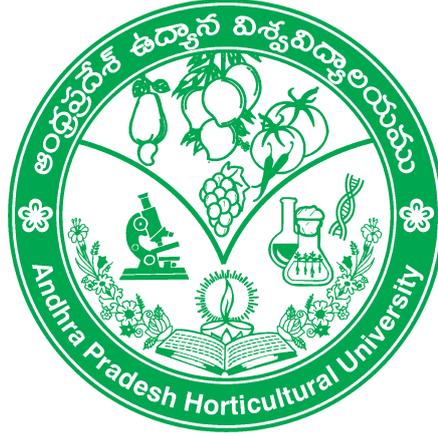


ANDHRA PRADESH HORTICULTURAL UNIVERSITY

VENKATARAMANNAGUDEM, WEST GODAVARI DISTRICT-534 101(A.P.)



PROCEEDINGS OF
ZONAL RESEARCH & EXTENSION ADVISORY COUNCIL MEETING
2010-2011

COASTAL ZONE

(Srikakulam, Vizianagaram, Visakhapatnam, East Godavari,
West Godavari, Krishna, Guntur districts)

23rd APRIL, 2010

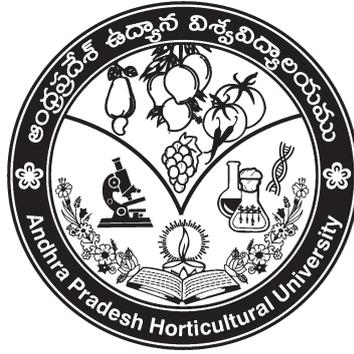
HORTICULTURAL RESEARCH STATION

Venkataramannagudem, West Godavari District - 534 101 (A.P.)

ANDHRA PRADESH HORTICULTURAL UNIVERSITY

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ANDHRA PRADESH HORTICULTURAL UNIVERSTIY

COASTAL ZONE

ZONAL RESEARCH AND EXTENSION ADVISORY COUNCIL MEETING 2010-2011

23rd APRIL, 2010

PROGRAMME

Venue: Rice Millers Association Hall, Near Railway Station, Tadepalligudem

INAUGURAL SESSION (TECHNICAL SESSION-I) (PRESENTATION OF RESEARCH RESULTS)

11.00 AM	Invocation & Lighting of Lamp	
11.05 AM	Welcome	Dr.K.V.Seshadri Director of Extension, APHU, Tadepalligudem
11.10 AM	President's opening remarks	Dr.S.D.Shikhamany, Hon'ble Vice-Chancellor, APHU, Tadepalligudem.
11.15 AM	Presentation of Research Highlights	Dr.K.Purushotham, Director of Research, APHU, Tadepalligudem
11.40 AM	Address by	Sri T.V. Subba Rao, Asst. Director of Horticulture Srikakulam
11.40 Noon	Presidential Remarks	Dr.S.D.Shikhamany, Hon'ble Vice-Chancellor, APHU, Tadepalligudem.
11.50 AM	Vote of thanks	Dr.P. Babu Ratan, Senior Scientist, HRS, Venkataramannagudem.

TEA BREAK : 12.00 Noon TO 12.20 PM

TECHNICAL SESSION-II

Crop wise production technology recommendations

Time 12.20 - 2.30 PM

Major problems faced by Horticultural farmers of Guntur, Krishna, East Godavari, West Godavari, Visakhapatnam, Vizianagaram and Srikakulam districts.

Guntur District	Farmers, Asst. Director of Horticulture
Krishna District	Farmers, Asst. Director of Horticulture
West Godavari District	Farmers, Asst. Director of Horticulture
East Godavari District	Farmers, Asst. Director of Horticulture
Visakhapatnam District	Farmers, Asst. Director of Horticulture
Vizianagaram District	Farmers, Asst. Director of Horticulture
Srikakulam District	Farmers, Asst. Director of Horticulture
Chairman	Dr.K.Purushotham, Director of Research
Co-Chairman	Dr.K.V.Seshadri, Director of Extension
Rapporteurs	Dr.A.Sujata, Principal Scientist (Ento.) Dr.S.Surya Kumari, Senior Scientist (Hort.)

LUNCH BREAK 2.30 PM - 3.30 PM

TECHNICAL SESSION-III

(Crop wise presentations & Interaction with Farmers and Horticultural Officers and Identification of Research and Extension Gaps)

Time 3.30 -4.30 PM

Resource persons		Crop
Dr.B.Gautham, Prl.Scientist (H) Hort. Res. Station, Ambajipeta	:	Coconut
Dr.B.V.K.Bhagwan, Sr. Scientist (H) Hort. Res. Station, Kovvur	:	Banana

Dr.A.Bhagwan, Sr. Scientist (H) : Mango
Fruit Res. Station, Sangareddy

Dr.V.Vijaya Bhaskar, Sr.Scientist (H) : Oil Palm & Cocoa
Hort. Res. Station, Vijayarai

Dr.R.V.S.K.Reddy, Sr. Scientist (H) : Vegetables
Vegetable Res. Station, R'nagar

Dr.S.Surya Kumari, Sr.Scientist (H) : Chilli
Hort. Res. Station, Lam, Guntur

Dr.K.T.Venkata Ramana, Sr. Scientist (H) : Cashew
Cashew Res. Station, Bapatla

Dr.P.Babu Ratan, Sr.Scientist (H) : Sapota
Hort. Res. Station, Venkataramannagudem

Chairman : Dr.K.Purushotham, Director of Research, APHU

Co-Chairman : Dr.K.V.Seshadri, Director of Extension, APHU

Rapporteurs : Dr.G.Ramanandam, Senior Scientist (Hort.)

Smt.M.Kalpana, Scientist (Hort.)

Smt. Mamata, Scientist (Hort.)

TECHNICAL SESSION-IV (PLENARY SESSION)

Time 4.30 - 5.30 PM

- **Presentation of Research, Extension gaps and Recommendations.**
- **Finalization of Research & Extension Programmes**

Chairman : Dr. K.Purushotham, Director of Research, APHU

Co-Chairman : Dr.K.V.Seshadri, Director of Extension, APHU

Vote of Thanks : Dr.B.Gautham, Principal Scientist (Hort.)

ANDHRA PRADESH HORTICULTURAL UNIVERSITY
VENKATARAMANNAGUDEM, WEST GODAVARI DISTRICT-534101

**PROCEEDINGS OF THE ZONAL RESEARCH AND EXTENSION ADVISORY COUNCIL MEETING OF
COASTAL ZONE 2010 -2011 HELD AT TADEPALLIGUDEM, WEST GODAVARI DISTRICT**

**VENUE : RICE MILLERS' ASSOCIATION HALL, NEAR ANDHRA BANK,
RAILWAY STATION ROAD, TADEPALLIGUDEM, Date: 23rd April, 2010**

The Zonal Research and Extension Advisory Council (ZREAC) meeting of Coastal Zone - 2010-2011 (Srikakulam, Vizianagaram, Visakhapatnam, East Godavari, West Godavari, Krishna, Guntur districts of Andhra Pradesh) was held on **23rd April, 2010** at Rice Millers' Association Hall, Tadepalligudem. Officers from Department of Horticulture and other line departments, scientists of APHU, NRC (oil palm), progressive farmers from the coastal districts participated in the meeting.

The Inaugural session was chaired and presided over by Dr.S.D.Shikhamany, Hon'ble Vice-Chancellor, APHU. The other dignitaries on the dias are Dr.K.Purushotham, Director of Research, Dr.K.V.Seshadri, Director of Extension, Dr.D.V.Raghava Rao, Dean of Horticulture, Dr.P.Suryanarayana Reddy, Registrar, Dr.K.Hari Babu, Dean of Student Affairs, Dr.B.Srinivasulu, Controller of Examinations, Smt. D. Suhasini D.D.H. (AEZ) Vijayawada and Sri T.V.Subbarao, A.D.H., Srikakulam.

The council reviewed the work done during 2009-2010 in different research stations of this zone. Crop production recommendations, problems encountered in the cultivation of different horticultural crops was thoroughly discussed. Important research and extension gaps were identified and possible useful solutions were drawn.

TECHNICAL SESSION-I (INAUGURAL SESSION)

Dr.K.V.Seshadri, Director of Extension, APHU extended warm welcome to the participants, distinguished invitees from different organizations, press and media.

Dr.S.D.Shikhamany, Hon'ble Vice chancellor, APHU presided over the session. In his opening remarks he welcomed the gathering who have attended the meeting with enthusiasm inspite of the havoc caused on the previous day by the gales. He explained that the primary objective of these deliberations is to identify the farmer's problems and design appropriate research programmes. He also instructed the scientists to survey the affected areas immediately after the meeting along with the officials of the Department of Horticulture and suggest measures to combat the present situation.

