining ability studies revealed the importance of both additive and non-additive gene action for all the characters studied. Among the lines, Arka Anamika, Arka Abhay and among the testers, IC-326893, IC-433670, IC-433673 and IC-433695 were found as best general combiners and the F1 cross combinations, Arka Abhay x IC-433675, Varsha Uphar x IC-433673 , Arka Anamika x IC-331217, Arka Abhay x IC-331217, Arka Anamika x IC-326893, Parbhani Kranti x IC-433672 and Varsha Uphar x IC-332454 as good specific combinations were adjudged for yield and yield attributing economic characters.

The parents and crosses exhibited high heterosis for all the characters and high genetic advance as percentage of mean for plant height, number of branches per plant, number of fruits per plant, length of the fruit, node at which mosaic disease appears, days at first mosaic symptom appears and fruit yield lending scope for improvement of these traits by simple selection procedure. High estimates of heterosis obtained in hybrid combinations revealed considerable genetic divergence among the parental lines. The fruit yield was found to be strongly associated with number of fruits per plant, fruit length and fruit weight in both parents and crosses. The positive association between plant height, number of fruits per plant, length of the fruit, ten pods weight and fruit yield and negative association of days to 50 per cent flowering, diameter of the fruit, number of branches per plant with fruit yield per plant established in parents and their F1 combinations.

The parents, Arka Anamika, IC-433675, IC-433695 and the cross combinations, Arka Abhay x IC-332454, Arka Abhay x IC-328942, Arka Abhay x IC-433675, Arka Abhay x IC-331217, Arka Anamika x IC-326893, Arka Anamika x IC-433670, Arka Anamika x 433673, Arka Anamika x IC-331217, Parbhani Kranti x IC-433672, VarshaUphar x IC-331026 and Varsha Uphar x IC-331067 were found to be best for high yielders along with yellow vein mosaic disease resistance.

Utilization of heterosis breeding to develop high yielding disease resistant hybrids, simple recurrent selection for increasing the frequency of desirable genes and back cross breeding to transfer YVMV disease resistant genes into any of the desirable lines are advisable to improve the material for further breeding programmers.

24) "Standardization of harvesting stages and drying method on yield and alkaloid content in *Solanum nigrum* L." - *P.Brahma Sai*

ABSTRACT

An experiment entitled "Standardization of harvesting stages and drying method on yield and alkaloid content in *Solanum nigrum* L." was conducted at College Of Horticulture, Rajendra nagar, Hyderabad during December 2009 to may 2010. It consisted of four harvesting stages with three drying methods. The experiment was laid out in a Completely Randomized Block Design (CRBD) with factorial concept with three replications.

The objective of experiment was to identify the right stage of harvesting for maximum herbage and alkaloid yield, to evaluate the alkaloid content in the ratoon crop and to find out the appropriate drying method.

Amongst the growth parameters significantly highest plant height (131.79 cm), number of branches per plant (140 plant^{-1}), and plant spread (11217 cm^2) were recorded at berry ripening stage and a similar trend prevailed in ratoon crop. Whereas number of leaves per plant (613), leaf area per plant (4027 cm^2) was recorded maximum at mature green berry stage and same trend was recorded in ratoon crop.

Among the dry matter accumulation and its partition (at harvest), significantly highest stem dry matter (91.5 g) was recorded at berry ripening stage, maximum leaves and fruits (65.3 and 65.4 g) was significantly higher at mature green berry stage. However maximum dry matter (214.1g) was recorded at berry ripening stage. The drying methods had no significant influence on dry matter accumulation in stems and fruits. While, significant differences were found with respect to dry matter accumulation in leaves, which was maximum (48.4 g plant $^{-1}$) in D_3 (oven drying)

Yield parameters were influenced significantly owing to the effect of harvesting stage. In the main crop maximum fresh herb yield per plant (675.26 g), fresh herb yield per hectare (24.96 t), dry herb yield per plant (141.34 g) and dry herb yield per hectare (5.23 t ha^{-1}), were recorded at berry ripening stage. Where as in ratoon crop highest fresh herb yield per plant (343.63 g), fresh herb yield per hectare (12.72 t), dry herbage yield per plant (76.78 g) and dry herb yield per hectare (2.83 t) were recorded at mature green berry stage.

Drying methods had no significant influence on dry herbage yield per hectare in main crop which being maximum under shade drying (3.77 t), however, drying methods had significant influence on dry herb yield in ratoon crop and the cumulative dry herb yield per hectare was also affected by drying methods.

The crop harvested at mature green berry stage and subjected to shade drying had the highest alkaloid (1.05 %w/w) and alkaloid yield per hectare was significantly higher at mature green berry stage (84.10 kg). Drying methods had significant influence on alkaloid yield per hectare and it was maximum (40.43 kg) under shade drying.

25)* "Evaluation of coloured grape (*Vitis vinifera* L.) varieties for yield, juice recovery and quality" - *S.V.Ratnamacharyulu

ABSTRACT

Study on 'Evaluation of coloured Grape (*Vitis vinifera* L.) varieties for yield, juice recovery and quality' was conducted at Grape Research Station, Andhra Pradesh Horticultural University, Hyderabad during September, 2009 to April, 2010. In the present investigation, nine coloured grape varieties *viz.*, Pusa Navrang, Bangalore Blue, E12/2, Concord, Rubi Red, Gulabi x Bangalore Purple, Madhu Angur, Bangalore Purple and Black Cornechen were evaluated for vegetative, yield parameters, juice recovery and quality.

All the varieties showed significant difference in the parameters recorded. Fruitfulness of buds was highest in the variety Rubi Red (79.17%) followed by E12/2 (76.25%), Gulabi x Bangalore Purple (72.08%) and Pusa Navrang (65.2%) whereas, it was lowest in Bangalore Blue (58.33%). Fruitfulness was observed in lower buds i.e. from 3rd bud itself in Rubi Red, E12/2 and Gulabi x Bangalore Purple whereas, it was noticed from 5th bud in case of Concord, Bangalore Blue and Pusa Navrang. Fruitfulness extended up to 7th to 9th bud in the varieties tested.

Highest percentage of juice recovery was recorded in Pusa Navrang (76%) followed by Black Cornechen (74.33%) and Bangalore Purple (67.67%). Highest yield among the nine coloured varieties was recorded in E12/2 (19.06 kg vine^{-1}), followed by Rubi Red (18.41kg vine^{-1}) and Gulabi x Bangalore Purple (14.31kg vine^{-1}) .The varieties Pusa Navrang, Rubi Red, Bangalore Blue and Madhu Angur may be considered as early juice varieties since they took less time from pruning to bud burst, bud burst to panicle emergence and harvesting.

Concord, Bangalore Blue, Black Cornechen and Pusa Navrang recorded highest TSS in juice and low acidity and were treated as sweetest juice varieties. Reducing and Non- reducing sugars were in proportion to the juice of Concord. Rubi Red and Madhu Angur were rich in ascorbic acid content whereas, Pusa Navrang, Black Cornechen and Rubi Red were rich in total anthocyanin content. Highest anti- oxidant activity was recorded in juice of Rubi Red followed by Pusa Navrang and Bangalore Blue by showing low per cent Thio Barbutyric Acid Reactive Substances .The juice of the Concord recorded the highest score for colour, appearance, flavour and overall acceptability followed by Bangalore Blue and Black Cornechen

Highly significant direct correlation between yield per vine and fruitfulness of buds, average number of bunches, average bunch weight and pruning weight were observed. Fruitfulness of buds exhibited highly significant positive correlation with average bunch weight. There was significant positive correlation between number of bunches per vine and pruning weight and fruitfulness of buds. Average bunch weight had significant positive correlation with fruitfulness of buds and average number of bunches per vine. Anti- oxidant activity of juice had direct correlation with anthocyanins, TSS and brix acid ratio as they are negatively correlated with per cent Thio Barbutyric Acid Reactive Substances, whereas, ascorbic acid and acidity had indirect correlation with anti- oxidant activity as they are positively correlated with per cent Thio Barbutyric Acid Reactive Substances.

26) "Exploitation of heterosis for yield and quality in tomato (*Lycopersicon esculentum* Mill.)" -*A.Shankar.*

ABSTRACT

The present investigation "Exploitation of heterosis for yield and quality in tomato (*Lycopersicon esculentum* Mill.)." was carried out during *rabi* 2009-10 and *summer* 2010 at Vegetable Research Station, Rajendranagar, Hyderabad to study the heterosis, combining ability, gene action governing the inheritance of the traits and genetic parameters. Eight lines (EC-165749, EC-157568, EC-164838, EC-163611, LE-53, LE-56, LE-62 and LE-64) were crossed with three testers (Arka Alok, Arka Meghali and Arka Vikas) in line x tester mating design. The resultant 24 F1's were evaluated along with their parents and two standard checks (Lakshmi and US-618) for sixteen characters*viz.*, plant height (cm), number of primary branches per plant, days to 50% flowering, number of flowers per cluster, number of fruits per cluster, fruit length (cm), fruit width (cm), average fruit weight (g), yield per plant (kg), number of locules per fruit, pericarp thickness (mm), TSS (0Brix), titrable acidity (%), ascorbic acid (mg/100g), lycopene (mg/100g) and shelf life (days). Combining ability analysis revealed that magnitude of *sca* variance was greater than *gca* variance suggesting the predominance of

non-additive gene action for yield per plant, pericarp thickness, TSS, titrable acidity, lycopene and shelf life. The magnitude of degree of dominance revealed over dominance is the cause of heterosis for these traits. Based on *gca* effects of parents, the lines LE-53 and LE-62 and the tester Arka Alok were good general combiners for most of the traits. The cross combinations EC-157568 x Arka Vikas, EC-163611 x Arka Alok, LE-62 x Arka Alok and LE-64 x Arka Vikas were found to be superior for yield per plant. For quality traits, the cross EC-165749 x Arka Alok was superior specific combiner for yield per plant, TSS, ascorbic acid and shelf life and the cross EC-157568 x Arka Alok was superior specific combiner for TSS, titrable acidity and lycopene. Studies on heterosis revealed that majority of the hybrids exhibited relative heterosis, heterobeltiosis, standard heterosis in desirable direction. The hybrids exhibiting high *per se* performance also showed high standard heterosis. The cross combination LE-62 x Arka Vikas registered high negative standard heterosis (*i.e.* for earliness) for days to 50% flowering. The potential crosses like LE-64 x Arka Vikas (H x L), LE-53 x Arka Alok (H x H0, LE-53 x Arka Meghali (H x H), LE-64 x Arka Meghali (H x H), LE-62 x Arka Alok (H x H) exhibited high standard heterosis and high *per se* performance for yield per plant, which offers scope of commercial exploitation through Heterosis breeding. Among promising hybrids for yield per plant, the crosses LE-53 x Arka Alok for TSS and titrable acidity, LE-53 x Arka Meghali for titrable acidity and lycopene and LE-64 x Arka Meghali for titrable acidity and ascorbic acid showed significant standard heterosis. Hence, these are appreciable for processing purpose. The genetic variability studies indicated that genetic material in the present investigation possessed variability which provides sufficient basis for selection by breeder. High estimates of PCV and GCV were obtained for plant height, number of fruits per cluster, average fruit weight, yield per plant, titrable acidity, ascorbic acid and lycopene indicated a good deal of variability in those characters signifying the effectiveness of selection of desirable types for improvement. High heritability assisted with high genetic advance as per cent of mean was observed for plant height, number of primary branches per plant, number of fruits per cluster, fruit length, fruit width, average fruit weight, number of locules per fruit, pericarp thickness, titrable acidity, ascorbic acid, lycopene and shelf life. Hence, simple selection based on phenotypic performance of these traits would be more effective.

27) "Effect of soda oil dip method of raisin making on recovery and keeping quality of seedless grape varieties" - S.Vishala

ABSTRACT

The present investigation entitled "Effect of soda oil dip method of raisin making on recovery and keeping quality of seedless grape varieties" was conducted at Grape Research Station, Rajendranagar, Hyderabad. Seven varieties Viz., Fantasy Seedless, Crimson Seedless, A17-3, K.R.White, A18/3, Manik Chaman and Thompson Seedless were used in the study

The grapes were subjected to pre- drying treatment with soda oil dip method. There are seven treatments, replicated thrice in Complete Randomized Design. The average bunch weight observed maximum in Manik Chaman (344.66 g), the average berry weight was recorded maximum in Thompson Seedless (2.31 g), the berry diameter recorded maximum in Manik Chaman (17.66 mm), the total soluble solids recorded maximum in Manik Chaman (23.43° Brix), the acidity recorded maximum in A17-3 (0.71 %), the ascorbic acid recorded maximum in Fantasy Seedless (1.30 mg/100) and Thompson Seedless (1.30 mg/100), the total sugars and reducing sugars recorded maximum in Manik Chaman (21.42%) and (19.65%) respectively. The non-reducing sugars recorded maximum in A18/3 (2.35%).

The treated grapes were dried separately under shade in a well ventilated room. The highest recovery of raisins was recorded in Manik Chaman (24.60%) and minimum recovery of

raisins in A17-3 (20.85%). The highest average weight of raisins found in Manik Chaman (0.46%). The highest moisture was found in Manik Chaman (16.23%) and minimum was recorded in A17-3 (13.61%). The total soluble solids of raisins found highest in Manik Chaman (79.36° Brix) followed by Thompson Seedless (68.10° Brix). The highest acidity content of raisins was found in A17-3 (3.13%).The ascorbic acid of raisins found highest in Thompson Seedless (24.88 mg/100 g). The total sugars of raisins found maximum in Manik Chaman (66.57%) and minimum was found in A17-3 (58.75%). Reducing sugars found highest in Manik Chaman (62.81%) and least reducing sugars found in A17-3 (56.33%). The non-reducing sugars found highest in Manik Chaman (3.76%).

The stored raisins were then analyzed for their chemical quality properties. The highest average weight of raisins was found in Manik Chaman from 30 to 120 days and least was found in A17-3. The moisture content of raisins during storage was found highest in Manik Chaman and least in A17-3. The total soluble solids of raisins were found highest in Manik Chaman and least in A17-3. The acidity content of raisins recorded maximum in A17-3 and least in Manik Chaman. The ascorbic acid content of raisins was found highest in Manik Chaman and least was found in A17-3. The total sugars of raisins were found highest in Manik Chaman and least in A17-3. The reducing sugars content found highest in Manik Chaman and least in A17-3. The non-reducing sugars content found highest in Manik Chaman and least was in K.R.White. The mould damage recorded highest in A17-3 and lowest was recorded in Thompson Seedless.

The variety Manik Chaman gave high score in colour and appearance, Texture, Flavour, Taste and least score in A17-3. The overall acceptability was recorded highest in Manik Chaman and Thompson Seedless. The least overall acceptability was recorded in A17-3. The result revealed that Manik Chaman was superior for raisin making followed by Thompson Seedless and A18/3 with their rich contribution of high raisin recovery, high total soluble solids, high total sugars and bright colour and excellent raisin qualities. Manik Chaman with soda oil dip method acquired coloured flavoursome raisins.The soda oil dip method wass most effective in obtaining high quality and organoleptic acceptability of raisins.

28) "Studies on response of grape (*Vitis vinifera* L.) Rootstocks for different levels of chloride salts" - *K.Saritha*

ABSTRACT

An experiment was conducted to study the response of grape rootstocks for different levels of chloride salts during October 2008 to May 2009 at Grape Research Station, APHU, Rajendranagar, Hyderabad. The experiment was laid out in a Factorial Completely Randomized Block Design with three replications. The treatments consisted of five rootstocks viz., Dogridge, Salt Creek, RS-19, SO4 and 1613-C with four chloride salts NaCl, KCl, $CaCl_2$ and $MgCl_2$ at five levels of salt concentrations i.e. normal irrigation as control, 4, 8, 16 and 32 meq of Cl/lt i.w.

The dry weight of root to shoot ratio was significantly higher in Dogridge (0.6) and RS-19 (0.6) when compared to Salt Creek (0.5), SO4 (0.5) and 1613-C (0.5). In case of salts $CaCl_2$ (0.6) and $MgCl_2$ (0.6) recorded higher dry weight of root to shoot ratio than NaCl (0.5) and KCl (0.5) salt.There was a significant decrease in the dry weight of root to shoot ratio with increase in concentration of chloride salts.

Among the rootstocks with application of NaCl, the per cent reduction in growth parameters was less with SO4 (17.0%) and 1613-C (17.1 %) and high with Salt Creek (21.9%). In case of KCl the lowest reduction was recorded in 1613-C (13.3 %) and highest was with SO4 (19.4 %). In respect of $CaCl_2$, lowest was with 1613-C (15.4 %) and highest with

Dogridge (17.1 %). In case of $MgCl_2$ salt, the lowest reduction in growth parameters was recorded with Salt Creek (13.4 %) and highest with RS-19 (17.1 %). Among chloride salts, the least per cent reduction in growth parameters was recorded with $MgCl_2$ (15.2%) and $CaCl_2$ (16.5%), whereas highest with NaCl (19.0%) followed by KCl (17.1%). This shows that rootstocks were more tolerant to $CaCl_2$ and $MgCl_2$ salts when compared to KCl and NaCl salts. Irrespective of chloride salts there was significant reduction in growth parameters with progressive increase in salt concentration.

With application of NaCl, among rootstocks the lowest reduction in root parameters was recorded with SO4 (30.8 %), whereas highest was with RS-19 (37.9 %).The lowest reduction due to KCl was recorded with 1613-C (30.4 %) whereas highest was with Dogridge (32.5%). In respect of $CaCl_2$, the lowest was recorded with SO4 (26.5 %) whereas highest was with Dogridge (31.1 %). In case of $MgCl_2$, the lowest per cent reduction in root parameters was recorded with 1613-C (24.6 %) whereas highest was with RS-19 (30.0 %). Among chloride salts, the reduction in root parameters was less with $MgCl_2$ (27.39 %), $CaCl_2$ (28.6 %) and it was high with NaCl (33.9 %) and KCl (31.4 %). Irrespective of chloride salts there was significant reduction in root parameters with progressive increase in salt concentration

With application of different levels of NaCl, 1613-C and SO4 recorded the significantly lowest Na^+ content, when compared to Dogridge, RS-19 and Salt Creek. With application of different levels of KCl, 1613-C recorded the significantly lowest K^+ content in leaf as compared to other rootstocks. With application of different levels of $CaCl_2$, the significantly less Ca^{+2} content in leaf was recorded with Dogridge and Salt Creek compared to SO4, 1613-C and RS-19. With regards to Mg content in leaf, there was no significant difference among rootstocks. There was progressive increase in ion content of leaf with increase in concentration of respective chloride salts.

The K/Na ratio in leaf of 1613-C, SO4 and RS-19 was significantly higher than Dogridge and Salt Creek. There was progressive decrease in K/Na content of leaf with increase in concentration of NaCl.

Dogridge recorded significantly less chloride content in leaf when compared to other rootstocks studied. Accumulation of chloride content in leaf was more with NaCl followed by KCl and it was less with $CaCl_2$ and $MgCl_2$ salt. There was progressive increase in chloride content of leaf with increase in concentration of NaCl followed by KCl when compared to $CaCl_2$ and $MgCl_2$.

The relative salt tolerance is judged based on reduction in growth parameters, dry weight of root to shoot ratio, ion content in leaf, K/Na ratio in leaf. Based on above criteria excepting dry weight of root to shoot ratio, with application of NaCl, KCl and $CaCl_2$ salts, 1613-C is relatively more salt tolerant than other rootstock studied. However Dogridge is commonly used rootstock in problematic soil due to its high vigour, high dry weight of root to shoot ratio and less accumulation of chlorides in leaves. Among chloride salts, the rootstocks are relatively tolerant to $CaCl_2$ and $MgCl_2$ salts when compared to KCl and NaCl salts. Irrespective of chloride salts, all rootstocks are sensitive to high salt concentration.

29) **"Studies on genetic variability and divergence and their association with phenotypic and seed quality parameters in cluster bean (*Cyamopsis tetragonoloba* (L.) Taub)"** - ***E.Anitha Goud.***

ABSTRACT

The present investigation was carried out during 2008-09 to study the genetic parameters, genetic divergence, character association and path co-efficient analysis in 50 genotypes of guar (*Cyamopsis tetragonoloba* (L.) Taub). The experiment was laid out at Vegetable Research Station, A.R.I, Rajendranagar in a randomized block design with three replications and observations were recorded on nineteen characters.

Analysis of variance indicated the presence of significant genotypic differences for all the components. The genotypes *viz*., IC-8592-1, CT-17, CT-28, IC-11357, CT-25, RGC-1025 and CT-19 showed high mean performance for seed yield and its components.

A perusal of genetic parameters revealed high phenotypic coefficient of variation and genotypic coefficient of variation for characters plant height, number of branches per plant, number of clusters per plant, number of pods per cluster, number of pods per plant, vegetable pod yield, pod weight, dry pod weight and dry pod yield. Further, high heritability coupled with high genetic advance as per cent of mean was recorded for plant height number of branches per plant, days to flower initiation, number of clusters per plant, number of pods per cluster, pod length, pod breadth, days to harvestable maturity, vegetable pod yield, dry pod weight, 100 seed weight, seed yield, protein content and gum content indicating the predominance of additive gene action in the inheritance of these traits. These characters can be further improved by following simple selection.

Genetic divergence studies by Mahalanobis D^2 analysis indicated the existence of significant diversity in 50 guar genotypes which were grouped into 7 clusters. The mode of distribution from different eco-geographical regions into various clusters was at random indicating that geographical and genetic diversity were not related. The characters number of branches per plant, dry pod yield and gum content contributed maximum towards genetic divergence. Based on Tocher's method of clustering the genotypes *viz.,* CT-14, CT-1, CT-25, IC-116731, PLG-72, CT-23, CT-12, Samrat and IC-8592-1 were suggested for inclusion in hybridization programme for obtaining desirable and novel recombinants.

Correlation studies indicated the positive and significant correlation of days to flower initiation, vegetable pod yield, number of clusters per plant and number of pods per plant with seed yield. Path coefficient analysis revealed that days to flower initiation, number of clusters per plant and number of pods per plant were the important attributes in formulating selection criteria for effective improvement of seed yield in guar.

30) **"Studies on the influence of leaf age, preservatives and blending on the Composition and storage life of aloe gel"** - ***Madiki Parimala Jyothi.***

ABSTRACT

Aloe vera gel is used as a potential source to develop a wide variety of functional food products and is an ingredient in other value added food products, health drinks, beverages, cosmetic and toilet industry. It is used in the food products like refreshing juice, ready- to – serve drinks, health drinks, sport drinks, soft drinks, diet drinks, laxative drinks, sherbets etc. The fleshy portion can also be converted into candies, squash, jam, jellies etc. Additionally, it can also be incorporated to dairy products like Yogurt, curd, lassies, ice – creams etc.

A lab experiment, "Studies on the influence of leaf age, preservatives and blending on the composition and storage life of Aloe gel" was conducted at the Post Harvest Technology Laboratory, College of Horticulture, Rajendranagar, during the year 2008-2009. A set of two experiments were conducted in a Completely Randomized Block Design with factorial concept.

First set of experiment comprised four different age groups and four methods of gel preparation replicated thrice to study the composition of Aloe gel. Second set of experiment comprised four preservatives and four fruit pulps replicated thrice to study the composition and storage life of Aloe gel.

Among the four age groups of *Aloe vera* leaves, 14 months aged leaf recorded higher antioxidant activity(65.73), total sugars(1.832), pH(5.3), ascorbic acid(2.93), TSS(1.075), reducing sugars(0.047) and non reducing sugars(1.785), there by recorded higher chemical composition than the rest of the age groups of leaves used.

There is an increase in total sugars, pH, TSS, reducing sugars, non-reducing sugars and microbial count and decrease in the antioxidant activity, colour, ascorbic acid and moisture per cent during the period of storage

Among the different preservatives used, the treatments with citric acid at 1.0% recorded higher amounts of antioxidant activity(64.49,63.65 and62.73 on first fifteenth and thirtieth day of storage respectively), total sugars(8.65,9.09 and 9.70 on first fifteenth and thirtieth day of storage respectively), pH(4.16, 4.23 and4.34 on first fifteenth and thirtieth day of storage respectively), ascorbic acid(4.98,4.77 and 4.61 on first fifteenth and thirtieth day of storage respectively), TSS(10.74,10.95 and 11.22 on first fifteenth and thirtieth day of storage respectively), reducing sugars(3.23, 4.11 and5.05 on first fifteenth and thirtieth day of storage respectively) and non reducing sugars(5.75, 4.98 and6.12 on first fifteenth and thirtieth day of storage respectively), moisture percentage(88.18,87.99 and 87.64 on first fifteenth and thirtieth day of storage respectively) there by recorded higher storage life with less microbial count.

Among the different fruit pulps blended pine apple fruit pulp blend with Aloe gel recorded higher total sugars(14.69, 14.85 and 15.28 on first fifteenth and thirtieth day of storage respectively), TSS(14.31, 14.59 and 14.88 on first fifteenth and thirtieth day of storage respectively), reducing sugars(4.08, 4.81 and 5.45 on first fifteenth and thirtieth day of storage respectively), non-reducing sugars(10.75, 10.05 and 10.81 on first fifteenth and thirtieth day of storage respectively) with least microbial count(5.3 and 3 bacterial and yeast/mould count, 7 and 5 bacterial and yeast/mould count on fifteenth and thirtieth day of storage). Similarly among the different fruit pulps blended guava recorded higher antioxidant activity (73.17, 72.23 and 71.30 on first fifteenth and thirtieth day of storage respectively) and ascorbic acid content(5.11, 4.89 and 4.73 on first fifteenth and thirtieth day of storage respectively).

31) "Effect of growth regulators and irradiation on shelf life of sapota (*Manilkara achras (*mill.) Fosberg) cv. Kalipatti" - *N.Kishore Kumar Yadav*

ABSTRACT

The research work entitled **"**Effect of growth regulators and irradiation on shelf life of sapota (*Manilkara achras (*Mill.) fosberg) Kv. Kalipatti" was conducted at PHT lab, college of Horticulture, Rajendranagar, Hyderabad and irradiation unit, College of Agriculture, ANGRAU during December-January of 2009-2010. It consisted of three experiments involving effect of growth regulators, irradiation treatments and the combination of growth regulators irradiation treatments.

The experiment-I consist of growth regulators GA at 100ppm and 200ppm; 2,4-D at 2,4-D at 2ppm and 4ppm; Kinetin at 100ppm and 200ppm including control were replicated thrice duly design the experiment as CRD.

The experiment-II consists of irradiation at 0.2kGy, 0.4kGy, 0.6kGy, 0.8kGy including control and was replicated 4 times under CRD experiment design.

Similarly the experiment-III consists of best one of experiment-I + best one of experiment-II; best one of experiment-I + second best of experiment- II; second best of experiment- II + best one of experiment-II; second best of experiment- I + second best of experiment- II including control. It was replicated 4 times with experiment design of CRD.

The objectives of research work consists of

1. To study the effect of growth regulators on the extension of shelf life of sapota.
2. To study the effect of irradiation doses on the extension of shelf life of sapota.
3. To identify the synergy of growth regulators and irradiation doses on shelf life of sapota.
4. To study the qualitative changes in fruits during the storage period.

The results of the experiments showed that among growth regulators, GA_3 200 ppm recorded lower physiological loss in weight (12.76%), spoilage (33.33%), ripening (58.92%), brix:acid ratio (146.46), higher acidity (0.15%), firmness (2.27kg/cm^2), total soluble solids (23.81^{0}B), reducing sugars (8.45%), total sugars (11.78%), organoleptic score (8.03) and thereby increased shelf life (12 days) of sapota and proved to be the best. It was observed that the physiological loss in weight and spoilage were increased and firmness and acidity decreased in all the treatments with the advancement of storage period.

Among the irradiation treatments, lower dose at 0.20 kGy recorded lower physiological loss in weight (14.73%), spoilage (31.52%), ripening (59.75%), brix: acid ratio (114.55) and higher firmness (1.97kg/cm^2), acidity (0.15%), total soluble solids (23.43^{0}B), reducing sugars (8.46%), total sugars (11.98%), organoleptic score (8.12) and thereby recorded higher shelf life (12.00 days). The combination treatment of GA_3 200 ppm and irradiation dose of 0.20 kGy enhanced the shelf life upto 12 days. The fruits had higher firmness (2.21kg/cm^2), higher total soluble solids (23.76^{0}B), reducing sugars (7.89%), total sugars (11.65%) and organoleptic score (8.45).

32) **"Genetic divergence studies in okra (*Abelmoschus esculentus (*L.) Moench.)"** - ***Mattaparthi Phanikrishna.***

ABSTRACT

The present investigation was undertaken to estimate the genetic divergence in okra and to carry out yield component analysis through correlation and path analysis. Thirty genotypes were sown in a randomized block design with three replications, during summer 2010 at Vegetable Research Station, Agriculture Research Institute, APHU, Rajendranagar, Hyderabad. The objective of the experiment was to identify divergent genotypes to use as donor parents in hybridization programmes.

The D^2 analysis was carried out for eighteen characters which partitioned the thirty genotypes into six clusters. The maximum genetic divergence was observed between cluster III and VI followed by between clusters III and IV. The maximum intra cluster distance was shown by cluster II. The characters fruit yield per plant, days to first flowering, number of nodes on main stem, first fruiting node and fruit width contributed greatly towards diversity. The clusters showing high genetic divergence could be effectively utilized in heterosis breeding programme. If a breeding programme is used at improving growth attributes like plant height, then cluster VI showing maximum plant height can be utilized in breeding programme. Therefore, a plant breeder may keep in mind the above aspects to obtain superior hybrids and good recombinants.

The analysis of variance revealed significant difference for eighteen characters studied suggesting considerable amount of variability exists among the genotypes. Wide range of variability was observed for plant height, fruiting period and fruit yield per plant indicating the scope for selection of suitable initial breeding material for further improvement.

GA as per cent of mean, GCV and PCV values are on par with each other for most of the characters suggesting that the influence of the environment on the traits was very negligible. The values observed are not confounding with the environment. It is a true to the reflection of the homeostasis effect or buffer reaction of the gene. Thus, the true reflection of the trait is exhibited.

In a true agreement with the GCV and PCV values in the present investigation for most of the characters was noticed, indicating additive genetic variance governing the high heritability with genetic advance as per cent of mean. Thus a breeder can employ a simple selection process which will rewarding one to improve the characters viz., plant height, internodal length, number of nodes on main stem, first fruiting node, average fruit weight, number of pickings and fruit yield per plant.

From correlation studies it was observed that fruit yield per plant has exhibited highly significant positive association with plant height, number of branches per plant, internodal length, number of nodes on main stem, fruit length, number of fruits per plant, average fruit weight, fruiting period and number of pickings. Therefore, it is emphasized to lay attention on these traits in crop improvement programme of okra in future.

The results on path analysis indicated that the characters which exhibited maximum positive direct effect on fruit yield per plant and positive associations like number of nodes on main stem, internodal length, average fruit weight and fruiting period would be more effective to bring improvement of yield and to evolve superior high yielding genotypes in okra.

On the basis of mean performance of the genotypes among traits studied, IC-43751 and IC-282226 were found to be best in almost all the attributes i.e., growth, earliness, fruit traits, biotic stresses and yield. So, these genotypes were considered the best genotypes and would be used as parental source in breeding programmes.

33) "Studies on modified atmospheric packaging and irradiation on shelf life and quality of sapota (*Manilkara achras* (*Mill*) fosberg) cv. Kalipatti" - *Banothu Srinu*

ABSTRACT

A set of two experiments on the effect polypropylene packaging (a modified atmospheric packaging) and combination of irradiation on storability at low temperature, shelf life and quality of sapota fruits cv. Kalipatti was conducted at Fruit Research Station, Sangareddy, APHU, A.P. In the first experiment sapota fruit cv. Kalipatti were packed in polypropylene bags of 100 and 150 guage with and without perforation and stored at 15 ^{O}C for 15 and 30 days and transferred to room temperature. Various physico-chemical parameters like PLW (%), Spoilage (%), Firmness(kg/cm^2), TSS (^{O}B), Sugar (%), Acidity (%) and TSS**:** Acid ratio were estimated at an interval of 3 days after transfer to room temperature. Fruits packed in polypropylene bags of 100 guage without perforation recorded significantly lower PLW (%); fruits packed in polypropylene bags of 100 guage with0.1% perforation recorded significantly higher firmness, lowest spoilage (%) irrespective of days of storage 15 ^{O}C. The fruits stored at 15 ^{O}C for 30 days were ripened on initial days of transfer to room temperature and recorded significantly higher PLW (%), lower firmness(kg/cm^2), on 3rd days (ripe stage) when compare to fruits stored at 15 ^{O}C for 15 days. The fruits packed in 100 guage with 0.1 % perforation and stored for 15 ^{O}C for 15 days has maintained higher TSS, sugar (both total and reducing sugars) and lower TSS: Acid ratio even up to 6th day after transfer to room temperature. The maximum total storability of 21 days (15 days at 15 ^{O}C and 6 days at room temperature) was recorded in fruits packed in 100 guage polypropylene with 0.1 % perforation.

The best packaging material and storage days in experiment no 1 has to be irradiated at various dosages in 2nd experiment. However, in the first experiment as 15 days storage has proved better than 30 days storage at 15^{O}C irrespective of packing material. Further to increase the total storability, the fruit after packaging in polypropylene bags of 100 guage with 0.1 % perforation of experiment-1 (best packing material) was irradiation at different doses of 0.2,0.4,0.6,0.8 kGy and stored at 15^{O}C for 20 days in 2nd experiment. The fruit irradiated with 0.2 kGy has recorded significant lower PLW, higher firmness and lower sugar when compare to higher doses of irradiation and control. Fruits irradiated with higher doses of above 0.4 kGy recorded higher PLW, lower firmness and minimum shelf life after transfer to room temperature. Further, fruits irradiated at irradiation doses of above 0.4 kGy have shown irradiation injury and recorded highest spoilage then the fruits irradiated at lower dose of 0.2 kGy. The fruits packed in polypropylene 100 guage with 0.1 % perforation and irradiated at 0.2 kGy recorded significantly higher shelf life of 6 days after transfer to room temperature; increase the total storability to 26 days (20 days at low temperature and 6 days after room temperature).

34) "Effect of invigoration treatments on seed germination and seedling vigour in carry-over onion seed (*Alium cepa* L.)." - *B.Somraj*

ABSTRACT

Onion seeds have poor longevity and loose its viability very rapidly. Generally, the demand for seed fluctuates very often and sometimes there may be a surplus of seeds which need to be stored upto two to three sowing seasons. These carry-over seeds exhibit poor germinability and less vigour. Since, onion seeds found to be poor storers, maintenance of seed viability of carry-over seed lots is of great importance in the sowing seasons following the periods of low production. Hence, proper seed treatments are needed during storage to maintain the seed quality.

Keeping this in view, present investigation was taken up in order to find out the effect of invigoration treatments with growth regulators and chemical nutrients on seed germination and seedling vigour in carry-over onion seed.

Six different aged seed lots with one month interval from the date of expiry along with the fresh seed lot were subjected to invigoration treatments with growth regulators - GA_3 @ 100 ppm, 200 ppm, 400 ppm and NAA @ 50 ppm, 100 ppm, 150 ppm and chemical nutrients - KNO_3 @ 0.25%, 0.5%, 1.0%, Na_2HPO_4 @ 10^{-2}M, 10^{-4}M, 10^{-8}M and $FeSO_4$ @ 0.25%, 0.5%, 1.0% as well as control with distilled water were tested for seed germination and seedling vigour parameters.

Among different methods studied, between paper method was found superior to test seed germination for routine analysis in onion followed by top of the paper method, soil media method and sand media method. Irrespective of the methods used, fresh seed lot recorded maximum germination and decreased along with the age of the seed lots.

Fresh seed lots recorded higher values in seedling vigour indices, speed of germination and stress tests (brick gravel test, field emergence, cold test and paper piercing test). But, the values decreased as the seed age advanced. In contrast, Electrical conductivity of seed leachate recorded lower values in fresh seed lot and increased with the age of seed lot.

Invigoration treatment with growth regulators i.e. GA_3 and NAA were found effective in improving germination percentage, seedling vigour indices, stress tests and speed of germination especially with GA_3 @ 100ppm found superior to the seed lots treated with other growth regulators followed by NAA @ 100ppm.

Similarly, invigoration treatment with chemical nutrients i.e. KNO_3, Na_2HPO_4 and $FeSO_4$ were also found effective in improving germination percentage, seedling vigour indices, stress tests and speed of germination especially with KNO_3 @ 1% found superior to seed lots treated with other chemical nutrients followed by Na_2HPO_4 @10^{-4}M and $FeSO_4$ @ 1%.

Out of the various treatments used for invigoration of aged onion seed lots the best treatment found were GA_3 @ 100ppm followed by NAA @ 100ppm, KNO_3 @ 1%, Na_2HPO_4 @ 10^{-4}M and $FeSO_4$ @ 1% which helped to improve seed germination and seedling vigour in carry-over onion seed.

35) "Variability and vase life studies in tuberose (*Polianthes tuberose* L.) Single cultivars" - *Vijayalaxmi Mandula.*

ABSTRACT

The present investigation entitled "Variability and vase life studies in tuberose (*Polianthes tuberosa* L.) single cultivars" was carried out during 2009-10 at AICRP on Floriculture, ARI, Rajendranagar, Hyderabad. The first experiment was laid out in Randomized Block Design comprising seven cultivars *viz.,* cv. Prajwal, cv. Hyderabad Single, cv. Culcutta Single, cv. Rajath Rekha, cv. Sikkim Selection, cv. Phule Rajani and cv. Shringar as seven treatments. They were evaluated for different vegetative and floral attributes. The information generated was utilised for genetic studies like variability, character association and path coefficient analysis. In the second experiment, spikes of cv. Hyderabad Single obtained from the first experiment were used for vase life studies using distilled water as control (T_1), sucrose 4% + aluminium sulphate 150 ppm (T_2), sucrose 4% + aluminium sulphate 200 ppm (T_3) sucrose 4% + aluminium sulphate 250 ppm (T_4), sucrose 4% + citric acid 150 ppm (T_5), sucrose 4% + citric acid 200 ppm (T_6), sucrose 4% + citric acid 250 ppm (T_7).

The results of the experiment revealed that among the cultivars, cv. Prajwal performed better in respect of all the vegetative parameters studied, except for the character number of

leaves per plant where the cv. Culcutta Single recorded highest. Regarding the floral characters, cv. Phule Rajani was early in the spike initiation with less number of days taken for basal floret opening and 50% flowering. The cv. Prajwal was superior in respect of duration of flowering, number of florets per spike, diameter of the spike, hundred flower weight, fresh weight of the spike, yield of flowers per plant and per plot, while the cv. Culcutta Single recorded more number of spikes per plant. Space between florets was maximium for the cv. Sikkim Selection.

The genotypic coefficients of variation for all the characters studied were lesser than the phenotypic coefficients of variation indicating the masking effects of the environment. Leaf area, dry matter production and yield of flowers per plant recorded high phenotypic and genotypic coefficient of variation and high heritability coupled with high genetic advance as per cent of mean. This indicates the predominance of additive gene action and hence, simple selection may be effective to some extent. The remaining traits were mostly under the influence of non additive gene effects as they recorded low to moderate estimates of genetic advance.

The study on correlations and path analysis indicated that emphasis should be given for selection of plants possessing higher leaf area, dry matter production, duration of flowering, number of spikes per plant and fresh weight of spike so as to develop high yielding varieties as they registered strong positive and direct association with yield component. The spikes treated with holding solution of sucrose 4% + citric acid 250 ppm (T_7) showed best results regarding maintenance of fresh weight and vase life for more number of days with high uptake of water and less loss uptake ratio.

36) "Studies on the effect of mulches and nitrogen on growth, yield and quality of okra (*Abelmoschus esculentus* L. Moench)" - *Tshering Lhamu Bhutia.*

ABSTRACT

A field experiment, "Studies on effect of mulches and nitrogen on growth, yield and quality of okra (*Abelmoschus esculentus* L.Moench)" was conducted at Model Orchard, College of Horticulture, Andhra Pradesh Horticultural University, Rajendranagar, Hyderabad during the year 2010-11. The experiment was laid out in Factorial Randomized Block Design with ten treatments and replicated thrice.

The treatment consists of (T_1)- 100% Recommended dose of Nitrogen (RDN) + Black plastic mulch (25µ), (T_2) 80% RDN+ Black plastic mulch (25µ) ,(T_3) 60% RDN + Black plastic mulch (25µ), (T_4) 100% RDN + Green plastic mulch (25µ), (T_5)80% RDN + Green plastic mulch (25µ), (T_6) 60% RDN + Green plastic mulch (25µ), (T_7) 100% RDN + Organic mulch (4''thickness), (T_8)80% RDN + Organic mulch (4'' thickness), (T_9)60% RDN + Organic mulch (4''thickness), (T_{10})100% RDF + Soil mulch (Control).

The results of the experiment revealed that among the different treatments, maximum growth attributes viz., plant height, number of nodes, internodal length leaf area index, dry matter production , root length, root dry matter was recorded with black plastic mulch as compared to green plastic mulch , organic mulch and control. Maximum weed control was observed with black and green plastic mulch than organic and control. Weed were observed only in organic mulch and control such as *Cynadon dactylon, Cyperus rotundus, Parthenium spp.* The highest uptake of nitrogen was recorded with black plastic mulch than other mulches and control.

Further, the yield attributes like number of fruits per plant, fruit length, fruit weight, fruit yield per plant and fruit yield per hectare was recorded highest in black plastic mulch than green plastic mulch, organic mulch and control. However, the girth of the fruit was not influenced by mulching. Black plastic mulch recorded significantly higher soil moisture, temperature and soil nitrogen (after harvest) than green plastic mulch, organic mulch and control. Similarly, nitrogen significantly influenced the plant height, number of nodes, internodal length, leaf area index, dry matter production, root length, root dry matter . Among the different levels of nitrogen 100% nitrogen was found to be superior over other nitrogen levels in all the aspects.

The yield attributes like number of fruits per plant, fruit length, fruit weight, fruit yield per plant and fruit yield per hectare except fruit girth was recorded maximum with 100% nitrogen than 80% , 60% nitrogen and control. Nitrogen did not show any effect on weed control and days to first flower appearance. Also, nitrogen did not influence soil moisture and soil temperature. But highest soil nitrogen was recorded with 100% nitrogen and lowest in control. Interactions were significant for dry matter production, uptake of nitrogen, and for fruit yield attributes and fruit yield per hectare except for fruit girth. Among the various treatment combinations, black plastic mulch + 100% nitrogen was found to be significantly superior over other treatment combinations.

The results from the present study clearly showed that the organic mulch +100% nitrogen (T_7) resulted in the maximum benefit cost ratio but among the plastic mulches black plastic mulch + 100% nitrogen (T_1) recorded highest benefit cost ratio. Also the highest gross and net returns were recorded with black plastic mulch +100% nitrogen (T_1).

37) "Heterosis breeding and combining ability studies in ridge gourd (*Luffa acutangula* roxb. L.)" - *Karthik Reddy Panyam.*

ABSTRACT

The present investigation was undertaken to assess the *per se* performance, magnitude of heterosis and combining ability in ridge gourd during *kharif* and summer 2010-11 at Vegetable Research Station, Agriculture Research Institute, APHU, Rajendranagar, Hyderabad. The study was mainly contemplated to study the heterosis, combining ability, gene action governing the inheritance of the traits and find out the best general and specific combiners for higher yield.

The genotypes under the investigation comprised six lines (LA-30, RG-152, Chitrada, RGP-26, LA -31 and SRG-41) and three testers (Pusa Nasdar, Jaipur Long and Arka Sujat) were selected on the basis of *per se* performance for yield and were collected from Vegetable Research Station, Rajendranagar. Eighteen hybrids were generated and evaluated along with nine parents and two commercial checks (Green Beauty and Viva Beauty) for the sixteen characters *viz.*, vine length (m), days to first staminate flower appearance, days to first pistillate flower appearance, node of first staminate flower appearance, node of first pistillate flower appearance, days to 50 per cent flowering, number of staminate flowers per vine, number of pistillate flowers per vine, sex ratio, fruit set per cent, fruit length (cm), fruit girth (cm), number of fruits per vine, average fruit weight (g), leaf area and yield per vine (kg).

Combining ability analysis revealed that the ratio of gca variance ($\sigma^2 gca$) to sca variance ($\sigma^2 sca$) of less than unity (<1) indicating the preponderance of non-additive gene action for all the traits. Since non-additive gene action was predominant for yield and yield contributing characters, it is advocated to undertake heterosis breeding among parents for genetic improvement of these characters in ridge gourd. RGP-26 and LA-31 among lines and

Pusa Nasdar and Jaipur Long among testers were good general combiners and are recommended for use in breeding programmes to improve yield and quality in ridge gourd. The cross combinations RGP-26 x Pusa Nasdar, LA-31 x Pusa Nasdar, LA-30 x Jaipur Long and RG-152 x Pusa Nasdar were found to be superior for yield per vine. For node of first pistillate flower appearance, number of pistillate flowers per vine, sex ratio, fruit girth and average fruit weight the cross LA -31 x Pusa Nasdar was superior specific combination.

Studies on heterosis revealed that the hybrids exhibiting high *per se* performance also showed high standard heterosis. The cross combination RG-152 x Arka Sujat registered highest negative standard heterosis for days to 50 % flowering. Significant standard heterosis for number of fruits per vine was expressed by the crosses LA-30 x Jaipur Long, RG-152 x Pusa Nasdar, RGP-26 x Pusa Nasdar, LA-31 x Pusa Nasdar and LA-31 x Arka Sujat. The potential crosses like RGP-26 x Pusa Nasdar, LA-31 x Pusa Nasdar, LA-30 x Jaipur Long and RG-152 x Pusa Nasdar exhibited appreciable standard heterosis and high *per se* performance for yield per vine, which offers scope for commercial exploitation.

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38) "Studies on integrated weed management in carrot (*Daucus carota* L.)" - *Kadarla Chaitanya.*

ABSTRACT

A field experiment entitled "**Studies on integrated weed management in Carrot (*Daucus carota* L.)"** was conducted during *rabi,* 2010-2011 in the Vegetable Research Station, ARI, APHU, Hyderabad.

Among the different weed management practices, application of metribuzin (PE) @ 0.3 kg a.i ha^{-1} + hand weeding at 30 DAS recorded significantly highest weed control efficiency (WCE). The lowest weed index (WI) (8.28 %) was recorded in farmers practice of hand weeding at 30 and 60 days after sowing.

Among the different weed management practices, metribuzin (PE) @ 0.3 kg a.i ha^{-1} + hand weeding at 30 DAS produced significantly tallest plants, higher fresh weight of roots, higher length and girth of root and higher root yield (21.72 t ha^{-1}).

None of the herbicides and their combinations had any phytotoxic effect on the carrot plants. Herbicides, their combinations and their integration with hand weeding produced significant differences in growth parameters, yield components and yield of carrot crop.

Among the different integrated weed management practices the net returns (Rs. 162900 ha^{-1}) and B: C ratio (2.38) were significantly higher with the pre emergence application of metribuzin @ 0.3 kg a.i ha^{-1} + hand weeding at 30 DAS.

39) "Studies on the effect of plant densities and phosphorus levels on the growth and yield of vegetable cowpea (*Vigna unguiculata* L.)" - *Ravikumar Kuna.*

ABSTRACT

The present investigation entitled "STUDIES ON THE EFFECT OF PLANT DENSITIES AND PHOSPHORUS LEVELS ON THE GROWTH AND YIELD OF VEGETABLE COWPEA (*Vigna unguiculata* L.)" was carried out during 2010-2011 at College of Horticulture, Venkataramannagudem, Andhra Pradesh Horticultural University, West Godavari (Dist.).

In this study, there are 12 treatments each replicated thrice in factorial RBD. The treatments included three levels of plant densities and four levels of phosphorus. The study revealed that the crop responded to plant densities as well as phosphorus levels. The biometric

characters like number of primary branches per plant, pod length, pod girth, , number of pods per plant, number of seeds per pod, pod weight per plant and pod yield per plant were favorably influenced by lower density plants (D1 : 37,037 plants ha^{-1}) and a phosphorus levels of 60 kg ha^{-1} (P_3) compared to other levels.

The growth and yield characters like plant height, days to flowering, days to first picking, number of pickings and pod yield ha^{-1} were showed better expression in case of high density planting (74,074 plants ha^{-1}) and 60 kg P_2O_5 ha^{-1} (P_3). Similarly the N P K uptake was more in high density plants (D_3) and 60 kg P_2O_5 ha^{-1} (P_3). The available soil N P K after experiment was comparatively high in low density plants with increasing levels of P. Total dry matter accumulation ha^{-1}, protein content in pod, gross returns, net returns and Benefit: Cost ratio were also higher at higher density plants (D_3) and higher dose of phosphorus (P_3 : 60 kg P_2O_5 ha^{-1}).

The interaction effect of plant densities and phosphorus levels were not significant on number of branches per plant at 45 DAS, number of pods per plant, number of seeds per pod and shelf life of pods. Significant differences were observed in plant height, total dry matter accumulation and days to flowering. The parameters like pod length, pod weight per plant, yield per plant, pod yield ha^{-1}, protein content in pod and N P K uptake by plant were also significant with interaction effect of densities and P levels. Similarly the gross returns, net returns and Benefit: Cost ratios were also higher with the treatmental combination of high density planting (74,074 plants ha^{-1}) and 60 kg P_2O_5 ha^{-1} (D_3P_3).

40) "Integrated weed management in tomato (*Lycopersicon esculentum* L.)" - *Sunil Kumar M.*

ABSTRACT

A field experiment entitled **Integrated weed management in Tomato (*Lycopersicon esculentum* L.)** was conducted at the Model orchard of College of Horticulture, Rajendranagar, Hyderabad during rabi, 2010-11. The experiment was carried out using tomato cv. Arka Vikas with 13 treatments viz., Pendimethalin (PE) @1.0 kg a.i ha^{-1}, Pendimethalin (PE) @ 1.0 kg a.i ha^{-1} + hand weeding at 30 DAT, Pendimethalin (PE) @ 1.0 kg a.i ha^{-1} + Quizalofop ethyl @50 g a.i ha-1(POE), Metribuzin (PE) @ 0.5 kg a.i ha^{-1}, Metribuzin (PE) @ 0.5 kg a.i ha^{-1} + hand weeding at 30 DAT, Metribuzin (PE) @ 0.5 kg a.i ha^{-1} + Quizalofop ethyl (POE) @50 g a.i ha-1, Oxadiargyl (PE) @ 100 g a.i ha^{-1}, Oxadiargyl (PE) @ 100 g a.i ha^{-1} + hand weeding at 30 DAT, Oxadiargyl (PE) @ 100 g a.i ha^{-1} + Quizalofop ethyl (POE) 50 g a.i ha^{-1}, Quizalofop ethyl (POE) @ 50 g a.i ha^{-1}, Quizalofop ethyl (POE) @ 50 g a.i ha^{-1} + hand weeding at 30 DAT, Farmers practice of hand weeding at 20 and 40 DAT and Unweeded control.

Among the different weed management practices, application of metribuzin (PE) @ 0.5 kg a.i ha^{-1} + hand weeding at 30 DAT recorded significantly highest weed control efficiency (WCE). The lowest weed index (WI) (5.30 %) was recorded in farmers practice of hand weeding at 20 and 40 days after transplanting.

Among the different weed management practices, metribuzin (PE) @ 0.5 kg a.i ha^{-1} + hand weeding at 30 DAT produced significantly tallest plants, higher dry weight of tomato plants, higher average fruit weight (86.22 g) and higher fruit yield (30.33 t ha^{-1}).

Application of metribuzin (PE) @ 0.5 kg a.i ha^{-1} + quizalofop ethyl (POE) @ 50 g a.i ha^{-1} recorded lowest number of days for flower initiation and 50% flowering.

The nutrient (N, P and K) uptake was significantly highest (128.40, 30.26 and 139.51 kg ha^{-1} N, P and K respectively) with application of metribuzin (PE) @ 0.5 kg a.i ha^{-1} + hand weeding at 30 DAT.

Among the different integrated weed management practices the net returns (Rs. 100735 ha^{-1}) and B:C ratio (1.98) were significantly higher with the pre emergence application of metribuzin @ 0.5 kg a.i ha^{-1} + hand weeding at 30 DAT.

41) "Studies on modified atmospheric packaging and antioxidants on shelf life of custard apple (*Annona squamosa* L.) Cv Balanagar" - *Ambotu Venkatram.*

ABSTRACT

A set of three experiments on the effect of MAP (fruits packed in polypropylene bags with 3% O_2 + 5% CO_2 or 3% O_2 + 10% CO_2 or 5% O_2 + 5% CO_2 or 5% O_2 + 10% CO_2 or air), antioxidants (500, 1000 ppm of sodium benzoate and ascorbic acid and 50, 100 ppm of benzyl adenine) and combination of MAP (first two best of MAP) and antioxidants (three best antioxidants) on shelf life and quality of custard apple fruits cv. Balanagar stored at 15 ±1˚C, was conducted at Fruit Research Station, Sangareddy, APHU, A. P. In all the experiments the design adopted is completely randomized design with factorial concept with three replications per treatment. Various physical parameters like PLW (%), Firmness (kg cm^{-2}), Spoilage (%), Ripening (%), Days taken for ripening and Shelf life (days) and biochemical parameters like TSS (˚Brix), Acidity (%), Brix-acid ratio, Sugars (%) and Ascorbic acid (mg/100 g) were estimated at an interval of 2 days during storage in all the experiments.

Custard apple fruits cv. Balanagar were packed in polypropylene bags with different concentrations of O_2 and CO_2 or air and stored at 15 ±1˚C. Fruits packed in polypropylene bags with 3% O_2 + 10% CO_2 recorded significantly lower PLW than control fruits. Significantly the highest firmness was recorded in fruits packed in polypropylene bags with 5% O_2 + 10% CO_2. Maximum days taken for ripening was recorded in fruits packed in polypropylene bags either with 5% O_2 + 10% CO_2 or 5% O_2 + 5% CO_2 or 3% O_2+10% CO_2. Fruits packed in polypropylene bags with air or 3% O_2 + 5% CO_2 recorded significantly lower spoilage and correspondingly increased the shelf life upto 12.28 and 12 days, respectively. Fruits packed in polypropylene bags with air were superior for appearance and overall acceptability. The control fruits recorded a shelf life of 8.5 days only. Biochemical parameters like TSS, brix-acid ratio and sugars (reducing and total) were significantly lower in fruits packed in polypropylene bags with 3% O_2 + 10% CO_2 than control fruits indicating delayed ripening. Significantly the highest acidity was recorded in fruits packed in polypropylene bags irrespective of concentration of O_2 + CO_2 or air. Significantly the lowest non-reducing sugars and highest ascorbic acid were recorded in fruits packed in polypropylene bags with 3% O_2 + 10% CO_2 or 5% O_2 + 5% CO_2 or 5% O_2 + 10% CO_2 or 3% O_2 + 5% CO_2.

Custard apple fruits cv. Balanagar were dipped in different concentrations of antioxidants and stored at 15 ±1˚C. Fruits treated with benzyl adenine 100 ppm recorded significantly lowest PLW than control fruits. Significantly highest firmness was recorded in fruits treated with benzyl adenine 100 ppm. Fruits treated with benzyl adenine 100 ppm were superior for appearance and overall acceptability. Maximum days taken for ripening was recorded in fruits treated with benzyl adenine with both concentrations (50 ppm and 100 ppm) and sodium benzoate 500 ppm. Fruits treated with benzyl adenine 100 ppm or sodium benzoate 500 ppm or ascorbic acid 1000 ppm recorded significantly lower spoilage and correspondingly increased the shelf life upto 11, 10.5 and 10 days, respectively. The control fruits recorded a shelf life of 8.5 days only. Biochemical parameters like TSS, brix-acid ratio and sugars (reducing and total) was recorded the lowest and ascorbic acid recorded the highest in fruits treated with benzyl adenine 100 ppm. The treated fruits recorded significantly the highest acidity and the lowest non-reducing sugars irrespective of antioxidants and their concentrations.

Custard apple fruits cv. Balanagar were treated with three best antioxidants (benzyl adenine 100 ppm or sodium benzoate 500 ppm or ascorbic acid 1000 ppm) and then packed in two best treatments of MAP (fruits packed in polypropylene bags with air and fruits packed in polypropylene bags with 3% O_2 + 5% CO_2) and stored at 15 ±1˚C. Fruits treated with benzyl adenine 100 ppm and then packing in polypropylene bags with 3% O_2 + 5% CO_2 recorded significantly lowest PLW and highest firmness than control fruits. Fruits treated with benzyl adenine 100 ppm and then packed in polypropylene bags with air were superior for appearance and overall acceptability. Fruits treated either with benzyl adenine 100 ppm or sodium benzoate 500 ppm or ascorbic acid 1000 ppm and then packed in polypropylene bags with air recorded significantly lowest spoilage and maximum days taken for ripening and correspondingly increase the shelf life upto 13.33 days. The control fruits recorded a shelf life of 8.9 days only. Biochemical parameters like TSS, brix-acid ratio and reducing sugars were recorded the lowest and ascorbic acid recorded the highest in fruits treated either with benzyl adenine 100 ppm or sodium benzoate 500 ppm or ascorbic acid 1000 ppm and then packed in polypropylene bags with 3% O_2 + 5% CO_2. Significantly lowest non-reducing sugars, total sugars and highest acidity were recorded in treated fruits irrespective of antioxidants and then packed in polypropylene bags with 3% O_2 + 5% CO_2 or air. The combination of MAP and antioxidants enhanced the shelf life of 1.33 and 2.83 days over the MAP or antioxidants used alone, respectively.

42) "Effect of phosphorus and plant growth regulators on growth, yield and quality of fenugreek (*Trigonella foenum graecum* L.)" - *G.C.Gangaram*

ABSTRACT

A field experiment entitled "Effect of phosphorus and plant growth regulators on growth, yield and quality of fenugreek (*Trigonella foenum-graecum* L.)" was carried out at Model orchard, College of Horticulture Rajendranagar during the *rabi*, 2010-11.

The significant effect of the phosphorus were observed for plant height 50.13, number of branches 5.38, fresh weight of plant 2610.29, dry weight of plant 649.96, number of pods per plant 26.21, number of seeds per pod 15.02, test weight 13.08, seed yield 15.91, straw yield 42.12, biological yield 55.68, protein content of seed 21.41, and chlorophyll content of leaves at both stages 1.52. However highest N, P, K content of seed was observed with RDF.

The significant effect of plant growth regulators were observed for plant height 51.96 and days to 50 % flowering 42.66 maximum with the treatment 50 ppm GA_3, were minimum with the treatments 75 ppm Ethrel. The significant effect of plant growth regulators were observed for higher number of branches with 75 ppm Ethrel. Among the different treatment combinations, plant growth regulators and phosphorus were observed for number of branches , number of pods per plant, number of seeds per pod, test weight, seed yield, straw yield, biological yield, N, P, K content of seed, protein content of seed, and chlorophyll content of leaves was observed in 60 kg phosphorus with 20 ppm NAA.

Among the different treatment combinations, plant growth regulators and phosphorus application of at 60 kg phosphorus with GA_3 50ppm had significant effect on plant height at 30, 60 DAS and at harvest with a mean maximum 12.00 cm, 37.21 cm and 56.64 cm, while minimum observed was 10.58 cm, 26.58 cm and 40.68 cm with application of 20 kg phosphorus with Ethrel 75 ppm at 30, 60 DAS and at harvest respectively.The highest cost benefit ratio was obtained with the treatment "60 kg Phosphorus /ha with 20 ppm NAA". The worked out economics revealed that, the maximum revenue (Rs.8692/ha) and net profit (Rs.32096/ha) were obtained from 60 kg phosphorus/ha with 20 ppm NAA.

43) "Integrated weed management in onion (*Allium cepa* L.)"- *B.Ramachandraiah*

ABSTRACT

A field experiment entitled "**Integrated weed management in onion (*Allium cepa* L.)"** was conducted at the Model orchard of College of Horticulture, Rajendranagar, Hyderabad during the year 2010-11.

Among the different integrated weed management practices, oxadiargyl @ 90 g a.i ha^{-1} (PE) + quizalofop ethyl @ 75 g a.i ha^{-1} (POE) (T_6) recorded highest weed control efficiency (WCE) of 91.54, 90.08, 85.57 and 82.87% at 30, 60, 90 and harvest respectively. The lowest weed index (WI) (8.19 %) was recorded in pendimethalin C.S @ 0.75 kg a.i ha^{-1} (PE) + quizalofop ethyl @ 75 g a.i ha^{-1} (POE) (T_4) at 2-3 leaf stage of weed. Among the different integrated weed management practices, oxadiargyl @ 90 g a.i ha^{-1} (PE) + quizalofop ethyl @ 75 g a.i ha^{-1} (POE) (T_6)produced significantly tallest plants, with more number of leaves, highest dry weight of onion plants, equatorial (6.71 cm.) and polar diameter (6.26 cm.) of the bulb, average weight of bulb (64.70 g), and marketable bulb yield (27.96 t ha^{-1}) and it was on par with pendimethalin C.S @ 0.75 kg a.i ha^{-1} (PE) + quizalofop ethyl @ 75 g a.i ha^{-1} (POE) (T_4).

The nutrient uptake (N,P and K) was significantly highest (48.20, 16.36 and 82.56 kg ha^{-1} respectively) with application of oxadiargyl @ 90 g a.i ha^{-1} (PE) + quizalofop ethyl @ 75 g a.i ha^{-1} (POE) (T_6)at 2-3 leaf stage of weed but was on par with pendimethalin C.S @ 0.75 kg a.i ha^{-1} (PE) + quizalofop ethyl @ 75 g a.i ha^{-1} (POE) (T_4). Among the different integrated weed management practices the net returns (Rs.141525 ha-1) and B:C ratio (2.61) were significantly higher with the application of oxadiargyl @ 90 g a.i. ha-1 (PE) + quizalofop ethyl @ 75 g a.i ha^{-1} (POE) (T_6) at 2-3 leaf stage of weed and it was on par with pendimethalin C.S @ 0.75 kg a.i ha^{-1} (PE) + quizalofop ethyl @ 75 g a.i ha^{-1} (POE) (T_4).

44) "Studies on the effect of organic manures and inorganic fertilizers on growth, yield and quality of okra (*Abelmoschus esculentus* L.) Cv. *Arka anamika*." - *Karipe Gayathri*

ABSTRACT

The present investigation entitled **"**STUDIES ON THE EFFECT OF ORGANIC MANURES AND INORGANIC FERTILIZERS ON GROWTH, YIELD AND QUALITY OF OKRA (*Abelmoschus esculentus* L.) cv. *Arka Anamika*." was conducted from October, 2010 to January, 2011 at Horticultural Research Station (HRS), Venkataramannagudem, West Godavari dist. There are 12 treatments, each replicated thrice in RBD.

An increase in vegetative growth was observed with T_1 Treatment which received recommended dose of NPK (100:50:50 kg /ha). Significantly highest plant height (104.42 cm) was recorded with T_1 over the other treatments but was on par with T_6 (94.12 cm), T_9 (91.01 cm), T_8 (90.79 cm) and T_7 (90.26 cm). The lowest plant height (61.30 cm) was recorded with T_{12} - control (No fertilizers + No organic manures). Plant girth (3.18 cm), number of nodes per plant (15.07), fresh weight of plant (171.17 g) and dry weight of plant (53.77 g) were recorded maximum with T_1 treatment which received recommended dose of NPK (100:50:50 kg /ha). The lowest plant girth (1.06 cm), number of nodes per plant (5.80), fresh weight of plant (40.67 g) and dry weight of plant (11.50 g) were observed with T_{12}(control). However the highest inter nodal length (12.76 cm) was recorded with T_9, i.e., 50% of RDF +25% of RDN through poultry manure +25% of RDN through vermicompost and the lowest inter nodal length (6.64 cm) was recorded with T_1.

T_1 treatment which received recommended dose of NPK (100:50:50 kg /ha) recorded least number of days to 50 percent flowering (32.80) and first picking (38.47). While, T_{12} treatment (control) recorded highest number of days to 50 percent flowering (47.33) and first picking (55.00). Similarly, yield and yield attributing characters were highest with the treatment which receives completely recommended inorganic fertilizers (T_1). Number of pods per plant 16.47), pod length (17.07 cm), pod weight (15.00 g), yield per plant (238.33 g), yield per plot (10.29 kg), number of seeds per pod (69.20) and pod yield per ha (135.83 q/ha) were recorded maximum with the T_1 treatment. Minimum number of pods per plant (7.80), pod length (8.47 cm), pod weight (8.60 g), yield per plant (66.36 g), yield per plot (2.85 kg), number of seeds per pod (39.07) and pod yield per ha (37.70 q/ha) were recorded with the T_{12} treatment (control).

Soil fertility status results after the crop harvest revealed that the available nitrogen is maximum in T_1 (248 kg ha^{-1}) and minimum in T_5 (203 kg ha^{-1}). Available phosphorus is maximum (41 kg ha^{-1}) in T_5 and minimum (16 kg ha^{-1}) in T_{12}. Where as available potassium is maximum (88 kg ha^{-1}) in T_3 and T_7 treatments and minimum (47 kg ha^{-1}) in T_{12} treatment. The nitrogen uptake was significantly highest (148.08 kg/ha) in the treatment T_1 over all other treatments. The least uptake of nitrogen was found in the treatment T_{12} (66.18 kg/ha).

Among the quality parameters, fibre content was least (10.03 %) in T_8 treatments and the maximum fibre content (12.07 %) was recorded in T_{12} treatment which differed significantly over the other treatments but was on par with T_1 (11.20 %). Maximum protein content (16.37 %) was recorded in T_5 treatment which is on par with T_2 (14.40 %), T_6 (15.28 %), T_7 (15.37 %) and T_8 (14.93 %). The protein content was minimum (10.67 %) in T_{12} treatment and was on par with T_4 (12.49 %) and T_{10} (12.57 %). Significantly higher ascorbic acid content (19.67 mg/100g) was recorded in T_2 and T_5 over the other treatments but is on par with T_3 (17.33 12.67), T_6 (19.33 mg/100g), T_7 (19.00 mg/100g) and T_{10} (18.67 mg/100g). Ascorbic acid content was lowest (12.67 12.67) in T_{12} treatment (control).

Cost economics results reveal that T_1 treatment recorded higher gross returns (Rs 2,71,600 per ha), net returns (Rs 2,08,318 per ha) and higher benefit cost ratio (4.29). However,T_{12} treatment (control) showed minimum gross returns (Rs 75,400 per ha), net returns (Rs 15,158 per ha) and least benefit cost ratio (1.25).

45) "Studies on effect of mulches and micronutrient foliar sprays on growth and flowering in gladioli (*Gladiolus grandiflorus* L.)" - *Yalek Messar.*

ABSTRACT

A field experiment **"Studies on effect of mulches and micronutrient foliar sprays on growth and flowering in gladioli (*Gladiolus grandiflorus* L.)"** was conducted at AICRP on Floriculture , Agricultural Research Institute, Rajendranagar, Hyderabad during the year 2010-2011. The experiment was laid out in Randomized Block Design comprising of ten treatments , T_1-Black polythene mulch (25µ), T_2- Black polythene mulch (25µ) + 1.0% $FeSO_4$, T_3- Black polythene mulch (25µ) + 0.75% $ZnSO_4$, T_4- Red polythene mulch (25µ), T_5- Red polythene mulch (25µ) + 1.0% $FeSO_4$, T_6-Red polythene mulch (25µ) + 0.75% $ZnSO_4$, T_7- White polythene mulch (25µ), T_8- White polythene mulch (25µ) + 1.0% $FeSO_4$, T_9-White polythene mulch (25µ) + 0.75% $ZnSO_4$, T_{10}-Soil mulch(control). The entire field was replicated thrice.

The results of the experiment revealed that among the mulches, Black polythene mulch recorded earliest sprouting and soil mulch i.e, control the late sprouting. The treatment T_2 produced tallest plant while the maximum leaf area was produced in treatment T_3. There was no effect of any of the treatments on the number of leaves of the gladiolus plant.

Earliness in days taken for spike initiation, and the maximum number of spikes per plot was observed in T_1(Black polythene mulch 25 µ) while minimum days for 50% flowering and days for basal flower opening was observed in T_2. Spike quality attributes like spike length, florets per spike, weight of spike, diameter of flower were more for the treatment T_2 but the increase in rachis length was observed in T_3. No significant difference were observed for the characters like number of spikes per plant and number of florets open at a time among different treatments.

Corm weight per plant and size of corms was highest in treatment T_2 and the similar trend was observed for number of cormels per corm and cormel weight. N, P, K and Zn content of the gladiolus plant were observed maximum with the treatment T_3 while the treatment T_2 recorded maximum content of the iron in gladiolus plant. The worked out economics revealed that, the maximum B:C ratio was obtained from the plots applied with Black polythene mulch and $FeSO_4$ 1.0% (T_2).

46) "Studies on effect of pre-sowing seed treatment and standardization of vegetative propagation technique in jackfruit (*Artocarpus heterophyllus lam*.)" - *A. Harshavardhan.*

ABSTRACT

The present investigation on "Studies on effect of pre-sowing seed treatments and standardization of vegetative propagation technique in Jackfruit (*Artocarpus heterophyllus* Lam.)**"** was carried out during 2010-2011 at Horticultural Research Station, Venkataramannagudem, Andhra Pradesh. The present investigation was divided into two experiments and both were carried out simultaneously. In the first experiment, the effect of pre-sowing seed treatments on germination and seedling growth of Jackfruit (*Artocarpus heterophyllus*) were studied, while in the second experiment the scion sticks of two cultivars viz., Singapore and Palur were grafted on Jackfruit seedlings by two methods of grafting (Veneer and Soft wood method) at monthly intervals starting from July 2010 to October 2010 in two environmental conditions viz., open and polyhouse condition on graft success and growth.

Jackfruit seeds were soaked in gibberellic acid, naphthalene acetic acid, potassium nitrate and in water for 12 hours and 24 hours period after washing thoroughly with water and then sown in polybags. Soaking seed in GA_3 200 ppm for 24 hours resulted in higher per cent of germination (77.33%), early initiation of germination (4.00 days) and lowest number of days taken for 50 per cent germination (11.00 days), maximum seedling height (72.11 cm), maximum seedling girth (0.78 cm), higher internodal length (4.66 cm), higher absolute growth rate (0.62 cm. day^{-1}) and higher root-shoot ratio (0.24 cm), while seed soaked in KNO_3 0.5% for 24 hours recorded maximum number of leaves, maximum length, width of leaf and leaf area per seedling (28.2, 14.45 cm, 7.69 cm and 2526 cm^2 respectively). Further, seed treated with NAA 50 ppm for 24 hours have recorded maximum primary root length (15.25 cm) and maximum secondary root length (17.35 cm).

In standardization of vegetative propagation technique, early sprouting of scion (15.33 days), higher per cent of graft success (75.97%), maximum number of leaves (8.67) and maximum leaf area per graft (200.00 cm^2) were obtained under polyhouse condition during October through veneer method in cv. Singapore, while grafts prepared during October through softwood method in Singapore variety under polyhouse condition recorded maximum scion length (16.91 cm), maximum absolute growth rate (1.1 cm/day) and attained plantable size at an early date (127.70 days). Further, maximum girth at graft union (0.83 cm) was found during October through veneer method in cv. Singapore under open condition, while maximum

internodal length (1.31 cm) was observed during October through veneer method in Palur variety under polyhouse condition.

The grafting environment with congenial microclimate and month of grafting with favourable weather are mainly influencing graft success and growth under polyhouse condition. There is evidence that under such conditions callus growth is rapid and formation of vascular tissue is early. It was observed that graft success was high under polyhouse during the month of October with veneer method of grafting. These conditions provided the congenial atmosphere for rapid development of callus tissue and formation of vascular bundle resulting in higher graft success and growth in jackfruit.

47) "Studies on integrated weed management in cabbag (*Brassica oleracea var.capitata* L.)" - *J.Suresh Kumar.*

ABSTRACT

The "Studies on integrated weed management in cabbage (*Brassica oleracea* var. *capitata* L.)" was conducted at the Model orchard of College of Horticulture, Rajendranagar, Hyderabad during the year 2010-11. The study was carried out using cabbage cv. Golden Acre with 13 treatments *viz.*, Pendimethalin C.S @ 0.7 kg a.i.ha^{-1} + Propaquizafop @ 75 g a.i.ha^{-1} (T_1), Pendimethalin C.S @ 0.7 kg a.i.ha^{-1} + Hand weeding at 30 DAT (T_2), Pendimethalin C.S @ 0.7 kg a.i.ha^{-1} + Black polythene mulch (T_3), Oxyfluorfen @ 0.25 kg a.i.ha^{-1} + Propaquizafop @ 75 g a.i.ha^{-1} (T_4), Oxyfluorfen @ 0.25 kg a.i.ha^{-1} + Hand weeding at 30 DAT (T_5), Oxyfluorfen @ 0.25 kg a.i.ha^{-1} + Black polythene mulch (T_6), Alachlor @ 1.0 kg a.i.ha^{-1} + Propaquizafop @ 75 g a.i.ha^{-1} (T_7), Alachlor @ 1.0 kg a.i.ha^{-1} + Hand weeding at 30 DAT (T_8), Alachlor @ 1.0 kg a.i.ha^{-1} + Black polythene mulch (T_9), Propaquizafop @ 75 g a.i.ha^{-1} (T_{10}), Black polythene mulch (T_{11}), Hand weeding twice at 25 and 50 DAT (T_{12}) and Un-weeded control (T_{13}). The experiment was laid out in a randomized block design with three replications.

Among the different integrated weed management practices, significant differences in the plant characters like number of plants per hectare, height of plant, number of leaves per plant, initiation of head and 50 percent head initiation, number of days for first and final harvesting, fresh weight, dry weight and moisture content of cabbage head, length and diameter of cabbage head, yield per hectare were highest in the treatment Oxyfluorfen + Black polythene mulch.

Among the different integrated weed management practices, significant differences were recorded for weed parameters like weed population, weed dry weight and weed control efficiency. The treatment Oxyfluorfen + Black polythene mulch was significantly reduced the grasses and broad leaved weeds. Whereas, purple nut sedge was efficiently controlled by treatment T_{12} - Hand weeding twice at 25 and 50 DAT. The less Weed Index was recorded in the treatment Oxyfluorfen + Black polythene mulch. Among the different integrated weed management practices maximum gross returns, net returns and B:C ratios were recorded in the treatment Oxyfluorfen + Black polythene mulch.

48) "Studies on the effect of holding solutions on vase life of cut gerbera (*Gerbera jamesonii bolus ex.hook*.) Ev.lamborgini"- *M.R.Bhanu Sree.*

ABSTRACT

The present investigation entitled "Studies on the effect of holding solution on vase life of cut gerbera (*Gerbera jamesonii* Bolus ex. Hook.) cv. Lamborgini." was carried out at Department of Horticulture, College of Horticulture, Venkataramannagudem, West Godavari District of Andhra Pradesh during October 2010 to January 2011. A total of four experiments were conducted and all the experiments were laid out in completely randomized design with factorial concept replicated thrice.

The first experiment consists of treatments with sucrose at different concentrations. The gerbera flowers held in sucrose 5% vase solution recorded higher values in water uptake (9.52 g/f), transpirational loss of water (9.31g/f), water balance (4.21g/f) and fresh weight of flowers (92.67%). The same treatment, however, recorded lower values in scape bending curvature (13.44 degrees), optical density (0.027) and electrolyte leakage (23.09%). Further, the cut flowers held in sucrose 5% vase solution recorded longer vase life (9.45 days) with higher total sugars (4.30 mg/g f wt) and non reducing sugars (2.10 mg/g f wt) contents.