Dr.K.Purushotham, Director of Research, in his address expressed his gratitude for the farmers and officers of the department of Horticulture who attended the meeting in spite of gales. He has informed that Rayalaseema is having 8 research stations, Coastal Andhra is having 12 research stations and Telangana is having 12 research stations. He further enlisted the research stations working in the zone and mandate crops for these research stations. He felt the damage caused by the recent thunder storms is huge and felt the need for immediate assessment of the damage. He further requested the respective ADHs of the districts to present the problems faced by the farmers of their districts.

The Director of Research brought to the notice of the house, that already nine modal nurseries are being established by APHU under SHM. Regarding the closed research station at Uddanam, he promised to put the best efforts to establish new research stations for the three districts of the north coastal region (Srikakulam, Vizianagaram and Vizag). Sufficient funds are available under RKVY and packaging technology for Mango will be developed soon. Regarding stem borer problems in cashew, he emphasized the need for community approach to control the problem. Similarly, eriophyid mite control measures are available and requested the farmer to follow these to minimize the damage. He also presented the salient research results of the experiments carried out during 2009-2010 on different horticultural crops in different research stations of the Coastal Zone.

Later Sri Sitarama Raju garu, REC Member, APHU in his address expressed the many difficulties like high cost of cultivation, difficulties in procuring labour and high labour cost, which are troubling the farmers. He suggested to develop model farms in each district to demonstrate various economically viable crops and technology. He further suggested that interaction between farmer and scientist will improve the farmers economic condition. Further, he requested the farmers and scientists to utilize Animal Husbandry for improving the economic stability of the farmer

Sri T.V.Subba Rao, ADH (Srikakulam) in his address opined that due to shortage of staff, many times unable to meet the farmers extension requirements. In this context, conducting ZREAC meeting by APHU is a land mark. Lack of supply of quality planting material and high incidence of pests and diseases are the major problems faced by the farmers. Many gardens of coconut are infested with Red palm weevil and Mite, particularly in Uddanam mandal. He requested to revive the research station which was existed at Uddanam Mandal, Srikakulam Dt. and expressed that packaged fruits give higher price to the farmers and hence more research on packaging to be taken up. He suggested to activate farmers groups to take up cost intensive

operations like digging of borewells can be taken up on cooperative basis collectively. He gave the feed back that there was low mite incidence in inter cropped coconut gardens. He requested the scientists to take up research on this issue. In cashew, stem borer and tea mosquito bug are the major problems that needs attention.

Dr.S.D.Shikamany, Hon'ble Vice-Chancellor requested the participants to evolve strategies to attain stable production even under adverse conditions. He opined that due to lack of proper quality, packaging and market intelligence, farmers are getting lower prices. Hence, suggested to evolve research programmes to achieve quality produce with low environmental pollution and low investment. He asked the scientists to develop technology for off-season production of vegetables. He suggested that the Dept. of Horticulture to build up the infrastructure for storage of perishable vegetables and fruits. Regarding model farms, he said that the technology generated by the APHU will be demonstrated as on farm trials. He brought to the notice of the house that efforts will be made by the University to establish new research stations in the North Coastal region. He further emphasized the importance of cluster approach farming for better returns. He narrated several advantages of such system like mass storage and transit, better infrastructure, easy processes, cost reduction, year long access to raw materials etc.. He requested the horticultural farmers to pool their strength and through cluster approach they should achieve greater goals. Regarding planting materials, the efforts of APHU and model nurseries will not meet even 0.5 to 1% of state's requirement. Hence, APHU and Dept. of Horticulture should work together to improve their scenario.

Dr. P. Babu Ratan, Senior Scientist, (Horticulture) HRS, Venkataramannagudem proposed the Vote of thanks for the Inaugural Session.

SALIENT RESEARCH RESULTS

COCONUT

At Ambajipeta

The dual purpose dwarf coconut cultivar Gangabondam, was released as Gauthami Ganga (Accession No. IND 003S) during the year 2007 for commercial cultivation in the state for tender nut water. The variety is precocious with average nut yield, sweet and very high water content with mellowing kernel and high copra content compared to the local cultivar East Coast Tall. The variety is one of the best combiner contributing to the development of number of hybrids in the country.

A selection from Fiji tall, Kera Bastar (Accession No.IND 004S) was released at National level for commercial cultivation in the states of Andhra Pradesh, Maharashtra, Tamil Nadu & Chathishgarh. The variety Kera Bastar performed better with 25.48% increase in nut yield (nuts/palm), 66.8% increase in copra (t/ha) and 54.5% increased in oil content (t/ha) than the local cultivar East Coast Tall.

Kalpa Prathibha (Accession No.IND 016S), a selection from Cochin China was released during 2007 for its better performance with higher nut, copra and oil yield over local cultivar East Coast Tall. The variety was released at National level for commercial cultivation in the states of Andhra Pradesh and Tamil Nadu.

Inter cropping the coconut gardens with perennials viz., cocoa, cinnamon; biennials like banana, pineapple, annuals like elephant foot yam, turmeric, colocasia, vegetables and aro-matic crop like patchouli generates an additional income of Rs. 8,000/- to 25,000/- per ha.

Standardized technique for preparation of coconut chips from coconut fresh kernel i.e., steeping the fresh kernel chips in 60% sugar solution for 3 hours followed by heating in hot air oven at 50-60°C temperature for four hours has developed.

Standardized technique for bioconversion of tender coconut waste and coconut coir pith into high quality organic manure treating the tender coconut bits or coconut coir pith with fungal organism's viz., *Pleurotus sajor caju*, *Trichoderma viride* which converts the raw material into valuable organic manure within two months has also developed.

The IPM technology with ecofriendly measures comprising of application of neem cake @ 10 kg/palm/year, intercropping, adequate irrigations, judicious applications of major nutrients and use of organic manures was evolved for the management of coconut eriophyid mite.

Azadiractin 10000 ppm (Econeem plus) either root feeding @ 12.5 ml + 12.5 ml water or spraying @ 5 ml/lt of water was effective against coconut eriophyid mite.

An IPM technology consists of removal and destruction of pest infested palms, application of monocrotophos (10 ml) + water (10 ml) through root feeding and use of pheromone lures was recommended for the management of red palm weevil.

Use of pheromone traps for the management of red palm weevil i.e., Ferrolure for red palm weevil effectively controlled the pest is recommended as one of the strong elements in the IPM of Red palm weevil.

IPM technology for coconut black-headed caterpillar was established and management technologies were standardized.

A biointensive IPM technology for the management of rhinoceros beetle was standardized which comprised of release of baculovirus, spraying of metarhizium on manure heaps, placement of rhinolure traps, mechanical hooking of the beetle and field sanitation.

A light trap technology [arrangement of 200 or 500 W bulb from 9.00 pm to 12.00 pm] for monitoring, mass trapping and destruction of coconut slug caterpillar was found as an effective component in the IPM of coconut slug caterpillar.

Standardized procedure for Random Amplified Micro Satellite - Polymerized Chain Reaction for *Ganoderma applanatum* and *G.lucidum* by using *Ganoderma* specific primers and amplified fungal DNA was developed.

Indicator plants viz., redgram, sesbania, eucalyptus, etc. were identified for early detection of basal stem rot disease in coconut.

Certain native biocontrol agents viz., *T.viride*, *T.harzianum*, *T.hamatum* and *Pseudomonas fluorescens* were found to suppress *Phytophthora palmivora* when applied in talc formulation in the crown region (rotted portion) of the coconut seedlings.

Copper oxy chloride 0.3% and carbendazim 0.1% were found effective against bud rot disease of coconut caused by *Phytophthora palmivora*.

Application of paste formulation of *Trichoderma viride* was found effective against stem bleeding disease of coconut.

Aspergillus flavus was predominant among the various mycoflora associated with copra rots in storage conditions. Chemical preservatives like Menodoine at 500 ppm concentration was found effective in inhibiting *Aspergillus flavus*.

At Vijayarai

Maximum nut yield per palm was recorded with the treatment N3P1K1 (352.50 nuts) followed by N2P2K3 which has recorded a yield of 128.09 nuts per palm per year. Maximum cumulative nut yield per palm since July 2000 (8 years, 8 months) was recorded with N3P1K1 (814.60) followed by N1P3K1 (680.67) in coconut.

Oil Palm

In Oil Palm the no. of bunches per palm were found significant with different fertigation treatments. The bunch weight was found non significant. The FFB yield was found significant due to fertigation. The maximum number of bunches were recorded (8.2) when 1200: 600: 2700g NPK was applied through fertigation. Application of 1200: 600: 1200g NPK through fertigation has recorded maximum FFB yield of 183.4 kg/palm/year or 26.2 tons per hectare and was on par with 1200: 600: 2700 g NPK through fertigation 179.3 kg/palm/year or 25.6 t/ha.