The second experiment, consisted of treatments with different biocides (8-hydroxy quinoline sulphate, Sodium hypochlorite and calcium hypochlorite) at varied concentrations. The flowers maintained in vase solution containing 8-hydroxy quinoline sulphate (8- HQS) at 200 ppm recorded longer vase life (9.22 days) with higher values in water uptake (8.11g/f), transpirational loss of water (8.29g/f), water balance (3.82g/f), fresh weight of flowers (95.63%), total sugars (3.91 mg/g f wt) and reducing sugars (2.51 mg/g f wt). The same treatment, however, recorded lower values in scape bending curvature (8.78 degrees), optical density (0.028) and electrolyte leakage (26.35%) which contributed to the longer vase life of cut flowers.

In the third experiment, the treatments were with different mineral salts (silver nitrate, aluminum sulphate, potassium chloride and calcium nitrate) at varied concentrations. The cut gerbera flowers with vase solution containing silver nitrate ($AgNO_3$) 20 ppm registered longer vase life (9.06 days) with higher values in water uptake (6.25 g/f), transpirational loss of water (6.66g/f), fresh weight (85.24%), total sugars (3.60 mg/g f wt), reducing sugars (2.43 mg/g f wt) and non reducing sugars (1.17 mg/g f wt). The same treatment by recording lower values in scape bending curvature (10.48 degrees), optical density (0.016) and electrolyte leakage (24.54%) contributed to cut flower quality.

The fourth experiment consisted of treatments with a combination of best of biocides, mineral salts and sucrose (8-HQS 200 ppm, 8-HQS 300 ppm, silver nitrate 20 ppm, potassium chloride 200 ppm and sucrose 5 %). The cut gerbera flowers held in vase solution containing a biocide, mineral salt and sucrose (8-HQS 200 ppm + $AgNO_3$ 20 ppm + sucrose 5%, respectively) registered longer vase life (12.22 days) by recording higher values in water uptake (9.86 g/f), transpirational loss of water (9.95 g/f), total sugars (4.43 mg/g f wt) and reducing sugars (2.86 mg/g f wt). The other factors contributed to the longer vase life of cut gerbera lowers with the treatment were lower values in scape bending curvature (1.62 degrees), optical density (0.012) and electrolyte leakage (22.52%).

49) "Studies on the effect of packaging and ventilation on post harvest shelf life and quality of sapota (*Manilkara achras* (mill.) Fosberg) cv. Kalipatti"- *R.Bindu Praveena*

ABSTRACT

An investigation was under taken to ascertain the effect of packaging and ventilation on post-harvest shelf life and quality of sapota cv. Kalipatti comprising a set of three experiments, at Post Harvest Technology laboratory, College of Horticulture, Andhra Pradesh Horticultural University, Venkataramannagudem, West Godavari District, A.P.

The experiments include fruits of sapota cv. Kalipatti packed in LDPE bags of 100, 200 and 300 gauge with different ventilation of 0.8, 1.2 and 1.6 per cent ventilation stored at ambient, low temperature conditions and fruits treated with ethrel @ 1000 ppm uniformly packed and stored at ambient conditions.

Various physico-chemical parameters like PLW (%), Spoilage (%), Firmness (kg/cm^2), TSS (^{O}Brix), Sugar (%), Acidity (%) and TSS**:** Acid ratio were estimated at an interval of 2, 5 and 2 days at room temperature, low temperature and ethrel treated fruits stored at ambient temperature respectively.

Fruits of control registered quicker ripening percentage, higher rate of PLW (%), early climacteric in all the three experiments. All these contributed to lower shelf life.

It was found that there was better retention of quality in terms TSS, Sugars, acidity and also lower PLW (%), ripening (%), spoilage (%), higher firmness (kg/cm^2) and shelf life in fruits stored at low temperature

Fruits treated with ethrel had higher ripening (%), spoilage (%), higher TSS, ascorbic acid content, sugars (%) and lower firmness (kg/cm^2) compared to the fruits stored under ambient and low temperature.

Fruits packed in poly bags of 300 gauge with 0.8 per cent ventilation of recorded significantly lower PLW (%) in the first experiment and fruits packed in polybags of 200 gauge with 0.8 % ventilation recorded in the second and third experiments.

The fruits packed in polybags of 200 gauge with 1.2 % ventilation followed by fruits of 200 gauge with 0.8 and 1.6 % ventilation recorded significantly lowest ripening (%) and spoilage (%), higher firmness (kg/cm^2), TSS, ascorbic acid content, sugars (%) and lower TSS: Acid ratio in all the three experiments and were also organoleptically superior.

The maximum shelf life of 13, 31.83, 11 days was recorded in fruits packed in 200 gauge LDPE with 1.2% ventilation in the ambient, low temperature and ethrel treated fruits respectively.

50) "Studies on the effect of chemicals and growth regulators on post harvest shelf life and quality of papaya (*Carica papaya* L.) Cultivar red lady" - *Ramesh Dasu.*

ABSTRACT

The present investigation entitled "Studies on the effect of chemicals and growth regulators on post harvest shelf life and quality of papaya (*Carica papaya* L.) cv. Red Lady" was carried out at College of Horticulture, Venkataramannagudem, West Godavari district of Andhra Pradesh. The study was carried out in two different experiments with 9 different treatments involving different combinations of calcium compounds in experiment I and growth regulators viz., GA_3 and BA at different combinations in experiment II. Further, the experiments were conducted in a Completely Randomized Design (CRD) with three replications and data on effect of different chemicals and growth regulator treatments were recorded at every three days interval on physical parameters such as physiological loss in

weight (PLW), ripening percentage, fruit firmness, disease occurrence, organoleptic scoring, shelf life and physico – chemical properties *viz.*, Total Soluble Solids (TSS), Total sugars, reducing sugars, acidity, ascorbic acid and brix acid ratio.

The fruits treated with $CaCl_2$ @ 4 % resulted in significantly lowest PLW, percentage of ripening, disease occurrence among the chemicals and $Ca(NO_3)_2$ @ 2 % was found on par with $CaCl_2$ @ 4 % whereas, GA_3 @ 100 ppm among the growth regulators resulted in lowest PLW, percentage of ripening, disease occurrence followed by BA @ 150 ppm which was on par with GA_3 @ 100 ppm. Highest physiological loss in weight (PLW), percentage of ripening and disease occurrence was observed in control where water treatment was imposed.

Significantly, highest fruit firmness, organoleptic scoring and highest shelf life was recorded for fruits treated with $CaCl_2$ @ 4 % and fruits treated with $Ca(NO_3)_2$ @ 2 % were found on par with $CaCl_2$ @ 4 %. Similarly, fruits treated with GA_3 @ 100 ppm recorded highest fruit firmness, organoleptic scoring and highest shelf life and were on par with fruits treated with BA @ 150 ppm.

The fruits treated with $CaCl_2$ @ 4 % was resulted in lowest total soluble solids (TSS), total sugars, reducing sugars and brix acid ratio among the chemicals and $Ca(NO_3)_2$ @ 2 % was found on par with $CaCl_2$ @ 4 % whereas, GA_3 @ 100 ppm among the growth regulators resulted in lowest total soluble solids (TSS), total sugars, reducing sugars and brix acid highest was recorded in BA @ 150 ppm. Untreated fruits resulted in highest total soluble solids (TSS), total sugars, reducing sugars and brix acid ratio in both the experiments.

Among the chemical treatments highest acidity and ascorbic acid was recorded with fruits treated with $CaCl_2$ @ 4 % and fruits treated with $Ca(NO_3)_2$ @ 2 % was found on a par with $CaCl_2$ @ 4 %. Similarly, fruits treated with GA_3 @ 100 ppm recorded highest acidity and ascorbic acid and fruits treated with BA @ 150 ppm which was at par with GA_3 @ 100 ppm. Lowest acidity and ascorbic acid content was recorded in untreated fruits.

51) "Studies on the effect of organic and bionutrition on growth, yield and quality in ashwagandha (*Wtihtania somenifera dunal*.)" - *Ramadugu Praveen.*

ABSTRACT

Studies on the "Effect of organic and bionutrition on growth, yield and quality in Ashwagandha (*Withania somnifera* Dunal.)" was conducted at College of Horticulture, Venkataramannagudem, West Godavari district of Andhra Pradesh during 2010-2011. The studies were carried out using ashwagandha cv. Poshita with 14 treatments *viz.*, neem cake 4 t ha^{-1} (NC 4 t ha^{-1}: T_1), vermicompost 5 t ha^{-1}(VC 5 t ha^{-1}: T_2), poultry manure 5 t ha^{-1} (PM 5 t ha^{-1}: T_3), farm yard manure 12 t ha^{-1} (FYM 12 t ha^{-1} : T_4), *insitu* green manuring with sunnhemp (GM : T_5), NC 4 t ha^{-1} + BF (T_6), VC 5 t ha^{-1} + BF (T_7), PM 5 t ha^{-1} + BF (T_8), FYM 12 t ha^{-1} + BF (T_9), GM + BF (T_{10}), bio-fertilizers consisting of *Azospirillum* and Phosphate solubilizing bacteria (BF: T_{11}), recommended dose of fertilizers (RDF : T_{12}), 50 per cent recommended dose of fertilizers (50 per cent RDF : T_{13}) and control (T_{14}). The experiment was laid out in a randomized block design with three replications.

Among the different treatments, PM 5 t ha^{-1} + BF, VC 5 t ha^{-1} + BF and RDF had recorded higher growth attributes *viz.*, plant height, number of branches per plant, leaf area, LAI, dry matter production and AGR for plant height on par with each other and significantly higher than other treatments at all the growth stages studied except 30 DAS. The other yield attributes and yield *viz.*, root length, root diameter, fresh root yield, dry root yield and seed yields recorded with PM 5 t ha^{-1} + BF, VC 5 t ha^{-1} + BF and RDF were also on par with each

other and significantly superior to other treatments indicating the potentiality of these treatments in enhancing ashwagandha root and seed yields.

The total alkaloid per cent recorded in ashwagandha root with the treatments, PM 5 t ha^{-1} + BF, VC 5 t ha^{-1} + BF and RDF was significantly higher over other treatments at harvest indicating the superiority of these treatments in enhancing the quality of produce. Among the treatments, application of PM 5 t ha^{-1} + BF, VC 5 t ha^{-1} + BF and RDF resulted in higher N P K uptake over other treatments in the experiment.

Among the different treatments, PM 5 t ha^{-1} + BF had recorded the highest gross income mainly on account of higher root and seed yield. The net income was, also, highest with PM 5 t ha^{-1} + BF owing to lower cost of cultivation and fair gross income. Further, the treatment, RDF recorded the highest BCR primarily on account of lower cost of cultivation and fair net income.

The treatments, PM 5 t ha^{-1} + BF and VC 5 t ha^{-1} + BF had recorded the growth, yield and quality attributes on par with RDF offering the scope for complete substitution of inorganic fertilizers with economic advantage over the other treatments with organic nutrient sources. Application of bio-fertilizers containing *Azospirillum* and PSB had resulted in growth, yield and quality attributes and nutrient uptake on par with 50 percent RDF offering the scope for reduction in inorganic fertilizers with increased soil health.

The present study clearly indicated that PM 5 t ha^{-1} + BF, VC 5 t ha^{-1} + BF and RDF were superior to other treatments in respect of root yield and quality with overall better performance. However, the treatment, PM 5 t ha^{-1} + BF with more economic advantage over can be recommended for obtaining higher yields in ashwagandha. Further for complete substitution of inorganic fertilizers, the treatment, PM 5 t ha^{-1} + BF can be recommended.

52) "Studies on the effect of modified atmosphere packing on shelf life of banana cv.grand naine" - *Harikumar Vangapandu.*

ABSTRACT

The research work entitled **"**Studies on the effect of modified atmosphere packing on shelf life of banana Cv. Grand Naine." was conducted at fruit Research station, Sangareddy, Medak during the year 2010-11. It consists a set of two experiments involving different levels of perforation (0.5 mm) treatments.

Both the experiments were carried out in CRD with factorial concept with eight treatments and replicated thrice. Physico-chemical characters were recorded at specific day intervals to study the shelf life of banana fruit under ambient conditions and cold room conditions with different perforation levels.

The fruits were packed in poly propylene bags with 5 Pores, 10 Pores, 15 Pores, 20 Pores, 25 Pores, 30 Pores, without Pores and unwrapped control and kept under ambient storage conditions in the first experiment and in cold room condition in the second experiment.

It was observed that the physiological loss in weight, colour index, spoilage rates increased and fruit firmness decreased in all the experiments irrespective of the treatments with the advancement of duration. Total Soluble Solids, reducing sugars and total sugars increased initially and then decreased towards the end of the storage period.

Irrespective of storage conditions, the banana Cv. Grand Naine fruits packed in polypropylene with 5 Pores registered the highest firmness, Total soluble solids, ascorbic acid, reducing sugars, total sugars which coupled with lowest physiological loss in weight, colour

index and spoilage which contributed highest shelf life. This was followed by fruits packed in polypropylene bag with 10 pores.

The shelf life of fruits packed in polypropylene bag with 5 pores can be extended successfully for about 11 days at ambient condition and 22 days at cold room conditions respectively.

53) "Effect of plant growth retardants, growth regulators and spacing on growth and flower yield of african marigold (*Tagetes erecta* L.) Cv.pusa narangi gainda" - *Haritha Naidu Jakkana*

ABSTRACT

Studies on "Effect of plant growth retardants, growth regulators and spacing on vegetative growth and flower yield of African marigold (*Tagetes erecta* L.) cv. Pusa Narangi Gainda" was conducted at Horticultural Research Station, College of Horticulture, Venkataramannagudem, Tadepalligudem, West Godavari during 2010-11. The study was carried out with two experiments.

Expt-I: To study the effect of two spacings 30 x 20 cm and 40 x 20 cm and also the effect of exogenously applied growth regulators *i.e.* GA_3, NAA and Ethrel at concentrations, 250 ppm 350 ppm, and 450 ppm respectively on growth and flower yield in African marigold cv. Pusa Narangi Gainda with 20 treatments replicated thrice in RBD with factorial concept.

Expt-II - To study the effect of two spacings 30 x 20 cm and 40 x 20 cm and also the effect of exogenously applied Plant growth retardants *i.e.* MH, CCC and TIBA at concentrations of 750 ppm, 1000 ppm and 1250 ppm respectively on growth and flower yield in African marigold cv. Pusa Narangi Gainda with 20 treatments replicated thrice in RBD with factorial concept.

Among the growth regulators studied, GA_3 and NAA had promotive effect on vegetative characters like plant height and inter nodal length. Ethrel suppressed plant height, inter nodal length and enhanced plant spread and number of laterals.

GA_3 at 350 ppm advanced flowering, increased flower weight, flower size and flower yield. Ethrel at 350 ppm increased number of flowers per plant and reduced flower size and flower weight.

Among the growth retardants studied, CCC, TIBA and MH suppressed plant height, inter nodal length and enhanced the plant spread, number of laterals over control. MH at 1250 ppm enhanced number of flowers and CCC at 750 ppm recorded maximum flower yield per plant and hectare. TIBA at 1000 ppm recorded maximum flower size, flower weight.

Among the spacings studied, 40 x 20 cm reduced plant height, inter nodal length and enhanced plant spread, number of laterals and enhanced the floral characters *i.e.* number of flowers, flower size, flower weight and flower yield per plant. Spacing 30 x 20 cm enhanced plant height, advanced flower initiation and increased flower yield per hectare due to increased plant population per unit area. The treatment combination of Ethrel at 250 ppm with 30 x 20 cm spacing recorded more flower yield per hectare.

54) "Studies on the effect of sowing dates and spacing on the growth and root yield of radish (*Raphanus sativus* L.) Cv. Pusa Chetki" - *A.V.N.Lavanya.*

ABSTRACT

The present investigation entitled "STUDIES ON THE EFFECT OF SOWING DATES AND SPACING ON GROWTH AND ROOT YIELD OF RADISH (*Raphanus sativus* L.) cv. PUSA CHETKI" was carried out in *Rabi* 2010-2011 at College of Horticulture, Venkataramannagudem, Andhra Pradesh Horticultural University, West Godavari (Dist.)

Present study includes 12 treatments each replicated thrice in Factorial Randomized Block Design. The treatments included four levels of sowing dates (1st October, 15th October, 1st November and 15th November) and three levels of spacing (45x10 cm, 45x20 cm and 45x30 cm).

The results revealed that the radish cv. Pusa Chetki responded well to sowing dates as well as plant spacing. The vegetative parameter like plant height was favorably influenced by sowing date D_1 (1st October) and a plant spacing of 45x10 cm (S_1). Whereas, others like days to germination, germination percentage, number of leaves per plant (15, 30, 45 and 60 DAS), leaf area (at 30, 45 and 60 DAS), root-shoot ratio (at 60 DAS) and plant weight (60 DAS) were recorded maximum with sowing date D_1 (1st October) and plant spacing S_3 (45x30 cm). The number of days taken to root maturity was found to be minimum with the delayed sowing i.e., (D_4-15th November) and closer spacing i.e., (S_1-45x10 cm).

The yield and yield attributing characters like root length, root yield plot^{1} and root yield ha^{-1} showed better expression with early sowing (D_1-1st October) and closer spacing (S_1-45x10 cm). However, the root girth and root weight were found significantly superior with the early sowing (D_1-1st October) and wider spacing (S_3-45x 30cm). Physiological disorders like cracking, splitting and root forking were found to be maximum with the delayed sowing (D_4-15th November) and closer spacing (S_1-45x10 cm).

The interaction effect of sowing dates and spacing were found non-significant with plant height (at 15, 30 and 60 DAS), leaf area at (15 DAS), root-shoot ratio at (15, 30 and 45 DAS), root length (at 15, 30, 45 and 60 DAS), days to maturity and disorders like cracking and splitting. Significant differences were observed in days to germination, germination percentage, plant height (at 45 days) and root yield ha^{-1} with the treatmental combination of (D_1-1st October + S_1-45x10 cm). However, number of leaves (15, 30, 45 and 60 DAS), leaf area (at 30, 45 and 60 DAS), root-shoot ratio at (60 DAS), plant weight (at 60 DAS), root girth and root weight (at 60 DAS) were found to be significant with treatmental combination of (D_1-1st October + S_3-45x30 cm). The maximum root forking was observed with treatmental combination of (D_4-15th November + S_1-45x10 cm).

55) "Studies on influence of calcium nitrate and mulches on growth and development of chrysanthemum (*Dendranthema grandiflora* L.)" - *B.Indira*

ABSTRACT

A field experiment,"Studies on influence of calcium nitrate and mulches on growth and development of chrysanthemum (*Dendranthema grandiflora* L.)" was conducted at All India Coordinated Research Project on Floriculture, College of Horrticulture, Andhra Pradesh Horticulture University, Rajendranagar, Hyderabad during the year 2010-11. This main experiment had two sub experiments. The first experiment was Studies on the influence of inorganic mulches and foliar spray of calcium nitrate on growth, flower yield and vase life of chrysanthemum. This experiment had 10 treatments. T_1 - Control: no

mulch+$CaNo_3$ 3% spray, T_2- Coir pith (check) T_3-Black polythene mulch 25 micron, T_4 - Black polythene mulch 25 micron +$CaNo_3$ 3% spray, T_5 -Black polythene mulch 50 micron, T_6 -Black polythene mulch 50 micron +$CaNo_3$ 3% spray, T_7 -White polythene mulch 25 micron, T_8-White polythene mulch 25 micron +$CaNo_3$ 3% spray, T_9 -White polythene mulch 50 micron, T_{10} -White polythene mulch 50 micron +$CaNo_3$ 3% spray. The second experiment was Studies on the influence of organic mulches and foliar spray of calcium nitrate on growth, flower yield and vase life of chrysanthemu. This experiment also had 10 treatments. T_1-Control: no mulch+$CaNo_3$ 3% spray, T_2-Black polythene mulch 25 micron (check), T_3-Coir pith mulch, T_4-Coir pith mulch +$CaNo_3$ 3% spray, T_5-Dried leaf mulch, T_6-Dried leaf mulch +$CaNo_3$ 3% spray, T_7-Coconut frond mulch, T_8-Coconut frond mulch +$CaNo_3$ 3% spray, T_9 -Paddy straw mulch, T_{10}-Paddy straw mulch +$CaNo_3$ 3% spray. The entire treatments were replicated thrice. In both experiment the treatments were laid out in randmozied block desing.

The results of the first experiment revealed that black polythene mulch of 50µ (T_5) and black polythene mulch of 50µ plus 3% $CaNO_3$ spray (T_6) treatments were superior over other treatments in most of the parameters studied. Black polythene mulch of 50µ plus 3% $CaNO_3$ spray (T_6) showed superiority in plant height, number of branches, plant spread, flower diameter, mean flower weight, number of flowers per plant, yield per plant, yield per plot, yield per hectare and vase life. Weed control efficiency and soil temperature was also recorded height under this treatment(T_6). The major and secondary nutients content were also maximum in plants of these treatment.

On the other hand, early flower bud initiation was observed in both white and black polythene of 50µ mulched plots without $CaNO_3$ spray (*i.e.* T_5 and T_7) and 50% flowering was noticed early in black polythene (50µ) mulched plot alone.

The results of the second experiment disclosed that plants in black polythene mulch of 25µ (T_2) and coconut frond mulch with 3% $CaNO_3$ spray (T_8) showed transdency over other treatments in most of the parameters. Black polythene mulch of 25µ (T_8) recorded highest plant height, number of branches, plant spread, mean flower weight, number of flowers per plant, yield per plant, yield per plot and yield per hectare.

Plants in coconut frond mulch and 3% $CaNO_3$ spray (T_8) have taken minimum days for flower bud initiation and 50% flowering. Flower diameter, vase life, nitrogen and calcium content (both at 60 DAT and at harvest) were maximum in this treatment, whereas height soil moisture was recorded under coconut frond mulched plot and coconut frond mulch plus 3% $CaNO_3$ sprayed (T_8) plot at 50 cm depth. Regarding Phosphorus and potassium accumulation in plants, it was recorded maximum in plants of coconut frond mulch plus 3% $CaNO_3$ foliar sprayed treatment (T_8).

56) "Studies on the synergistic effects of antioxidants and modified atmosphere packaging on chilling injury and storage life of papaya cv.red lady"- *R.Vijay Kumar.*

ABSTRACT

A set of three experiments on the effects of modified atmosphere packaging (fruits packed in polypropylene bags with 3% O_2 + 5% CO_2 or 3% O_2 + 10% CO_2 or 5% O_2 + 5% CO_2 or 5% O_2 + 10% CO_2 or vacuum), antioxidants (benzyl adenine 50, 100 ppm or sodium benzoate and ascorbic acid of 500, 1000 ppm) and combination of MAP (first two best of MAP) and antioxidants (three best of antioxidants) on chilling injury and storage life of papaya cv. Red Lady stored at 10 ± 1º C conducted at Fruit Research Station, Sangareddy, Medak District, Andhra Pradesh. In all the experiments, the design followed is Completely Randomized Design with Factorial concept with three replications per treatment. Various

physical parameters like PLW (%), fruit firmness ($kg.cm^{-2}$), chilling injury (rotting, skin scald), shelf life (in days), ripening (in days), organoleptic evaluation and color of the fruit and biochemical parameters like TSS (°Brix), titrable acidity (%), ascorbic acid (mg/100g), electrolyte leakage (%), brix-acid ratio and respiration rate (ml. CO_2 $kg^{-1}hr^{-1}$) were estimated at an interval of 5 days during storage in all the experiments.

Papaya fruits cv. Red Lady were packed in polypropylene bags with different concentrations of O_2 + CO_2 or vacuum and stored at 10 ± 1º C. Fruits packed in polypropylene bags with 5 % O_2 + 5 % CO_2 significantly recorded lowest PLW. Singnificantly highest fruit firmness and organoleptic evaluation were recorded in fruits packed in polypropylene bags with 5 % O_2 + 5 % CO_2. Significantly lowest chilling injury was recorded in fruits packed in polypropylene bags with 5 % O_2 + 5 % CO_2 and correspondingly increased the shelf life upto 25.00 days. The fruits kept under control recorded a shelf life of 15.35 days only. Biochemical parameters like electrolyte leakage, titrable acidity and respiration rate were significantly lowest in fruits packed in polypropylene bags with 5 % O_2 + 5 % CO_2. Fruits packed in polypropylene bags with 3 % O_2 + 10 % CO_2 recorded significantly highest TSS and brix-acid ratio. Significantly highest ascorbic acid was recorded with the fruits packed in polypropylene bags with 5 % O_2 + 5 % CO_2.

Papaya fruits cv. Red Lady were dipped in different concentrations of antioxidants and stored at 10 ± 1º C. Fruits treated with benzyl adenine 50 ppm recorded significantly lowest PLW, ripening and highest fruit firmness, organoleptic evaluation and color. Significantly lowest chilling injury was recorded in the fruits treated either with benzyl adenine 50 ppm or sodium benzoate 500 ppm and correspondingly increased the shelf life upto 25.00, 24.42 days respectively. The fruits kept under control recorded the shelf life upto 15.72 days only. Biochemical parameters like titrable acidity, electrolyte leakage and respiration rate were significantly lowest in the fruits treated with benzyl adenine 50 ppm. Significantly highest TSS and brix-acid ratio were recorded in fruits treated with benzyl adenine 50 ppm. Significantly highest ascorbic acid was recorded with either benzyl adenine 50 ppm or ascorbic acid 1000 ppm.

Papaya fruits cv. Red Lady were treated with three best antioxidants (benzyl adenine 50 ppm or sodium benzoate 500 ppm or ascorbic acid 500 ppm) and then packed in two best treatments of MAP (fruits packed in polypropylene bags with 5 % O_2 + 5 % CO_2 or 3 % O_2 + 10 % CO_2) and stored at 10 ± 1º C. The combination treatments of fruits packed in polypropylene bags either with 3 % O_2 + 10 % CO_2 + benzyl adenine 50 ppm or 3 % O_2 + 10 % CO_2 + sodium benzoate 500 ppm or 3 % O_2 + 10 % CO_2 + ascorbic acid 500 ppm recorded significantly lowest chilling injury correspondingly increased the shelf life upto 29.46, 29.33 and 28.75 days respectively. The combination treatments of fruits packed in polypropylene bags with 3 % O_2 + 10 % CO_2 + benzyl adenine 50 ppm recorded significantly lowest ripening, highest fruit firmness and highest organoleptic evaluation. Significantly lowest PLW was recorded with fruits packed in polypropylene bags either with 3 % O_2 + 10 % CO_2 + ascorbic acid 500 ppm or 5 % O_2 + 5 % CO_2 + sodium benzoate 500 ppm. Biochemical parameters like highest TSS, highest ascorbic acid, lowest electrolyte leakage and lowest respiration rates were recorded with the fruits packed in polypropylene bags with 3 % O_2 + 10 % CO_2 + benzyl adenine 50 ppm. Significantly lowest titrable acidity was recorded with the fruits packed in polypropylene bags either with 3 % O_2 + 10 % CO_2 + benzyl adenine 50 ppm or 5 % O_2 + 5 % CO_2 + sodium benzoate 500 ppm. Significantly highest brix-acid ratio was recorded with the fruits packed in polypropylene bags with 3 % O_2 + 10 % CO_2 + benzyl adenine 50 ppm. The combination of MAP and antioxidants enhanced the shelf life of 4.17 and 4.46 days over the MAP or antioxidants used alone, respectively.

57) "Genetic divergence studies in dolichos bean (*Dolichos lablab* L *var.typicus prain*)" - *Chaitanya Vanam.*

ABSTRACT

A field experiment was conducted to estimate the genetic variability and genetic divergence in dolichos bean and to carry out yield component analysis through correlation and path analysis. Forty five local genotypes along with three checks were sown in a randomized block design with three replications, during *rabi* 2010-2011 at NBPGR Regional Station, Hyderabad. The objective of the experiment was to identify divergent genotypes to be used as donor parents in hybridization programmes.

The analysis of variance revealed significant differences between genotypes indicating presence of sufficient amount of variability in all the characters studied. Wide range of variability was observed for plant height, marketable pod yield per plant and number of pods per plant indicating the scope for selection of suitable initial breeding material for further improvement.

On the basis of the mean performance of the genotypes among traits studied, the following were identified as promising lines for further crop improvement in dolichos bean *viz.,* RJR-150, PSRJ-13008, JBT-38/36 and NSJ-169.

GA as percent of mean, GCV and PCV values was on par with each other for most of the characters which indicated that the influence of the environment on the trait (s) was very negligible. The values observed were not confounding with the environment. It is a true reflection of the homeostasis effect or buffer reaction of the gene. Thus, the true reflection of the trait is exhibited.

A true agreement with the GCV and PCV values in the present investigation for the 19 characters was noticed, indicating additive genetic variance governing the high heritability with genetic advance as percent of mean. Thus, a breeder can employ a simple selection process which will be a rewarding one to improve the characters *viz.*, plant height (cm),number of primary branches per plant, days to first flowering, days to 50 per cent flowering, length of inflorescence (cm), internode length (cm), number of flowers per inflorescence, number of pods per inflorescence, days to last pod harvest, pod length (cm), pod weight (g), number of pods per plant, 100 seed weight (g), protein content (%) and marketable pod yield per plant (g). For days to first pod harvest, pod length and number of seeds per pod, moderate heritability with high GA as per cent of mean indicates non additive action controlling the traits.

By Mahalanobis' D^2 statistic, it could be inferred that protein content, followed by number of flowers per inflorescence, pod length, number of pods per plant, marketable pod yield per plant and number of pods per inflorescence contributed maximum towards genetic divergence.

The D^2 analysis was carried out for 19 characters which partitioned the forty eight genotypes into eight clusters. Maximum divergence was observed between cluster IV and VI, while minimum was between cluster IV and I. The maximum intra cluster distance was shown by cluster V. The clusters showing high genetic divergence could be effectively utilized in heterosis breeding programme.

From correlation studies it was observed that marketable pod yield per plant has exhibited highly significant positive association with number of pods per plant followed by days to last pod harvest, pod weight, protein content, pod length, pod width, pod weight and number seeds per pod.

Path analysis revealed that maximum positive direct effect on marketable pod yield per plant was exhibited through number of pods per plant followed by high positive direct effect of pod weight, moderate positive direct effect of days to 50 per cent flowering. Pod weight and number of seeds per pod exhibited low positive direct effect on marketable pod yield per plant.

Dolichos bean genotypes exhibited high variability for all the qualitative traits *viz.*, plant growth characters, leaf characters, flower characters, pod characters, pod characters and seed characters. Therefore, it is emphasized to lay attention on the traits *viz.,* number of pods per plant, pod weight, days to last pod harvest, pod length and protein content in crop improvement programme of dolichos bean in future.

58) " Studies on genetic diversity in muskmelon (*Cucumis melo* L.)" - *B.Praveen Kumar Reddy*

ABSTRACT

A set of thirty five genotypes of muskmelon (*Cucumis melo* L.) were characterized and evaluated in a randomized block design with three replications at VRS, ARI, Rajendranagar during *rabi* 2010-2011with an objective of studying genetic variability, genetic diversity, character association and contribution.

The analysis of variance revealed significant differences for all the eighteen characters under study suggesting considerable amount of variability exists among the genotypes. On the basis of mean performance the genotypes RNMM-31, RNMM-32, RNMM-3 and RNMM-12 were found to be superior for majority of the yield and fruit quality attributes which can be used as parental source in breeding programmes.

Multivariate analysis following Mahalanobis D^2 statistic revealed distinct clustering pattern and considerable genetic diversity within and between clusters. The selection and involvement of the horticulturally superior and genetically divergent genotypes from the divergent clusters (cluster I and VI) is expected to give high heterosis and throw more useful segregants. The characters TSS, seed yield, days to appearance of first staminate flower, average fruit weight and fruit cavity length contributed greatly towards diversity.

From the coefficient of variation, it is evident that the estimates of phenotypic coefficients of variation were higher than the corresponding genotypic coefficients of variation for all the eighteen growth, earliness, fruit yield and quality attributes indicating the greater influence of environment on the expression of these genotypes. The estimates of genotypic and phenotypic coefficient of variation for average fruit weight, number of fruits per vine, fruit cavity length, rind thickness, seed yield per fruit and fruit yield per plant were high (>20%) indicating that the variability observed in 35 genotypes of muskmelon is high offering ample scope for selection for these traits.

Days to appearance of first staminate flower, fruit length, average fruit weight, fruit cavity length, fruit cavity width, rind thickness, TSS and seed yield having high heritability (>60%) accompanied with high genetic advance over percent of mean (>20%), indicating that most likely the heritability is due to additive gene action and the chances of fixing by selection are more to improve these traits.

From the association analysis, it is evident that the characters vine length, number of primary branches per vine, fruit length, fruit diameter, average fruit weight, number of fruits per vine, fruit cavity length, fruit cavity width, rind thickness and seed yield had positively significant association with fruit yield per plant in muskmelon.

Path coefficient revealed high (>0.3) positive direct effect of days appearance first pistillate flower, node number of first pistillate flower, fruit diameter, average fruit weight,

number fruits per vine, rind thickness, TSS and seed yield and high negative direct of number of primary branches per vine, days appearance first staminate flower, days to first fruit harvest, days to last fruit harvest, fruit cavity length and width and pulp thickness on fruit yield per plant in muskmelon.

In conclusion, the present investigation revealed that the horticulturally superior genotypes *viz*., RNMM-31, 32, 3 and 12 are selected, on the basis of the characters having high heritability, high genetic advance as percent of mean and strong association and high direct effect on fruit yield *viz*., days appearance first staminate flower, average fruit weight, fruit cavity length and width, rind thickness and seed yield per fruit. Following any one the methods like synthetic breeding, composite breeding and population improvement by recurrent selection for gca can help in the genetic improvement of yield in muskmelon.

59) "Effect of integrated nutrient management on growth, yield and quality of elephant foot yam (*Amorphophallus paeonifolius*) (*dennst.*) Var. Gajendra" - *Sudheer Kumar Annepu.*

ABSTRACT

The present investigation entitled "Effect of integrated nutrient management on growth, yield and quality of elephant foot yam [*Amorphophallus paeoniifolius* (Dennst.)] Var. Gajendra**"** was carried out during the *kharif* season of 2010-2011 at Horticultural Research Station, Kovvur, West Godavari district of Andhra Pradesh. The studies were carried out with 10 different INM treatments involving different combinations of 100% recommended dose of fertilizers, 75% and 50% dose of inorganic fertilizers along with organic manures *viz.*, farm yard manure, bio-fertilizers (*Azospirllum*, PSB, AMF) and bioagents such as *Pseudomonas* and *Trichoderma*. Further, the experiments were laid out in a randomized block design (RBD) with three replications and data on effect of different INM treatments on growth, dry matter production, yield, yield attributes, quality, nutrient uptake, residual fertility and economics of cultivation were recorded and statistically analyzed.

The application of 75% RDF through inorganic fertilizers and 25 % RDF through organic source (FYM) along with AMF @ 5 kg ha^{-1} and *Azospirillum* @ 5 kg ha^{-1} (T_4) had resulted in maximum plant height and highest dry matter production, canopy spread, nitrogen and potassium uptake at all the growth stages whereas, 75% RDF through IOS and 25 % RDF through FYM in conjunction with PSB @ 5 kg ha^{-1} and *Azospirillum* @ 5 kg ha^{-1} resulted in highest uptake of P. Further, psuedostem girth was recorded maximum with 100 % RDF at all the growth stages.

Highest yield per hectare and yield attributes *viz.*, single corm weight, volume and diameter of the corm were recorded with 75% RDF through (IOS) and 25 % RDF through FYM in combination with AMF and *Azospirillum* (T_4) and the treatments 100 % RDF (T_9) and T_3, T_5 which are the combinations of 75 % RDF (IOS) and 25 % RDF (FYM) along with PSB and *Azospirillum* and 75 % RDF (IOS), 25 % RDF (OS- FYM) in conjunction with *Pseudomonas* and *Trichoderma* were statistically found at par with T_4.

The quality attributes *viz.*, moisture percentage, total sugars, phenols and β-carotene were found non significant irrespective of the INM treatments imposed whereas, significantly lowest calcium oxalates were found with the control where no inorganic fertilizers were applied. Increase in the N content supplied through the inorganic fertilizers results in the accumulation of more oxalates. In contrast, highest starch and total soluble proteins were recorded with the T_4 which is the combination of 75 % RDF (IOS) + 25 % RDF (OS- FYM) + AMF + *Azospirillum* and the treatments 100 % RDF (T_9) and T_3 [(75 % RDF (IOS) + 25 % RDF (OS- FYM) + PSB + *Azospirillum*]and , T_5 [75 % RDF (IOS) + 25 % RDF (OS- FYM) + *Pseudomonas* + *Trichoderma*] were statistically found at par with T_4.

Highest residual fertility of N, P and K were recorded with 75% RDF through IOS and 25 % RDF through FYM (T_8) whereas, 75 % RDF (IOS) + 25 % RDF (OS- FYM) + PSB + *Azospirillum* and 75 % RDF (IOS) + 25 % RDF (OS- FYM) + AMF + *Azospirillum* were found statistically on a par with T_8 with respect to the residual fertility.

The different INM treatments were also observed to profoundly influence the gross and net returns in addition to benefit: cost ratio of *Amorphophallus* cultivation. The treatment 75 % RDF (IOS) and 25 % RDF (OS- FYM) along with AMF and *Azospirillum* resulted in highest benefit cost ratio of 3.84 followed by the treatments 75 % RDF (IOS) + 25 % RDF (OS- FYM) + PSB + *Azospirillum* (T_3) and 75 % RDF (IOS) + 25 % RDF (OS- FYM) + *Pseudomonas* + *Trichoderma* (T_5).