In Oil Palm number of bunches/palm, and yield differed significant among the different cross combinations. The maximum number of bunches/palm was recorded (8.5) in the cross combination 104 D X 98 P. Lowest number of bunches was recorded in 65 D X 111 P (3.1). The bunch weight was found non significant. The maximum FFB yield/palm was obtained in the cross combination of 104 D X 98 P (187.8 kg/palm/year or 26.9 t/ha and the lowest yield was recorded in 65 D X 111 P (60.9 kg/palm/year or 8.7 t/ha).

Maximum number of bunches per palm were recorded in Costa Rica (5.8) and lowest in Palode (2.7). The maximum bunch weight was recorded in IRHO (20.2) and lowest was recorded in Palode (16.7 kg). Maximum yield was recorded in Costa Rica (15.1 t/ha) and lowest of 6.4 t/ha was recorded in Palode.

One year old data of ten cross combinations of oil palm growth characters i.e., plant height, girth and number of leaves were found non significant.

MANGO

Among the sucking complex in mango thrips population peaked to a high of 120 nos/12 panicles in first fortnight of February while hopper population of about 72 nos/12 panicles in 2nd fortnight of February. Minor incidence of Mealy bugs and scale insects was recorded during the study period in the month of March-April.

Among the lepidopteran pests fruit borer is a major pest and at peak incidence of it 26% damaged fruits was recorded in first fortnight of March.

It was observed that there was regular incidence of Leaf gall causing insects and incidence of fruit fly in the month of May.

Among the various insecticides tested thiamethoxam 0.005% was only effective against hoppers, while Fipronil 0.01% was only effective against thrips.

Among the various insecticides tested against Mango fruit borer chloripyriphos + dichlorovas (0.05%+0.11%) recorded the lowest fruit borer damage through out the spray period.

BANANA

June to August was found to be ideal planting period for susceptible Cavendish group of cultivars to minimize loss due to leaf spot diseases without fungicidal intervention.

Covering bunches with 100 gauge white (transparent) polyethylene bags with 2 per cent ventilation at the time of last hand emergence improved finger length and finger girth and produces increased bunch weight (16.0%) with attractive light green lustrous fruits.

KBS-5, a high yielding clone (46t/ha) with more number of fingers per bunch with good cooking quality and market acceptability when compared to cultivar, Kovvur bontha.

Planting of Grand Naine banana at a spacing of 2x3 m with 2-3 suckers/hill and application of 100% RDF can be recommended for higher yield and returns per unit area.

Application of either poultry manure or farmyard manure along with *Azospirillum* and AM fungi was found to be promising for a sustainable organic banana production under coastal ecosystem of Andhra Pradesh.

A total number of 69678 tissue culture banana plants were produced and supplied to farmers during 2009-10.

CASHEW

Among the 54-germplasm accessions, evaluated BLA 39/4-1 has given highest cumulative yield of 41.68 kg/tree followed by T.No.5/1 (33.89 kg/tree). Highest nut weight of 11.03 gm was recorded in Priyanka.

Out of 23 released varieties evaluated, the highest cumulative nut yield of 31.35 kg/tree was recorded with BPP-8 followed by Vengurla-5 (30.90 kg/tree) since 2001. However mean nut weight was found maximum in Vengurla 5 (9.12 gm)

In the MLT-II trial, the maximum cumulative nut yield per tree was recorded highest in T.No.10/19 (76.129 kg) followed by T.No 30/1(64.475kg) in twelve annual harvests. The highest nut weight was recorded with H-320 (10.500g) followed by H-255 (9.380g) during the year and the number of nuts per panicle was highest in M-44/3 (6.25) followed by T.No.3/33 (5.745).

In the hybridization programme, the total number of 105 F1 hybrid nuts were obtained from the 10 cross combinations during the year. The highest fruit set of 33.33 % was recorded in the cross combination of 228 X BPP 8.

F1 hybrid trees were evaluated during the year 2008-2009, H-36 (F.No.3X T30/1) recorded highest cumulative yield of 17.500Kg / tree followed by H-10(T.No.273 x T 71) with 15.530kg/ tree. Maximum nut weight of 9.196 gm was recorded in H 36.

Application of 1000g of nitrogen,125 g of Phosphorus and 125 g of Potash to cashew has given the highest cumulative nut yield of 72.40 kg/tree followed by 1000g N:250g P: 125g K (67.408 kg/tree) over 10 years In the second order interaction, the highest annual nut yield was recorded in the plants applied with 1000g N : 125g P : 125g K (7.18 kg/tree) followed by 1000g N : 250g P : 250g K (7.05 kg/tree).

Among the inter crops grown in cashew plantations, groundnut has recorded higher net returns of Rs 38,517/- per ha than sesamum and horsegram.

Application of NPK at 150:50:50 g/tree coupled with planting density 10x5 m (200 plants/ha) has given highest nut yield of 7.99 kg/tree followed by density level of 400 plants/ha (7.01 kg/tree) in a trial with fertilizer requirement in high density planting

Highest nut yield of 0.43 kg/tree was recorded in plants planted at 4x4 m spacing. Plant height, canopy spread and trunk girth was also found highest at 4x4 m density level.

During the surveys conducted the incidence of cashew stem and root borer was observed to be high (10-15%) in different coastal districts of Andhra Pradesh warranting immediate curative and prophylactic measures against the pest. The activity of other foliage, flower and nut feeders was almost negligible.

As curative treatments against the cashew stem and root borer, after extraction of the immature stages of the pests from the stem and root, carbaryl 1.0%, monocrotophos 0.2% offered relatively better protection to the tune of 91.67% trees followed by chlorpyrifos 0.2% with 83.33% trees without re-infestation or persistent attack.

The incidence of leaf and blossom webber varied from 1.12 to 6.26 per cent in different germplasm entries. The entries viz., T.No.2/15, T.No.268, Hy 94 T-5, Hy 94 T-3, BLA 139-1, T.No.244, and T.No.6/14 were found relatively tolerant to the leaf and blossom webber which recorded less than 1.50 per cent damage.

Application of three sprays of insecticides with monocrotophos 0.05% at flushing, endosulfan 0.05% at flowering and carbaryl 0.1% at nut development or chlorpyrifos 0.05% (3sprays) or L-cyhalothrin 0.003%(3 sprays) or triazophos 0.1% (3 sprays) or profenophos 0.05% (3 sprays) were found on par with each other in keeping the leaf and blossom webber under check at 30 days after 3rd spray but superior over untreated control which recorded the maximum damage of 3.37%.

SAPOTA

One new Sapota accession Gede Sapota was collected from Ulavapadu area of Prakasham district and planted for further evaluation. Thirty four Sapota accessions are being maintained at HRS, Venkataramannagudem.

Fruit yield was highest in PKM - 3 (12.40 t ha⁻¹) followed by Singapore (11.73 t ha⁻¹) and lowest in CO-1 (3.70 t ha⁻¹). PKM -3 is performing well for the last ten years (Cumulative yield 47.15 t ha⁻¹) in varietal trial of Sapota.

In the spacing trial of Sapota fruit yield was maximum in the spacing 7.5 x 7.5 m and 7.5 x 5.0m (19.99) and 19.81 t ha⁻¹ respectively). However, cumulative yield was highest in 5.0 x 5.0m spacing (72.52 t ha⁻¹)

JACKFRUIT

One jackfruit accession (with > 100 fruits of small size with crisp carpels) was identified in the Boduluru village of East Godavari and planted for its evaluation. Twenty five jackfruit accessions are being maintained at HRS, Venkataramannagudem.

Approach method grafting was found to be best method for the propagation of jackfruit with 86.0% success rate.

TAPIOCA

A total of 52 accessions are being maintained and evaluated for their performance. Among the non bitter entries KPSLO1/92 recorded the highest tuber yield (25.9 t/ha) followed by KPSLO3/92, M4 and ARK-C with 24.7 t/ha. No of tubers/plant varied between 5 to 9 and starch content ranged between 21.0 to (ARK-A) to KPSLO 5/92(29%). Among the non bitter entries, PDP-7 and PDP-8 recorded the highest tuber yield of 37.4 t/ha, 37.0 t/ha respectively followed by TCH-2(35.2 t/ha). No of tubers/plant ranged between 5.7 to 8.3 among the entries and the starch content varied between 18.2 (H-165) to 26% (TCH-1)

In the Initial evaluation trial on Cassava (IET ca08), significant differences were recorded for fresh tuber yield among the test entries evaluated. The highest fresh tuber yield was recorded in Ci- 823 (33.8 t/ha) followed by Cm 69-1 (33.3 t/ha). However, the yield is on par with check variety TCH-2 (33.3 t/ha). All most all test entries are susceptible to CMV and the per cent incidence ranged between 3 to 86.

In the Initial evaluation trial on Cassava Mosaic Resistant lines (IET Ca MR08), significant differences were recorded for plant height and tuber yield per hectare. Significantly higher tuber yield was recorded in PDP-8 (32.7 t/ha) followed by PDP-6 (30.1 t/h). Further the CMD incidence is also very low in these entries.

In the Multilocation trial on Cassava (MLT Ca08), significant differences were recorded among the test entries for number of tubers per plant and fresh tuber yield. The highest no of tubers per plant and fresh tuber yield was recorded in H-740/92 (7.5 and 35.1 t/ha) followed by Ci-848 (33.8 t/ha). However, the yield is on par with check varieties H-165 (35.0 t/ha) and TCH-2 (34.9 t/ha).

The variety TCH-2 recorded significantly higher tuber yield (24.21 t/ha) compared to other varieties H-165 (20.46 t/ha) and S-856 (21.39 t/ha). The variety TCH-2 recorded 18.3% and 13.2% higher tuber yield compared to H-165 and S-856 respectively. The fertilizer doses did not significantly influence the tuber yield/ha. No pruning and Pruning 1/3rd top portion 3 months after planting both being on a par recorded significantly highly tuber yield/ha (23.84 t/ha and 22.89 t/ha respectively) than Pruning 1/3rd top portion at 3 & 6 months after planting (19.32 t/ha)

In the Integrated nutrient management for Cassava, application of recommended dose of FYM + NPK + 3% panchagavya spray, recorded significantly higher tuber yields followed by application of 3/4 RD of FYM + N & K + Greenleaf manure (Glyricidia leaf @25 t/ha + 3% panchagavya spray and application of 3/4 RD of FYM + N&K + Greenleaf manure (Glyricidia leaf @ 25 t/ha) recorded significantly higher tuber yields (28.5 t, 27.6 t and 27.7 t respectively) over the control (22.7 t/ha).

In the study to use of Tapioca leaf for Eri culture for Eri cococon production variety Ci - 649 and S-856 both being on a par recorded significantly higher tuber yield 29.6 and 26.8 t per ha over variety H-165 17.8 t/ha. Defoliation levels did not influenced tuber yield significantly. Further the interaction effects between varieties and defoliation levels were found non significant.

BETELVINE

In Hybrid evaluation trial, Tellaku Ponnuru, local variety of A.P recorded increased leaf yield of 59% over GN hybrid however leaf quality recorded better in latter.

Integrated crop management on Betelvine revealed that a manurial dose of 200 kg N (through Neem cake + Urea in the ratio of 1:1), 100 kg P₂O₅ and 100 kg K₂O/ha, and soil drenching with 1% Bordeaux mixture four times at monthly interval recorded higher leaf yield and lower incidence of *Phytophthora* wilt.

Leaves stored in 300 guage polybags was found better in increase shelf life of leaves irrespective of aeration provided in the pack by 2 to 3 days.

Soil drenching with 1% Bordeaux mixture four times at monthly interval and spraying with 0.5% Bordeaux mixture 8 times at fortnightly interval recorded lowest disease incidence of *Phytophthora* foot rot.

Among eco-friendly insecticides, neem oil 0.5% spray + Neem oil 2% soil drenching was found better in reducing the incidence of leaf eating caterpillars and stem borer on sesbania. Among ecofriendly insecticides cartap hydrochloride 0.1% spray & NSKE 5% were found effective in reducing the incidence of tobacco caterpillar on betelvine.

Microbial origin acaricides, Milbemectin and Abamectin @ 0.3 ml/lt of water recorded minimum leaf damage with a corresponding higher leaf yield.

HOT PEPPER (CHILLIES)

In the preliminary Yield Trial on hot pepper, only one entry viz., LCA- 679 recorded significantly highest dry pod yield of 4616 kg/ha over the check LCA -334 (3801 kg/ha).

In the advanced yield trial, the entry LCA- 625 recorded significantly highest dry pod yield 6132 kg/ha, followed by LCA-620 (5872 kg/ha) over the check LCA -334 (4706 kg/ha).

In the replicated row yield trial, 39 entries were evaluated for yield and yield components over the check LCA-334. The entry RRYT T 13 recorded significantly highest dry pod yield 5223 kg/ha followed by RRYT T 24 (4385 kg/ha) over the check LCA-334 (3279 kg/ha).

Nearly 150 progenies were selected from the advanced generations of the breeding material of hot pepper from F2 to F7.

In heterosis breeding programme, a total of 71 crosses were evaluated during 2009-10 crop season.

One hundred and thirty germplasm lines were taken for evaluation during 2008-09 for biotic and abiotic components besides qualitative and quantitative characters.

PAPRIKA

In the preliminary yield trial, entry LCA- 503 recorded significantly highest dry pod yield 4332 kg/ha followed by LCA-480 (4102 kg/ha) over the check LCA-436 (3117 kg/ha).

In advanced yield trial, the entry LCA- 442 recorded significantly highest dry pod yield 5192 kg/ha followed by LCA-445 (4950 kg/ha) over the check LCA-436 (3776 kg/ha)

In the replicated Row yield trial, 19 entries were evaluated for yield and yield components over the check LCA-436. None of the entry was found significant over check. But, entry PRRYT T 1 (4132 kg/ha) followed by PRRYT T 7 (4090 kg/ha) were on par with check LCA -436 (3824 kg/ha).

PEPPER

Among 22 accessions evaluated, Vellanamban recorded maximum number (1945 No.) of spikes per vine followed by Malamundi (1300 No.)

Narayakkodi recorded maximum No.of berries per spike (87 No.). Among 22 accessions, Evaluated Vellanamban recorded highest fresh yield of 7.8 kg/vine followed by Neelamundi (6.9 kg/vine). Vellanamban recorded maximum dry berry yield (2.7 t/ha) followed by Neelamundi (2.37 t/ha)

Among the 12 varieties evaluated, Cul-1041 recorded maximum fresh berry yield (526.7 g) followed by Cul-5308 (410g).

Black pepper vines treated with Potassium phosphonate (0.3%) + *Trichoderma harzianum* before onset of monsoon (May 2nd fortnight), during monsoon (July 1st week) and after monsoons (September 1st fortnight) recorded the less yellowing (11.98%), defoliation (18.64%) and death of vines (7.16%) and more yield /vine (3.54 Kg) as compared to the farmers practice.

TURMERIC

Out of 13 promising turmeric cultivars evaluated, Roma recorded maximum *rhizome* yield (30.11 t/ha) followed by Rasmi (28.78 t/ha).

Application of RDF (265:375:205 kg NPK/ha) recorded the highest fresh rhizome yield of 32.57 t/ha followed by 100% N through FYM (29.57 t/ha)

Rhizome treatment with Propiconazole (0.1%) + Foliar spray of propiconazole (0.1%) on 45 and 90 DAP gave the maximum percent disease reduction over control (65.43%) followed by Rhizome treatment with Carbendiazim + Mancozeb (0.1%) + Foliar spray of Carbendiazim + Mancozeb (0.1%) on 45 and 90 DAP (58.98%) in case of leaf spot.

TUBERCROPS

Seed corm size of 100 g planted at 45 x 45 cm was found optimum for raising seed crop of elephant foot yam during Rabi season for obtaining ideal corm size of 500 g for use as planting material of commercial crop in the main season, Kharif.

Standardized protocol for *in Vitro* propagation of virus free stock planting material of *Colocasia*.

KCS-3, a short duration (150-165 days) variety with an yield potential of 18-20 t/ha was evaluated and submitted for release proposals.

VEGETABLES

COOKING MELON

Fifty seven cooking melon germplasm lines were evaluated. Among the lines VC-39 recorded maximum yield (25.7 t/ha) with an average fruit weight of 215.50 g, followed by VC-20. Among the lines evaluated VC-20 has produced maximum no. of fruits/basin (18.7) followed by VC-39. The results were very inconsistent due to lack of proper maintenance of the germplasm for the past few years due to lack of scientific support at the station.

BHENDI

Eight elite lines of bhendi were evaluated separately along with the germplasm material available at the Horticultural Research Station, Vijayarai. Among the elite lines evaluated IC 128089 has recorded highest yield (6.80 q/ha) where as VB-6 recorded lowest yield (3.07 q/ha.) Almost all the elite lines were found susceptible to YMV disease.

TOMATO

Sixty seven entries of tomato were screened including the new germplasm lines obtained from the vegetable research station, Rajendranagar, Hyderabad. Among the lines evaluated no one could set the fruits under high temperatures prevailed in the months of March and April, 2009.

FRENCH BEAN

Application of 100% RDF + Inorganic pesticides/fungicides recorded highest yield of 1141.38 kg/ha followed by application of FYM + Vermicompost + Neemcake + Azatobactor + VAM + Biopesticides (1104.13 kg/ha) .

MEDICINAL PLANTS

Among organic manures FYM 5 t/ha + Vermicompost 0.5 t/ha and among Bio-fertilizer Azospirillum + Phosphobacter of each 2 kg/ha significantly increased tuber number, weight and yield.

Survey conducted on Medicinal Plants in Nellore and Vizag districts revealed that the Rust was observed on *Acorus calamus*, Leaf spot on *Solanum nigrum*, *Tinospora cordifolia* and Root rot on *Coleus forskohlii*.