60) **"Post harvest studies in banana cv.grand naine" -** ***Ram Mohan K***

ABSTRACT

With the objectives of extending the shelf life and assessing the quality changes (physical and chemical) of banana fruits cv. Grand Naine, Three experiments were conducted using packaging material (150, 200, 250 and 300 gauge with 0.5 and 1 % vents), fruit coating material (4 %, 6 % and 8 % wax),packaging, fruit coating material along with growth regulator (GA_3 150 ppm) and Antioxidants (Sodium benzoate 500 ppm and Benzyl adenine 50 ppm) at laboratory department of Horticulture, APHU, College of Horticulture, Rajendranagar, Hyderabad during year 2010-11. In all the experiments the design followed is completely randomized design. Various physico-chemical parameters like PLW (%), pulp to peel ratio, fruit firmness (kg/cm^2), colour development, spoilage (%), TSS (^{o}B), sugars(total and reducing) (%), acidity (%), ascorbic acid content (mg/100 g) and shelf-life(days) were estimated at an interval of 3 days. Fruits packed in polythene covers of 300 gauge with 1 % vents recorded significantly lower PLW (%); pulp to peel ratio, spoilage (%), TSS (^{o}B) and sugars (%) (Reducing and total). Significantly higher firmness (kg / cm^2), good colour development, acidity (%), ascorbic acid content (mg/100 g) and correspondingly increased the shelf life upto 18.19 days. The fruits kept under control recorded the shelf life upto 8.86 days only.

Banana fruits cv. Grand Naine was dipped in different percentage of wax (4 %, 6 % and 8 %). Fruits treated with 8 % wax recorded significantly lowest PLW (%), pulp to peel ratio, spoilage (%), TSS (^{o}B) and sugars (reducing and total). Significantly higher firmness (kg / cm^2), good colour development, acidity (%), ascorbic acid content (mg/100 g) and correspondingly increased the shelf life upto 15.21 days. The fruits kept under control recorded the shelf life upto 8.64 days only.

Banana fruits cv. Grand Naine were treated with growth regulator (GA_3 150 ppm) and Antioxidants (BA 50 ppm and sodium benzoate 500 ppm), best treatment of experiment-2 (8 % wax) and then packed in best treatment of experiment-1 (300 gauge + % vent). The combination treatments of fruits packed in 300 gauge with 1 % vent treats with GA_3 150 ppm + 8 % wax recorded significantly lowest PLW (%), pulp to peel ratio, spoilage (%), TSS (^{o}B) and sugars (reducing and total). Significantly higher firmness (kg/cm^2), good colour development, acidity (%), ascorbic acid content (mg / 100 g) and correspondingly increased the shelf life upto 21.41 days.

61) "Effect of growth regulators on shelf life of sweet orange cv. Sathgudi"- *V.Hemalatha.*

ABSTRACT

The present investigation entitled "Effect of Growth regulators on Shelf-life of Sweet orange Cv. Sathgudi**"** was carried out in the Post Harvest Technology Laboratory, College of Horticulture and Quality control lab (ANGRAU), Rajendranagar during the year 2010. Effect of growth regulators with wax on shelf life of sweet orange was observed at ambient and low temperature.

Two experiments were conducted in CRBD with factorial concept and the treatments were replicated four times. The fruits were treated with 2,4-D 500 ppm + Wax 6 %, GA_3 500 ppm + Wax 6 %, BA 50 ppm + Wax 6 % and Wax 6 %. Physico-chemical characters were recorded at 5 days interval at ambient condition and at 15 days interval at low temperature.

It was observed that the physiological loss in weight, colour index, spoilage rates increased while the juice content, peel content, peel thickness and fruit firmness decreased irrespective of the treatments and storage with the advancement of duration. Total Soluble Solids, reducing, total and non-reducing sugars, acidity, ascorbic acid, organoleptic evaluation decreased whereas pH increased towards the end of the storage period.

In the first experiment lower PLW (13.33 %), spoilage (2.78 %), pH (3.50) and high juice content (42.07 %), peel content (23.53 %), peel thickness (2.00 mm), firmness (6.20 kg/cm^2), reducing sugars (3.24 %), ascorbic acid (48.68 mg/100ml of juice) and organoleptic score (2.42) was observed with BA 50 ppm + Wax 6 % upto 25 days of storage. However, shelf life as per organoleptic evaluation was found to be upto 15 days.

Lowest colour index value (2.34) and high total (6.76 %) and non-reducing sugars (3.56 %) was observed in 2,4-D 500 ppm + Wax 6 % whereas high TSS (10.18^0B) and titrable acidity (0.87 %) was observed in GA_3 500ppm + Wax 6 %.

At low temperature less PLW (6.61 %), spoilage (2.67 %), pH (3.57) and high juice (43.54 %) and peel content (24.65 %), peel thickness (2.16mm), firmness (6.52 kg/cm^2), TSS (10.54^0B), reducing sugars (3.42 %), total sugars (7.06 %), non-reducing sugars (3.64 %), acidity (0.83 %), ascorbic acid (51.89mg/100ml of juice) and organoleptic score (2.50) was observed with BA 50 ppm + Wax 6 % upto 120 days of storage. However, colour index value was found to be lowest in GA_3 500 ppm + Wax6% (3.82) treated fruits.

62) "Studies on the effect of integrated nutrient management practices on growth, leaf yield and quality of palak (*Beta vulgaris var. bengalensis* hort.)" - *Perapogu Vinod Kumar*

ABSTRACT

The present investigation entitled "Studies on the effect of Integrated Nutrient Management practices on growth, leaf yield and quality of palak" (*Beta vulgaris*var.*bengalensis*Hort.) was carried out during the *rabi* season of 2010-2011at the college farm of College of Horticulture, Venkataramannagudem, West Godavari district of Andhra Pradesh. The studies were carried out with 11 different INM treatments involving 100% recommended dose of nutrients through inorganic and organic, integrated treatments of 75%, 50% and 25% of recommended dose of inorganic fertilizers along with 25%, 50%and 75% organic manures *viz.*,vermicompost, farm yard manure, and poultry manure and bio-fertilizers (*Azospirllum*@5kgha^{-1}, PSB@ 2 kg ha^{-1}). Further, the experiment was laid out in a

randomized block design (RBD) with three replications and data on effect of different INM treatments on growth, production, yield, quality, nutrient uptake and economics of cultivation were recorded and statistically analyzed.

The application of 100% RDF through inorganic (T_{11}) was best and it was on par with 75% RDF through inorganic fertilizers + 25% RDN through organic source (poultry manure and vermicompost) along with bio-fertilizers *Azospirillum* @ 5 kg $ha^{-1}$and PSB @ 2kg ha^{-1} (T_3 and T_1) in maximum plant height, number of leaves, leaf area per plant, fresh weight of leaf, dry weight of leaf, leaf dry matter production, nitrogen and potassium and phosphorus uptake. Highest yield per hectare was recorded with100% RDF through inorganic (T_{11}) which was on par with 75% RDF through (IOS) + 25% RDN through poultry manure and vermicompost in combination with bio-fertilizers.

The highest quality attributes *viz.*, protein and chlorophyll were recorded with100% RDF and it was on par with 75% RDF through (IOS) + 25% RDN through poultry manure and vermicompost in combination with bio-fertilizers. Highest ascorbic content was recorded with application of 75% RDF through (IOS) + 25 % RDN through poultry manure. The different INM treatments were also observed to profoundly influence the gross and net returns of palak cv. ArkaAnupama cultivation. The treatment 100% RDF through inorganic (T_{11}) recorded highest benefit-cost ratio of 2.52 followed by 75 % RDF (IOS) + 25 % RDN through poultry manure along with bio-fertilizers (T_3)

63) "Characterization and evaluation of brinjal genotypes (*Solanum melongena* L)" - *K.Chandra Sekhar*.

ABSTRACT

Characterization for qualitative and evaluation for quantitative characters, genetic variability, heritability, genetic advance and direct and indirect effects of various components on yield in 31 germplasm accessions of brinjal (*Solanum melongena* L.) were evaluated in a Randomized Block design with three replications at College of Horticulture and Research Institute, Venkataramannagudem during *Kharif* 2009-2010.

Among the 31 brinjal genotypes the frequency of qualitative characters like plant growth habit in which upright plants were dominant, followed by intermediate, in leaf blade lobbing, intermediate group were dominant, in leaf prickles, none group was dominant, in corolla colour, pale violet was dominant, in fruit curvature, none fruit genotype was dominant, in fruit apex shape, protruded fruit genotypes were dominant, in fruit colour at commercial ripeness, purple black was dominant.

The analysis of variance of RBD revealed highly significant differences among the genotypes for all the 14 characters studied. The values of PCV and GCV for all the traits except for plant height, number of branches per plant, days to first flowering, days to first picking, average fruit weight and total number of harvests, indicating the less influence of environment consequently more scope for their improvement through selection.

High heritability and genetic advance over mean were recorded for all the characters (except plant height and average fruit weight) indicating that the characters were least influenced by the environmental effects, but the selection for the improvement of such characters may not be useful, because broad sense heritability is based on genetic variance which includes both fixable (additive) and non fixable (dominance and epistatic) variances.

Correlation coefficient analysis revealed highly significant positive association of number of leaves per plant, number of fruits per plant, average fruit weight and total number of harvests with fruit yield per plant and thus these characters were identified as component characters on which selection can be relied upon for genetic improvement of brinjal.

Path analysis revealed that number of fruits per plant and average fruit weight had high positive direct effect on fruit yield per plant. While the remaining characters had negligible to low indirect effect through other component characters. Therefore, number of fruits per plant and average fruit weight are the reliable characters for the improvement of the fruit yield. The residual effect, if it is high, some other factors which have not been considered here need to be included in this analysis to account fully for the variation in yield.

The mean performance of genotypes indicated that the genotypes IC-111444, IC-136088, IC-111387 and IC-111404 were found to be elite for days to first flowering, days to first picking, plant height, number of fruits per plant, fruit yield per plant, average fruit length, average fruit weight and average fruit diameter respectively in brinjal.

The maximum contribution towards total genetic divergence was from average fruit length. All the 31 brinjal genotypes were grouped into six clusters using Ward's method and cluster IV and VI accounted for 7 genotypes followed by cluster II (6), I and III (4) and V (3).

Intra cluster distance was minimum in cluster IV while maximum in cluster I. The inter cluster distance was minimum between III and V and the genotypes of these clusters could be used in hybridization programme to develop heterotic hybrids.

The elite genotypes form different clusters may be chosen for further breeding programme in addition for further genetic studies either by way of Line X Tester or diallel analysis.

64) "Studies on the effect of plant growth regulators and zinc on vegetative growth, flowering corm and cormel production in gladiolus (*Gladiolus grandiflorus* L.) Cv. White prosperity."- *G.Venkata Subba Reddy.*

ABSTRACT

The present experiment entitled "Studies on the effect of plant growth regulators and zinc on vegetative growth, flowering, corm and cormel production in gladiolus *(gladiolus grandiflorus* l.) Cv. White Prosperity." were carried out during 2010-2011 at College of Horticulture, Andhra Pradesh Horticulture University, Venkataramannagudem, West Godavri district.

The present studies were conducted under two experiments, the first experiment was on the effect of plant growth regulators on vegetative growth, flowering, corm and cormel production with 9 treatments in 3 replications in a Randomized block design. The second experiment was on the effect of zinc on vegetative growth, flowering, corm and cormel production with 9 treatments and 3 replications in a Factorial Randomized block design.

Among the vegetative parameters, the treatment GA_3 at 100 ppm recorded maximum values for plant height and leaf length over other treatments. NAA at 250 ppm recorded the maximum number of leaves, leaf width and leaf area over other treatments. TIBA at 150 ppm recorded minimum plant height, number of leaves and leaf area.

Among the floral parameters, TIBA at 150 ppm recorded minimum number of days to first floret appearance (82.56), and 50 percent flowering (90.93). Similarly BA at 100 ppm recorded maximum number of spikes per corm (1.40). However higher mean spike length (137.98 cm) and number of florets per spike (14.06) were recorded with GA_3 at 100 ppm. The minimum spike length and number of florets were observed with TIBA at 150 ppm.

In case of corm and cormel parameters GA_3 at 100 ppm recorded maximum corm size and weight while BA at 100 ppm recorded maximum number of cormels produced per corm (29.75) cormel weight per corm (14.00 g) and highest propagation coefficient (194.20).

In the second experiment, the treatment 2 % zinc has significantly increased plant height, number of leaves, leaf length, leaf width and leaf area at 40, 60 and 80 DAP, with highest values when sprayed at 6 weeks after planting compared to 4 and 8 after planting, minimum values were observed with control.

Among the floral parameters, the treatment 2 % zinc recorded more number of days (97.63) to first floret appearance and 50 % flowering (103.32**)** over other treatments. Whereas, control recorded minimum number of days to first floret appearance and 50 % flowering. Similarly, the treatment 2% zinc recorded more number of spikes (1.33), spike length (112.19 cm), number of florets per spike and highest spike growth rate (0.68 cm/day). While the interaction of 2% zinc and 6 weeks after planting recorded maximum spike length (118.36 cm) and number of florets (13.40).

The treatment 2 % zinc recorded maximum values for corm size (4.47 cm), corm weight (37.97 g) number of cormels (32.90) and cormel weight per corm (10.72 g). In case of time of spraying, spraying at 6 weeks after planting recorded maximum values for corm size, corm weight, number of cormels and cormel weight while minimum values were observed in control. The maximum propagation coefficient was observed with 2% zinc (168.09) followed by 1.5 % zinc. Zinc sprayed at 6 weeks after planting recorded highest propagation coefficient (154.24) compared to 4 and 8 weeks after planting, while lowest propagation coefficient was recorded with control (127.81).

65) "Genetic divergence studies in amaranthus (*Amaranthus tricolor L.)" - *V.Sravanthi*

ABSTRACT

In the present investigation, a set of 43 genotypes comprising of 40 germplasm lines and three checks of amaranthus (*Amaranthus* spp.) were evaluated in a randomized block design with three replications at NBPGR Regional Station, Rajendranagar, Hyderabad during *kharif* 2010 for nineteen seed yield attributes and seven foliage yield attributes so as to identify the horticulturally superior genotypes for seed and leaf production, respectively.

The analysis of variance revealed significant difference for all the nineteen seed yield attributes and seven foliage yield attributes among the genotypes. From the results of the mean performance it is evident that the genotypes SNTV-32, IC-313546 and IC-526834 were found to be horticulturally superior for majority of the seed yield attributes while, the genotypes IC-313546, IC-426559 and SNTV-56 were found to be horticulturally superior for majority of the foliage yield attributes in amaranthus.

Multivariate analysis following Mahalanobis D^2 statistics revealed distinct clustering pattern and considerable genetic diversity within and between clusters and were grouped into eight clusters. The selection and involvement of the horticulturally superior and divergent parents from the divergent clusters for seed yield (cluster VII and VIII) and for foliage yield (cluster VI and VII) is expected to give high heterosis and throw more useful segregants. The characters stem weight, leaf area, dry matter content, protein content, days to 80 percent maturity of seed for seed purpose and the characters leaf area, foliage yield per plant per cutting and leaf length were found to be the potent factors in differentiating the genotypes under study.

From the coefficient of variation it is evident that the estimates of PCV were higher than the corresponding GCV for all the nineteen growth, earliness and seed yield attributes and seven growth and foliage yield attributes indicating the greater influence of environment on the expression of these characters. The estimates of genotypic and phenotypic coefficient of

variation for almost all the growth, earliness and seed yield attributes except protein content and majority of the growth and foliage yield attributes except plant height at first cutting and foliage yield per plant per cutting indicating that the variability observed in 43 genotypes of amaranthus is high (>20%) offering ample scope for selection.

All the nineteen growth, earliness and seed yield attributes for seed production and all the seven growth and foliage yield attributes for leaf production had high heritability (>60 %) accompanied with high genetic advance over percent of mean (>20%) indicating that most likely the heritability is due to additive gene action and the chances of fixing by selection is easy to improve these traits.

From the correlation coefficient analysis it is evident that, the characters plant height, stem girth, stem weight, leaf area, leaf length, leaf width, petiole length, total leaf weight per plant, days to 50 percent flowering, inflorescence length, lateral spikelet length, days to 80 percent maturity of seed, leaf/stem ratio and dry matter content had positively significant association, while protein content and 1000 seed weight had negatively significant association with seed yield. All of the seven growth and foliage yield characters *viz.,* height at first cutting, leaf length, leaf width, leaf area, number of cuttings per plant, foliage yield per plant per cutting had positively significant association with foliage yield suggesting that selection based on these characters will be useful in increasing yield per plant in amaranthus.

From the path coefficient analysis, it is evident that the characters leaf length, stem weight and inflorescence length had high positive direct effect and the characters plant height, stem girth, leaf area had high negative direct effect on seed yield. Leaf length had high positive direct effect and leaf area had high negative direct effect on total foliage yield per plant indicating that these traits are more reliable for selection for genetic improvement of seed yield and foliage yield respectively. The residual effect of 0.6828 (P) and 0.6081 (P) is high indicating that some other characters which have not been studied here need to be included in this analysis to account fully for the variation in seed yield and foliage yield, respectively.

In conclusion, the characters plant height, stem girth, leaf area, leaf length, stem weight and inflorescence length having higher estimates of heritability, genetic advance over percent of mean, significant correlation and high direct effect were found to be the yield components for seed production, while the characters leaf length and leaf area were found to be the yield components for leaf production. Therefore, selection based on these yield components the horticulturally superior and genetically divergent genotypes for seed yield and foliage yield following any one of the pure line selection or mass selection, progeny selection, hybridization and selection with pedigree breeding is expected to result in genetic improvement of seed or foliage yield in amaranthus.

66) "Effect of sowing dates on growth, yield and quality of certain carrot (*Daucus carota Linn*.) cultivars" - *Madhavi Latha Polaki*

ABSTRACT

The present investigation entitled "Effect of sowing dates on growth, yield and quality of certain carrot (*Daucus carota* Linn.) cultivars**"** was carried out during *rabi* of 2010-2011 at College of Horticulture, Venkataramannagudem, West Godavari District of Andhra Pradesh. The study was carried out with four different sowing dates *viz.,* November 10th, November 25th, December 10th and December 25th and three cultivars namely Pusa Kesar, Pusa Rudhira and Kuroda Improved. The experiment was laid out in a split plot design with three replications and

the data on effect of different dates of sowing and different varieties on growth, yield, yield attributes and quality attributes were recorded and statistically analyzed.

Sowing time has shown significant effect on the growth parameters like plant height, number of primary and secondary branches. Highest plant height and maximum number of primary branches and secondary branches were produced by plants which were sown early *i.e.*, on November 10th. Similarly, various yield attributes *viz*. fresh weight of the plant, fresh and dry weight of the root, root length, root diameter, root shoot ratio and core thickness; yield per plot and yield per hectare were highest from November 10th sowing. In the experiment, November 10th sowing gave the highest yields of 172.82 q ha^{-1} compared to the lowest yield of 67.98 q ha^{-1} by December 25th sowing. Moisture percentage, TSS, reducing and total sugars were also significantly affected by sowing dates. Sowing carrot at 10th November recorded the highest values of each of the above mention parameters. All the parameters *viz.,* growth, yield, yield attributes and quality showed decreasing trend as sowing date was delayed.

Results also revealed that all the growth parameters, yield and yield attributes and quality parameters also significantly affected by different varieties. Growth parameters such as plant height, number of primary and secondary branches were maximum with Kuroda Improved variety irrespective of dates of sowing. Similarly, the root yield and yield contributing characters were also found to be maximum with Kuroda Improved variety. Highest yield (149.16 q ha^{-1}) was obtained with the Kuroda Improved variety, followed by Pusa Rudhira (121.39 q ha^{-1}), and the lowest (111.49 q ha^{-1}) was with Pusa Kesar. Whereas Pusa Rudhira was found to be the best in respect of quality judged.

In the same concern, the interaction between sowing dates and varieties also showed significant effect in case of plant height, yield attributes, yield and TSS. Combined effect of sowing dates and varieties showed that early sowing on November 10th, all cultivars performed well with respect to yield and yield components. However, among all the treatmental combinations Kuroda Improved variety sown on 10th November recorded the best in respect of yield and yield components, whereas Pusa Rudhira was found to be the best with respect to quality judged which was sown on the same date *i.e.,* 10th November.

Interaction between the two factors under investigation did not show any effect on the growth parameters like germination percentage, number of primary and secondary branches and quality attributes *viz.,* moisture percentage, total sugars and reducing sugars.

67) "Effect of different levels of Nitrogen and Phosphorus on growth and seed yield of Coriander (*Coriandrum sativum* L.) cv. Sudha"- *Sridevi Chodapuneedi.*

ABSTRACT

The present investigation entitled "Effect of different levels of Nitrogen and Phosphorus on growth and seed yield of Coriander (*Coriandrum sativum* L.) *cv*. Sudha**"** was carried out during *rabi* 2010-2011 at College of Horticulture, Venkataramannagudem, W.G Dist. The study was carried out with four different levels of nitrogen (20, 40, 60 and 80kg N/ha) and four different levels of phosphorus (20, 30, 40 and 50 kg P_2O_5/ ha). The experiment was laid out in a factorial randomized block design with three replications and the data on the effect of different levels of nitrogen and phosphorus on vegetative growth parameters, yield and yield attributes, nutrient uptake and economics in coriander *cv*. 'Sudha' was recorded and statistically analyzed.

Increased levels of nitrogen showed significantly increased influence on growth parameters. Plant height, number of branches per plant, days to 50% flowering, days to maturity and biomass production per plant (g) were highest with the treatments receiving higher levels of nitrogen (80 kg N ha^{-1}). However nitrogen at 20 kg ha^{-1} took less number of

days to maturity. Similarly various yield attributes *viz*. number of umbels per plant, number of umbellets per plant, number of seeds per plant, weight of 1000 seeds and seed yield per hectare were highest with 80 kg N ha^{-1}. Highest seed yield of 1165.4 kg/ha recorded with 80 kg N ha^{-1} compared to the lowest yield of 841.1kg/ha by 20 kg N ha^{-1}.

It is also revealed from the results that all the growth parameters, yield and yield attributes were significantly influenced by different levels of phosphorus. Growth parameters like plant height, number of branches per plant and biomass production per plant (g) were maximum with the application of 40 kg P_2O_5 ha^{-1}. Similarly yield and yield contributing characters were significantly increased with increased levels of phosphorus upto 50 kg P_2O_5 ha^{-1}.The highest yield (1033.1 Kg/ha) was obtained with phosphorus at 50 kg ha^{-1} followed by phosphorus at 40 kg ha^{-1} (1013.9 Kg/ha) and the lowest (960.8 Kg/ha) was with 20 kg P_2O_5 ha^{-}

In the same concern, the interaction between different levels of nitrogen and phosphorus also showed highly significant effects on growth parameters and yield attributes. The treatmental combination of 80 kg N ha^{-1} and 40 kg P_2O_5 ha^{-1} recorded the best in respect of growth parameters and yield components.

Nutrient uptake and economics were also significantly influenced by different levels of nitrogen. Maximum uptake of nitrogen was observed with the 80 kg N ha^{-1}. Phosphorus also significantly influences the uptake of nitrogen and phosphorus. The treatmental combination of 80 kg N ha^{-1} and 50 kg P_2O_5 ha^{-1} recorded the maximum uptake of nitrogen and phosphorus. However, highest net returns (Rs.83, 245) and benefit cost ratio (7.03) was recorded with 80 kg N ha^{-1} and 40 kg P_2O_5 ha^{-1}.

68) "Studies on flowring and fruiting behaviour of Sapota (*Manilkara achras (Mill.) Fosberg*) cultivars in coastal regions of A.P." - *Bommina Narendra Kumar*.

ABSTRACT

An investigation was carried out during 2010-2011 at Horticultural Research Station, Venkataramannagudem, West Godavari District, Andhra Pradesh with the objective of understanding branching pattern and its relation to flowering, fruiting behaviour and pattern of fruit development in different cultivars of sapota.

The experiment was carried out with 11 varieties viz. Cricket Ball, Pala, Kalipatti, Singapore, DHS-1, DHS-2, PKM-1, PKM-2, PKM-3, CO-1, CO-2 in a Randomized Block Design (RBD) with three replications. The canopy of the tree was divided into three strata viz. lower strata (up to 1/3rd height of the canopy from ground level), middle strata (1/3rd to 2/3rd height) and upper strata (top 1/3rd height of the canopy) and data were recorded on randomly selected branches of all the strata. The terminal portion of branch was designated as N order and the subtending orders as N-1, N-2 and so on and observations were recorded from tip downwards of a branch.

Irrespective of the strata and variety, the mean number of branches produced at different orders decreased gradually from tip downwards with maximum values recorded at N order *i.e.,* the tip. The number of branches ranged from 2.890 (N order) to 0.906 (N-7) in the lower strata, from 2.760 (N) to 0.681 (N-6) in the middle strata and from 2.555 (N) to 0.879 (N-5) in the upper strata. Relatively higher number of branches was produced in lower strata compared to the middle and upper strata. Among the cultivars maximum number of branches were recorded in lower strata (2.181), and middle strata (2.184) by cv.DHS-2 whereas in the upper strata by cv. Pala (2.079).

The number of flowers and flower bearing units (branches) decreased from tip downwards irrespective of the strata and variety .The number of flowers ranged from 1.160 (N-

7) to 5.247 (N-2) in the lower strata, from 1.353 (N-6) to 4.550 (N-2) and from 1.803 (N-5) to 4.264 (N-3) in the middle and upper strata respectively. Flowering was intense at N-2 to N-4 orders. Among the varieties, highest number of flowers was recorded in lower strata of cv. PKM-1 (5.073), in middle strata of cv. Kalipatti (5.693) and in upper strata of cv.PKM-2(5.392).

The fruit set at different branch orders decreased gradually from tip downwards. The number of fruits produced ranged from 0.315 (N-7) to 1.480 (N-2) in the lower strata, from 0.572 (N-6) to 1.321 (N-3) in the middle strata and from 0.482 (N-5) to 1.534 (N-3) in the upper strata. The per cent set also followed trends similar to that of number of fruits produced. Among the different varieties, cv. PKM-1, Kalipatti and Pala produced higher number of fruits over other varieties in all the strata. Relatively higher number of fruits were produced on the branches of lower strata as compared to those on middle and upper strata. Thus, fruiting was mainly concentrated on the lower strata and on laterals produced at orders N-2, N-3 and N-4.

The number of days required from fruit set to harvest differed significantly with the varieties. The cv. DHS-2 recorded the highest number of days (263.46) to attain harvestable maturity followed by cv. DHS-1 (258.00) and Cricket Ball (257.93) while the lowest was observed in cv. PKM-1 (189.33). The weight was maximum in cv. Cricket Ball (123.20 g) followed by cv. DHS-1 (122.40 g) while it was minimum in cv. Pala (32.09 g) and PKM-1 (46.18 g). The pattern of fruit development in terms of fresh weight of the fruit followed double sigmoid growth curve and maximum increase in fruit weight was observed between 150- 210 days after set.

The number of flowers and fruits produced were positively correlated with the total number of lateral branches produced at different orders. Further research on canopy management by way pruning and its impact on fruiting of sapota has been suggested.

69) Studies on sex and sex modification with silver nitrate in Kakrol (*Mamordica dioica Roxb*)" - *Gali Parimala*

ABSTRACT

The present investigation entitled "Studies on sex and sex modification with silver nitrate in kakrol (*Momordica dioica* Roxb)**"** was carried out during *kharif* season of 2010-2011 at College of Horticulture, Venkataramannagudem, W.G Dist. The first experiment was carried out with 7 treatments *i.e* 100 ppm $AgNO_3$, 200 ppm $AgNO_3$, 300 ppm $AgNO_3$, 400 ppm $AgNO_3$, 500 ppm $AgNO_3$, 600 ppm $AgNO_3$ and control. Experiment was laid out in a randomized block design with three replications and the data on effect of different concentrations of silver nitrate on sex modification, growth characters, yield contributing characters and yield were recorded and statistically analyzed.

Another experiment was carried out to identify the morphological marker characters between male and female sex forms in kakrol. The male and female plants each of 10 were taken, observed morphological characters and evaluated the differences between male female sex forms and the results were analyzed through the two sample t-test.

Silver nitrate was sprayed in different concentrations on female plants at pre floral stage. As a result development of hermaphrodite was observed at 20 to 25 days after spraying. Spraying of silver nitrate at the rate of 600 ppm significantly affected the stamen length at 8^{th}, $10^{th,}$ and 12^{th} day (7.80 mm, 8.60 mm, 8.66 mm) respectively and stigma length at 8^{th}, 10^{th}, and 12^{th} day (8.06 mm, 9.73mm 10.0 mm) respectively over the other treatments. The lowest stamen length and stigma length were recorded with 100 ppm silver nitrate. The growth characters like calyx length at 8^{th}, 10^{th} and 12^{th} day after spraying were (1.46 cm, 1.27 cm and 0.93 cm) respectively. Leaf area also recorded highest at 500 ppm $AgNO_3$ *i.e* (2583.33) cm^2. The yield characters like fruit diameter, fruit stalk length, individual fruit weight; number of

seeds per fruit and fruit yield were found to be significant at 500 ppm silver nitrate application. The plants sprayed with 600 ppm silver nitrate were affected by toxicity symptoms *i.e* wilting of vines and scorching .

The second experiment results revealed that the plant height, internodal length, leaf margins, number of lobes, leaf shapes and days to appearance of first male and female flowers were found to be significant. By observing these characters we can differentiate between male and female plants. The plant height, internodal lengths were more in male plants than on female plants. The number of lobes in leaf was more in female plants. Male flower appear earlier than female flowers. The leaf shape of female plant was mostly mapple like where that of male plant was cordate and mapple.

The characters like leaf length, leaf width, petiole length, tendril length, leaf area were found to be non significant. Primary leaf shape, leaf colour were not differing in male and female sex forms . The morphological marker characters help in differentiating male and female sex forms of kakrol were plant height, internodal length, leaf margins, number of lobes, leaf shapes and days to appearance of first male and female flowers.

70) "Effect of chemicals and plant growth regulators on dormancy, flowering, corm production and vase life in gladiolus (*Gladiolus grandiflorus* L.)" - *T.Padmalatha*

ABSTRACT

The present investigations entitled "Effect of chemicals and plant growth regulators on dormancy, flowering, corm production and vase life in gladiolus *(Gladiolus grandiflorus* L.)" were carried out for two years during 2008-09 and 2009-10 at Herbal Garden, Rajendranagar, Hyderabad. For this study, four experiments were conducted with the gladiolus cultivars Darshan and Dhiraj.

In effect of growth regulating chemicals and plant growth regulators on dormancy, flowering and corm and cormel production experiment, cv. Darshan recorded significantly minimum number of days to sprouting and maximum percentage of sprouting over cv. Dhiraj. Pre-planting soaking of corms for 24 h was significantly more influencing over 12 h soaking in decreasing the number of days to sprouting and increasing corm sprouting percentage and number of buds sprouted per corm. Thiourea (TU) 2% and salicylic acid (SA) 150 ppm were highly effective in reducing the number of days taken for sprouting over control. TU 2%, SA 150 ppm, KNO_3 1.5% and GA_3 150 ppm significantly increased sprouting percentage of corms over control and recorded maximum number of sprouts per corm.

The cv. Darshan was early in flowering and performed better than the cv. Dhiraj with respect to vegetative and floral parameters. Likewise, pre-planting soaking of corms for 24 h improved vegetative and flowering attributes. SA 150 ppm followed by TU 2% were more effective in increasing vegetative growth and reducing number of days to flowering. SA 150 ppm followed by GA_3 150 ppm were effective in improving flowering performance of gladiolus cultivars in terms of increasing number of spikes per plant, spike length and weight and number of florets per spike.

The cv. Dhiraj recorded maximum corm size and weight, maximum number of small cormels and total number of cormels per plant over cv. Darshan. Cv. Darshan recorded higher number of big cormels. Soaking of corms for 24 h significantly improved corm and cormel attributes. SA 150 ppm and TU 2% were effective in increasing number of corms per plant. Maximum corm size and weight were recorded with SA 150 ppm and GA_3 150 ppm.

Maximum number of big cormels per plant and cormel weight was recorded with TU 2%, GA_3 150 ppm and SA 150 ppm. Control recorded significantly more number of small cormels and total number of cormels per plant.

With respect to studies on the influence of plant growth regulator sprays on flowering and corm and cormel production, cv. Darshan differed significantly with cv. Dhiraj in respect to plant height, leaf area and flowered earlier. GA_3 150 ppm followed by brassinosteroid (BR) 10 ppm recorded maximum plant height, number of leaves and leaf area during vegetative growth and resulted in earlier flowering. TIBA 100 ppm, TIBA 50 ppm and control recorded significantly minimum leaf area and showed delayed flowering. Cv. Dhiraj recorded maximum percentage of plants flowered than the cv.Darshan. Cv. Darshan recorded significantly highest spike length and inter floret length and minimum days to wilting of spike over the cv. Dhiraj. Cv. Dhiraj was significantly superior over cv. Darshan in respect of number of florets per spike and longevity of spike. Maximum spike length and weight, number of florets per spike and spike field life were recorded with GA_3 150 ppm. Lowest values in respect of flower parameters were recorded with TIBA treatments and control.

The cv. Darshan recorded maximum number of big cormels per plant and cormel weight. Cv. Dhiraj recorded maximum number of small cormels per plant. Foliar sprays of BR 10 ppm and GA_3 150 ppm significantly increased number of corms produced per plant, corm size and corm weight and propagation coefficient. Number of big cormels per plant and total number of cormels were recorded significantly higher with BR 10 ppm and was followed by TIBA 100 ppm. BR 10 ppm and TIBA 100 ppm produced maximum number of small cormels per plant. Weight of cormels per plant was recorded maximum with BR 10 ppm and GA_3 150 ppm.

In studies on effect of chemicals and plant growth regulators on induction of flowering in gladiolus plants raised from cormels, cv. Darshan was significantly superior over cv. Dhiraj in respect of vegetative parameters and earliness in flowering. Foliar sprays of SA 150 ppm and $Ca(NO_3)_2$ 1% recorded maximum vegetative growth and were significantly effective in induction of early flowering in the plants raised from cormels. These treatments also recorded significantly highest flowering percentage. Control and TIBA 100 ppm took maximum number of days to flowering. Number of spikes per plant, spike length and weight, number of florets per spike and spike longevity were maximum with salicylic acid at 150 ppm. Cv. Dhiraj recorded maximum corm size and number of small cormels per plant. BA 100 ppm and SA 150 ppm recorded maximum number of corms per plant, corm size, corm weight, number of big and small cormels per plant, total number of cormels per plant and weight of cormels per plant.

In the post harvest experiments, pre-planting soaking of corms for 24 h recorded significantly less number of days to first floret opening. Pre-planting treatment of corms with SA 150 ppm recorded minimum days to first floret opening, maximum number of florets opened at a time per spike and vase life. The cv. Darshan recorded maximum diameter of the second fully opened floret and higher vase life than cv. Dhiraj due to pre-harvest foliar sprays of plant growth regulators. Pre harvest foliar sprays of GA_3 150 ppm, BR 10 ppm and CPPU 5 ppm induced earliest first floret opening and recorded maximum values for number of florets opened at a time per spike, diameter of second full opened floret and vase life.

The cv. Darshan recorded maximum diameter of the second fully opened floret and higher vase life than cv. Dhiraj due to pre-harvest foliar sprays of plant growth regulators and chemicals on the plants raised from cormels. Significantly minimum days to first floret opening, maximum number of florets opened at a time per spike and diameter of second floret were recorded with pre harvest foliar sprays of SA 150 ppm, BA 100 ppm and $Ca(NO_3)_2$ 1%. Maximum vase life of 7.17 days was recorded with SA 150 ppm.

71) "Effect of harvesting at different levels and growth regulators on growth and flower yield of carnation (*Dianthus caryophyllus* L.)" – Ashwini Kasturi.

ABSTRACT

The present investigation on "Effect of harvesting at different levels and growth regulators on growth and flower yield of carnation (*Dianthus caryophyllus* L.) in second season crop." was undertaken at Commercial Floriculture Farm at Mudimyal, Ranga Reddy district, A.P during July 2010 to February 2011. The three experiments were laid out in randomized block design with factorial concept.

Exp 1:"Studies on the effect of harvesting at different heights on growth and cutflower yield of carnation in second season crop"

Exp 2:"Studies on the effect of harvesting at different nodes on growth and cutflower yield of carnation in second season crop"

Exp 3: "Studies on the effect of plant growth regulators on growth and cut flower yield of carnation cv. Domingo"

In the present study, harvesting of carnation flower stalks at 10 cm height proved to be superior with regard to all the growth and flowering characters studied during the experiment period. Between the cultivars, cv. Domingo has performed superior over other two Cvs. Dover and Kiero. Between these two cultivars cv. Dover performed better than cv. Kiero Number of buds per node, length of lateral, flower stalk length, diameter of flower stalk, flower length, flower diameter, length of neck, number of flower ligules, fresh flower weight and vase life of cut flower were maximum and number of days to bud sprout was minimum in cv. Domingo with harvesting at 10 cm height from the ground level than other harvesting heights studied *i.e.* 5, 15, 20 cm height from the ground level. Harvesting at 20 cm height recorded maximum number of buds per harvested stalk and also maximum flower stalks per plant but the flowers were not of acceptable quality as cut flower as they have poor flower quality.

Flowering characters like number of days for first flower bud appearance, 50 per cent flower bud appearance, for colour break stage and harvesting of flower stalks was minimum with harvesting at 10 cm height from the ground level. Number of buds per node, length of lateral, flower stalk length, diameter of flower stalk, flower length, flower diameter, length of neck, number of flower ligules, fresh flower weight and vase life of cut flower were maximum and number of days to bud sprout was minimum in cv. Domingo with harvesting at 3^{rd} node from the ground level than other harvesting nodes studied *i.e.* 2^{nd}, 4^{th}, 5^{th} nodes from the ground level.

Flowering characters like number of days for first flower bud appearance, 50 per cent flower bud appearance, for colour break stage and harvesting of flower stalks was minimum with harvesting at 3^{rd} node. Among the growth regulators studied GA_3 recorded minimum number of days to bud sprout by increasing the concentrations from 150 to 250 ppm and BA also recorded minimum number of days to bud sprout by increasing the concentrations from

250 to 350 ppm whereas NAA recorded maximum number of days to bud sprout by increasing the concentrations from 250 to 350 ppm.

GA_3 promoted early flowering and reduced the number of days to 50% flowering, colour break stage and harvest of flower stalks with higher concentrations. Floral characters such as flower stalk length, flower length, flower diameter, flower neck length, number of flower ligules per flower and fresh weight of flower were maximum with increasing concentration of GA_3 from 150 to 250 ppm. BA recorded maximum number of buds sprouted per node and per harvested stalk. BA significantly increased the number of flower stalks harvested per plant with higher concentrations and vase life of cut flower also increased.