25 -30% yield loss was observed in unprotected plots of medicinal plants when compared to protected plots using plant protection chemicals like Neem oil, Dimethoate & Chlorpyrifos.

Natural enemies associated with major pests on medicinal crops were listed below.

Crop	Major Pest	Natural enemies
a. <i>Psoralea corylifolia</i> :	1) <i>Papilio demoleus</i>	<i>Cotesia</i> Sps (Larval parasitiod)
b. <i>Solanum nigrum</i> :	1) <i>Henosepilachna vigintipunctata</i>	<i>Tamarixia pookodia</i> (Egg parasitiod)
c. <i>Mucuna pruriens</i> :		
<i>Anethum graveolens</i>	1) Aphids	1) <i>Coccinella transversalis</i>
<i>Trachyspermum ammi</i>		2) <i>Chilomenes sexmaculata</i>
<i>Solanum nigrum</i>		

Plant extracts of Vasa, Pitchi tulasi, Kalmegh & Seed powder of Bavanchal were proved to be effective only at higher concentrations.

TECHNICAL SESSION - II
(Crop wise production recommendations)

Chairman : Dr. K.Purushotham, DR, APHU

Co-Chairman : Dr.K.V.Seshadri, DE, APHU

The following scientists have acted as resource persons and explained the present scenario and answered the problems raised by the Farmers and Horticultural Officers.

Dr.B.Gautham, Pr.Scientist (H) : Coconut
Dr. A.Sujatha, Pr.Scientist (Ent.)
Hort. Res. Station, Ambajipeta

Dr.B.V.K.Bhagwan, Sr. Scientist (H) : Banana
Hort. Res. Station, Kovvur

Dr.A.Bhagwan, Sr. Scientist (H) : Mango
Fruit Res. Station, Sangareddy
Dr.N.B.V.Chalapathi Rao, Sr. Scientist (Hort.)
Mango Res. Station, Nuzvid.

Dr.V.Vijaya Bhaskar, Sr.Scientist (H) : Oil Palm & Cocoa
Hort. Res. Station, Vijayarai

Dr.R.V.S.K.Reddy, Sr. Scientist (H) : Vegetables
Vegetable Res. Station, R'nagar

Dr.S.Surya Kumari, Sr.Scientist (H) : Chilli
Hort. Res. Station, Lam, Guntur

Dr.K.T.Venkata Ramana, Sr. Scientist (H) : Cashew
Cashew Res. Station, Bapatla

Dr.P.Babu Ratan, Sr.Scientist (H) : Sapota
Hort. Res.Station, Venkataramannagudem

Rapporteur : Dr.S.Surya Kumari, Senior Scientist (H)

Guntur District

CHILLIES

Bandaru Srinivasa Rao, Ananthavarapadu, Vatticherukuru Mandal, Guntur dist.

Q: LCA 334 is the most popularly cultivated variety in this area and due to the failure of rains farmers were unable to go for direct sowing and has to depend on private nurseries for seedling supply and the purity and genuineness of the variety is in question and requested for supply from government or university.

A: It is not possible to supply in a large scale at present from the university with the available resources and seed can be supplied to some extent from the research stations.

Q: Information on Drip irrigation and resistant variety for fruit rot in chilli is needed.

A: Research work will be initiated.

Q: Harvesting costs are increasing day by day and variety with single harvesting type is needed to reduce the cost of cultivation and to facilitate mechanical harvesting.

A: Research work will be taken up.

Q: Drying of chillies especially using solar energy.

A: After the strengthening of Engineering and post harvest technology work will be taken up and meantime efforts will be made to coordinate with ANGRAU to fabricate.

Post Harvest Technology

Q: Requested to start at least one Food processing industry in each mandal to produce value added products.

A: It is a government policy and after ascertaining the possibility and viability govt. will start or permit private sector to establish the processing industry.

Bandaru Veeranjanyulu, Marturu mandal, Prakasam district.

General

Q: For the harvesting of chillies nearly 300 labour are required and costs Rs.30,000 only for harvesting (@ 10/q chilli -@ Rs.100/- per head Rs.30,000) and requested to subsidise certain labour under NRG Scheme.

A: Horticulture department, MRO/MDO may be contacted as this is a policy matter.

Q: To increase the extent of area under chilli with drip at least to one hectare and provide subsidy for raising one acre nursery of capsicum/chillies under shade net.

A: Horticulture department and APMIP may be contacted as this is a policy matter.

Q: To provide subsidy for mulching sheet to fruit crops.

A: Horticulture department and APMIP may be contacted as this is a policy matter.

Capsicum under Shadenet

Q: There is a heavy incidence of thrips and sucking pests under shade nets and suggest control measures.

A: The microclimate may be very congenial for the sucking pests. Hence, timely application of any recommended pesticides control the pests. Research will be initiated to specify the control measures.

Mutyala Sree Ramulu

General

Q: Some of the private firms are providing the seed to raise the crop and using the produce by buyback at lower rates and the same is disposed of to the same farmers at a higher rate. Requested department intervention.

A: Please bring it to the notice of the concerned H.O./ADH/ADA/JDA for taking necessary action.

Smt. B.Padmavathamma ADH-2

Chillies

- Q:** Request for diagnostic surveys to be taken up to identify the problems and to suggest the control measures.
- A:** Due to paucity of staff, depending upon the need, scientists will be deputed, on request.
- Q:** Number of varieties are floating in the market in chillies and requested to inform the genuineness of the seed/variety by the scientists.
- A:** Since no company is having MOU with APHU, it cannot be ascertained unless the variety is tested in the research station. Hence it is advised to go for the recommended variety from APHU.

TURMERIC

- Q:** Salem variety is popular among farmers and requested to supply the material from TNAU.
- A:** TNAU will be persuaded to supply the seed material and after ascertaining the performance in the research station it will be multiplied and supplied.
- Q:** Boiling unit of TNAU for turmeric may be modified to be available at low cost to the farmers.
- A:** After the strengthening of Engineering and post harvest technology work will be taken up and meantime efforts will be made to coordinate with ANGRAU to fabricate.

Rammohan Rao, ADH

MANGO

- Q:** Since there is more than 70% of Mango plants are about 30 to 50 years old the rejuvenation technology and canopy management may be suggested.
- A:** Centre opening and removal of dry shoots should be taken up after the harvest. Foliar spray of ZnSo₄ 1 gm/l during June - July should be taken up.
- Q:** Information on the Farm ponds in the rainfed Mango orchard may be provided.
- A:** Farm Pond Research is to be initiated.
- Q:** Fruit borer is a major problems in Mango and hence at least 2 diagnostic visits during the crop season may be taken up .
- A:** Senior scientist, MRS, Nuzividu may be contacted whenever problem arises.

COCOA

- Q:** Suitable inter crop in Oil palm may be suggested.
- A:** Cocoa can be grown as intercrop in oil palm.

GUAVA

- Q:** Guava wilt is a major problem and Resistant variety/rootstock and control measures may be suggested.
- A:** Work is in progress at FRS, Sangareddy.
- Q:** Coloured Variety in guava for processing is required.
- A:** Pink coloured variety from CHES, Lucknow is available for processing.

BANANA

Q: Virus resistant Banana in Tellachakerakeli is needed.

A: So far no resistant variety/strain is available in Tellachakerakeli.

VEGETABLES

Q: Any new varieties/hybrids developed by APHU in vegetables.

A: Work is being taken up at Vegetable Research Station, Rajendranagar.

CAPSICUM

Q: Intensify research on Capsicum at least as an onfarm trial.

A: Research will be taken up on the important aspect on capsicum with the coordination of the department of horticulture in the progressive farmer's fields.

DRIP IRRIGATION

Q: Information on suitability of drip/jet in fruit crop may be provided.

A: Drip irrigation is suitable in all the horticultural crops and the concern scientists in the research stations may be contacted for further details. No specific information is available on jet irrigation and work will be initiated.

INTERCROPS IN OIL PALM

Q: Intercrop in Oil palm with Cocoa in the triangular system of planting was found to be not suitable but it was found suitable in square system of planting with 9x9 m spacing.

A: In the square system of planting it facilitates for intercultivation and other operations will be easy and hence may be found convenient.

FERTIGATION

Q: Information on fertigation may be provided.

A: The work is in progress in some of the research stations on only few crops. However, efforts will be made to obtain the information from the other universities and published.

CITRUS

Q: Suggest control measures for canker in acid lime and mangu disease in acid lime and sweet orange (Battai)

A: i) For the control of canker spray 1% Bordeaux mixture + 10 ppm streptomycin sulphate during monsoon period at monthly intervals after removing the diseased and dead wood branches.

ii) For the control of Mangu spray wettable sulphur @3g/lit. or dicofol @ 5ml/lit. during the pea nut stage of the fruit twice at monthly intervals.

N. Trinadh

VEGETABLES

Q: Require the high yielding varieties/hybrids in vegetables, Yellow vein mosaic resistant Bheni and CMV resistant varieties in Cucurbits.

A: Work is in progress at Vegetable Research Station, Rajendranagar. Although resistant sources are available in the germplasm, the resistance could not be established as it is breaking down. YVMV has to be managed by controlling the vectors.

Q: Cucurbits and Ridge gourds are getting low yields in this area. What is the reason?

A: During summer (after March) the temperature are very high and produce mostly male flowers which may be the reason for low yields. Hence, the sowings have to be taken up before 15th February and Tomato before January 30th for better yields. Population and spacings should be maintained as per the recommendations. During flowering and fruiting spray Planofix or KNO₃ for fruit retention.

Q: Farmers are using most of the bio based products of private companies but their genuinity and suitability are not known.

A: As most of the products have not registred with the Government and their composition and contents are not known, it is requested to use Government approved products only.

Q: There is a problem in marketing of vegetables by the farmers.

A: As there are no regulated markets, it is advised to form cooperative societies in the village to take up marketing.

Sri Satyanarayana, Dwaraka Tirumala, Venkata Krishnapuram

VERMICOMPOST

Q: Can earthworms be directly left in debris of orchards for dev. of Vermi compost.

A: If the earthworms are directly put in the basins of the plants, the congenial atmosphere has to be maintained in the field and should be protected against natural pests and constant optimum moisture should be maintained.

IMPLEMENTS

Q: Chaff cultures are not working.

A: As there is no engineering division on post harvest technology in the university for the present you may please contact the agriculture engineering, ANGRAU for this problem.

P.Seshagiri Rao, Reddygudem Mandal

GUAVA

Q: Wilt resistant variety in Guava need to be developed.

A: The work is being done at FRS, Sangareddy.

Ravi Prakash, ADH

OIL PALM

Q: Spacing trial in Oil palm for suitability of triangular/square system of planting for intercropping may be taken up. Development of processing & value addition technology.

A: Already information is available and you may please contact the Senior Scientist (Horticulture), HRS, Vijayarai and NRC on Oil palm, Pedavegi.

GENERAL

Q: Request to depute the Scientists immediately whenever asked for.

A: Inspite of the shortage of personnel they are being deputed in exigensis. Further the department of horticulture officers are requested to solve the routine problems and in case of special contingencies ask for the scientists.

Q: Requested to establish Toll free number to the farmers for their enquiries regarding problems in Horticultural crops.

A: It will be taken up after the strengthen of scientists and extension personnel

Q: Development of crop registration at village level & development of crop specific groups.

A: It is requested to form cooperative societies among the farmers and contact the concern Horticulture Officers/ADH regarding the registration etc.

East Godavari District

Satyanarayana, Ravulapalem

BANANA

Q: Suggestions for cyclone affected crop.

A: The scientists are being deputed to survey the cyclone affected areas and suggest the remedial measures depending upon the situation along with the concern department of horticulture officials.

Palacharla Viswanatham, Peddapuram & Durgesh, ADH, Kakinada.

MANGO AND CASHEW

Q: Suggest to improve the yields in Cashew & Mango gardens (rejuvenation, pruning) requested.

A: It is requested to follow the recommended package of practices.

GENERAL

Q: It is requested to develop Tapioca Reseach Station at Peddapuram and strengthen the staff in the existing place.

A: Local farmers have to take initiative to contact the people's representatives to provide at least 30 acres of land for the Research Station to enable to develop/strengthen the research in Tapioca at Peddapuram and surrounding area.

Surikuchi Surya Subrahmanyam, NABARD, FETF, Convener, Farmers society, Muppala, Ambajipet & Durgesh, ADH, Kakinada

COCONUT

Q: Low yields were observed in the 1996 cyclone affected Coconut gardens and the reasons for this may be studied.

A: Low yields may be due to pollination problem which may be improved by encouraging beehives. Due to the high temperatures prevailed from February onwards affects the pollen viability which causes low yields.

U.Bhasker, Bandarlanka

COCONUT

Q: Suitable high yielding varieties for tender nuts with more than 250 ml water may be suggested.

A: Suitable varieties for tender nuts and also for Copra are Godavari Ganga (Tender nuts & copra), Double Century, Kalpa Prabha which yields 100-120 nuts per plant and Godavari Ganga with 80-100 nuts yield per plant.

Q: Research and fixing of standards for procurement of nuts directly from farmer for both tender nuts, nuts & dry copra.

A: Research will be initiated to study this.

COCOA

Q: Request for the package of practices to be followed in Cocoa as an intercrop in coconut garden.

A: Already package of practices are available for cocoa which is provided in the annexure. Further you may also contact the scientists at Ambajipeta (East Godavari District) and Vijayarai (West Godavari District) for further details.

IMPLEMENTS

Q: Mechical harvesters and implements for dehusking & reeling of Coconuts are to be developed.

A: Very soon the HRS, Ambajipeta will get harvesters from CPCRI, Kasargod/TNAU and will be demonstrated and enlightened about its usefulness.

Durgesh, ADH, Kakinada.

MANGO

Q: Suggest the control measures for Mango fruit borer.

A: Phytosanitation plays very important role in avoiding the pest. In second fortnight of January spray of chloripyriphos 2.5 ml or dichlorovas 1.5 ml or carbaryl 3 gms. per litre of water especially in those garden where previous incidence of this recorded.

Visakhapatnam

Gottipati Chalapathi Rao

PAPAYA

Q: Bending of Papaya variety Taiwan grown in this area may be due to heavy bearing and suggest to over come this.

A: Scientists may be contacted to verify whether collar rot infection is there in the garden. Meanwhile earthing up around the stem may be taken up and drenching with 1% Bordex mixture or 0.25% Redomil M-Z may be done. Generally virus complex is developing after 3 years of cultivation.

OIL PALM

Q: Suggest rodent control in Oil palm.

A: Recommended spacing @ 8 x 8 m should be followed in plantations, Bromodialone bait cake should be kept in the palm crown and live burrows in nurseries. Use of smoke generators in nurseries. Keeping rat traps in the stores where nuts and copra are stored. Adopt periodical crown cleaning.

Sri Ram Mohan, ADH, Visakhapatnam.

MANGO

Q: Request for off season varieties in mango.

A: Already off season varieties like Royal special and Punasa varieties are available but they are not suitable for table purpose and can be used for culinary purpose and pickle purpose.

Q: Suitable varieties for high density planting may be suggested.

A: So far Amrapali and Mallika are available for high density planting in Mango.

Srikakulam district

Subba Rao, ADH

COCONUT

Q: Control measures for Red palm weevil and Mite may be suggested

A: Dark brown gummy liquid oozes from the site of infestation on the stem. From small holes on the stem chewed fiber pieces protrude. Due to continuous larval feeding, tunnels will be formed within the stem making it weak and ultimately palm dies.

Management

Root feeding of monocrotophos 10 ml with 10 ml water/palm would be effective. Remove and destroy pest affected dead palms. Avoid injuries to the stem.

Eriophyid mite

Due to feeding of mite colonies, white streaks/triangular yellow and brown patches appear near the perianth region on nuts of 2 to 4 months age. These brown patches increase on the nut surface in the advanced stage causing longitudinal cracks. Button drop or reduced nut size and thereby decreased copra yield are associated.

Management

Collection and destruction of mite infested dropped nuts.

Root feeding with Azadiractin 10000 ppm @ 10 ml + 10 ml of water/spraying of Azadiractin 10000 ppm 5 ml/ltr of water.

Application of neem cake @ 5 kg/palm/year along with other organic manures including green manuring.

Application of recommended dose of fertilizers (1 kg U, 2 kg SSP, 2.5 kg MOP/palm/year)

Providing regular irrigations.

Growing of intercrops like banana, yams, cocoa and turmeric or vegetables.

GENERAL

Q: He requested to revive the research station existed at Uddanam Mandal, Srikakulam District and support the farmers of this region.

A: It is requested to send the proposals along with the allotment of land along with documents from the district Collector to enable the university for processing to start the new Research Station.

- Q:** Since farmers get higher prices for the fresh fruits, research on packaging and storage of fresh fruits may be taken up.
- A:** The research has been already initiated at post harvest technology scheme, Rajendranagar, Hybderbad and will be intensified further.
- Q:** Because of the small scale holding of land of the farmers in this area they could not take up cost intensive operations like digging of borewell etc. and to activate the farmer's group and take up on the cooperative basis.
- A:** The farmers may be motivated to form the societies and the benefits may be utilized from the Govt. schemes by approaching the department of horticulture and other related departments to provide subsidy.

CASHEW

Q: Suggest the control measures for stem borer and tea mosquito bug in cashew.