NAA delayed the first flower bud appearance and significantly increased the number of days to 50% flowering, days to colour break stage, days to harvest of flower stalks by increasing the concentrations of NAA from 250 to 350 ppm. All the parameters studied recorded the best results with spray of growth regulators immediately after harvest of flower stalk than 15 and 30 days after harvest.

72) "Effect of pre-sowing treatments on growth, vigour and graft success in mango (*Mangifera indica* Linn.)"- Hima Bindu Aatla.

ABSTRACT

The present investigation on "Effect of pre-sowing treatments on growth, vigour and graft success in mango (*Mangifera indica* Linn.)" was conducted at Experimental Learning - Hands on Training Nurseries, College of Horticulture, Rajendranagar, during July 2010 to January 2011. The two experiments were laid out in randomized block design with factorial concept and the third experiment was laid out in randomized block design.

Exp 1: "Effect of pre- sowing treatments on germination, growth and vigour of mango cv. Totapuri**.**"

Exp 2: "Effect of pre- sowing treatments on germination, growth and vigour of mango cv. Alphonso**.**"

Exp 3: "Effect of two best performed pretreatments in each of Totapuri and Alphonso rootstocks on performance of graft- take**.**"

In the present study, pre-sowing treatment of mango stones with KNO_3 at 0.5 % proved to be superior with regard to all the germination, growth and vigour characters studied during the experiment period.

Among the seed materials, extracted kernel has performed superior over whole nut with regard to all the germination, growth and vigour characters.

In mango cv. Totapuri, minimum number of days taken for initiation of germination and 50 per cent of germination and maximum rate of germination and germination percentage were observed with extracted kernel pre-treated with KNO_3 at 0.5 % over other pre-sowing treatments i.e. KNO_3 at 1.0 %, GA_3 at 250 ppm, GA_3 at 500 ppm, Water soaking and Control.

Growth characters like number of leaves, leaf length and width, root length and spread and root to shoot ratio were maximum with extracted kernel pre-treated with KNO_3 at 0.5 %. In cv. Totapuri, GA_3 at 500 ppm recorded maximum seedling height and internodal length but the seedling diameter is not suitable for grafting as they are very thin.

Vigour characters like vigour of seedling and vigour index were maximum with extracted kernel pre-treated with KNO_3 at 0.5 % in cv. Totapuri.

Similarly in mango cv. Alphonso, extracted kernel pretreated with KNO_3 at 0.5 % proved to be superior with regard to all the germination, growth and vigour characters.

Among the pre-sowing treatments studied KNO_3 at 0.5 % recorded early sprouting of buds on scion, early emergence of 1st and 2nd flush of leaves.

Graft-take, internodal length, number of leaves, root to shoot ratio, graft diameter and graft height were maximum with extracted kernel pre-treated with KNO_3 at 0.5 % in mango cv. Totapuri.

All the parameters studied recorded the best results with extracted kernel pre-treated with KNO_3 at 0.5 % in mango cv. Totapuri.

73) "Effect of organic manures, biofertilizers and inorganic fertilizers on growth and yield of senna (*Cassia angustifolia* Vahl.)" – Aruw Kayina.

ABSTRACT

A field experiment was conducted during Rabi, January to June 2011 to study the "Effect of organic manures, biofertilizers and inorganic fertilizers on growth and yield of senna (*Cassia angustifolia* Vahl.)" grown on red sandy loam soil at Herbal Garden, Andhra Pradesh Horticultural University, Rajendranagar, Hyderabad. The experiment was laid out in randomized block design with twelve treatments replicated thrice.

The treatments consisted of 100 % RDF (150:50:50 kg ha^{-1}), 100% RDF +*Azospirillum* at 200g kg^{-1} seed, 75% RDF (113:38:38 kg ha^{-1})+*Azospirillum* at 200g kg^{-1} seed, 50% RDF (75:25:25 kg ha^{-1})+*Azospirillum* at 200g kg^{-1} seed, Vermicompost 10 t ha^{-1}, Vermicompost 7.50 t ha^{-1}+*Azospirillum* at 200g kg^{-1} seed, Vermicompost 3.75 t ha^{-1}+*Azospirillum* at 200g kg^{-1} seed, Vermicompost 1.80 t ha^{-1} + *Azospirillum* at 200g kg^{-1} seed, Neem Cake 3 t ha^{-1}, Neem Cake 2.2 t ha^{-1}+ *Azospirillum* at 200g kg^{-1} seed, Neem Cake 1.5 t ha^{-1} +*Azospirillum* at 200g kg^{-1} seed and Neem Cake 0.75 t ha^{-1}+*Azospirillum* at 200g kg^{-1} seed.

The results of the present investigation revealed that among the different traits, the highest plant height (78.10 cm) was recorded with the application of 75% RDF (113:38:38 kg ha^{-1})+*Azospirillum* at 200g kg^{-1} seed which was at par with Vermicompost 10 t ha^{-1} (75.29 cm). The leaf dry weight plant^{-1} (13.91 g) at final harvest was highest with the application of 75% RDF (113:38:38 kg ha^{-1}) +*Azospirillum* at 200g kg^{-1} seed which was on a par with Vermicompost 10 t ha^{-1} (12.92 g). While the highest shoot dry weight per plant (16.81 g) was recorded with 75% RDF (113:38:38 kg ha^{-1}) +*Azospirillum* at 200g kg^{-1} seed which was followed by Neem Cake 2.2 t ha^{-1}+ *Azospirillum* at 200g kg^{-1} seed (14.38 g). But the parameters like leaf area (136.37 cm^2) and dry matter production (17.51

q ha^{-1}) were highest with 75% RDF (113:38:38 kg ha^{-1}) +*Azospirillum* at 200g kg^{-1} seed and was on a par with Vermicompost 10 t ha^{-1} (135.39 cm^2, 16.77 q ha^{-1})

The yield parameters like number of pods $plant^{-1}$ (58.98), pod length (5.88 cm), fresh and dry weight of pods $plant^{-1}$ (35.37g and 12.29 g respectively), dry leaf and pod yield (6.78 q ha^{-1} and 4.32 q ha^{-1} respectively) were highest with 75% RDF (113:38:38 kg ha^{-1}) +*Azospirillum* at 200g kg^{-1} seed at final harvest and was on a par with Vermicompost 10 t ha^{-1}.

The highest uptake of nutrients such as Nitrogen (92.51 kg ha^{-1}), Phosphorus (65.58 kg ha^{-1}) and Potassium (118.60 kg ha^{-1}) at harvest were recorded with 75% RDF (113:38:38 kg ha^{-1}) +*Azospirillum* at 200g kg^{-1} seed and was on a par with Vermicompost 10 t ha^{-1}(87.70, 60.69 and 114.71 kg ha^{-1} respectively).

Economic analysis revealed that the highest net returns were recorded with 75% RDF (113:38:38 kg ha^{-1}) +*Azospirillum* at 200g kg^{-1} seed (Rs 52,957 ha^{-1}) followed by Vermicompost 10 t ha^{-1}(Rs 45,822 ha^{-1}). Also the highest benefit cost ratio was recorded with 75% RDF (113:38:38 kg ha^{-1}) +*Azospirillum* at 200g kg^{-1} seed (2.91) followed by 100 % RDF (150:50:50 kg ha^{-1}) (2.32).

74) "studies on post-harvest behavior of organically grown banana (cv. grandnaine) *vis-a-vis* conventionally grown banana"- Srivalli Atcha

ABSTRACT

The present investigation entitled "STUDIES ON POST-HARVEST BEHAVIOR OF ORGANICALLY GROWN BANANA (Cv. GRANDNAINE) *VIS-A-VIS* CONVENTIONALLY GROWN BANANA**"** was carried out during 2010-2011 at the Horticultural Research Station, Kovvur, West Godavari district of Andhra Pradesh.

Experiment was carried out to know the effect of organic manures [FYM, poultry manure (PM), vermicompost (VC)] along with biofertilizers [*Azospririllum*, Arbuscular mycorrhizal fungi (AMF) and phosphate solubilizing bacteria (PSB)] on physico-chemical parameters and shelf life of banana fruits, observed at ambient and refrigerated (14 ± 1^0C) storage conditions.

A set of two experiments were conducted in CRBD with factorial concept and the treatments were replicated three times. Physico-chemical characters were recorded at 2 days interval at ambient condition and 4 days interval at low temperature storage.

It was observed that the physiological loss in weight, colour index, spoilage per cent, pulp to peel ratio increased while the fruit firmness, peel thickness decreased irrespective of the treatments and storage with the advancement of storage period. While, the total soluble solids, reducing, non-reducing and total sugars, acidity, organoleptic scores increased initially and then decreased towards the end of the shelf life, the ascorbic acid decreased towards the end of the storage period.

In the first experiment, poultry manure + *Azospirillum* + AMF recorded lower physiological loss in weight (10.00), colour development (3.23), spoilage (8.51), pulp to

peel ratio (1.78), acidity (0.22) and higher firmness (3.76), total soluble solids (18.09), reducing sugars (7.30), non-reducing sugars (8.19), total sugars (15.49), ascorbic acid (10.88) and thereby recorded more shelf life (16 days) than rest of the treatments. However, organoleptic evaluation for appearance, flavour and over all acceptability was higher for vermicompost + *Azospirillum* + AMF which was on par with, poultry manure + *Azospirillum* + AMF.

At refrigerated storage less physiological loss in weight (8.05), colour development (3.27), spoilage (7.61), pulp to peel ratio (1.71), acidity (0.23) and higher firmness (4.37), Total Soluble Solids (16.10), reducing sugars (7.25), non-reducing sugars (8.10), total sugars (15.32), ascorbic acid (11.11) and organoleptic score was observed with poultry manure + *Azospirillum* + AMF and thereby registering increased shelf life of 20 days over 100% RDF treatment.

75) "Studies on the effect of plant growth regulators on growth, flower yield and vase life of China aster (*Callistephus chinensis* (L.) Ness) cv. Kamini in coastal districts of Andhra Pradesh"- E.Kiran Kumar

ABSTRACT

The present experiment entitled **"Studies on the effect of plant growth regulators on growth, flower yield and vase life of China aster (C*allistephus chinensis* (L.) Ness**) cv**. Kamini in coastal districts of Andhra Pradesh"** was carried out during 2010-2011 at College of Horticulture, Andhra Pradesh Horticulture University, Venkataramannagudem, West Godavri district.

The present experiment is designed to study the effect of plant growth regulators namely GA_3 at 100 ppm, 200 ppm, 300 ppm, NAA at 100 ppm, 200 ppm,300 ppm, MH at 500 ppm, 750 ppm, 1000 ppm and CCC at 1500 ppm, 2000 ppm and 2500 ppm on vegetative growth, flowering, and vase life of china aster with 13 treatments in three replications in a randomized block design.

Among the vegetative parameters, the treatment GA_3 at 200 ppm recorded maximum values for plant height, number of branches, internodal length, number of leaves and leaf area over other treatments. NAA at 300 ppm application resulted in minimum number of branches per plant over other treatments. MH at 1000 ppm application resulted in minimum plant height, inter nodal length, number of leaves per plant and leaf area.

Among the treatments, CCC at 1500 ppm recorded minimum number of days to first floret appearance (51.68), and 50 percent flowering (60.25). GA_3 at 200 ppm application enhanced the duration of flowering (90.33), number of flowers per plant (68.54), diameter (4.86 cm), flower weight (3.26 g), flower yield per plant (111.2 g), per plot (14.91 kg), per hectare (30.87 Q) and vase life (22.88 days).

Flower diameter was minimum with NAA 100 ppm (3.14 cm) and flower weight was minimum with NAA 300 ppm (1.42 g), whereas maximum number of days to first floret appearance (63.80), and 50 percent flowering (73.22 days) was with control. Control recorded minimum duration of flowering (63.24 days), number of flowers per plant (29.49), flower yield per plant (52.39 g), per plot (9 kg), per hectare (18.63 Q) and vase life (16 days) also.

It was found that GA_3 at 200 ppm was best in improving the yield and vase life of China aster cv Kamini.

76) "Studies on effect of Modified atmosphere packing on shelf life of guava (*Psidium guajava)* cv. Allahabad Safeda"- B. Rajitha.

ABSTRACT

The present investigation entitled **Studies on effect of Modified atmosphere packing on shelf life of guava (*Psidium guajava)* cv. Allahabad Safeda** was conducted at FRS Sangareddy, College of Horticulture, Rajendranagar, Hyderabad during the year 2010-2011. Studies on effect of Modified atmosphere packing on shelf life of guava was observed at ambient and low temperature(10±1°C).

Two experiments were divided into four experiments and were conducted in CRBD with factorial concept and the treatments were replicated three times. The first two experiments were conducted to study the response of guava fruits to the modified atmosphere packing and other two experiments were to study the ripening behaviour after removal from modified atmosphere packing to ambient condition. The fruits were treated with 2.5% O_2 and 2.5% CO_2, 2.5% O_2 and 5% CO_2, 5% O_2 and 5% CO_2, 5% O_2 and 2.5% CO_2, packing without gases and control. Physico-chemical characters were recorded at 4 days interval at ambient condition and 10 days interval at low temperatures.

It was observed that the Modified Atmosphere Packages(MAP) delayed and suppressed respiratory and ethylene peaks during ripening. It was effective in reducing weight loss and maintaining firmness of fruit. The changes in total soluble solids, acidity, ascorbic acid, and sugars were retarded by Modified Atmosphere Packing (MAP), the extent of which was dependent upon cultivar, storage temperature and atmosphere composition. Chilling injury and decay incidence were reduced during ripening of fruit stored in optimal atmospheres compared to air-stored fruit.

A greater suppression of respiration and ethylene production was observed in fruit stored in 5% O_2 and 5% CO_2 compared to the other MA treatments. In brief, MAP as a storage technique at a level of 5% O_2 and 5% CO_2 and stored at ambient and low temperature(10±1°C) was the best treatments with Guava cv. Allahabad safeda to inhibit the ripening process and maintain the postharvest quality for 12 days at ambient condition and up to 30 days at low temperature(10±1°C).

77) "Influence of different herbicides on weed control, growth, flowering and yield of gladiolus (*Gladiolus grandiflorus*) cv. White Prosperity" – Swathi Desai.

ABSTRACT

A field experiment on "Influence of different herbicides on weed control, growth, flowering and yield of gladiolus (*Gladiolus grandiflorus*) cv. White Prosperity" was conducted at All India Coordinated Research Project on Floriculture, Horticultural Research Institute, College of Horticulture, Andhra Pradesh Horticultural University, Rajendranagar, Hyderabad during the year 2010-11. The experiment was laid out in Randomized Block Design with twelve treatments and replicated thrice.

The treatments consisted of Atrazine 1.0 kg a.i. ha^{-1} Pre-emergence followed by one hand weeding 50 DAP (T_1), Atrazine 1.5 kg a.i. ha^{-1} Pre emergence (T_2), Metribuzin 0.25 kg a.i. ha^{-1} Pre emergence followed by one hand weeding 50 DAP (T_3), Metribuzin 0.50 kg a.i. ha^{-1} Pre emergence (T_4), Butachlor 1.0 kg a.i. ha^{-1} Pre emergence followed by one hand weeding 50DAP (T_5), Butachlor 1.5 kg a.i ha^{-1} Pre emergence (T_6), Pendimethalin 0.75 kg a.i. ha^{-1} Pre emergence followed by one hand weeding 50 DAP (T_7), Pendimethalin 1.00 kg a.i. ha^{-1} Pre emergence (T_8), Quizalofop ethyl 0.05 kg a.i ha^{-1} Post emergence at 2-3 leaf stage (T_9), Control (T_{10}), Hand weeding 25 and 50 DAP (T_{11}) and Paddy straw (T_{12}).

The results of the experiment indicated considerable difference among the treatments with respect to vegetative, floral and corm characteristics.

Maximum growth attributes viz., plant height, leaf length, leaf area were recorded in T_{12} while the maximum number of leaves per plant was obtained in T_7 & T_1 and maximum leaf width was recorded in pendimethalin T_8 at higher concentration. Non significant result was recorded with respect to leaf width at initial stages with the different treatment combinations.

Further, it was observed that the different floral attributes viz., minimum days taken to 50% flowering observed in paddy straw mulch which was on par with T_7, minimum days taken to spike initiation, maximum number of spikes per plant, maximum spike length , rachis length, minimum days taken for basal flower to open, maximum fresh weight of spike, floret length, floret diameter were observed in T_{12} where as maximum number of florets per spike and maximum number of spikes per plot was obtained in pendimethalin T_7.

Among yield and corm attributes, maximum number of corms per plant were recorded in T_7, maximum diameter of corm and fresh weight of corm was observed in paddy straw mulch T_{12}, maximum number of cormels per plant, maximum diameter of cormels and fresh weight of cormels per plant was obtained in post emergence herbicide quizalofop ethyle T_9.

Among all treatments lowest weed count, dry weight, weed index and highest weed control efficiency was recorded in treatment pendimethalin at lower concentration with one hand weeding T_7.

The highest nutrient content in plants such as nitrogen, phosphorus and potassium were recorded in treatment T_1, T_4 and T_3 & T_{12} respectively.

The results from the present study clearly showed that the application of pendimethalin at lower concentration 0.75 kg a.i. ha^{-1} followed by one hand weeding and paddy straw mulch

resulted in the maximum net returns (Rs. 7,96,180 & Rs. 7,43,538) respectively with a benefit cost ratio of (1.21:1).

78) "Effect of post harvest treatments with Growth regulators and chemicals on shelf life of Sweet orange(*citrus sinensis* L.Osbeck) Cv. Sathgudi" – N. Suresh.

ABSTRACT

A laboratory experiment entitled "Effect of post harvest treatments with Growth regulators and chemicals on shelf life of Sweet orange(*citrus sinensis* L.Osbeck) Cv. Sathgudi**"** was conducted at Post Harvest Technology Laboratory, College of Horticulture, Rajendranagar, Hyderabad during 2008-2009.

The first set of experiments consists of growth regulators namely GA_3(100 and 200 ppm),BA(100 and 200 ppm), SA(100 and 200 ppm) and control. All the treatments replicated thrice with CRD factorial concept. The fruits were analyzed for physio chemical properties at an interval of 5 days.

Another set of experiment consist of chemicals viz., namely $Ca(NO_3)_2$(0.5% and 1%), Nacl(0.5% and 1%),$CaCl_2$(0.5% and 1%) and control. The treatments were replicated thrice with design of CRD with factorial concept. The fruits were analyzed at an interval of 5 days for physico-chemical properties.

The fruits treated with GA3 200ppm recorded a shelf life of 30.09 days as against 8.89 days in control. The fruits had lesser colour change, lower rotting percent, higher juice percent and higher peel thickness.

There was an increase in TSS content of fruit juice with increase in storage period, GA_3 200 ppm treated fruits recorded lower TSS content and more shelf life recorded. The fruits had higher titrable acidity, lesser reducing sugars and TSS/Acid ratio.

Among the chemicals $Ca(NO_3)_2$-1% resulted in increasing the shelf life of fruits to 27.09 days as against 8.89 days in control.

The treatment resulted in bringing of slow change of colour lesser rotting percent and peel thickness. TSS content in fruits was registered lowest coupled with higher titable acidity resulted in lower TSS/Acid ratio.

79) "Genetic Diversity Studies In Paprika Germplasm (*Capsicum annuum L.*)"- S.V. Vishnu VArdhan.

ABSTRACT

A field experiment was conducted to estimate the genetic variability and genetic divergence in paprika and to carry out yield component analysis through correlation and path analysis. Fifty five exotic and indigenous genotypes along with three checks were sown in a randomized block design with three replications, during *rabi* 2009-2010 at College of Horticulture, Rajendranagar, Hyderabad. The objective of the experiment was to identify divergent genotypes to use as donor parents in hybridization programmes.

By Mahalanobis' D^2 statistic, it could be inferred that 1000 seed weight, followed by vitamin C content, capsanthin content, days to maturity and fresh fruit yield per plant contributed maximum towards genetic divergence. Number of fruits per plant and seed content contributed equally followed by fresh fruit weight towards genetic diversity.

The D^2 analysis was carried out for 19 characters which partitioned the fifty eight genotypes into eight clusters. Maximum divergence was observed between cluster VII and VIII, while minimum was between cluster III and I. The maximum intra cluster distance was shown by cluster V.

The clusters showing high genetic divergence could be effectively utilized in heterosis breeding programme. If a breeding programme is used at improving the character capsanthin content, cluster VI (IC-572490) showing maximum capsanthin content can be utilized in breeding programme.

The analysis of variance revealed significant differences between genotypes for all the characters. However, there was no significant difference among three checks with respect to three characters *viz*., number of branches per plant, stem diameter and seed content. Also, there was no significant difference between checks and genotypes for the character, number of primary branches per plant.

On the basis of the mean performance of the genotypes among traits studied, the following were identified as promising lines for further crop improvement in paprika *viz.* IC-570388 (plant height), IC-572456 (plant spread), EC-599993(PR) (number of branches per plant and capsaicin), EC-599981(fruit length), IC-572472 (fruit pedicel length), EC-599978 (vitamin C content), EC-599992 (stem diameter), IC-57246 (seed content), IC-572490 (capsanthin), IC-572469 (stem length), EC-596940 (early maturity).

Coefficient of variation values indicated considerable amount of variability for all the characters studied except days to 50 % flowering and days to maturity, indicating the scope for selection of suitable initial breeding material for further improvement.

GA as percent of mean, GCV and PCV values are on par with each other for most of the characters that the influence of the environment on the trait (s) was very negligible. The values observed are not confounding with the environment. It is a true reflection of the homeostasis effect or buffer reaction of the gene. Thus, the true reflection of the trait is exhibited.

A true agreement with the GCV and PCV values in the present investigation for the 19 characters was noticed, indicating additive genetic variance governing the high heritability with genetic advance as percent of mean. Thus, a breeder can employ a simple selection process which will be a rewarding one to improve the characters *viz.*, plant height (cm), plant spread (cm), stem length (cm), stem diameter (cm), number of branches per plant, days to 50 per cent flowering, days to maturity, fruit length (cm), fruit width (cm), fruit pedicel length (cm), fresh fruit weight (g), dry fruit weight (g), number of fruits per plant, seed content (%), 1000 seed weight (g), vitamin-C content (mg $100g^{-1}$), capsanthin content (ASTA Units), capsaicin content (%) and fresh fruit yield per plant (g). For number of branches per plant, moderate heritability with high GA as per cent of mean indicates non additive action controlling the traits. Thus, selection for days to 50 per cent flowering may not be rewarding.

From correlation studies it was observed that fruit yield per plant has exhibited highly significant positive association with fresh fruit weight followed by fruit width, dry fruit weight, fruit pedicel length, plant height, number of fruits per plant, stem diameter, fruit length, plant canopy width and 1000 seed weight.

Path analysis revealed that maximum positive direct effect on fruit yield per plant was exhibited fresh fruit weight followed by high positive direct effect of number of fruits per plant, moderate positive direct effect of fruit length and plant height. Vitamin C content exhibited low positive direct effect on fresh fruit yield per plant.

Therefore, it is emphasized to lay attention on traits like fresh fruit weight, number of fruits per plant, fruit length and vitamin C content in crop improvement programme of paprika in future.

80) "standardization of procedures and evaluation of RTS juice and wine from karonda (*Carissa carandas* L.)" - G.Kalyani.

ABSTRACT

A set of two experiments were conducted on "Standardization of procedures and evaluation of RTS juice and wine from karonda (*Carissa carandas* L.)" at fruit Research Station, Sangareddy, Medak district. All the experiments were carried out in CRD with factorial concept and the treatments were replicated thrice. Various physico-chemical parameters like TSS(°B), Reducing sugars (%), Total sugars (%), Titrable acidity (%), pH, Alcohol (%), Colour Stability, Ascorbic acid (mg/100 ml), Microbial load (cfu/ml) were analysed during storage period.

In the first experiment, karonda juice was diluted to different dilutions with 10,15, 20 % TSS and stored at room conditions. The treatment 1:5 with 20 % TSS showed highest TSS, reducing sugars and Total sugars, while lowest PH and acidity are recorded. In 1:2 proportion with 10% TSS, lowest TSS, Reducing sugars and Total sugars and highest in pH and acidity were recorded. The overall acceptability of the RTS was good in 1:3 with15% TSS followed by 1:3 with 20% TSS

In the second experiment, karonda wine was prepared with different proportions like 1,1.5, 2 with and without DAHP. During storage TSS, reducing sugars, total sugars, titrable acidity and ascorbic acid were decreased. There was decrease in alcohol content in wine was due to auto-oxidation of ethyl alcohol to aldehydes or combination with volatile acids to form esters. However, maximum alcohol content (8.26%) was recorded in 1:2 dilution with DAHP. In all the treatments, DAHP treated wine showed maximum acidity, alcohol, ascorbic acid and lowest pH, TSS, reducing sugars and total sugars than the treatments without DAHP.

81) "studies on acceptability and shelflife on value added products developed from aloevera based blends of sapota and guava"- T.Baby Rani

ABSTRACT

A set of experiments were conducted at post harvest technology laboratory, Department of horticulture, College of Horticulture, Rajendranagar, Hyderabad during year 2009.

Most of the fruits and vegetables are seasonal crops and perishable in nature. Some fruits are highly perishable and require immediate processing. Among such fruits include sapota and guava which are common and most important fruits of India. These are highly nutritious and rich flavored fruits but have recorded huge post harvest losses and need to be utilized for processing / value added products.

Aloe, a member of lily family, is a subtropical medicinal plant. .Aloe Vera was known to Indians for its medicinal values since time immemorial in the name of "Grit kumari." It is a kind of evergreen succulent. The mucilage portion of the leaves contain glucose, galactose, mannose, galacturonic acid and protein with 17 amino acids. Aloe has a wide range of medicinal applications such as wound healing effects, reduces blood sugar in diabetes, soothes burns, eases intestinal problems, reduces arthritic swelling, ulcer curative effect, stimulates immune response against cancer, etc.

Initially recipes for value added products like RTS, nectar and squash with sapota and guava were standardized. Blended beverages (RTS, nectar and squash) were prepared by blending aloe with sapota and guava in different proportions. In order to study the storage stability and consumer acceptability, products were stored for a period of three months and were analyzed for total soluble solids, acidity, pH, ascorbic acid, total sugars, reducing sugars, non reducing sugars, antioxidant activity and overall acceptability at monthly intervals.

Slight increase in total soluble solids, pH and total sugar content and a considerable increase in reducing sugars, but sight decrease in acidity, considerable decrease in non reducing sugars, ascorbic acid and antioxidant activity was noticed in all the products of sapota blended with aloe such as RTS, nectar and squash.

In all the products of guava blended with aloe such as RTS, nectar and squash there was a slight increase in total soluble solids, acidity and a considerable increase in reducing sugars but, sight decrease in pH, total sugar content and a considerable decrease in non reducing sugars, ascorbic acid and antioxidant activity noticed during storage for a period of 90 days.

Among all the RTS blends of sapota, sapota and aloe in the ratio 60:40 was rated as superior for quality attributes and acceptability through organoleptic evaluation

Among all the prepared RTS blends of guava, guava and aloe in the ratio of 80:20 was rated the best.

Among all the nectar blends of sapota, sapota and aloe in the ratio of 60:40 was found to be the superior organoleptically.

Among the guava nectar blends, guava and aloe in the ratio of 70:30 was rated as the best.

Among all the prepared squash blends of sapota, sapota and aloe in the ratio of 60:40 was found to be the superior organoleptically.

Among the guava squash blends, guava and aloe in the ratio of 70:30 was rated as the best.

All the products prepared from aloe based sapota and guava were free from the visual microbial growth. This was due to the application of heat, addition of preservative during processing or might also be due to aloe which has antimicrobial properties. Hence, all the products can be stored with out deterioration and can be acceptable up to 3 months.

82) "standardization and storage studies on value added products of ber (*Zyziphus mauritiana Lamk*.) CV. Gola"- S.Kavitha.

ABSTRACT

The study was divided into three experiments and conducted in the Post Harvest Technology Laboratory, College of Horticulture, Rajendranagar, Hyderabad from December 2008 to February 2009. Investigations were carried out to standardize the recipes for preparation of squash, RTS (Ready to serve) and nectar from ber fruits by using different ratios of pulp and TSS levels at both ambient and low temperature conditions. The products were analyzed at every 30 days interval for their physicochemical, organoleptic characteristics.

TSS content of ber products increased during storage period. Acidity and ascorbic acid of the products were decreased during storage. Total sugars and reducing sugars are increased during storage period and decrease of non-reducing sugars noted. The overall acceptability though it reduced during storage but the products was reasonably stored upto 90 days period. The overall results indicated that ber beverages can store up to 3 months both at ambient and low temperature.

83) "Effect of Post-harvest treatments on Shelf-life and ripening of sapota (*Acharas zapota* L.) fruits cv. Kalipatti "- C.S.Aparna.

ABSTRACT

The present investigation entitled "Effect of Post-harvest treatments on Shelf-life and ripening of sapota (*Acharas zapota* L.) fruits cv. Kalipatti**"** was carried out in the Post Harvest Technology Laboratory, College of Horticulture and Quality Control Lab (ANGRAU), Rajendranagar during the year 2010-2011.

Four experiments were conducted in CRD. Effect of Post harvest application of calcium compounds, growth regulators, packaging materials and chemicals on shelf life and ripening of sapota fruits stored at ambient temperature and cold storage (12^0C). The days taken for ripening were increased in fruits. The days taken for ripening was increased in the fruits treated with calcium nitrate and benzyl adenine when compared to control at ambient temperature. The data on quality parameters like PLW, reducing sugars, titrable acidity, TSS also confirm the inhibitory effect on ripening with above treatments.

The total, reducing and non-reducing sugars (%) content increased up to ten days of storage and then declined. Among the respective treatments the highest total, reducing and non-reducing (%) TSS (^{0}B) recorded in fruits treated with both 2 % calcium nitrate and BA 75 ppm.

Sapota fruits packed in polythene bag (100 guage) showed the highest shelf life of 10.67 days. The ripening was increased in Gunny bag with Paddy straw packed fruits.

Post harvest dip treatments of sapota fruits with calcium nitrate (1.5 / 2 %) and BA 75 ppm reduced the rate of oxidative metabolism through retarded catalase activity.

The chemicals from the above experiments namely Calcium nitrate 2.0 %, calcium nitrate 1.5 %, benzyl adenine 75 ppm and gibberllic acid 250 ppm were tried as post harvest dip treatments on sapota fruits and stored at 12^0C. Sapota fruits treated with BA 75 ppm and stored at 12^0C showed delayed ripening when compared to other treatments.

Sapota fruits treated with BA 75 ppm as post harvest dip recorded the highest shelf life (13.00 days) at ambient temperature and it was 35.34 days when stored at low temperature (12^0C).

84) "Studies on the effect of holding solutions on the vase life of carnation flowers (*Dianthus caryophyllus* L.) cv. Charmant"- M.Maduri.

ABSTRACT

The present investigation entitled "Studies on the effect of holding solutions on the vase life of carnation flowers (*Dianthus caryophyllus* L.) cv. Charmant" was carried out at Department of Horticulture, College of Horticulture, Andhra Pradesh Horticultural University, Venkataramannagudem, West Godavari Dist. during October 2010 to March 2011. The main objective of the investigation is to find out the efficacy of different preservatives on the post harvest physiology, biochemistry and vase life of cut carnation flowers. A total of four experiments were conducted and all the experiments were laid out in completely randomized design with factorial concept and replicated thrice.

The first experiment consisted of treatments with sucrose at different concentrations. The carnation cut flowers held in sucrose 6 percent vase solution recorded higher values in water uptake, transpirational loss of water and fresh weight of flowers. The same treatment, however, recorded lower values in the electrolyte leakage and microbial count in vase solution. Further, the flowers held in sucrose 6 percent vase solution recorded longer vase life with delayed flower opening and higher chlorophyll content in leaf and calyx.

The second experiment consisted of treatments with ethylene inhibitors and growth regulators (STS, SA and BA) at different concentrations. The cut carnation flowers maintained in vase solution containing STS at 0.25mM recorded longer vase life with higher values in water uptake, transpirational loss of water and flower diameter. The treatment, benzyl adenine-15 ppm (BA-15) also recorded vase life on par with STS (0.25 mM) with maximum water balance, fresh weight of flower and chlorophyll content in leaf and calyx. Electrolyte leakage, however, was lowest in SA 5.

In third experiment, the treatments were with different biocides ($Al_2(SO_4)_3$, $CaOCl_2$, 8-HQS and CA) at varied concentrations. The treatments, 8-HQS 200 ppm and $Al_2(SO_4)_3$ 150 ppm with higher values in water uptake, transpirational loss of water, water balance, fresh weight of flowers, flower diameter, chlorophyll content in leaf and calyx and lower values in electrolyte leakage recorded longer vase life of carnation cut flowers.

The fourth experiment consisted of treatments with combination of the best in sucrose, ethylene inhibitors, growth regulators and biocides (Sucrose 6 percent, STS 0.25 mM, BA 15 ppm, 8-HQS 200 ppm and $Al_2(SO_4)_3$ 150 ppm). The carnation cut flowers held in vase solution containing sucrose, ethylene inhibitor and biocide (Sucrose 6 per cent + STS 0.25 mM + $Al_2(SO_4)_3$ 150 ppm) recorded a longer vase life by registering higher values in water uptake, transpirational loss of water and fresh flower weight. The other factors contributed to the longer vase life of carnation cut flowers with the treatment were lower electrolyte leakage and delayed opening of flowers.

85) "Heterosis And Combining Ability Studies For Yield And Its Components In Bottle Gourd (*Lagenaria siceraria* (Mol.) Standl.)"- V.Vijay Kumar.

ABSTRACT

The present investigation entitled was undertaken to estimate levels of heterosis, gene action and combining ability effects for vine yield and its component characters in bottle gourd. The experimental material comprised of 12 genotypes including eight lines, namely, LS-50, LS-16, LS-41, LS-10, LS-45, LS-46, LS-34 and LS-62-1; three testers, namely, LS-20, LS-7 and PSPL; and one Standard check namely Arka Bahar. The selected parents were raised and crosses were effected in a line x tester fashion and the resultant F_1s, parents and the check Arka Bahar were sown in a randomized block design with two replications during *spring summer* season of 2009 at the college Farm, college of Agriculture, Rajendranagar, Hyderabad and evaluated for genetic parameters, heterosis and combining ability for the yield and yield component characters.

Analysis of variance revealed the existence of significant differences among the genotypes for all the traits studied, indicating the existence of sufficient variation for effective selection. The hybrids, in general were early maturing and high yielding with high fruit number/vine, fruit weight, length and girth in addition to greater number of branches per vine, compared to the parents. Maximum yield levels were recorded for the hybrid LS-34 x LS-7 followed by LS-34 x LS-20. LS-34 among lines and LS-7 and LS-20 among testers were observed to be superior to the standard check, Arka Bahar with regards to vine yield and other important yield component characters.

High genotypic and phenotypic coefficients of variation, heritability and genetic advance were noticed for the traits *viz.*, vine length, node of first female flower, branches per vine, fruits per vine, fruit girth, fruit weight and vine yield, indicating the effectiveness of direct selection for these traits. However, moderate values were noticed for fruit length, while, days to first female flower and days to first harvest had recorded low values indicating the need for adoption of indirect selection procedures for improvement of these traits.

Existence of significant levels of heterosis for yield and yield component characters was observed in the experimental material studied. The highest value of standard heterosis for vine yield was observed for LS-34 x LS-7 (55.15%), followed by LS-34 x LS-20 (47.49%) and LS-45 x LS-7 (44.01%). Positive and significant heterosis more than 10 per cent for vine yield was recorded for the hybrids, LS-10 x PSPL, LS-16 x PSPL, LS-34 x LS-7, LS-34 x LS-20, LS-34 x PSPL, LS-45 x LS-7, LS-45 x LS-20 and LS-45 x PSPL uniformly over mid parent, better parent and the standard check, Arka Bahar indicating their potential for commercial exploitation. Among these, LS-10 x PSPL, LS-16 x PSPL, LS-34 x LS-7 and LS-45 x PSPL had also recorded desirable and significant negative heterosis for days to first harvest, uniformly over mid parent, better parent and the standard check, Arka Bahar indicating their scope for promotion as early and high yielding hybrids.

The estimates of components of variance and their ratio revealed a greater magnitude of SCA variance, compared to GCA variance for all the traits studied, indicating the pre-ponderance of non-additive gene action and a scope for improvement of the traits through heterosis breeding. An analysis of the general combining ability effects revealed the lines, LS-10, LS-16, LS-34 and LS-45; and the tester, LS-7 to be good general combiners for vine yield. Among these, LS-34 and LS-45 lines and LS-7 tester had recorded high *per se* performance for

the trait and hybrid combinations involving these parents were also observed to result in high yielding and heterotic hybrids, indicating their potential in the crop breeding programmes aimed at the development of high yielding hybrids and varieties. The line, LS-34 was also observed to be a good general combiner for fruit weight, fruit length, fruits per vine and days to first female flower, while LS-45 was also noticed to be a good general combiner for fruit weight, fruit girth, fruit length, fruits per vine, branches per vine, node of first female flower and days to first harvest indicating a scope for simultaneous improvement of the above traits with utilization of these lines in the crop breeding programmes. Similarly, the tester, LS-7 was noticed to be a good general combiner for fruit weight and fruit girth, in addition to vine yield.

An analysis of specific combining ability effects of the hybrids revealed LS-10 x LS-7, LS-16 x LS-7, LS-16 x LS-20, LS-34 x LS-7, LS-34 x LS-20, LS-34 x PSPL, LS-45 x LS-7 and LS-45 x LS-20 hybrids to be good specific combiners for vine yield. These hybrids had also recorded high *per se* performance for the character. Among these, LS-34 x LS-7, LS-34 x LS-20, LS-34 x PSPL, LS-45 x LS-7 and LS-45 x LS-20 hybrids had also recorded high heterosis (>10%) over mid-parent, better parent and the standard check, namely, Arka Bahar and hence, are identified as potential high yielding hybrid combinations and may be utilized for commercial exploitation after extensive testing for stability in performance.