A: Cashew stem and shoot borer

Dried, dead trees with complete yellowing should be removed immediately along with root system by digging deep pit of 2 feet all around the base of the trunk in a radius of 1 m and disposed off. The cocoons present with in and around the trunk and root system 1 - 2 feet below the soil surface should be destroyed mechanically. Waste material should be burnt in the pit to destroy the resting stages of the pest if any. This should be the most important practice in cashew orchards in order to prevent further spread of the dreaded pest.

Periodical monitoring of the trees for identification of the pest infestation at early stages (gummosis). Tree base must be kept clean and weed free so as to observed the gum exudation, which is the early symptom of borer attack. Extraction and killing of the grubs and cocoons by chiseling the affected portion of bark of trunk or root followed by spraying the chisel portion with neem oil 5% or chlorpyriphos or 0.2% carbaryl and earthing up on the chisel portion.

Chiseled pieces of bark should be buried deep in to the soil immediately. More than 50% of the bark circumference on the trunk/root should not be removed while extracting the grubs and cocoons.

As prophylactic measures brush the tree trunk up to a height of 1 m and also the exposed roots with a smooth iron bristles brush and spray with neem oil 5% thrice during the year at an interval of 4 months starting from June onwards or onset of monsoon.

Tea mosquito in cashew

Spraying with monocrotophos (1.4 ml/litre), Endosulfan (1.4 ml/litre) and carbaryl (2 g/l) during flushing, flowering and nut formation stages respectively are essential to control the pest.

Vizianagaram

Muthyala Jameed

- Q:** There are no Horticultural Research Stations in the 3 North Coastal districts Viz. Srikakulam, Vizianagaram and Visakhapatnam districts. Hence, it is requested to establish Horticultural Research Stations in these districts.
- A:** At least 50-100 acres of land is required to start a research station. If the land allotment proposal from the District Collector/People's Representative is received to start the research station the same will be considered.

TECHNICAL SESSION-III

(Crop wise presentations & Interaction with Farmers and Horticultural Officers and Identification of Research and Extension Gaps)

Dr.B.Gautham, Pr.Scientist (H) Dr. A.Sujatha, Pr.Scientist (Ent.) Hort. Res. Station, Ambajipeta	: Coconut
Dr.B.V.K.Bhagwan, Sr. Scientist (H) Hort. Res. Station, Kovvur	: Banana
Dr.A.Bhagwan, Sr. Scientist (H) Fruit Res. Station, Sangareddy Dr.N.B.V.Chalapathi Rao, Sr. Scientist (Hort.) Mango Res. Station, Nuzvid.	: Mango
Dr.V.Vijaya Bhaskar, Sr.Scientist (H) Hort. Res. Station, Vijayarai	: Oil Palm & Cocoa
Dr.R.V.S.K.Reddy, Sr. Scientist (H) Vegetable Res. Station, R'nagar	: Vegetables
Dr.S.Surya Kumari, Sr.Scientist (H) Hort. Res. Station, Lam, Guntur	: Chilli
Dr.K.T.Venkata Ramana, Sr. Scientist (H) Cashew Res. Station, Bapatla	: Cashew
Dr.P.Babu Ratan, Sr.Scientist (H) Hort. Res.Station, Venkataramannagudem	: Sapota

MANGO

1. To increase the yields in old Mango orchards it is advised to open the center and also to remove the dried up branches and criss-cross branches immediately after the harvest during June-July and spray Zn @ 1gm/lit and Boric Acid 1.5gm/lit.
2. Rejuvenation technology in Mango is already available and they will be demonstrated in the farmers' fields in co-ordination with the department of horticulture wherever necessary.
3. For the control of Fruit borer in Mango an integrated approach is required by following the schedule Phytosanitation plays a very important role in avoiding the pest. Remove the dry twigs and destroy by burning the affected twigs, branches and fruits. In the second fortnight of January spray of chlorpyrifos 2.5 ml or dichlorovos 1.5 ml or carbaryl 3 gms/lit of water especially in those gardens where previous incidence of this was recorded. Spray Thiomethaxone 5g/20lit or Imidachloroprid or Conifider @ 0.3 ml/lit.
4. For controlling the gummosis after removing affected part spray Copper Oxychloride @ 3g/lit and apply the paste on the surface.

COCOA

1. Package of practices is readily available and for the details please contact HRS, Ambajipet or HRS, Vijayarai.
2. Earthing up in cocoa is not necessary.

COCONUT

Varieties suitable for tender nuts

Following varieties are suitable for tender nuts and copra.

1. Godavari Ganga
2. Double Century
3. Kalpa Prabha
4. Gowthami Ganga

The 1996 cyclone affected gardens the yields were low may be because of the pollination problem and also high temperature prevailing from February onwards by which the pollen viability will be lost. It is advised to go for apiculture to improve the pollination in the garden.

The instrument for breaking and dehusking the nuts will be procured from CPCRI, Kasargod/ TNAU and will be demonstrated at HRS, Ambajipeta for the benefit of the farmers.

Moisture conservation in Coconut gardens during Rabi season when there is no release of canal water mulching can be adopted.

Rhynoceros Beetel Control

Release of baculovirus @ 10-15 inoculated beetles/ha at 3 months interval.

Spraying of *Metarhizium* solution on manure heaps @ 1 lt of spray fluid for 3 mt³ of heap.

Establishment of rhinolure traps @ 1 trap/2ha.

Mechanical hooking of the beetle from palm crown.

Destruction of dead logs and boles of palms in the garden.

Red palm weevil Control

Root feeding of monocrotophos 10 ml with 10 ml water/palm would be effective. Remove and destroy pest affected dead palms. Avoid injuries to the stem.

Control of Crown rot drench with Copper Oxychloride @ 3g/lit or dusting *Pseudomonas fluorescens* @ 50 g in the crown.

VEGETABLES

1. There is no resistant variety for Yellow Vein Mosaic Virus disease in Bhendi from the University even though sources are available for resistance they could not be establish in hybrids and it is breaking down due to climatic changes. Hence it is recommended to manage the disease by controlling the vectors for better yields.
2. Low yields in Cucurbits and Ridge gourd is due to the high temperatures prevailed during summer. So summer sowings should be taken up only up to February 15th. After this male flowers will be produced leading to low yields.

3. In Tomato sowing should be done before January 30th for better yields by maintaining the recommended spacing and population. For better flowering and fruiting spray Planofix or KNO₃.
4. In the Tomato, Carrot and Potato plots for the control of broad leaved weeds application of pre emergence herbicide viz., Pendimethalin @ 6 ml/lit. 25 days after transplanting or post emergence pesticide Metribenzene @ 300 g/200 lit. is beneficial.

GUAVA

1. Lalit Kiran variety was introduced at Sangareddy to see the performance of this variety to processing.
2. Experiments were started on the control of Guava wilt like use of Hybrid/root stock resistant to disease and use of *Aspergillum niger* strain 17 against the root wilt.

CHILLIES

1. Dieback or Fruit rot

Seed treatment with Captan @ 2.5g/kg seed Spray Captan 1.5g/l or Mancozeb 2.5g/l or copper oxychloride 3.0g/l or Propiconazole 1 ml/l, Difencnazole 0.5ml/l, Copper hydroxide 2.5g/l of water 3-4 times.

2. Single Harvest Variety

Kasianmol variety of UP gives single harvest and yields about 10 q/ha.

3. Use Shilpaulin sheet for drying of chillies during the untimely rains.
4. Thrips control in Capsicum can be done by spraying Spinosad @ 0.025 ml/lit.
5. Failure of chilli fruiting may be due to the excessive use of bios which do not have any information or registration of the product.

TECHNICAL SESSION-IV

(PLENARY SESSION)

Problems identified through interaction with farmers, Officers of the department of Horticulture & Scientists. (Research & Extension Gaps)

MANGO

1. Canopy management in more than 40 years old mango plants
2. Nutritional and irrigation requirements of more than 40 years old mango plants.
3. To study the efficacy of farm ponds in Mango orchards in the rainfed areas of Krishna Districts.
4. Drought tolerant variety for rainfed areas

BANANA

1. Virus resistant variety in Thellachekarakeli
2. Rejuvenation technique for gale affected gardens

GUAVA

1. Develop wilt resistant variety
2. Management of wilt disease

SAPOTA

1. Survey to identify the problem of low yields every year in Nellore District.
2. Pruning technique in Sapota
3. Fertigation in Sapota

PAPAYA

1. Varietal development to replace Taiwan variety (Red lady/786)
2. Resistant variety against ring spot and leaf curl virus

COCONUT

1. To develop procurement standards for Tender coconuts with more than 250ml water and also for Copra.
2. To fabricate mechanical harvester, dehusking machines etc.,

OILPALM

1. Intercrop studies in the triangular or square system of planting
2. Fertigation
3. Rodent control.

CASHEW

1. High density planting
2. Fertigation

TURMERIC

1. New improved variety with root rot resistance, high yields and Curcumin content.
2. Fertigation
3. Fabricate low cost boiling and curing machine

CHILLIES AND CAPSICUM

1. To develop variety/hybrid resist to fruit rot
2. To develop variety which is yielding single harvest to facilitate mechanization or harvesting to reduce the cost of cultivation.
3. Fabricate drying equipment using solar energy
4. Package of practices for capsicum grown under shadenet.
5. Control of pests and diseases in Capsicum grown under shadenet

TAPIOCA

Develop resistant variety against virus

VEGETABLES

1. Yellow vein mosaic virus resistant variety in Okra
2. Production of F₁ hybrids in vegetables
3. Herbicidal control of weeds in vegetables
4. Fertigation.