86) "Studies on dilution of sweet orange juice and use of yeast strains for prepration of vermouth" –Kadam Ganesh. D.

ABSTRACT

An experiment entitled "Studies on dilution of sweet orange juice and use of yeast strains for prepration of vermouth" was conducted at College of Horticulture, APHU, Rajendranagar, Hyderabad during 2010-11. The experiment consists of six treatments Viz. (i) T_1-(1:0 dilution with yeast strain 1), (ii) T_2-(1:0 dilution with yeast strain 2), (iii) T_3-(1:0.5 dilution with yeast strain 1), (iv) T_4-(1:0.5 dilution with yeast strain 2), (v) T_5-(1:1 dilution with yeast strain 1) and (vi) T_6-(1:1 dilution with yeast strain 2) replicated thrice with CRD (Completely Randomized Design) with factorial concept.

The aim of experiment was (i) to standardize the dilution of sweet orange juice for vermouth preparation, (ii) to standardize the starter for preparation of sweet orange vermouth, (iii) to study the compositional changes in base wine during fermentation and (iv) to study the compositional changes in sweet orange vermouth during maturation.

The extracted juice of sweet orange fruit diluted as per the treatments and inoculated with yeast strains Viz. (i) *Saccharomyces cerevisiae* var. *ellipsoideus* and (ii) *Saccharomyces cerevisiae* var. MTCC 172 for start the fermentation of sweet orange must. The fermentation was completed in 13 days with treatment T_3 (1:0.5 dilution with yeast strain 1) and it produced alcohol of 7.99% in base wine. In the processes of fermentation the TSS, reducing sugars and total sugars got reduced with increase in titrable acidity. The optimum pH of sweet orange must could be 4.6 which hasten the rate of fermentation.

The dilution of sweet orange juice in the ratio of 1:0.5 was found to be optimum scence it had completed the process fermentation within 13 days with yeast strain *Saccharomyces cerevisiae* var. *ellipsoideus* and also had higher % of alcohol.

The spice and herb extract (1:1 ratio of base wine and brandy added to spices and herbs) were added to the base wine called 'vermouth' and were allowed for the maturation for a period of 90days.

The alcohol content during the maturation of vermouth slightly increased due to addition of sweet orange brandy upto 60 days thereafter it did not differ.

The treatment T_3 (1:0.5 dilution with yeast strain 1) recorded significantly lower phenols (156.50 µg/ml), tannins (0.015%), TSS (4.89^0B), reducing sugars (2.25%) and total sugars (4.11%) with an alcohol content of 15.09%.

87) Studies on the effect of INM practices on growth, yield and quality of cluster bean (*Cyamopsis tetragonoloba* L. Taub) – Narasimha Reddy .M

ABSTRACT

An experiment was carried out during the *kharif* 2010 at Horticultural Research Station, APHU, Venkataramannagudem, West Godavari district, Andhra Pradesh to study the response of different organic (FYM, poultry manure and vermicompost) and inorganic (urea, SSP and MOP) sources of nutrients in combination with biofertilizers (*Rhizobium,* PSB) on growth, pod yield and quality of cluster bean (*Cyamopsis tetragonaloba* L. Taub) var. Pusa Sadabahar. Experiment was laid out in a randomized block design (RBD) with three replications and data on growth (plant height, number of leaves and leaf area plant^{-1}), pod yield (pod yield plant^{-1}) and its attributes (pod clusters plant^{-1}, pods cluster^{-1}, length and diameter of pod) and pod quality(protein and crude fibre contents and shelf life) were recorded.

Morphological characters like plant height, number of leaves plant^{-1}, leaf area plant^{-1} at all stages of plant growth were significantly increased with the application of 75% recommended dose of nitrogen (RDN) through inorganic fertilizers and 25% RDN through poultry manure along with biofertilizers (*Rhizobium* + PSB) over other treatment combinations whereas, application of 25% RDN through inorganic fertilizers and 75% RDN through FYM along with biofertilizers has recorded poor growth at all the crop stages over other treatments. Plants that received 100% RDF +*Rhizobium* shown early flowering and took shorter crop duration than other combinations, while, application of 25% RDN through chemical fertilizers+75% RDN through FYM+ biofertilizers taken more days for flowering and recorded longer crop duration.

Yield components *viz.*, number of clusters plant^{-1}, number of pods in a cluster, length and diameter of pod and number of seeds pod^{-1} differed significantly due to the different INM practices. Among the treatments, application of 75% RDN through inorganic fertilizers and 25% RDN through poultry manure along with biofertilizers has recorded higher pod yield (50.21 g plant^{-1}), while 25% RDN through inorganic fertilizers + 75% RDN through FYM+ biofertilizers recorded lower pod yield (37.62 g plant^{-1}). Protein content (3.63 %) in pods was higher with the application of 75% RDN through inorganic fertilizers + 25% RDN through

poultry manure + biofertilizers. while, lesser crude fibre content (2.18 %) and higher shelf life of pods (5.62 days) was observed in pods obtained from plant that received 25% RDN through inorganic fertilizers + 75% RDN through poultry manure+ biofertilizers.

Higher gross returns (Rs 78, 720.00 ha^{-1}) and benefit: cost ratio (1: 2.02) were recorded with the application of 75% RDN through inorganic fertilizers + 25% RDN through poultry manure+ biofertilizers and followed by 100% RDF+ *Rhizobium.*

Hence, application of poultry manure (equivalent weight of 25% recommended dose of nitrogen) + 75% RDN through chemical fertilizers along with *Rhizobium a*nd PSB can be recommended for profitable cultivation of cluster bean crop along with optimum quality in coastal region of Andhra Pradesh.

88) "Studies on morphological characterization, variability, heritability and genetic advance in betelvine (*Piper betle* Linn.)"- S.Gopi Priya

ABSTRACT

The present investigation entitled **"Studies on morphological characterization, variability, heritability and genetic advance in betelvine (*Piper betle* Linn.)"** was carried out during 2010-2011 at AICRP on Medicinal and Aromatic Plants & Betelvine, Venkataramannagudem, Andhra Pradesh Horticulture University, West Godavari District, Andhra Pradesh.

The present study was conducted with forty betelvine genotypes for seventeen characters, of which three were morphological characters *viz.,* leaf colour, internodal colour, orientation of petiole and one qualitative character *i.e.,* keeping quality. Quantitative characters were thirteen, which include plant height, number of laterals, petiole length, internodal length, diameter of the stem, leaf area, R-value, leaf area index, specific leaf weight, main veinlet number, number of harvestable leaves per vine, fresh and dry weights of 100 leaves. The experiment was conducted in augmented design with thirty six genotypes and four check varieties. The four check genotypes were replicated six times after each row of six genotypes. The check varieties include Swarna Kapoori, Tellaku Ponnuru, Black leaf and Karapaku, of which the former two genotypes belong to Kapoori group while, the latter two genotypes belong to Bangla group. The study was conducted to document information on morphological characterization, variability, heritability and genetic advance characters. Correlation studies were also carried out between yield and yield attributing characters.

The study revealed that both the groups exhibited diversity in exomorphic characters during the first year of crop growth at 60, 120 and 180 days after planting. Data revealed that traits like plant height, number of laterals and number of harvestable leaves per vine contributed maximum for leaf yield in Kapoori group over Bangla group. Among all the genotypes studied, the check Swarna Kapoori recorded the highest yield and is found suitable to the local agro-climatic conditions.

Significant variability was observed for all the seventeen characters under study. Among the characters studied, number of laterals and leaf area index showed higher GCV

and PCV at all the three stages of observation *i.e.*, at 60, 120 and 180 DAP, evincing more scope for the improvement through selection.

The heritability estimates were high for most of the characters under consideration like plant height, petiole length, internodal length, leaf area, leaf area index, specific leaf weight, fresh weight of 100-leaves and dry weight of 100-leaves at all the three stages *i.e.*, 60, 120 and 180 DAP indicating the scope for effective selection for further breeding programmes.

Genetic advance as per cent of mean were high for the characters like plant height, number of laterals, leaf area, leaf area index, specific leaf weight, fresh weight and dry weights of 100-leaves at all the three stages *i.e.*, 60, 120 and 180 DAP indicating that these characters were governed by additive genes and selection will be rewarding for improvement of such traits.

The studies on character association showed that number of harvestable leaves per vine had positive correlation with traits like plant height, number of laterals, leaf area, leaf area index and fresh weight of 100-leaves signifying the importance of these traits in selection for yield and can be identified as yield attributing traits for the genetic improvement of yield in betelvine.

89) "Effect of micronutrients on growth, yield and quality of tomato (*Solanum lycopersicum* L.)."- A.Prakash.

ABSTRACT

The present investigation "Effect of micronutrients on growth, yield and quality of tomato (*Solanum lycopersicum* L.)." was carried out during *rabi* 2010-11 at Vegetable Research Station, Rajendranagar, Hyderabad. The treatments included frequency of application of micronutrients at different levels of concentrations. The experiment was laid out in randomized block design with 13 treatments and three replications.

The study revealed that the application of 0.50 % micronutrient mixture(B, Cu, Fe, Mn, Mo and Zn) recorded the maximum plant height which was followed by 0.50 % $ZnSO_4$.The leaf area and the number of branches were highest with the sprays of 0.50 % of micronutrient mixture followed by the treatment 0.50 % H_3BO_4.

Days to flower initiation and days to 50 % flowering recorded lesser number of days in 0.50 % micronutrient mixture treatment. It was followed by 0.50 % H_3BO_4 and 0.50 % $ZnSO_4$. For the number of flowers per cluster, 0.50 % micronutrient mixture recorded maximum average number of flowers per cluster. It was followed by 0.50 % H_3BO_4 and 0.50 % $ZnSO_4$ treatments.

Weight of fruit was maximum with the application of 0.50 % micronutrient mixture which was on par with 0.50 % $FeSO_4$ whereas, the length of the fruit, diameter

of the fruit and pericarp thickness of fruit recorded maximum in 0.50 % micronutrient mixture. It was followed by 0.50 % H_3BO_4.

The number of fruits per cluster recorded highest in the 0.50 % micronutrient mixture spray which was followed by 0.50 % H_3BO_4 and 0.50 % $ZnSO_4$.

Yield per plant, yield per plot and yield per hectare were maximum in the treatment 0.50 % micronutrient mixture. It was followed by the treatment 0.50 % of H_3BO_4.

The highest total soluble solid was recorded in the treatment 0.50 % micronutrient mixture. It was followed by the treatments 0.50 % of H_3BO_4 and 0.50 % of $ZnSO_4$. The highest ascorbic acid content was recorded in the treatment 0.50 % micronutrient mixture. It was followed by the treatments 0.50 % of $CuSO_4$ and 0.50 % of $ZnSO_4$. The maximum shelf life was recorded in the treatment 0.50 % micronutrient mixtures. It was followed by the treatments 0.50 % of H_3BO_4 and 0.50 % of $ZnSO_4$.

The best economic cost benefit ratio (1:1.80) was recorded in the treatment 0.50 % micronutrient mixture. The treatment 0.50 % H_3BO_4 (1:1.62) also showed favourable economic cost benefit ratio. The cost benefit ratio was economically very less in the control (1:1.29).

90) "Effect of different levels of nitrogen fertilization andgrowthretardants on growth and yield of China aster (*Callistephus chinensis* L. Nees)"- L.Rupa.

ABSTRACT

A field experiment, "**Effect of different levels of nitrogen fertilization and growth retardants on growth and yield of China aster (*Callistephus chinensis* L. Nees).**" was conducted at College of Horticulture, Andhra Pradesh Horticulture University, Rajendranagar, Hyderabad during the year 2009-10. The experiment was laid out in Split plot design comprising twenty one treatments, with main treatment as nitrogen fertilization consisting of three nitrogen levels- 120 kg N/ha, 150 kg N/ha and 180 kg N/ha; sub-treatments as growth retardants (CCC and MH) consisting of seven concentrations - water spray, CCC 2000 ppm, CCC 2200 ppm, CCC 2400 ppm, MH 500 ppm, MH 1000 ppm and MH 1500 ppm . The entire treatments were replicated thrice.

The results of the experiment revealed that the china aster plants supplied with 180 kg N/ha showed superirorty in plant characters *viz*., plant height, number of branches, internodal length, number of leaves, leaf area, leaf area index and dry matter accumulation.

Reduced plant height, highest number of branches, number of leaves and dry matter accumulation were recorded by CCC 2400 ppm. Highest number of branches,

minimum internodal length, leaf area and leaf area index are reported with MH 1500 ppm.

With respect to floral characters earlyness in flower bud initiation and 50% flowering were obtained with 120 kg N/ha. Where as 180 kg N/ha recorded maximum number of flowers per plant, diameter of flower, 100 flowers weight, stalk length, flower yield per plant and flower yield per plot. Longest vase life was obtained with 120 kg N/ha.

CCC 2400 ppm treatment showed delay in flower bud initiation, 50% flowering, highest number of flowers per plant and smallest flowers. But highest flower weight and yield per plant and plot were recorded with CCC 2200 ppm. and for the yield per plot CCC 2000 ppm and MH 1500 ppm are at on par with CCC 2200 ppm.

MH 1500 ppm treated plants showed extended flowering period, reduced stalk length and longer vase life.

180 kg N/ha and CCC 2400 ppm both expressed highest values for the biochemical parameters i.e. nitrogen content, nitrogen uptake and nitrate reductase activity.

91) "Effect Of Anti Softening And Anti Browning Chemicals On Storage And Quality Of Fresh Cut Mangoes"- G.Kalpana.

ABSTRACT

A Set of 4 experiments on the effects of anti softening (calcium chloride 1 % and 2 %) and anti browning chemicals (ascorbic acid 1 % and 2 %) individually and in combinations (best of anti softening and anti browning) on the browning and shelf life and quality of fresh cut mango cubes of cv Baneshan and Totapari stored at different temperatures (ambient conditions, at 10^{O}C and 5^{O}C) was conducted at Horticultural research station, Sangareddy. In all the experiments, the design followed in Completely Randomized design with Factorial concept with three replications per treatment. Various physical parameters like browning index, shelf life (in days) , orgnaoleptic evaluation and biochemical parameters like TSS (^{O} Brix), titrable acidity, reducing sugars, total sugars, total phenols and ascorbic acid were estimated at regular intervals during the storage in all the experiments. The fruit cubes were analyzed on alternate day interval for their browning index, physicochemical and organoleptic characteristics.

Mango fruit of cv.Baneshan and Totapari were cut and treated with different chemicals and stored at different temperatures. At ambient temperatures, calcium chloride 2 % and ascorbic acid 2 % were found to be effective in reducing the browning index and recorded increased total phenols when compared to lower concentrations and untreated controls of mango cubes of both cv. Baneshan and Totapari. However, at ambient temperatures the mango cubes has a shelf life of less than two days in both the mango cultivars. The best anti softening (calcium 2 %) and anti browning chemical (ascorbic acid 2 %) based on the reduction of browning index in the mango fruit cubes of cv. Baneshan

and Totapari of first 2 experiments were used individually and in combinations and stored at 10^{o}C and 5^{o}C in 3rd and 4th experiment respectively .

At 10^{o}C and 5^{o}C, maximum shelf life of 10 days and 16 days respectively was observed in the mango fruit cubes of Totapari treated with combination of calcium 2 % and ascorbic acid 2 %. At low temperatures, mango fruit cubes of cv.Totapari have lowest browning and highest shelf life when compared to the cv.Baneshan. The combination treatment was more effective in reducing the browning index. The treatments which improved the shelf life have recorded lowest browning index. Highest total phenols were observed in the treatments which recorded lowest browning index and subsequently increased the shelf life irrespective of storage temperatures and mango variety tested. Highest total phenols indicate the lowest polyphenol oxidase enzymatic activity and thereby resulting in reducing browning effect in the treated fruit cubes. Further highest ascorbic acid content was observed in the fruit cubes which were treated with ascorbic acid 2 % individually or in combinations irrespective of the variety and storage temperatures. The TSS increased during storage of the fruit cubes during the storage period irrespective of the storage temperatures and varieties. However, the increase in sugars both reducing and non reducing sugars were slow when the fruit cubes stored at low temperatures indication and otherwise delayed ripening. The fruit cubes treated with calcium chloride 2 % and ascorbic acid 2 % recorded maximum organoleptic score irrespective of storage temperatures.

92) "Studies on the effect of growth regulators and micronutrients on growth and yield of okra (*Abelmoschus esculentus* (L.) Moench) cv Arka Anamika"- M. Usha Rani.

ABSTRACT

The present investigation entitled "Studies on the effect of growth regulators and micronutrients on growth and yield of okra (*Abelmoschus esculentus* (L.) Moench) cv Arka Anamika"was carried out during the *kharif* , 2011 at Horticultural College and Research Institute, Venkataramannagudem. The studies were carried out with 13 different treatments involving three growth regulators (GA_3, NAA and triacontanol) and three micronutrients ($ZnSO_4$, $FeSO_4$ and Borax), at two different concentrations sprayed at 20 and 40 DAS. The experiment was laid out in a randomized block design (RBD) with three replications and data on effect of different growth regulators and micronutrients on growth, yield, yield attributes and nutrient uptake was recorded and statistically analyzed.

Among the treatments GA_3 at 50 (T_2) ppm had resulted in maximum plant height (111.0 cm), minimum number of days to 50 per cent flowering (36.6) and highest number of nodes per plant at harvest (26.7), minimum number of days to first picking (42.6), increased number of days to final picking (84) and highest number of fruits per plant (22.6) compared to other treatments.

In case of yield attributes, the highest fruit length (25.5 cm) was recorded with triacontanol 4000 ppm, followed by triacontanol 2000 ppm (24.8 cm) and GA_3 50 ppm (24.3 cm). Among the micronutrients, $FeSO_4$ 0.2% recorded maximum fruit length (19.8 cm) followed by $ZnSO_4$ 0.4% (19.4 cm). The highest fruit diameter (7.5 cm) was recorded with NAA 20 ppm followed by borax 0.2% (7.3 cm).

The highest fruit weight (23.8 g) was recorded with GA_3 50 ppm followed by $ZnSO_4$ 0.4% (22.8 g). The GA_3 50 ppm and triacontanol 4000 ppm recorded he highest number of seeds per fruit (54.3) followed by $FeSO_4$ 0.4% (48.3) and $ZnSO_4$ 0.4% (48.3).

All the treatments showed increased the fruit yield per plant, fruit yield per plot and fruit yield per hectare compared to control. Among the treatments, GA_3 50 ppm recorded the highest fruit yield per plant (452.4 g), fruit yield per plot (16.19 kg) and fruit yield per hectare (199.9 q) followed by GA_3 25 ppm (373.2 g, 13.5 kg and 166.8 q) . Among the micronutrients, $FeSO_4$ 0.4 % recorded the highest fruit yield per plant (290.8 g), fruit yield per plot (10.51 kg) and fruit yield per hectare (129.8 q) followed by $FeSO_4$0.2% (284.0 g, 10.07 kg and 124.4 q) respectively.

Irrespective of growth regulators and micronutrients and their concentrations all the treatments recorded superior B: C ratios over the control. The highest benefit: cost ratio (5.06) was obtained with GA_3 50 ppm followed by GA_3 25 ppm (4.10) and triacontanol 4000 ppm (3.77).

All the treatments invariably enhanced the uptake of nitrogen, phosphorus and potassium over the control. Among the treatments, the highest nitrogen uptake (83.3 kg/ha) and potassium uptake (40.6 kg/ha) was observed in plants sprayed with triacontanol 4000 ppm, followed by GA_3 50 ppm (81.6 kg/ha and 39.6 kg/ha) respectively. The highest phosphorus uptake (22.9 kg/ha) was observed with GA_3 50 ppm, followed by triacontanol 4000 ppm (22.6 kg/ha).

93) "Studies on the effect of type of cuttings and IBA concentrations on the propagation of Fig (*Ficus carica*) cv. Poona fig under open and polyhouse conditions."- Sivaji Thota.

ABSTRACT

The present experiment entitled **"Studies on the effect of type of cuttings and IBA concentrations on the propagation of Fig (*Ficus carica*) cv. Poona fig under open and polyhouse conditions.''** were carried out during 2011-2012 at Horticultural College & Research institute, Dr. Y.S.R. Horticulture University, Venkataramannagudem, West Godavri district.

The present experiment was designed to study the effect of type of cuttings namely basal, middle, apical cuttings and different IBA concentrations at 1000 ppm, 2000 ppm, 3000 ppm in open and polyhouse conditions on days to first sprouting, root and shoot parameters and establishment percent in open field conditions with nine treatments and three replications in Factorial Randomized Block Design.

Among the type of cuttings, apical cuttings recorded minimum number of days for sprouting and basal cuttings recorded maximum rooting and shooting parmeters like percentage of rooted cuttings, survival percentage of rooted cuttings, number of roots, length of longest root, root fresh and dry weight, number of shoots per cutting, number of leaves per shoot, length of the longest shoot at 30,60 and 90 DAP, shoot fresh and dry weight, leaf area per cutting and establishment percentage of rooted cuttings in open field conditions in both open and polyhouse conditions.

Of all the IBA concentrations used, IBA 3000 ppm recorded minimum number of days for sprouting, maximum rooting and shooting parameters like percentage of rooted cuttings, survival percentage of rooted cuttings, number of roots, length of longest root, root fresh and dry weight, number of shoots per cutting, number of leaves per shoot, length of the longest shoot at 30, 60 and 90 DAP, shoot fresh and dry weight, leaf area per cutting and establishment percentage of rooted cuttings in open field conditions in both open and polyhouse conditions.

Among the treatment combinations, basal cuttings treated with 3000 ppm recorded maximum rooting and shooting parmeters like percentage of rooted cuttings, survival percentage of rooted cuttings, number of roots, length of longest root, root fresh and dry weight, number of shoots per cutting, number of leaves per shoot, length of the longest shoot at 30, 60 and 90 DAP, shoot fresh and dry weight, leaf area per cutting and establishment percentage of rooted cuttings in open field conditions in both open and polyhouse conditions.

Between open and polyhouse conditions, open conditions recorded minimum number of days for sprouting, maximum rooting parameters, establishment percent than cuttings grown under polyhouse conditions. Cuttings grown under polyhouse recorded maximum shooting parameters than open conditions.

It was found that basal cutting treated with IBA 3000 ppm grown in open environmental conditions is best for propagation of fig by cuttings.

94) "Performance of Different Varieties of African Marigold (*Tagetes erecta* L.) at Different Levels of Nitrogen "- Y.Nayomi Namratha.

ABSTRACT

The present experiment entitled "**Performance of Different Varieties of African Marigold (*Tagetes erecta* L.) at Different Levels of Nitrogen**" was undertaken at college farm of Horticultural College and Research Institute (HCRI), Venkataramannagudem, West Godavari district during *Rabi* of 2011-2012.

The experiment was carried out with 12 different treatments in a randomized block design (RBD) with factorial concept with three replications. The treatments include three varieties of marigold i.e. Pusa Narangi Gainda, Pusa Basanthi Gainda and V. R. Gudem Local at four levels of nitrogen i.e. control, 150 kg/ha, 300 kg/ha, 450 kg/ha. The data were recorded and statistically analysed to find out the effect of different treatments on the vegetative characters, flower characters, yield parameters, vase life, along with nitrogen uptake in different treatments.

Among the vegetative characters Pusa Basanthi Gainda with the application of 450 kg/ha (T_2N_3) recorded maximum plant height (77.85 cm). However, highest number of primary (36.87) and secondary (59.92) branches and maximum plant spread (E-W - 62.26 cm N-S - 62.12 cm) was recorded Pusa Narangi Gainda at the same dose of nitrogen (T_1N_3).

Among the flower characters, Pusa Narangi Gainda has recorded minimum number of days taken for 50 per cent bud initiation (31.10), 50 per cent flowering (42.70) and first picking (42.38) without nitrogen. However the number of flower per

plant (82.43), days taken for last picking (130.84), number of pickings (11.49) and the duration of flowering (68.70) were maximum in Pusa Narangi Gainda with 450 kg/ha. On the other hand, flower diameter (9.35 cm) and weight of 100 flowers (2576.31 g) was maximum in Local variety with 450 kg /ha (T_3N_3).

In case of yield parameters, Pusa Narangi Gainda with 450 kg/ha (T_1N_3) has recorded maximum yield per plant (1276.61 g), yield per plot (18.54 kg) and yield per hectare (299.48 t).

Maximum shelf life (7.33 days) was recorded in Pusa Narangi Gainda when no nitrogen was applied (T_1N_0). But nitrogen uptake (320.20 kg) was recorded maximum in the treatment T_1N_3 *i.e.* Pusa Narangi Gainda with 450 kg/ha (T_1N_3).

95) "Evaluation of Chrysanthemum (*Dendranthema grandiflora* Tzvelev) cultivars in alfisols of coastal Andhra Pradesh "- M. Ashok Reddy.

ABSTRACT

The present experiment entitled "**Evaluation of Chrysanthemum (*Dendranthema grandiflora* Tzvelev) cultivars in alfisols of coastal Andhra Pradesh**" was conducted at Horticultural College and Research Institute (HCRI), Venkataramannagudem, West Godavari district during 2011-2012. in field experiment, fifteen chrysanthemum cultivars were evaluated for growth and flower yield potential.

During evaluation studies with fifteen cultivars, positive and significant variations were observed for growth, flowering and yield. Among the varieties, maximum plant height was observed in Cv. Geethanjali, While the Cv. Aparijitha recorded maximum plant spread and number of primary branches per plant.

Days taken for flower bud initiation and days taken to 50 per cent flowerinhg varied significantly with the varieties. Local check was early to flower, whereas Cv. Red Stone was late to flower and Cv Punjab Gold ahs taken more number of days to 50 per cent flowering. Duration of flowering was maximum for local check and minimum for Cv. Aarijitha. Local check took less number days to first and final harvest which was on par with Cv. Meera.

Among the fifteen cultivars of chrysanthemum evaluated, seven were yellow in colour, three were red in colour, two were white in colour and the remaining three were lemon yellow, pinkish cream and purple in colour. The cultivars Meera and Aparitjitha had more number of flowers per plant and Cv. Aparijitha significantly superceeded the other varieties by recording more yield per plant and hectare. All the cultivars tested and better shelf life and vase life. Life compared to local check. Cv. Jaya recorded maximum shelf life and vase life.

In genetic studies, high genotypic and phenotypic coefficient of variation, heritability and genetic advance as per cent of mean was observed with number of flowers per plant, stalk length, flower disc diameter, number of ray florets per head, flower weight and flower yield per plant. In correlation studies, significant positive association of yield per plant was observed with number of flowers per plant, flower diameters, stalk length and number of ray florets yield of chrysanthemum. In path first

ranking components of flower yield in chrysanthemum were number of ray florets per head, number flowers per plant and flower weight as these characters directly influence the flower yield.

Thus, practical and promisable inference could be drawn from the experimentation for selecting suitable chrysanthemum cultivars. Selecting the cultivars like Aparijitha, Jaya and Red Stone hold a promising preference for the growth and flowering. Further, Cv. Jaya is also having better shelf life and vase life. Improvement of characters like numbers of flow4rs per plant, flower diameter, stalk length and number of ray florets per head will be useful in improving the yield of chrysanthemum flower

96) "Studies On The Effect Of Plant Densities And Nitrogen Levels On Growth And Curd Yield Of Cauliflower (*Brassica oleracea* var. *botrytis* L.) cv. Pusa sharad"- K.Indira.

ABSTRACT

The present investigation entitled "**STUDIES ON THE EFFECT OF PLANT DENSITIES AND NITROGEN LEVELS ON GROWTH AND CURD YIELD OF CAULIFLOWER (*Brassica oleracea* var. *botrytis* L.) cv. PUSA SHARAD"** was carried out in *Rabi* 2011-2012 at Horticultural College and Research Institute, Venkataramannagudem, Dr. Y. S. R. Horticultural University, West Godavari (Dist.).

The present study included 9 treatment combinations each replicated thrice in Factorial Randomized Block Design. The treatment combinations included three levels of plant densities (49,383 plants per ha, 37,037 plants per ha and 27,778 plants per ha) and three levels of nitrogen (100 kg/ha, 200 kg/ha and 300 kg/ha).

The results revealed that the cauliflower cv. Pusa Sharad responded well to plant densities as well as nitrogen levels. The vegetative parameter like plant height was favorably influenced by high density planting (D_1) and a nitrogen level of 300 kg/ha (N_3). Whereas, other characters like number of leaves per plant (30, and 60 DAT and at harvest), leaf area (at 30 and 60 DAT and at harvest) and plant spread (30 and 60 DAT and at harvest) were recorded maximum with lower plant density (D_3) and higher nitrogen level (N_3). The number of days taken to first curd appearance and maturity were found to be minimum with high plant density (D_1) and lower dose of nitrogen (N_1). The minimum per cent of abnormal curds was found with lower plant density (D_3) and higher dose of nitrogen (N_3).

The yield and yield attributing characters like curd diameter, curd weight showed better expression with lower plant density (D_3) and higher dose of nitrogen (N_3). However, the curd yield per plot and hectare were found significantly superior with the high density planting (D_1) and higher dose of nitrogen (N_3).

The interaction effect of plant densities and nitrogen levels were found non-significant with plant height (at 30 DAT), days to first curd appearance and maturity and N uptake. Significant differences were observed in plant height (at 60 DAT and harvest) and curd yield per plot and hectare, net returns and B: C ratio with the treatment combination of D_1N_3. However, number of leaves (at 30 and 60 DAT and at harvest), leaf area (at 30 and 60 DAT and at harvest), plant spread (at 30 and 60 DAT and at harvest), curd diameter and curd weight

were found to be significant with treatment combination of D_3N_3. The maximum per cent of abnormal curds was observed with treatment combination of D_1N_1.

97) "Studies on growth, yield and quality of different cultivars of banana in Andhra Pradesh"- K.Ganga Raju.

ABSTRACT

The present investigation entitled **"Studies on growth, yield and quality of different cultivars of banana in Andhra Pradesh"** was conducted at Horticulture Research Station, Kovvur, West Godavari during 2010-11. The objective of the experiment is to recommend a suitable cultivar with higher yield, quality and shelf life for commercial cultivation in coastal areas of Andhra Pradesh. In field experiment, eight banana cultivars *viz.*, Dwarf Cavendish, Robusta, Grand Naine, Martman, Tella Chakkerakeli, KBS-01, Yangambi Km-5 and Karpura Chakkerakeli were evaluated for growth and yield potential. The data collected from this experiment was further utilized for the genetic analysis *viz*., PCV, GCV, Correlation studies and Path coefficient analysis.

Among the cultivars of banana evaluated, the maximum plant height and pseudostem girth was recorded in Martman at shooting stage, the higher number of suckers were observed in Dwarf Cavendish, whereas the total leaves production was highest in Martman followed by Grand Naine, similarly green leaves were higher in Martman followed by Dwarf Cavendish. Leaf area was significantly highest in Martman followed by Tella Chakkerakeli and Karpura Chakkerakeli. The early shooting was observed in Dwarf Cavendish whereas late shooting was recorded in Martman and also same trend was observed in days taken to harvest. The growth rate for plant height was maximum at early stage of crop growth in KBS-01. With regards to LAI, Martman recorded the highest value.

Regarding to yield attributes, the maximum bunch weight and yield was recorded in Grand Naine. The number of hands per bunch and fingers in 2nd hand were higher in Karpura Chakkerakeli and Yangambi Km-5 respectively, whereas finger length and finger girth were highest in Grand Naine. With respects to the quality, Tella Chakkerakeli recorded significantly higher to characters *viz.*, TSS, total sugar content and reducing sugar content, but it had less shelf life. Comparatively the highest shelf life was recorded in Grand Naine.

In genetic studies, high Genotypic and Phenotypic coefficient of Variation, heritability and genetic advance as per cent mean were observed in leaf area, bunch weight and yield per plant. In correlation studies, significant positive association of yield per plant was observed with bunch weight, number of hands per bunch, fingers in 2nd hand and finger length at the genotypic and phenotypic level. Therefore improvement of these characters might be helpful in improving the yield in banana. With regards to Path coefficient analysis, the first ranking components of yield of banana were bunch weight, number of hands per bunch, fingers in 2nd hand as these characters directly influenced the bunch yield.

In banana, on basis of results obtained in the present investigation among eight cultivars of AAA and AAB genomic groups tested, Grand Naine recorded highest yield followed by Martman and Robusta. The variety, Grand Naine also recorded higher values for yield attributing characters such as bunch weight, number of hands per bunch and number of fingers in hand with longer shelf life. Therefore, above cultivar can be recommended for commercial cultivation in coastal areas of Andhra Pradesh.

98) "Studies on genetic variability, correlation, path analysis and divergence in brinjal genotypes (*Solanum melongena* L.)"- P.Vindya Rani.

ABSTRACT

The experiment entitled, **"Studies on genetic variability, correlation, path analysis and divergence in brinjal genotypes (*Solanum melongena* L.)"** was carried out during 2011-2012 at Horticultural Research Station, Dr. Y. S. R. Horticultural University, Venkataramannagudem, West Godavari district, Andhra Pradesh.

The present study was conducted with forty genotypes of brinjal along with four local checks Gulabi, Bhagyamati, Improved Bhagyamati and Arka Kesav in Randomized Block Design with two replications to study the genetic variability, heritability, genetic advance, correlation, path coefficient analysis and divergence for quantitative characters.

The study revealed significant differences among genotypes for different characters studied. Among all the genotypes studied, the check variety Gulabi recorded the highest yield and found suitable to the local agro-climatic conditions. The genotypes IC090132, DBT/OR-37, IC090785, IC285140, were found to be elite for different characters.

Among the characters studied, high PCV and GCV were observed for characters like plant spread, per cent fruit set of pseudo short styled flowers, number of flowers per inflorescence, number of fruits per cluster, number of fruits per plant, fruit length, fruit diameter, fruit weight, fruit yield per plant and fruit yield per hectare indicating high variability available in the germplasm for these characters for further improvement.

High heritability coupled with high genetic advance as per cent of mean was observed for characters like plant height, plant spread, number of primary branches per plant, number of secondary branches per plant, number of flowers per inflorescence, number of fruits per cluster, number of fruits per plant, fruit length, fruit diameter, fruit weight, fruit yield per plant and fruit yield per hectare indicated that these characters were least influenced by the environmental effects, and these characters were governed by additive genes and selection will be rewarding for improvement of such traits.

The fruit yield per plant had significant positive correlation with traits like number of flowers per inflorescence, number of fruits per cluster, number of fruits per plant, total number of harvests, yield per hectare, per cent fruit set of long, medium, short and pseudo short styled flowers, fruit length and crop duration signifying the importance of these traits in selection for yield and can be identified as yield attributing characters for the genetic improvement of yield in brinjal.

Yield per hectare, total number of harvests and days to first picking exerted a high positive direct effect on fruit yield per plant. The high direct effect of these traits appeared to be the main factor for their strong association with fruit yield per plant.

D^2 analysis based on Mahalanobis D^2 statistics grouped 44 genotypes of brinjal into seven clusters. Maximum inter cluster distance was observed between clusters III and VII whereas the intra cluster distance was maximum in cluster IV. Selection of parents from clusters III and VII for hybridization programme would help in achieving novel recombinants.

Maximum contribution towards genetic divergence by the characters *viz.*, fruit yield per plant, number of fruits per cluster, yield per hectare and number of flowers per inflorescence suggested that selection of one or two elite genotypes from such divergent clusters based on the above characters and crossing would result in more heterosis and superior hybrids.

99) "Studies on the effect of boron and iron on vegetative growth, flowering, corm and cormel production in gladiolus (*Gladiolus grandiflorus* L.) cultivars"- Vijay Ilapogu.

ABSTRACT

The present experiment entitled "**Studies on the effect of boron and iron on vegetative growth, flowering, corm and cormel production in gladiolus (*Gladiolus grandiflorus* L.) cultivars**" were carried out during 2011-2012 at Horticultural College & Research institute, Dr. Y.S.R. Horticulture University, Venkataramannagudem, West Godavari district.

The present experiment was designed to study the effect of boron and iron on vegetative growth, flowering, corm and cormel production in three gladiolus cultivars with 15 treatments and 3 replications in a Factorial Randomized block design.

Among the vegetative parameters, the treatment 1.5 per cent iron has significantly increased plant height, number of leaves, leaf length, leaf width and leaf area at 60 and 80 DAP except for 40 DAP as spraying was undertaken at 45 days after planting with highest values in cultivar White Prosperity followed by the cvs. American beauty and Darshan.

Among the floral parameters, the treatment 1.5 per cent iron recorded more number of days (82.27) to first floret appearance and 50 per cent flowering (97.01**)** over other treatments. Whereas, control recorded minimum number of days to first floret appearance and 50 per cent flowering. Similarly, the treatment 1.5 per cent iron recorded more number of spikes (1.55), spike length (80.64 cm), number of florets per spike (12.16) and days to first harvest (90.23), While the interaction of 1.5 per cent iron with cultivar White Prosperity recorded maximum spike length (96.53 cm) and maximum number of florets (14.03).

The treatment 1.5 per cent iron recorded maximum values for number of corms produced (1.62), corm size (5.72 cm), corm weight (53.57 g), while iron 1 per cent

recorded maximum number of cormels (28.86). In case of cultivars American beauty recorded maximum values for number of corms, corm size, corm weight, while minimum values were observed in cultivar Darshan. The maximum propagation coefficient was observed with 1.5 per cent iron (135.61) followed by 1 per cent iron. Cultivar Darshan recorded highest propagation coefficient (133.77) followed by cv. American beauty (123.71), while lowest propagation coefficient was recorded with cultivar White prosperity(109.82).

100) "Evaluation of vegetable cowpea (*Vigna unguiculata* L. Walp*)* varieties for high yield in coastal Andhra Pradesh"- K.Madhavi.

ABSTRACT

The present experiment entitled **"Evaluation of vegetable cowpea (*Vigna unguiculata* L. Walp*)* varieties for high yield in coastal Andhra Pradesh"** was carried out during 2011 at Horticultural College and Research Institute, Dr.Y.S.R. Horticultural University, Venkataramannagudem, West Godavri district.

Nine cowpea varieties *viz.* Arka Garima, Arka Suman, Bhagya Lakshmi, Vellayani Local, Khashi Khanchan, Baramasi, Gomthi, Pusa Komal and local check were evaluated in Randomized block design and replicated thrice. Data was collected on plant height, number of leaves per plant, number of primary branches per plant, dry matter accumulation per plant, number of days to first flowering, number of days to 50 per cent flowering, days to first picking, crop duration, pods per plant, pod length, pod girth, mean pod weight, number of seeds per pod, test weight and pod yield per plant. Data collected was subjected to analysis of variance to test significant difference among the varieties and to estimate variance components and other genetic parameters like genetic variability, heritability, genetic advance, correlation coefficients and path analysis.

Among the varieties evaluated Vellayani Local recorded the highest plant height (161.59 cm), primary branches (9.55), leaves (173.66), dry matter accumulation (90.33 g), crop duration (95.54 days), pod length (46.70 cm), pod girth (3.51 cm), mean pod weight (28.77 g), seeds per pod (21), test weight (169.46 g) and pod yield per plant (556.04 g) whereas it took the lowest number of days to first flowering (34.3 days), 50 per cent flowering (39.9 days) and first picking (42.9 days). Vellayani Local was followed by Baramasi for days to first flowering (35.1 days), Khashi Khanchan for 50 per cent flowering, pod girth (3.30 cm), mean pod weight (32.83 g) and test weight (148.80 g) and Arka Garima for days to first picking (45.7 days) and pod girth (3.30 cm). Gomathi recorded the highest number of pods per plant (25) followed by Vellayani Local (19.46). Bhagya Lakshmi recored the lowest growth and yield parameters except for mean pod weight (8.18 g) and test weight (129.20 g) which were lowest in Pusa Komal *ie*., 6.69 g and 113.23 g respectively.

Vellayani Local was followed by Gomthi for all the growth attributes *ie*., plant height (145.50 cm), primary branches (8.48), leaves (141.66) and dry matter accumulation (72.38 g) and pod yield per plant (400.56 g).

In the present study, high phenotypic coefficient of variation and genotypic coefficient of variation were observed for plant height, primary branches, leaves, dry matter accumulation, pod length, pods per plant, mean pod weight and pod yield per plant. All the characters under study exhibited highest heritability. Genetic advance as percentage of mean was high in all the characters except for days to first flowering, 50 per cent flowering, first picking and crop duration.

At genotypic level, pod yield per plant had high positive correlation with seeds per pod, primary branches, number of leaves, plant height, dry matter, crop duration, pod length, pod girth, pod weight and test weight. The path analysis showed that pod length, mean pod weight, days to first picking, plant height, dry matter accumulation and days to first flowering had direct positive effect on pod yield per plant.

101) "Studies on the effect of different post harvest chemicals on shelf life and quality of banana (*Musa paradisica* L.) cv. Grand Naine under ambient and refrigerated conditions " – Uma Devi .S

ABSTRACT

The present investigation entitled "**Studies on the effect of different post harvest chemicals on shelf life and quality of banana (*Musa paradisica* L.) cv. Grand Naine under ambient and refrigerated conditions"** was carried out during 2011-2012 at Horticultural Research Station, Kovvur, West Godavari district of Andhra Pradesh.

Experiment was carried out to know the effect of different post harvest chemicals on physico - chemical parameters and shelf life of banana fruits at ambient and refrigerated storage conditions. The treatments are T_1 (Sodium benzoate 500 ppm), T_2 (Sodium benzoate 500 ppm kept in polythene cover), T_3 (Ascorbic acid 1000 ppm), T_4 (Ascorbic acid 1000 ppm kept in polythene cover), T_5 (GA_3 150 ppm), T_6 (GA_3 150 ppm kept in polythene cover), T_7 ($KMnO_4$ 1%) and T_8 (Control).

A set of two experiments were conducted in Completely Randomized Design with factorial concept and the treatments were replicated three times. Physico-chemical characters were recorded at 3 days interval at ambient condition and at 5 days interval at low temperature storage.

It was observed that the physiological loss in weight, colour index, spoilage rates, pulp to peel ratio increased while the fruit firmness, peel thickness decreased irrespective of the treatments with the advancement of storage period. Total soluble solids, reducing, non-reducing, total sugars and acidity increased initially and then decreased towards the end of the shelf life whereas ascorbic acid decreased towards the end of the storage period.

Under ambient condition, fruits treated with GA_3 (150 ppm) kept in polythene cover (T_6) recorded lower values for physiological loss in weight (6.58%), colour development (3.08), spoilage (16.39%), pulp to peel ratio (2.01) and Total soluble solids (15.43 ^{0}B). Similarly, the above treatment recorded higher values for firmness (3.19 kg/cm^2), peel thickness (2.73 mm), acidity (0.34%), reducing sugars (8.56%), non-reducing sugars (4.46%), total sugars (13.02%) and ascorbic acid (11.25 mg/100gm) and thereby recorded more shelf life (18 days) than rest of the treatments. Organoleptic scoring for appearance, taste and over all acceptability was also higher when fruits were sprayed with GA_3 (150 ppm) kept in polythene cover. Next to T_6 (GA_3 150 ppm kept in polythene cover), $KMnO_4$ 1% (T_7) also recorded higher shelf life of 16.93 days.

At refrigerated storage, lower values for physiological loss in weight (5.19%), colour development (2.64), spoilage (15.93%), pulp to peel ratio (1.69) and Total soluble solids (13.98 ^{0}B) and higher values for firmness (3.85 kg/cm^2), peel thickness (2.97mm), acidity (0.35%), reducing sugars (8.03%), non-reducing sugars (4.40%), total sugars (12.43%), ascorbic acid (11.42 mg/100gm) and organoleptic score were observed with GA_3 150 ppm kept in polythene cover and thereby recorded higher shelf life of 40.42 days over other treatments. Next to T_6 (GA_3 150 ppm kept in polythene cover), SB 500 ppm kept in polythene cover (T_2) recorded higher shelf life of 16 days over control.

Under both the conditions, fruits treated with GA_3 (150 ppm) kept in polythene cover recorded higher shelf life and less spoilage of fruits as compared to other treatments.

102) "Studies On Post Harvest Drying And Storage Of Tomato (*Lycopersicon Esculentum* Mill) Seeds Using Desiccant (Zeolite) Beads And Their Effects On Seed Quality"- Peter Jackson.

ABSTRACT

An investigation was conducted on post harvest drying and storage of tomato (*Lycopersicon esculentum*) seeds using desiccant (zeolite) beads and their effects on seed quality was carried out during August 2011 to April 2012 at the Department of Seed Science and Technology, ANGRAU, Rajendranagar, Hyderabad. The treatments included seed drying and storage using zeolite beads and silica gel under ambient conditions. The experiment was laid out in completely randomized design with five treatments and three replications.

The study revealed that zeolite beads at 1:1and 0.5:1 bead seed ratio dried the seeds to the lowest moisture content of 4.4 and 7% respectively after 96 hours of seed drying which was followed by silica gel at 1:1 and 0.5:1 silica gel to seed ratio which lowered seed moisture to 7.2% and 8.4% after 96 hrs of seed drying, respectively. Germination percent and seedling length was not significantly affected by the extent and speed of seed drying after 96 hrs with desiccants zeolite beads and silica gel and remained the same as that of the control.

Studies made on the effect of zeolite beads (desiccant beads) on seed storability and seed quality revealed that among all treatments zeolite beads found to be superior in lowering seed moisture content to (2.1%) after 8 months of storage period, followed by silica gel (5.2%) at the end of storage period. Whereas, seeds stored in cloth bag (control) the seed moisture content per cent fluctuated with environmental conditions i.e. temperature and atmospheric relative humidity and at the end of storage recorded 9.6% seed moisture content. Seed stored with silica gel recorded the highest germination percent (89) which was on par with zeolite beads (88) at the end of storage period. The highest seedling root length of 13.4 and 13.3 cm was recorded by silica gel and zeolite beads respectively at the end of storage period. Zeolite beads recorded higher shoot length of 6.3 cm which was on par with silica gel (6.2 cm) followed by poly pouch (5.9 cm) and airtight container (5.9 cm) after 8 months of seed storage. Lower electrical conductivity of seed leachate of 0.289 dSm^{-1} was observed in seeds stored with silica gel, followed by zeolite beads (0.293 dSm^{-1}) at the end of storage period. Higher seedling dry weight of 83 mg was observed in seeds stored with silica gel which was on par with zeolite beads (81 mg), followed by poly pouch (80 mg) and airtight container (79 mg) at the end of storage period. Silica gel recorded higher vigour indices I and II of 1747 and 7387 respectively followed by zeolite beads 1728 and 7158 respectively, at the end of storage. Higher field emergence of 85% and 84% was observed in seeds stored with silica gel and zeolite beads respectively, at 8^{th} month, followed by poly pouch (79%) and airtight container (77%). No seed borne pathogen infection was observed in seed stored with zeolite beads or silica gel, higher seed infection of 5.33%, 4% and 3.33% was reorded in seeds stored in cloth bag, airtight container and poly pouch, respectively.

The maximum benefit cost ratio of (150:1) and (107:1) was recorded in seeds stored with desiccants zeolite beads and silica gel respectively at the end of storage period compared to control.

103) "Genetic Divergence Studies In Indigenous French Bean (*Phaseolus vulgaris* L.) Germplasm" P. Arun Kumar.

ABSTRACT

A field experiment was conducted to estimate the genetic variability and genetic divergence in French bean and to carry out yield component analysis through correlation and path analysis. Forty one local landraces along with three checks were sown in a randomized block design with three replications, during *rabi* 2011-12 at the NBPGR Regional Station, Rajendranagar, Hyderabad. The objective of the experiment was to identify divergent genotypes to be used as donor parents in hybridization programmes.

The analysis of variance revealed significant differences among genotypes indicating presence of sufficient amount of variability in all the characters studied. Wide range of variability was observed for marketable pod yield per plant, pod weight and number of pods per plant indicating the scope for selection of suitable breeding material for further improvement. On the basis of mean performance of the genotypes among traits studied, AUV-315, SRS-13456, SRS-13451and SRS-13443 were identified as promising lines for further crop improvement.

Genetic advance as percent of mean, Genotypic and Phenotypic coefficient of variation values was on par for most of the characters which indicates the influence of environment on the trait (s) was very negligible. The values observed were not confounding with the environment. It is a true reflection of homeostasis or buffer reaction of the gene. Thus, the true reflection of the trait is exhibited. A true agreement with GCV and PCV values for the eighteen characters was noticed, indicating additive genetic variance governing the high heritability coupled with high genetic advance as percent of mean. Thus, a breeder can employ simple selection which will be rewarding to improve all the characters except for days to last pod harvest wherein high heritability coupled with moderate GA as per cent of mean indicates additive and non additive action controlling the trait.

By Mahalanobi`s D^2 statistic, it could be inferred that 100 seed weight, followed by pod weight, protein content, days to first flowering, length of inflorescence, number of inflorescences per plant, number of pods per inflorescence, days to last pod harvest, plant height, marketable pod yield per plant, days to first pod harvest, pod length, number of flowers per inflorescence, number of pods per inflorescence and number of seeds per pod contributed maximum towards genetic divergence. The D^2 analysis partitioned forty four genotypes into seven clusters. Maximum divergence was observed between cluster III and VI, while minimum was between cluster VI and I. The maximum intracluster distance was shown by cluster V. The clusters showing high genetic divergence could be effectively utilized in heterosis breeding programme.

From correlation studies it was observed that marketable pod yield per plant has exhibited highly significant positive association with length of inflorescence followed by number of inflorescences per plant, number of flowers per inflorescence, number of

pods per inflorescence, pod length, pod weight, number of pods per plant and number of seeds per pod.

Path analysis revealed that maximum positive direct effect on marketable pod yield per plant was exhibited through number of pods per plant followed by pod weight and days to 50 percent flowering. Pod weight, pod width and number of seeds per pod exhibited high, moderate and low positive indirect effect on marketable pod yield per plant.

Thus, French bean genotypes exhibited high variability for all the qualitative traits *viz.*, plant, flower, pod and seed characters.

Therefore, it is emphasized to lay attention on the traits *viz.*, number of pods per plant, pod weight, days to last pod harvest, pod length and protein content in crop improvement programme of French bean in future.

104) "Effect of different priming methods on seed quality,biochemical changes on seed storability of china aster (Callistephus chinensis L. Nees)"
- B. Vimala.

ABSTRACT

A laboratory experiment, "Effect of different priming methods on seed quality,biochemical changes on seed storability of china aster (Callistephus chinensis L. Nees)" on 'kamini' variety was conducted at College of Horticulture, Dr.Y.S.R. Horticulture University, Rajendranagar, Hyderabad during the year 2011-12. The experiment was laid in factorial completely randomised block design comprising two factors viz., age of the seed and then other as priming method. Entire treatments were replicated four times.

The experiment consisted of four treatments *viz*., Hydro priming (T_1), Osmo priming(T_2), Halo priming(T_3), Unprimed as control (T_4), as one factor and two different ages of the seed *viz*., one year old seed (S_1) and Half year old seed (S_2) as another factor, which was replicated four times in completely randomized design with factorial concept. Seed samples were primed and kept in polyethythelene bag and stored for six months at ambient condition.

The treated seeds were used to observe different physiological and biochemical changes in each month upto a period of six months.The samples were drawn at monthly intervals for assessing the seed quality parameters *viz*., germination percentage, speed of germination, root length, shoot length, seedling vigour index, seedling dry weight, field emergence and electrical conductivity, lipid peroxidase activity and dehydrogenase activity.

The results emanated from the experiment revealed that, amongest the two different ages of the seed, six months old seed recorded maximum germination percentage, field emergence, speed of germination, seedling length, seedling dry weight and seedling vigor index and least was observed in one year old seed.

Amongest the priming treatments, priming of seed with KNO_3 @ 0.5% resulted in best performance of the seed regarding all the physiological and biochemical parameters followed by hydro priming. Unprimed seed (control) failed to exert any significant influence on the quality parameters. Storage of the treated seeds up to six months resulted in a gradual decrease in performance of the seed. However, storage of the six months old KNO_3 treated seed up to six months was found to be good compared to one year old seed regarding all the quality parametes.

As a whole, treating of the six months old seed with KNO_3 @ 0.5% gave good results compared to all other priming treatments as well as control in all respects.

105) "Preliminary characterization and evaluation of exotic lines of Tomato (*Solanum lycopersicum* L.)"- B. Rajasekhar Reddy

ABSTRACT

A set of 56 exotic collections of tomato (*Solanum lycopersicum* L.) along with 3 checks *viz.,* Arka Vikas, Marutham and Punjab Chhauhara were evaluated in an augmented block design with eight blocks at National Bureau of Plant Genetic Resources Regional Station, Hyderabad during *rabi*, 2011-12 for the purpose of studying genetic diversity, variability, heritability, genetic advance and character association for eighteen quantitative traits pertaining to growth, earliness, yield and quality.

The analysis of variance revealed significant difference for all the eighteen quantitative and fruit quality attributes. On the basis of the mean performance the genotypes EC677102, EC677047, EC671596, EC676783 were superior for earliness, EC676789, EC676799, EC676725, EC677076 and EC677072 were superior for fruit yield and the genotypes EC677076, EC676791, EC677130, EC581017 and EC581018 were superior for quality, which can be utilized in various breeding programmes for the development of either pureline variety or F_1 hybrids.

Multivariate analysis following Mahalanobis D^2 statistics revealed distinct clustering pattern and considerable genetic diversity within and between clusters and were grouped into seven clusters. The characters fruit weight, number of fruits per plant and plant height were found to be the potent factors in differentiating the genotypes under study.

From the coefficient of variation it is evident that the estimates of PCV were higher than the corresponding GCV for all the eighteen quantitative attributes indicating the greater influence of environment on the expression of these genotypes. The estimates of genotypic and phenotypic coefficient of variation were high for plant height, number of primary branches per plant, number of flowers per cluster, number of fruits per cluster, fruit length, fruit weight, fruit yield and ascorbic acid indicating the existence of high degree in the material under study offering ample scope for selection.

The attributes plant height,number of primary branches per plant, number of flowers per cluster, number of fruits per cluster, fruit length, fruit weight and acidity had high heritability (>60%) accompanied with high genetic advance over percent mean (>20%) indicating that most likely the heritability is due to additive gene action and the chances of fixing by selection is easy to improve these traits.

Simple correlation coefficient analysis revealed significantly positive association of plant height, number of primary branches per plant, number of flowers per cluster, fruit length and

width with fruit yield, while no association of ascorbic acid, acidity and TSS with shelf life.

Of the five quantitative traits which had positively significant association with fruit yield only number of primary branches per plant and number of flowers per cluster had positively high direct effect indicating that direct selection for these characters will be effective. For plant height, fruit length and fruit width whose direct effect is negligible to low but had significantly positive correlation with fruit yield, indirect selection will be effective.

On the whole, there was magnificient diversity and variability for all the eighteen characters under study. The characters plant height, number of primary branches per plant, number of flowers per cluster, fruit length and fruit width were identified as yield components in tomato. Considering these components as selection indices, the genotypes EC676789 and EC676799 were horticulturally superior with respect to indeterminate growth and fruit yield and the genotypes EC677076 and EC676725 were determinate, horticulturally superior for both fruit yield and fruit quality attributes.

106) "Integrated weed management in Okra (*Abelmoschus esculentus* (L.) Moench) Cv. Arka Anamika" – G. Jalendhar

ABSTRACT

A field experiment, **"Integrated weed management in Okra (*Abelmoschus esculentus* (L.) Moench) Cv. Arka Anamika"** was conducted at Model Orchard, College of Horticulture, Dr.Y.S.R. Horticultural University, Rajendranagar, Hyderabad during the year 2011-12. The experiment was laid out in Randomized Block Design with twelve treatments and replicated thrice.

The treatments consists of Pendimethalin C.S as pre emergence @0.6 kg a.i ha^{-1} (T_1), Alachlor as pre emergence @1.0 kg a.i ha^{-1} (T_2), Oxyfluorfen as pre emergence @0.15 kg a.i ha^{-1} (T_3), Pendimethalin C.S as pre emergence @0.6 kg a.i ha^{-1}followed by Quizalofop ethyl @ 50 g a.i ha^{-1} as post emergence at 2-3 leaf stage of weed (T_4), Pendimethalin C.S as pre emergence @0.6 kg a.i ha^{-1}+ one hand weeding at 30 DAS (T_5), Alachlor as pre emergence @1.0 kg a.i ha^{-1} followed by Quizalofop ethyl @50 g a.i ha^{-1} as post emergence at 2-3 leaf stage of weed (T_6), Alachlor as pre emergence @1.0 kg a.i ha^{-1} + one hand weeding at 30 DAS (T_7), Oxyfluorfen as pre emergence @0.15 kg a.i ha^{-1} followed by Quizalofop ethyl @50 g a.i ha^{-1} as post emergence at 2-3 leaf stage of weed (T_8), Oxyfluorfen as pre emergence @0.15 kg a.i ha^{-1}+ one hand weeding at 30 DAS (T_9), Quizalofop ethyl @50 g a.i ha^{-1} as post emergence at 2-3 leaf stage of weed (T_{10}), Farmers practice (2 HWs at 20 and 40 DAS) (T_{11}), Weedy check (Control) (T_{12}).

The results of the experiment revealed that among the different weed management practices, application of Oxyfluorfen as pre emergence @0.15 kg a.i ha^{-1}+ one hand weeding at 30 DAS recorded significantly the highest Weed Control Efficiency (WCE). The lowest Weed Index (WI) (3.76%) was recorded in farmers practice of hand weeding at 20 and 40 days after sowing.

Among the different weed management practices, Oxyfluorfen as pre emergence @0.15 kg a.i ha^{-1}+ one hand weeding at 30 DAS produced significantly the tallest

plants, higher crop dry weight, high leaf area index, high pod yield per plant (127.16 g) and higher total pod yield (13279 kg ha^{-1}).

The nutrient (N, P and K) uptake by crop was significantly the highest (78.53, 23.27 and 66.64 kg ha^{-1} N, P and K respectively) with application of Oxyfluorfen as pre emergence @0.15 kg a.i ha^{-1}+ one hand weeding at 30 DAS. The highest uptake of nutrients by weeds (63.81, 17.73 and 45.24 kg ha-1 N, P and K respectively) recorded in weedy check .

Among the different weed management practices the gross returns was maximum (Rs.146069 ha^{-1}), net returns (Rs.93,964 ha^{-1}) and B:C ratio (1.80) were also significantly higher with the application of Oxyfluorfen as pre emergence @0.15 kg a.i ha^{-1}+ one hand weeding at 30 DAS.

107) "Influence Of Storage Period And Packing Material On Quality Of Pomegranate Fruit And Arils *(Punica granatum* L.*)* cv. Bhagwa." B. Sekhar Goud.

ABSTRACT

A set of three experiments were conducted at post harvest technology laboratory, college of Horticulture, Rajendranagar during the year 2009-10 to study the influence of storage period and packing material on quality of pomegranate fruit and arils *(Punica granatum* L.*)* cv. Bhagwa. The fruit and arils stored under 4 ± 1^{o}c temperature.

As the storage period increased physiological loss in weight, external appearance, spoilage, firmness, sugars, ascorbic acid anthocyanins and the total soluble solids of fruits & arils decreased.

Among the different treatments, the pomegranate arils packed in polymeric bags resulted in increased shelf life of 6 days over the control at 4 ± 1^{o} C temperature. Pomegranate arils packed in 100gauge polymeric bags, the external appearance, shelf life, acidity, sugars, ascorbic acid and anthocyanins were found to be higher when compare to control. In case of storage process arils the TSS initially increased up to 4 days and thereafter declined. The overall acceptability of stored arils decreased with increase in storage period.

As the storage period increased the arils extracted from stored pomegranate fruits had shown decreased physiological loss in weight, shelf life, external appearance, acidity, sugars, ascorbic acid and anthocyanins. The fresh arils recorded higher physical and chemical parameters.

108) "Effect Of Modified Atmosphere Packaging And Hot Water Treatments On Shelf Life Of Custard Apple (*Annona squamosa* L.*)* Stored at ambient temperature " – G.Balakoti.

ABSTRACT

A set of six experiments on the effect of MAP (Polypropylene bags with different number of pores), hot water treatments (45^{0}C, 50^{0}C and 55^{0}C for 5, 10, 15 and 20 minutes) and

combination of MAP (two best treatments of MAP) and hot water treatments (two best treatments of hot water experiment) on shelf life of custard apple fruits cv. Balanagar and hybrid Atemoya X Balanagar stored at ambient temperature, was conducted at Fruit Research Station, Sangareddy, Dr YSRHU, A.P. The MAP and hot water experiments were laid out in completely randomized design with factorial concept with three replications and the combination experiments have three replications in MAP and five replications in hot water experiment. Various physical parameters like PLW (%),firmness (kg cm^{-2}), spoilage (%), ripening (%) and biochemical parameters like TSS (˚Brix), acidity (%), brix-acid ratio, sugars (%) and ascorbic acid (mg/100 g) were estimated at an interval of 2 days during storage in all the experiments.

Custard apple fruits cv. Balanagar and hybrid Atemoya X Balanagar were packed in polypropylene bags with different number of pores and stored at ambient temperature. Cultivar Balanagar, in polypropylene bags with 20 pores recorded significantly lower PLW, highest firmness, minimum ripening, minimum spoilage, superior appearance and overall acceptability than control fruits. Biochemical parameters like TSS and total sugars were significantly lower in fruits packed in polypropylene bags with 20 pores than control. Significantly highest acidity was recorded in fruits packed in polypropylene bags with 50 pores. Significantly lowest non-reducing sugars were recorded in fruits packed in polypropylene bags with 30 pores. Significantly highest ascorbic acid was recorded in fruits packed in polypropylene bags with 30 pores. The control fruits recorded a shelf life of 4.63 days. In cv. Balanagar, fruits packed in polypropylene bags with 20 pores recorded significantly lower spoilage and correspondingly increased the shelf life up to 7.99 days. In hybrid Atemoya X Balanagar, polypropylene bags without pores followed by fruits packed in polypropylene bags with 10 pores was recorded significantly lower PLW, highest firmness, minimum ripening. Significantly lowest spoilage and superior appearance and overall acceptability was recorded in fruits packed in polypropylene bags with 10 pores. Biochemical parameters like TSS, brix-acid ratio and total sugars were significantly lower in fruits packed in polypropylene bags with, without pores, 50 pores and 30 pores respectively than control. Significantly highest acidity was recorded in fruits packed in polypropylene bags with 50 pores. Significantly lowest non-reducing sugars and highest ascorbic acid were recorded in control and fruits packed in polypropylene bags with 30 pores respectively. The control fruits recorded a shelf life of 3.34 days. In hybrid Atemoya X Balanagar, fruits packed in polypropylene bags with 10 pores recorded significantly lower spoilage and correspondingly increased the shelf life up to 6.00 days.

Custard apple fruits cv. Balanagar and hybrid Atemoya X Balanagar were treated with hot water and stored at ambient temperature. In Balanagar, fruits treated with hot water at 50^0C for 15 minutes recorded significantly lowest PLW, highest firmness, minimum ripening, minimum spoilage, superior appearance and overall acceptability than control. Biochemical parameters like TSS, brix-acid ratio and total sugars were recorded lowest and ascorbic acid recorded highest in fruits treated with hot water at 50^0C for 5 minutes, 45^0C for 15 minutes, 55^0C for 15 minutes and 50^0C for 20 minutes. The hot water treated fruits recorded significantly highest acidity and the lowest non-reducing sugars than control. The control fruits recorded a shelf life of 4.63 days.In cv. Balanagar, fruits treated with hot water at 50^0C for 15 minutes recorded significantly lower spoilage and correspondingly increased the shelf life up to 7.46 days. In hybrid Atemoya X Balanagar fruits treated with hot water at 55^0C for 5 minutes recorded significantly lowest PLW, highest firmness, minimum ripening, minimum spoilage, superior appearance and overall acceptability than control. Biochemical parameters like TSS, brix-acid ratio and total sugars were recorded lowest in fruits treated with 55^0C for 20 minutes, 50^0C for 5 minutes and 55^0C for 10 minutes respectively. The hot water treated fruits recorded significantly the highest acidity and the lowest non-reducing sugars. The control fruits recorded

a shelf life of 3.34 days. In hybrid Atemoya X Balanagar, fruits treated with hot water at 55^0C for 5 minutes recorded significantly lower spoilage and correspondingly increased the shelf life up to 4.81 days.

Custard apple fruits cv. Balanagar and hybrid Atemoya X Balanagar were treated with hot water (two best treatments from 2nd experiment) and packed Polypropylene bags (two best treatments from 1st experiment) and stored at ambient temperature. In Balanagar, fruits treated at 50^0C for 20 minutes and then packing in polypropylene bags with 20 pores recorded significantly lowest PLW, highest firmness, minimum ripening, minimum spoilage, superior for appearance and overall acceptability. Biochemical parameters like TSS, brix-acid ratio and reducing sugars were observed to be the lowest and highest ascorbic acid content in fruits treated at 50^0C for 15 minutes and then packed in polypropylene bags with 20 pores, 50^0C for 15 minutes and then packed in polypropylene bags with 10 pores, 50^0C for 20 minutes and then packed in polypropylene bags with 10 pores, 50^0C for 15 minutes and then packed in polypropylene bags with 10 pores. Significantly highest acidity were recorded in treated fruits 50^0C for 20 minutes and then packed in polypropylene bags with 10 pores and 20 pores. The control fruits recorded a shelf life of 4.63 days. In cv. Balanagar, fruits treated with hot water at 50^0C for 20 minutes then packed in polypropylene bags with 20 pores recorded significantly lower spoilage and correspondingly increased the shelf life up to 8.00 days. In hybrid Atemoya X Balanagar, fruits treated with 55^0C for 10 minutes and then packing in polypropylene bags with 20 pores recorded significantly lowest PLW, highest firmness, minimum ripening, minimum spoilage, superior for appearance and overall acceptability. Biochemical parameters like TSS were observed to be the lowest and highest acidity at 55^0C for 5 minutes and then packed in polypropylene bags with 30 pores. Significantly lowest sugars and highest ascorbic acid content were recorded in treated fruits treated at 55^0C for 5 minutes and then packed in polypropylene bags with 20 pores. The control fruits recorded a shelf life of 3.34 days. In hybrid Atemoya X Balanagar, fruits treated with hot water at 55^0C for 10 minutes then packed in polypropylene bags with 30 pores recorded significantly lower spoilage and correspondingly increased the shelf life up to 5.04 days.

In custard apple cv. Balanagar, modified atmospheric packaging, hot water treatments and combination of both enhanced the shelf life of 3.36, 2.83 and 3.37 days over the control.

In custard apple hybrid Atemoya X Balanagar, modified atmospheric packaging, hot water treatments and combination of both enhanced the shelf life of 2.60, 1.41 and 1.64 days over the control.

109) "**The effect of cytokinins and silver nitrate on success of graft union in Thompson Seedless grape (*Vitis vinifera* L.)**"- **Ch. Sunitha**.

ABSTRACT

Investigation was carried out at Grape Research Station, Dr.Y.S.R Horticultural University, Rajendranagar, Hyderabad during October 2011 – December 2011 to find out the "**The effect of cytokinins and silver nitrate on success of graft union in Thompson Seedless grape (*Vitis vinifera* L.)**".

A set of two experiments were conducted in Completely Randomized Design one in open conditions and another in polyhouse conditions with same treatments for cuttings grafted on Dogridge and Salt Creek. The treatments included three different concentrations of BAP (150 ppm, 250 ppm and 350 ppm), kinetin (150 ppm, 250 ppm and 350 ppm), silver nitrate (50 ppm, 100 ppm and 150 ppm) and control, IBA 2000 ppm was commonly treated for all the basal end of the rootstock cuttings. The treated cuttings were grafted and analyzed for various growth parameters *viz.,* number of days required for bud sprouting of scion, percentage survival of grafts at 30, 40, 50 and 60 days interval, scion length after 30, 40, 50 and 60 days (cm)**,** number of leaves after 30, 40, 50 and 60 days(cm), number of roots after 60 days, mean root length after 60 days (cm)**,** maximum root length after 60 days (cm)**,** fresh weight of roots after 60 days (gm/graft)**,** dry weight of roots after 60 days (gm/graft)**,** fresh weight of shoot after 60 days (gm/graft)**,** dry weight of shoot after 60 days (gm/graft)**,** scion/stock ratio**,** callus degree and rooting degree.

All the growth parameters of grafts grown under polyhouse condition were better when compared to open condition while rooting parameters like number of roots, mean root length, maximum root length, fresh weight of roots after 60 days, dry weight of roots after 60 days and rooting degree were higher in grafts kept under open conditions.

Cuttings of Thompson seedless grafted on Dogridge rootstock recorded better results when compared to Salt Creek rootstock in both the growing conditions.

Among the various treatments cuttings treated with kinetin 250 ppm followed by BAP 250 ppm recorded beneficial effect on the early union of grafts and subsequent improvement in growth parameters. Though $AgNO_3$ has antisenescence effect which can help in delaying abscission by inhibiting ethylene synthesis it had little effect on graft success when compared to kinetin and BAP on both the rootstocks.

110) "Genetic Variability and Correlation Studies in Gladiolus (*Gladiolus grandiflorus* L.*)*"- N. Amrutha.

ABSTRACT

The present experiment entitled **"GENETIC VARIABILITY AND CORRELATION STUDIES IN GLADIOLUS (*Gladiolus grandiflorus* L.*)"*** carried out during the *rabi,* 2011-2012 at Horticultural Research Station, Dr. Y.S.R. Horticultural University, Venkataramannagudem, West Godavari district. The studies were carried out in Randomized Block Design using twenty cultivars to study the genetic variability, heritability, genetic advance and correlations among quantitative characters.

In the present study observations recorded for the following characters *viz.,* plant height at flowering stage and spike fully opened, number of leaves at flowering stage, number of days taken to 50 per cent flowering, number of days taken for basal floret to open, number of spikes per plant, spike length at harvest, number of florets per spike, floret colour, floret length, floret diameter, number of corms produced per mother corm, corm diameter, corm weight and cormel diameter.

There were highly significant differences for all the characters studied. Wide range of variability was observed for the characters like number of leaves at flowering stage, number of

spikes per plant, number of corms produced per mother corm and corm weight. These characters could be considered as useful selection criteria for differentiating the gladiolus cultivars.

Heritability and genetic advance as per cent of mean were high for plant height at flowering stage and spike fully opened, number of leaves at flowering stage, number of spikes per plant, spike length at harvest, number of florets per spike, floret diameter, corm diameter and corm weight. These characters offer scope for their improvement by applying selection pressure in breeding programme.

The correlation studies revealed that yield parameters like spike length at harvest exhibited significant positive correlation with number of florets per spike and floret size. Number of spikes per plant shown significant positive correlation with number of corms produced per mother corm and improvement of these traits will directly influence the yield of spikes.

111) "Studies On The Effect Of Plant Growth Regulators And Chemicals On Flowering, Fruit Set And Yield Of Mango (*Mangifera indica* L) cv.Banganpalli" – G.Vijaya Krishna.

ABSTRACT

A set of two experiments on the effect of plant growth regulators (paclobutrazol @ 3ml.m^{-1} canopy diameter, NAA @ 80 ppm), flower enhancing chemicals ($Ca(NO_3)_2$ @ 1%, H_3PO_4 @ 0.5%, KH_2PO_4 @ 1%) in combination with fruit set improving chemicals (spermidine @ 0.01 mM, spermine @ 0.1 mM, boron -20% @1.25gm.l^{-1}) on flowering, fruit set and yield of mango cv. Banganpalli, was conducted at Fruit Research Station, Sangareddy, Dr. YSRHU, A.P. In two experiments the design adopted is Randomized Block Design with factorial concept with three replications per treatment. Various vegetative parameters like number of new flushes (number), internodal length (cm), flowering parameters like time taken for panicle initiation(days), days taken for 50 % flowering and 100 % flowering per cent of flowering (%), panicle length and panicle breadth (cm), and yield parameters like number of days taken for fruit set from panicle initiation (days), number of fruits. panicle^{-1} (number), number of fruits tree^{-1}, fruit weight (gm) and yield (kg tree^{-1}) were recorded.

In the first experiment mango cv. Banganpalli trees were sprayed with flower enhancing plant growth regulators and fruit set improving chemicals alone and in combinations. Trees applied with paclobutrazol alone significantly reduced the vegetative growth in terms of minimum number of new flushes and internodal length compared to control trees. Paclobutrazol alone and in combinations with fruit set improving chemical significantly minimized the number of days taken for panicle initiation and increased the number of days taken for 50% and 100% flowering, duration of flowering along with increase in percent of flowering, panicle length and breadth when compare to control trees. Significantly the highest fruits.panicle^{-1}, fruit.tree^{-1} and yield was recorded in paclobutrazol (42.17 % over control) alone applied trees compare to control. Boron could able to significantly increase the fruit.panicle^{-1} and final retention of fruits and increased the fruit weight reflecting in the overall increase in yield by 37 percent. Among the combination, maximum increase in yield over control was recorded in paclobutrazol application along with spermidine (63.11 %), NAA +

spermidine (57.59 %), NAA + boron (60.03 %). However, based on benefit cost ratio spraying of NAA + Boron has give maximum benefit cost ratio of 3.06. Among the fruit set improving chemical boron either alone or in combination with NAA has recorded highest improvement in the yield.

In the second experiment mango cv. Banganpalli trees were sprayed with flower enhancing chemicals in combination with fruit set improving chemicals. Ca $(NO_3)_2$ applied trees has reduced significantly the number of new flushes and H_3PO_4 has significantly reduced the intermodal length. KH_2PO_4 and H_3PO_4 alone or in combinations with fruit set improving chemical significantly minimized the number of days taken for panicle initiation and increased the number of days taken for 50% and 100% flowering, duration of flowering along with increase in percent of flowering, panicle length and breadth when compare to control trees. Significantly the highest fruits.panicle^{-1}, fruit. tree^{-1} and yield was recorded in $Ca(NO_3)_2$ (29.81 % over control) applied trees and spermidine (48.72 % over control) applied trees alone compare to control. Spermidine alone could able to significantly increase the fruit.panicle^{-1} and final retention of fruits and increased the fruit weight reflecting in the overall increase in yield by 48.72 %. Among the combination, maximum increase in yield over control was recorded in Ca $(NO_3)_2$ + spermidine (87.27 %), H_3PO_4 + spermine (76.09 %), KH_2PO_4 + Spermine (74.51 %). However, based on benefit cost ratio spraying of Ca $(NO_3)_2$ + spermidine has give maximum benefit cost ratio of 3.35.

112) "Studies On The Effect Of Planting Density And Nutrient Management In Amaranthus (*Amaranthus tricolor* L.) cv. Arka Suguna"- Druga Prasad – A.

ABSTRACT

The present investigation entitled "**STUDIES ON THE EFFECT OF PLANTING DENSITY AND NUTRIENT MANAGEMENT IN AMARANTHUS (*Amaranthus tricolor* L.) cv. ARKA SUGUNA"** was carried out in *late kharif*, 2011 at Horticulture College and Research Institute, Venkataramannagudem, Dr. Y. S. R. Horticultural University, West Godavari District.

The present study included 15 treatment combinations each replicated thrice in Factorial Randomized Block Design. The treatment combinations included three levels of plant densities (3,33,333 plants per ha, 1,66,666 plants per ha and 1,11,111 plants per ha) and five nutrient combinations (100% Recommended dose of fertilizers, 50% Recommended dose of fertilizers + 1% 19-19-19, 25% Recommended dose of fertilizers + 2% 19-19-19, 50% Recommended dose of fertilizers + 1% 20-20-20 and 25% Recommended dose of fertilizers + 2% 20-20-20).

The study revealed that amaranthus cv. Arka Suguna responded well to plant densities as well as nutrient combinations. Among the growth parameters plant height was favorably influenced by high density planting (D_1) and nutrient combination of 25% Recommended dose of fertilizers + 2% 20-20-20 (N_5) whereas, number of leaves per plant, leaf area, branches per plant and dry matter production were recorded maximum with lower plant density (D_3) and the nutrient combination of 25% Recommended dose of fertilizers + 2% 20-20-20 (N_5). Among the yield and yield attributing character, leaf weight per plant and stem weight per plant showed better expression with lower plant density (D_3) and 25% recommended dose of

fertilizers along with foliar spay of 2% 20-20-20 (N_5). However, the green yield per plot and hectare were found significantly superior with the high density planting (D_1) and 25% recommended dose of fertilizers along with foliar spay of 2% 20-20-20 (N_5). The quality parameters like chlorophyll content and crude protein content responded negatively to high plant density, however, maximum values were recorded with low plant density (D) The interaction effect of plant densities and nutrient combinations were found significant with plant height, leaf area and dry matter production per plant. Plant height, total yield per plot and per hectare and B:C ratio was recorded maximum in the treatment combination of D_1N_5 *i.e.* higher plant density with increasing level of foliar spray. . However, number of leaves, leaf area, branches per plant, leaf weight per plant and stem weight per plant were found to be the highest with treatment combination of D_3N_5 *i.e.* lower plant densities with increase in the concentration of foliar spray.3) and 25% recommended dose of fertilizers along with six foliar spays of 2% 20-20-20 (N5) at one week after each havesting.

113) "**Effect of different herbicides and organic mulches on weed control in spray chrysanthemum (*Dendranthema grandiflora* L.*)*"- **B. Laxmi Chaitanya**.

ABSTRACT

An experiment entitled **"Effect of different herbicides and organic mulches on weed control in spray chrysanthemum (*Dendranthema grandiflora* L.*)"** was conducted during 2010-2011 in Kharif season at All IndiaCoordinated Research Project on Floriculture, Agricultural Research Institute, Rajendranagar, Hyderabad during the year 2010-2011. There are 11 treatments, each replicated thrice in RBD.

The treatments consists of Dried leaf mulch, Paddy straw, Hand weeding at 20, 40 and 60 DAT, Unweeded control, Quizalofop ethyl as post emergence @ 50 g a.i./ha, Pendimethalin as pre-emergence @ 1 kg a.i./ha, Alachlor as pre-emergence @ 1 kg a.i./ha, Pendimethalin as pre-emergence @ 0.75 kg a.i./ha+ Quizalofop ethyl as post emergence @ 50 g a.i./ha, Alachlor as pre-emergence @ 0.75 kg a.i./ha + quizalofop ethlyl as post emergence @ 50 g a.i./ha, Pendimethalin as pre-emergence @ 0.75 kg a.i./ha+ hand weeding, and Alachlor as pre-emergence @ 0.75 kg a.i./ha + hand weeding.

Hand weeding recorded vegetative parameters like maximum plant height, more number of branches per plant and maximum horizontal spread of the plant at 30, 60, 90, 120 days after transplanting.

Floral parameters like early flower initiation, maximum number of sprays per plant and early to reach full bloom (50 per cent flowering) were recorded in treatments hand weeding.

Diameter of the flower, spray length, no. of flowers per spray and weight of single flower were recorded highest in treatment hand weeding.

The weed control treatments also showed difference in duration of flowering. Among the treatments hand weeding showed extended period of flowering.

The maximum shelf life was exhibited by the treatments hand weeding

There was significant increase in no. of flowers per plant, weight of flowers per plant and weight of flowers per plot in treatment hand weeding.

At all the crop growth stages, unweeded control had significantly higher weed count and higher dry matter of weeds. In general, the weeds population and weeds dry weight were reduced with the application of herbicides and mulching materials.

Hand weeding was very effective in controlling weed density. The total dry weight of weeds differed significantly at all the stages of plant growth. However, unweeded control recorded maximum dry weight of weeds indicating higher density and luxurious growth of weeds.

Weed control efficiency was significantly varied due to weed control treatments. Hand weeding recorded the highest weed control efficiency followed by pendimethalin as pre-emergence + hand weeding. Weed index was lowest in treatment hand weeding and it was on par with pendimethalin as pre-emergence + hand weeding.

Plant nitrogen, phosphorus and potassium content were significantly varied with different weed control treatments. The treatment with hand weeding recorded highest nitrogen, phosphorus, potassium content followed by pedimethalin as pre-emergence + hand weeding.

The highest net returns and marginal returns were obtained in treatment hand weeding followed by pendimethalin as pre-emergece + hand weeding. Highest B:C was obtained in treatment pendimethalin as pre-emergece+ hand weeding.

From the results it can be summarized that among the weed control treatments pendimethalin pendimethalin as pre-emergence + hand weeding may be recommended for reducing weed population, better growth and for high yields. And also get more profits due to labour cost.

114) "Studies On The Performance Of Lawn Grasses Under Different Soil And Shade Conditions"- G. Venu Gopal.

ABSTRACT

The effect of soils and different shade levels on the growth and establishment of four lawn grass species were examined in two experiments at Floricultural Research Station and College of Horticulture, Rajendranagar,Hyderabad during 2011-12.

In the experiment-I, four lawngrass species viz., Argentine bahiagrass, Koreangrass, Bermudagrass (warm season grasses) and Perennial ryegrass(cool season grass) were evaluated on three soil types viz. red soil, black soil and laterite soil in a randomized block design. In the experiment-II the effect of shade on growth and performance of four lawngrasses (Argentine bahiagrass, Koreangrass, Bermudagrass and Perennial ryegrass) were studied under four levels of shade (0%,35%,50% ,75%) in split plot design.

Significant differences in morphological and physiological parameters of lawngrasses were observed in different soils. The Bermudagrass exhibited maximum shoot elongation, and ground coverage and was considered as the best species for all soil types. Argentine bahiagrass and perennial Ryegrasses relatively performed well under red and black soils. They recorded maximum stem thickness, leaf area, root length, root-shoot ratio, ground coverage and chlorophyll content in these soils. Bermuda and Koreangrasses had fine leaf texture when

compared to Argentine bahia and Perennial ryegrasses. Perennial ryegrass was the quickest lawn grass species to establish, and Koreangrass was the slowest during the entire study period. Further, long term studies are suggested to observe the soil compaction on these soils.

Lawn grasses responded differently under various shade levels. Species dependent differences are observed for all parameters.Leaf elongation was maximum under shade conditions compared to full light (0% shade) in all lawn grasses.The ground coverage decreased with increase in shade level (from 0% to 75%). This reduction was high for perennial ryegrass. Under shade conditions chlorophyll content increased in Perennial ryegrass upto 50% shade and decreased in Bermuda and Koreangrass upto 75% shade and remained unchanged in Argentine bahiagrass. A strong reduction in root biomass was observed in all species with increase in shade.

Based on the performance, it was concluded that under 35% shade the performance of all grasses were satisfactory while under 50% shade,Argentine bahia and Koreangrass were found highly satisfactory, under full sunlight (0% shade) Bermuda performed well.Although Koreangrass had slow grow rate, it was found to be the best species under shade for its outstanding turf quality . All the turfgrass species declined in quality under high shade levels (75%) as indicated by increase in thin, succulent vertical growth, and less dense turf stand.

115) "Effect of sowing time, seed rate and harvesting duration on growth, yield and quality of Ashwagandha (*Withania somnifera* Dunal)"- T. Swathi.

ABSTRACT

A field experiment entitled "**Effect of sowing time, seed rate and harvesting duration on growth, yield and quality of Ashwagandha (*Withania somnifera* Dunal)**" was conducted at Herbal Garden, Dr.Y.S.R Horticultural University, Rajendranagar, Hyderabad during the year 2009-10. The experiment was laid out in Completely Randomized Block Design with factorial concept comprising eighteen treatments with sowing time, seed rate and harvesting duration. The treatment combinations included two dates of sowing August 15th and August 30th , three seed rates viz., S_1(10 kg/ha), S_2(12 kg/ha) and S_3(14 kg/ha), three harvesting durations viz., H_1(150 DAS), H_2(180 DAS) and H_3(210 DAS).

The results of the experiment revealed that August 15th sown crop recorded early germination and maximum germination percentage.

Maximum plant height and leaf area were recorded in August 15th sown crop. Among the interactions, August 15th sown crop with a seed rate of 14 kg/ha and harvesting duration of 180 DAS ($D_1S_3H_2$) recorded maximum plant height and leaf area. Maximum number of branches was recorded when harvested at 210 days after sowing. Among the interactions, the crop sown on August 30th with a seed rate of 14 kg/ha and harvested at 210 DAS ($D_2S_3H_3$) recorded highest number of branches.

Flowering and fruiting characters like early flowering and 50 per cent flowering, early fruit set and 50 per cent fruit set were recorded in August 15th sown crop. Among the interactions, August 15th sown crop with a seed rate of 12 kg/ha and harvesting duration of 180 DAS ($D_1S_2H_2$) and August 15th sown crop with a seed rate of 12 kg/ha and harvesting duration of 210DAS ($D_1S_2H_3$) recorded early flowering.

August 30th sown crop with a seed rate of 10 kg/ha and harvesting duration of 210 DAS ($D_2S_1H_3$) recorded early 50 per cent flowering and early fruit set and 50 per cent fuit set.

Yield characters like length of the root, thickness of the root, fresh root yield, dry root yield, days for harvesting of seed and total biomass production recorded maximum in August 15th sown crop. Minimum was resulted in August 30th sown crop. Among the interactions, August 15th sown crop with a seed rate of 12 kg/ha and harvesting duration of 210 DAS ($D_1S_2H_3$) recorded maximum length of the root, thickness of the root, fresh and dry root yields.

Early days for harvesting of seed and maximum total biomass production were recorded in August 15th sown crop with a seed rate of 12 kg/ha and harvesting duration of 180 DAS ($D_1S_2H_2$).

Quality parameters like starch content, reducing sugars and non reducing sugars resulted highest in August 30th sown crop. Among the interactions, August 30th sown crop with a seed rate of 12 kg/ha and harvesting duration of 210 DAS ($D_2S_2H_3$) recorded highest starch content and non reducing sugars. Highest reducing sugars were recorded in August 30th sown crop with a seed rate of 12 kg/ha and harvesting duration of 150 DAS ($D_2S_2H_1$). Similar results were recorded in August 30th sown crop with a seed rate of 10 kg/ha and harvesting duration of 150 DAS ($D_2S_1H_1$).

116) "Studies on the effect of fertilizer levels and plant densities on growth and yield of ambrette (*Abelmoschus moschatus* Medic.) – K. Stella."

ABSTRACT

A field experiment, "**Studies on the effect of fertilizer levels and plant densities on growth and yield of ambrette (*Abelmoschus moschatus* Medic.)** was conducted at Herbal Garden, College of Horticulture, Dr. Y. S. R Horticultural University, Rajendranagar, Hyderabad during the year 2010-2011. The experiment was laid out in split plot design with nine treatments and replicated four times.

The treatment consisted of (T_1)- 50 × 30 cm + N P K at 75: 50: 40 kg per ha, (T_2)- 50 × 30 cm + N P K at 100: 50: 50 kg per ha, (T_3)- 50 × 30 cm + N P K at 125: 50: 60 kg per ha, (T_4)- 50 × 40 cm + N P K at 75: 50: 40 kg per ha, (T_5)- 50 × 40 cm + N P K at 100: 50: 50 kg per ha, (T_6)- 50 × 40 cm + N P K at 125: 50: 60 kg per ha, (T_7)- 50 × 50 cm + N P K at 75: 50: 40 kg per ha, (T_8)- 50 × 50 cm + N P K at 100: 50: 50 kg per ha, (T_9)- 50 × 50 cm + N P K at 125: 50: 60 kg per ha.

The results of the experiment revealed that the maximum plant height and internodal length was recorded with fertilizer dose of N P and K at 125: 50: 60 kg per ha. A spacing of 50 × 30 cm recorded maximum plant height and internodal length. The interaction of spacing of 50 × 30 cm and

fertilizer dose of 125: 50:60 kg per ha recorded maximum plant height and internodal length.

The leaf area was maximum at a spacing of 50 × 50 cm. A fertilizer dose of N P and K at 100: 50: 50 kg per ha recorded maximum leaf area. Interaction of fertilizer level of N P K at 100: 50: 50 kg per ha and a spacing at 50 × 50 cm recorded maximum leaf area.

The dry matter production recorded maximum at a spacing of 50 × 50 cm. A fertilizer dose of N P K at 125: 50: 60 kg per ha recorded maximum dry matter production. Interaction of fertilizer level of N P K at 125: 50: 60 kg per ha and a spacing at 50 × 50 cm recorded maximum dry matter production.

Days to initiation of flowering and days to 50 per cent flowering were minimum at a spacing of 50 × 30 cm. A fertilizer dose of N P K at 100: 50: 50 kg per ha recorded minimum days to initiation of flowering and days to 50 per cent flowering. Interaction of spacing of 50 × 30 cm and fertilizer dose of N P K at 100: 50: 50 kg per ha recorded minimum days to initiation of flowering and days to 50 per cent flowering.

Number of seeds per pod and seed weight per pod was maximum at a spacing of 50 × 50 cm. A fertilizer dose of N P K at 125: 50: 60 kg per ha recorded maximum number of seeds per pod and seed weight per pod. Interaction of spacing of 50 × 50 cm and fertilizer dose of N P K at 125: 50: 60 kg per ha recorded maximum number of seeds per pod and seed weight per pod.

Seed yield per plant and were recorded to be maximum at a spacing of 50 × 50 cm. A fertilizer dose of N P K at 100: 50: 50 kg per ha recorded maximum seed yield per plant and seed yield per ha.

Seed yield per plot and seed yield per ha was maximum at a spacing of 50 × 30 cm. A fertilizer dose of N P K at 100: 50: 50 kg per ha recorded maximum seed yield per plot and seed yield per ha. Interaction of fertilizer levels of N P K at 100: 50: 50 kg per ha and a spacing of 50 × 30 cm recorded maximum seed yield per plot and seed yield per ha.

Oil content was maximum at a spacing of 50 × 30 cm. A fertilizer dose of N P K at 100: 50: 50 kg per ha recorded maximum oil content (%). Interaction of fertilizer levels of N P K at 100: 50: 50 kg per ha and a spacing of 50 × 30 cm recorded maximum oil content.

The nitrogen content in leaves was maximum at a spacing of 50 × 50 cm. A fertilizer dose of N P K at 100: 50: 50 kg per ha recorded maximum nitrogen content. Interaction of fertilizer levels of N P K at 100: 50: 50 kg per ha and a spacing of 50 × 50 cm recorded maximum nitrogen content in leaves after harvest.

The phosphorus content in leaves was maximum at a spacing of 50 × 50 cm. A fertilizer dose of N P K at 100: 50: 50 kg per ha recorded maximum phosphorus content. Interaction of fertilizer levels of N P K at 100: 50: 50 kg per ha and a spacing of 50 × 40 cm recorded maximum phosphorus content in leaves after harvest.

The potassium content in leaves was maximum at a spacing of 50 × 50 cm. A fertilizer dose of N P K at 100: 50: 50 kg per ha recorded maximum potassium content. Interaction of fertilizer levels of N P K at 100: 50: 50 kg per ha and a spacing of 50 × 50 cm recorded maximum potassium content in leaves after harvest.

117) "**Effect of dehydration and storage on quality of banana flour *(Musa paradisiaca* Var Kovvur Bontha*)"* – B. Uma Bharani**."

ABSTRACT

Investigation was carried out in laboratory of post harvest technology, College of Horticulture, Rajendranagar, during the year 2011-2012 to find out the "Effect of dehydration and storage on quality of banana flour *(Musa paradisiaca* Var Kovvur Bontha*)"* .A set of two experiments were conducted.

First set of experiment was conducted to improve the quality of banana flour in Completely Randomized Design with factorial concept using different pretreatments and drying methods. Different pretreatments used were blanching and sulphitation at different times and their combinations. Each pretreated banana fruit slices were dried individually in tray drier and infrared drier and ground into flour. Various physico-chemical parameters like recovery (%), TSS (ºbrix), acidity (%), total sugars (%), reducing sugars (%)**,** non-reducing sugars (%)**,** ascorbic acid content (mg/100g), organoleptic evaluation, crude protein (%), ash content (%) were analysed for the flour thus obtained from different pretreatments and drying methods.

Among different pretreatments, sulphitation of samples in 0.25 % KMS for 10 and 20 minutes showed better results with respect to the TSS, sugars and ascorbic acid content of the flour, blanching at 60ºC for 5 minutes + 0.25% KMS for 20 minutes showed better results with respect to crude protein and organoleptic qualities of the banana flour while blanching at 60ºCfor 5 minutes resulted in better retention of acidity.

Drying methods did not show any significant difference on nutritive value of the flour except for TSS and sugars which were recorded better in tray drying than infrared drying.

Flour obtained from the fruit slices blanched at 60ºC for 5 minutes + 0.25% KMS dip for 20 minutes before dehydration followed by tray drying was of best quality since this combination recorded maximum score for various parameters studied.

Second set of experiment was conducted in Completely Randomized Design to study the effect of different packaging materials on nutritional and physico-chemical composition of banana flour during storage. Best combination from the earlier experiment viz., blanching of banana slices at 60ºC for 5 minutes + 0.25% KMS dip for 20 minutes followed by tray drying was used to prepare banana flour which was then packed in six different packaging materials viz., 200 gauge polythene bags, 300 gauge polythene bags , 100 gauge polypropylene bags, 200 gauge polypropylene bags, aluminium foil covers and glass bottles and stored at ambient conditions for six months. Various physico-chemical parameters like moisture (%), loss or gain in weight (%), TSS (ºbrix), total sugars (%), reducing sugars (%), non reducing sugars(%), ascorbic acid content(mg/100g), acidity (%), microbial load (cfu), crude protein (%), ash content (%) were analysed in monthly intervals.

During storage, moisture, weight, ash, TSS and sugars of the flour showed an increasing trend while acidity, ascorbic acid, and crude protein showed a decreasing trend. There was no microbial contamination for the initial two months which increased further during storage. However the microbial load remained within the prescribed limits as given by ICMSF. Aluminium foil covers were found to be best followed by glass bottles in retaining various nutrients and quality attributes and recording lesser microbial load when compared to the other packaging materials.

The flour prepared from bananas, pretreated by blanching at 60ºC for 5 minutes + 0.25% KMS dip for 20 minutes and dehydrated in a tray drier, packed in aluminium foil covers and glass bottles could be stored successfully for six months at ambient conditions.

118) "Effect of chemicals and plant growth regulators on dormancy, flowering, corm production and vase life in gladiolus *(Gladiolus grandiflorus* L.)" T. Padma latha.

ABSTRACT

The present investigations entitled **"Effect of chemicals and plant growth regulators on dormancy, flowering, corm production and vase life in gladiolus *(Gladiolus grandiflorus* L.)"** were carried out for two years during 2008-09 and 2009-10 at Herbal Garden, Rajendranagar, Hyderabad. For this study, four experiments were conducted with the gladiolus cultivars Darshan and Dhiraj.

In effect of growth regulating chemicals and plant growth regulators on dormancy, flowering and corm and cormel production experiment, cv. Darshan recorded significantly minimum number of days to sprouting and maximum percentage of sprouting over cv. Dhiraj. Pre-planting soaking of corms for 24 h was significantly more influencing over 12 h soaking in decreasing the number of days to sprouting and increasing corm sprouting percentage and number of buds sprouted per corm. Thiourea (TU) 2% and salicylic acid (SA) 150 ppm were highly effective in reducing the number of days taken for sprouting over control. TU 2%, SA 150 ppm, KNO_3 1.5% and GA_3 150 ppm significantly increased sprouting percentage of corms over control and recorded maximum number of sprouts per corm.

The cv. Darshan was early in flowering and performed better than the cv. Dhiraj with respect to vegetative and floral parameters. Likewise, pre-planting soaking of corms for 24 h improved vegetative and flowering attributes. SA 150 ppm followed by TU 2% were more effective in increasing vegetative growth and reducing number of days to flowering. SA 150 ppm followed by GA_3 150 ppm were effective in improving flowering performance of gladiolus cultivars in terms of increasing number of spikes per plant, spike length and weight and number of florets per spike.

The cv. Dhiraj recorded maximum corm size and weight, maximum number of small cormels and total number of cormels per plant over cv. Darshan. Cv. Darshan recorded higher number of big cormels. Soaking of corms for 24 h significantly improved corm and cormel attributes. SA 150 ppm and TU 2% were effective in increasing number of corms per plant. Maximum corm size and weight were recorded with SA 150 ppm and GA_3 150 ppm. Maximum number of big cormels per plant and cormel weight was recorded with TU 2%, GA_3 150 ppm and SA 150 ppm. Control recorded significantly more number of small cormels and total number of cormels per plant.

With respect to studies on the influence of plant growth regulator sprays on flowering and corm and cormel production, cv. Darshan differed significantly with cv. Dhiraj in respect to plant height, leaf area and flowered earlier. GA_3 150 ppm followed by brassinosteroid (BR) 10 ppm recorded maximum plant height, number of leaves and leaf area during vegetative growth and resulted in earlier flowering. TIBA 100 ppm, TIBA 50 ppm and control recorded significantly minimum leaf area and showed delayed flowering. Cv. Dhiraj recorded maximum percentage of plants flowered than the cv.Darshan. Cv. Darshan recorded significantly highest spike length and inter floret length and minimum days to wilting of spike over the cv. Dhiraj. Cv. Dhiraj was significantly superior over cv. Darshan in respect of number of florets per spike and longevity of spike. Maximum spike length and weight, number of florets per spike and spike field life were recorded with GA_3 150 ppm. Lowest values in respect of flower parameters were recorded with TIBA treatments and control.

The cv. Darshan recorded maximum number of big cormels per plant and cormel weight. Cv. Dhiraj recorded maximum number of small cormels per plant. Foliar sprays of BR 10 ppm and GA_3 150 ppm significantly increased number of corms produced per plant, corm size and corm weight and propagation coefficient. Number of big cormels per plant and total number of cormels were recorded significantly higher with BR 10 ppm and was followed by TIBA 100 ppm. BR 10 ppm and TIBA 100 ppm produced maximum number of small cormels per plant. Weight of cormels per plant was recorded maximum with BR 10 ppm and GA_3 150 ppm.

In studies on effect of chemicals and plant growth regulators on induction of flowering in gladiolus plants raised from cormels, cv. Darshan was significantly superior over cv. Dhiraj in respect of vegetative parameters and earliness in flowering. Foliar sprays of SA 150 ppm and $Ca(NO_3)_2$ 1% recorded maximum vegetative growth and were significantly effective in induction of early flowering in the plants raised from cormels. These treatments also recorded significantly highest flowering percentage. Control and TIBA 100 ppm took maximum number of days to flowering. Number of spikes per plant, spike length and weight, number of florets per spike and spike longevity were maximum with salicylic acid at 150 ppm. Cv. Dhiraj recorded maximum corm size and number of small cormels per plant. BA 100 ppm and SA 150 ppm recorded maximum number of corms per plant, corm size, corm weight, number of big and small cormels per plant, total number of cormels per plant and weight of cormels per plant.

In the post harvest experiments, pre-planting soaking of corms for 24 h recorded significantly less number of days to first floret opening. Pre-planting treatment of corms with

SA 150 ppm recorded minimum days to first floret opening, maximum number of florets opened at a time per spike and vase life.

The cv. Darshan recorded maximum diameter of the second fully opened floret and higher vase life than cv. Dhiraj due to pre-harvest foliar sprays of plant growth regulators. Pre harvest foliar sprays of GA_3 150 ppm, BR 10 ppm and CPPU 5 ppm induced earliest first floret opening and recorded maximum values for number of florets opened at a time per spike, diameter of second full opened floret and vase life.

The cv. Darshan recorded maximum diameter of the second fully opened floret and higher vase life than cv. Dhiraj due to pre-harvest foliar sprays of plant growth regulators and chemicals on the plants raised from cormels. Significantly minimum days to first floret opening, maximum number of florets opened at a time per spike and diameter of second floret were recorded with pre harvest foliar sprays of SA 150 ppm, BA 100 ppm and $Ca(NO_3)_2$ 1%. Maximum vase life of 7.17 days was recorded with SA 150 ppm.

119) "Studies On Different Stages Of Maturity, Post Harvest Treatments, Packaging And Storage On Extension Of Shelf Life Of Mango (*mangifera indica* L.) cv. Baneshan"- A. Kiran Kumar

ABSTRACT

Mango is a climacteric fruit generally harvested green, which ripens during the marketing process (transport and storage) with an irregular storage and short shelf life period between harvest and consumption. To evaluate different maturity stages of harvest, post harvest 1-MCP chemical treatment and packing material most suitable for enhancing the shelf life of commercial popular Baneshan mango fruits for along distance shipment this experiment was conducted.

The present investigation was executed by form ulating four experiments, tow experiments were carried out in the year 2009-10 and the best treatments from these experiments were taken and another two experiments were carried out in the year 2010-11 on mango cv. Baneshan fruits harvested at two different maturity stages (7-8 TSS, M1 and 8-9 TSS, m2) stored at 12.5 ^{0}C +_ 1.

In the experiment "Effect of post harvest chemical treatments and storage intervals at low temperature (12.5^0 C) on shelf life of mango cv. Baneshan at two stages of maturity" After 14 days and 28 days of cold storage PLW (%) was lower in 1- MCP 2000 ppb treated fruits at ambient conditions followed by 1-MCP 1000 ppb and Firmness was better in fruits treated with 1- MCP 2000 ppb followed by 1- MCP 1000 ppb. The colour attainment in 1-MCP treated frits was better. Other quality parameters pH, TSS and Total sugars were better in 1- MCP treated fru8its was better. Followed by 1-MCP 2000 ppb. Among the maturity stages TSS and Total sugars were better in M2 with 1-MCP 1000 and 2000 ppb.

In the Second experiment "Effect of post harvest chemical treatments and storage intervals at low temperature (12.5^0 C) on shelf life of mango cv. Baneshan at two stages of maturity" the $_{O2\ (\%)}$ and CO2(%) in Extend bags was maintained constituently throughout the storage period without moisture accumulation, where as the O2 level in polypropylene bags was not consistent. Firmness and colour development was better in extend bag stored frits at ambient conditions. After 14 days and 28 days of cold storge Xtend bag stored frits has more pH. Qualithy parameters like TSS, Acidity, Reducing sugars and Total sugars of Baneshan

mango were better in Xtend bags. Xtend bags stored fruits had better Tss after 14 and 28 days of cold storage at ambient conditions. All the physico – chemical parameters were better in M2.

In the Third experiment "Effect of post harvest chemical treatments and storage intervals at low temperature (12.5^0 C) on shelf life of mango cv. Baneshan at two stages of maturity" the O2 (%) and CO2(%) levels were consistent mango cv. Baneshan frits packed in the Xtend bags. Though the firmness was more in 1-MCP + polypropylene bags after 14dasy and 28 days of cold storage and at ambient conditions the process of ripening and colour change were not uniform, where as the fruits in 1- MCP+ X tend bags had acceptable firmness during the storage period. pH, TSS and Tirable acidity, Ascorbic acid and Total sugars were influenced only after 28 days of cold storage, were better in 1- MCP + Xtend bags treatments at ambient conditions. Beta Carotene in peel and pulp was better 1 - -CP+X tend bags had acceptable firmness during the storage period. pH, TSS and Titrable acidity, Ascorbic acid and Total sugars were influenced only after 28 days of cold storage, were better in 1 – MCP Xtend bags after 14 and 28 days of cold strograge and at ambient conditions. Maturity stages had no influence on firmness immediately after removal from cold strogae that is on 'O' day. Maturity sstage M2 had better colour development . TSS was better in maturity stage M2 and Ascorbic acid was less in m2 when compared to m1 maturity stage. Beta carotne in peel and pulp was more m2.

In the fourth experiment "Effect of 1-MCP treatment and combination of 1- MCP and Xtend bags on shelf life of mango cv,. Baneshan at two stages of maturityu stored for 28 days. 32 days and 36 days, 40 days and 44 days at 12.5 C + 1" the spoilage per cent increased in 1 – MCP + xtedn bags and this may be due to accumulation of moisture in the bags after 28 days. Though the natural ripening of mango fruits exposed to 1 – MCP and held in Xtend bags was delayed, the results indicated that there was moisture accumulation in the bags after 28 days. Extended holding of 1 – MCP treaded fruit in xtend bags encouraged physiological and pathological deterioration.

In conclusion, 1 – MCP application in combination with MAP can be used effectively to reduce the respiration raes and fruit softendingt during cold storage and to Xtend the storage and life up to 28 days by 4 days of ripening at ambient condtions without any adverse effects on the quality of ripe fruit. Overall 1-MCP 1000 ppb on 8-9 TSS maturity stage (m2) was effective in extension of shelf life of Baneshan mangoes up to 28 days at 12.50c _c 1 _ + four days at ambient temperature.

120) "Studies on Morphological and Molecular Divergence in Egg Plant *(Solanum melongena* L.*)*"- R. Rajya Lakshmi.

ABSTRACT

An investigation was carried out to evaluate genetic diversity in eighty four accessions of brinjal with morphological and molecular markers. Eleven RAPD and twenty two SSR markers were employed to analyse the molecular genetic diversity and to establish phylogenetic relationships among the accessions.

The 26 quantitative and 25 qualitative morphological characters were evaluated. Analysis of variance on twenty six quantitative traits revealed significant differences among eighty four accessions for almost all the characters studied thus indicating wide

variation among the accessions. The high values of PCV and GCV observed for leaf, flower and fruit characters and yield per plant indicated that the variability observed among the brinjal accessions was high.

High heritability coupled with high genetic advance was recorded for leaf blade length, leaf blade width, leaf petiole length, days to 50% flowering, number of flowers per cluster, relative style length, days to first fruit set, per cent fruit set, days to harvest, number of fruits per cluster, number of fruits per plant, fruit length, fruit breadth, fruit pedicel length, fruit pedicel thickness, fruit weight, fruit volume, seed weight, seed diameter and yield per plant which revealed the involvement of additive gene action.

The number of flowers and fruits per cluster, fruit length and number of fruits per plant were positively associated with fruit yield and among themselves and were identified as major yield components emphasizing the significance of direct selection of these components for genetic improvement of yield. Path coefficient analysis also revealed that fruit set percentage, fruit weight, number of fruits per plant, relative style length and number of flowers and fruits per cluster had high direct effect and positive correlation values with per plant yield . Hence, these characters may be selected in yield improvement programme.

Multivariate analysis following Mahalanobis D^2 statistic grouped the entire germplasm into ten distinct clusters. The inter cluster distance was maximum between cluster III and IX (136.52) indicating that the accessions of these clusters are highly divergent. Yield per plant and seed weight had maximum contribution to total divergence and crosses between the accessions of these clusters (cluser III and IX) may be effective and result in high heterosis.

The RAPD analysis with 11 primers produced 100 per cent polymorphism with an average of 4.5 polymorphic bands per primer and detected a moderate level of genetic variation among brinjal accessions with average similarity coefficient of 0.36. Accession-specific RAPD markers were detected only for two accessions such as IC112726 (OPP 17) and IC336793 (OPB 20). The UPGMA analysis grouped the accessions into two main clusters *viz.*, cluster I (forty four accessions) and cluster II (forty accessions).

In total, thirty alleles were detected using twenty two SSR primer pairs and Polymorphic Information Content (PIC) values ranged from 0.1491 (155) to 0.5293 (117). UPGMA analysis grouped the accessions into two main clusters *viz.*, cluster I (eighty two accessions) and cluster II (two accessions). Among the commercial check varieties, Bhagyamati, Shyamala and Gulabi were included in one cluster while Arka Keshav was included in another cluster. The exotic collections *viz.*, EC386589, EC316280, EC384565, EC385380, EC329327 and EC316226 were included separately in different clusters along with other indigenous collections. The genetic diversity observed by SSR and RAPD markers indicated presence of considerable variation among the germplasm lines.

The SSRs were able to differentiate exotic collections and commercially grown check varieties into different groups to some extent, indicating that SSRs is a more accurate and reliable method than RAPD to study the genetic diversity in brinjal.

121) "Studies on the Effect of Maturity Stages and Post Harvest Treatments on the Storage Behaviour of Guava Fruits (*Psidium guajava* L.) cv. Lucknow-49 at Low Temperature"- V. Phani Deepthi .

ABSTRACT

The present investigation entitled, "Studies on the effect of maturity stages and post harvest treatments on the storage behaviour of guava fruits (*Psidium guajava* L.) cv. Lucknow-49 at low temperature" was carried out during 2009-10 and 2010-11 at Post Harvest Laboratory, College of Horticulture, Rajendranagar, Hyderabad. A set of five experiments were conducted using mature green (MG) and colour turning (CT) stages of guava fruits with post harvest application of calcium compounds, growth regulators, polyamines and LDPE packaging to study the physico-chemical, physiological and biochemical changes during storage at low temperature (10 ± 1^0C and 90±5% RH) and subsequent post-low temperature storage (22 ± 4^0C and 60±5% RH).

Irrespective of maturity stages and post harvest treatments used, weight loss, skin colour (Hunter 'L', 'a' and 'b'), ripening and spoilage of guava fruits increased progressively, whereas fruit firmness decreased consistently during storage. However, TSS, reducing and total sugars increased gradually and reached their peaks on days coinciding with ripe stage followed by a gradual decline towards the end of storage. Pectin, acidity and ascorbic acid contents also decreased with the advancement of storage period. Organoleptic parameters such as, fruit appearance and colour, flavour, taste and overall acceptance gradually increased till ripe stage, while fruit texture declined continuously. Activity of cell wall degrading enzyme, PME declined gradually till the fruits became ripe, but increased in the over-ripe stage. Likewise, respiration and ethylene production rates also exhibited similar pattern of increase coinciding with ripe stage followed by a decline later. However, the peak in respiration rate was preceded by maximum ethylene production in guava during storage at 10 ± 1^0C.

In studies on the effect of maturity stages and calcium compounds on storage behavior of guava, mature green stage fruits exhibited longer storage life and better fruit quality with all the treatments compared to colour turning stage during storage at 10 ± 1^0C. Among the calcium treatments, $Ca(NO_3)_2$ -2% recorded highest storage life with reduced losses in weight, firmness, spoilage and skin greenness (negative Hunter 'a'). Fruit ripening and yellow colour development (Hunter 'L' and 'b') were also delayed. All the quality and organoleptic parameters were found to be better with the treatment $Ca(NO_3)_2$ -2%. There were also considerable reductions in the rate of respiration, ethylene production and activity of cell wall degrading enzyme (PME) with the post harvest application of $Ca(NO_3)_2$ -2%.

With respect to studies on the influence of maturity stages and growth regulators on the storage behavior of guava, mature green stage fruits exhibited longer storage life and better fruit quality with all the treatments compared to colour turning stage during storage at 10 ± 1^0C. Post harvest application of GA_3 -300ppm exhibited better retention of green colour (negative Hunter 'a') and acidity of guava fruits. It also retarded the rate of ripening and yellow colour development (Hunter 'L' and 'b') with concomitant reduction in ethylene production. However, maximum storage life and organoleptic quality was observed with BA -50ppm. The treatment BA -50ppm effectively maintained higher firmness, reduced weight loss and spoilage percentage of guava fruits with highest TSS, sugars, ascorbic acid and pectin contents during storage, besides lowering the rate of respiration and PME activity.

In studies on the effect of maturity stages and polyamines on the storage behavior of guava, mature green stage fruits exhibited longer storage life and better fruit quality with all the treatments compared to colour turning stage during storage at 10 ± 1^0C. The treatment SPM -200ppm was found superior in maintaining higher firmness, skin greenness (negative Hunter 'a'), acidity, pectin content and texture of guava fruits during storage. It was also proved effective in retarding the rate of ripening and yellow colour development (Hunter 'L' and 'b'). There was a prominent reduction in ethylene production and PME activity with post harvest application of SPM -200ppm. However, storage life, quality and organoleptic parameters were found to be better with the post harvest application SPM -100ppm. SPM -100ppm effectively reduced weight loss, spoilage loss and rate of respiration during storage.

In the fourth experiment, the best post harvest treatments from 1st, 2nd and 3rd experiments *viz*., $Ca(NO_3)_2$ -2%, BA -50ppm and SPM -100ppm were combined with six packaging treatments (LDPE 100 and 200 gauge with 1%, 2% and without ventilation) to study the storage behavior of mature green (MG) guava fruits at low temperature. Losses in weight, firmness, skin greenness (negative Hunter 'a'), yellow colour development (Hunter 'L' and 'b'), ripening and spoilage of fruits were significantly reduced with post harvest application of SPM -100ppm packed in 200 gauge LDPE bags without ventilation. The treatment SPM -100ppm in combination with 200 gauge LDPE without ventilation also recorded highest storage life, fruit texture, acidity and ascorbic acid contents of fruits during storage at 10 ± 1^0C. The quality (TSS and sugars) and organoleptic (fruit flavour and taste) parameters were found to be superior in guava fruits treated with either $Ca(NO_3)_2$ -2% or BA -50ppm packed in 200 gauge LDPE bag with 1 percent ventilation during storage at 10 ± 1^0C. However, fruit appearance and colour, and overall acceptance were better in SPM -100ppm in combination with 200 gauge LDPE with 1 percent ventilation.

Among the post-low temperature storage (PLTS) experiments, MG guava fruits taken on 5th, 10th, 15th and 20th days of low temperature storage recorded a maximum shelf life of 8, 6, 6 and 4 days respectively at ambient conditions (22 ± 4^0C and 60±5% RH). However, MG guava fruits treated with either $Ca(NO_3)_2$ -2% or BA -50ppm, removed from 200 gauge LDPE bags with 1 percent ventilation taken on 10th day of low temperature storage could retain highly acceptable organoleptic quality upto 6 days at 22 ± 4^0C. Also, MG guava fruits treated with either SPM -100ppm, removed from 200 gauge LDPE bags with 1 percent ventilation taken on 15th day of low temperature storage could retain better acceptable organoleptic quality upto 6 days at 22 ± 4^0C. Similarly, MG guava fruits treated with either SPM -100ppm, removed from 200 gauge LDPE bags without ventilation taken on 20th day of low temperature storage could retain good acceptable organoleptic quality upto 4 days at 22 ± 4^0C.