GENERAL

1. Fertigation information for all the Horticultural crops.
2. Water management for all the Horticultural crops.
3. Post harvest techniques and value addition in all the Horticultural crops
4. Study on the biofertilizers usage
5. Research on fabrication of weeders, harvesters drying and curing equipment, dehusking in coconut etc.

EXTENSION GAPS

COCONUT

1. Control of Rhynoceros beetle and Red palm weevil
2. Control of Eriophid mite

OIL PALM

1. Inter cropping in Oil palm
2. Package of practices for Cocoa

MANGO

1. Rejuvenation of old mango orchards.
2. Fruit borer control in Mango.

3. Mechanical Harvesting and dehusking in Coconut
Obtain them from CPCRI Kasargod/TNAU and demonstrate.

CASHEW

1. Control of Shoot and root borer

Recommendations

1. Local farmers have to take initiative to contact the people's representatives to provide at least 30 acres of land for the Research Station to enable to develop/strengthen the research in Tapioca at Peddapuram and surrounding area.
2. It is requested to send the proposals along with the allotment of land with documents from the District Collector to enable the university for processing to start the new Research Stations at Uddanam Mandal in Srikakulam and Vizianagaram districts.
3. After the strengthening of Engineering and post harvest technology work will be taken up and meantime efforts should be made to coordinate with ANGRAU to fabricate to develop machine for drying chillies and to modify the boiling unit of TNAU for turmeric to be available at low cost to the farmers.
4. Fertigation schedule in Horticulture crops (Bulletin) to be prepared obtaining the information from other states/research stations.
5. Enhancement of seed and plant material production from the Research Stations.
6. Publication of technical bulletins utilizing of ATMA Funds
7. Visual aids such as CDs about research stations and its research activities should be developed.
8. Team may be constituted involving farmers, scientists and department of horticulture for conducting the survey in different areas and to forecast possible problems.
9. Crop Museums have to be developed in the research stations with mandate crops.
10. Introduce new crops for crop diversification.
11. To form the diagnostic teams with department of horticulture.
12. To take up on farm trials wherever necessary and could not be conducted in the research stations with the coordination of department of horticulture.
13. To develop Vermicompost unit in the research station.

At the end of the Session/Day Dr.B.Gowtham, Principal Scientist (Horticulture) has proposed the Vote of thanks to all the participants.

ANNEXURE-I

List of Titles of the Research Projects proposed for 2010-2011

1. HORTICULTURAL RESEARCH STATION-AMBAJIPETA

Horticulture

Crop improvement

1. Collection, conservation and evaluation of local germplasm (ICAR)
2. Production and evaluation of new cross combinations (ICAR)
3. Evaluation of certain F1 coconut crosses (Non-Plan)
4. Evaluation of new coconut hybrids (ICAR)
5. Improvement of coconut through hybridization (Trial of promising seed material) (ICAR)
6. Performance of Tall X Tall hybrids in coconut in different agro-climatic regions (ICAR)
7. Performance of New (experimental) cross combinations of Tall X Tall hybrids in coconut in different agro-climatic regions (ICAR)
8. Performance of Dwarf X Dwarf hybrids in coconut in different agro-climatic regions (ICAR)
9. Performance of newly released coconut varieties and hybrids in different agro-climatic zones (ICAR)
10. Screening of cocoa clones for their performance in coconut gardens (ICAR)
11. Large scale multiplication of newly released coconut varieties and hybrids in different agro - climatic regions (ICAR)

Crop Production

1. Performance of medicinal and aromatic crops as intercrops in coconut gardens (ICAR)
2. Studies on fertilizer application through micro-irrigation technique in coconut (ICAR)
3. Development of coconut based integrated farming system model for different agro-climatic regions. (ICAR).
4. Observation trial on the performance of Morinda citrifolia as mixed crop in coconut gardens (ICAR).
5. Effect of time and level of annual pruning in Cocoa under Coconut based cropping system. (Non-plan)
6. Evaluation of Nutmeg varieties under coconut based cropping systems. (Non-plan)
7. Impact of organic manuring on yield attributes, pests and diseases of coconut (Non-plan)

Entomology

1. Survey and monitoring of pest problems in coconut [Plan]
2. Management of eriophyid mite in coconut gardens [Plan]
3. Compatibility of natural enemies with the most commonly used botanical / chemical pesticides [Plan]

4. Evaluation of improved strains of parasitoids (Braconid) and predators (*Cardiostethus exiguus*) in the field against *O. arenosella* [Plan]
5. Studies on field efficacy of commercially available pheromones against coconut pests viz., rhinoceros beetle and red palm weevil [Plan]
6. Screening of coconut germplasm for tolerance/resistance to *O. arenosella* by diet control method in the laboratory [Plan]
7. Validation of integrated pest management technology for *Oryctes rhinoceros* in different regions [Plan]
8. Effect of management practices on the incidence and intensity of coconut pests [Plan].
9. Mass multiplication of parasitoids of *Opisina arenosella* [Non-Plan]
10. Influence of crop habitat diversity on the occurrence of coconut pests [Non-Plan]
11. Studies on the seasonal incidence and management of Cocoa pests [Non-Plan]
12. Special Grant Scheme of AICRP on Palms - Identification of potential bioagents for coconut slug caterpillar management [ICAR - Adhoc Project].

Plant Pathology

1. Etiology and epidemiology of basal stem rot disease of coconut [Plan]
2. Management of basal stem rot disease in coconut [Plan]
3. Biocontrol of Bud rot and stem bleeding diseases in coconut [Plan]
4. Survey and Surveillance on diseases of coconut [Plan]
5. Early detection of Basal stem rot (*Ganoderma wilt*) disease in coconut [Plan]
6. Early detection of Bud rot disease in coconut [Plan]
7. Identification of coconut types resistant to *Ganoderma wilt* disease [Plan]
8. Studies on post harvest diseases of coconut [Plan]
9. Survey and surveillance on diseases of cocoa and their management. [Non- Plan]

2. BETELVINE, BAPATLA

I) Horticulture

1. Collection, characterization, evaluation and maintenance of *Acorus calamus*.
2. Collection, characterization, evaluation and maintenance of *Solanum nigrum*.
3. Effect of spacing and organic manures on growth and yield of *Acorus calamus*.
4. Effect of spacing on growth and yield of *Solanum nigrum*
5. Effect of organic manures and bio-fertilizers on growth and yield of *Solanum nigrum*
6. Hybrid evaluation trial in betelvine.
7. Demonstration of ICM module developed by the centre in the farmer's field

II) Plant Pathology

1. Demonstration of Disease management technology developed by the centre in the farmer's field.
2. Studies on diseases of medicinal and aromatic plants
3. Compendium of diseases of mandate crops viz., *Acorus calamus* & *Solanum nigrum*

III) Entomology

1. Demonstration of pest control package developed as a part of Integrated Crop Management.
2. Survey, collection, cataloguing and identification of entomofauna associated with allotted and other medicinal and aromatic plants.
3. Seasonal abundance of economically important insects and arachnids.
4. Damage intensity assessment of the crops infested by the major pests to know the level of infestation of key pests on a particular crop.
5. Natural enemies associated with economically important insects and arachnids.

IV) Minikit trials proposed NIL

V) On farm trials proposed (In the proforma -III) NIL

VI) Variety proposed for release

Swarna Kapoori, a promising variety was evaluated from 2001 to 2008, under minikit from 2003 to 2008 in Krishna and Guntur districts and on farm trials in Krishna, Guntur and Warangal districts from 2004 to 2008.

Variety Release Proposal was also submitted to the Project coordinator of AICRP on MAP and Betelvine for the recommendation of release in state

3. CASHEW RESEARCH STATION-BAPATLA

I. Horticulture (Crop Improvement)

1. Germplasm collection, maintenance, description and evaluation of clonal material of Cashew genotypes (Gene Bank).
2. Hybridization for new economic types and evaluation of existing F1 progenies of Cashew.
3. Multi-location Trial-II .
4. Evaluation of the performance of the Cashew varieties released from different centers.
5. Multi-location trial-III (2002) in cashew.

II. Horticulture (Crop Management)

1. Studies on N,P,K requirement for cashew clones in sandy soils of Andhra Pradesh.
2. Observational trail on the affect of high density planting on growth and yield of cashew
3. High density planting with different levels of fertilizer doses in Cashew.
4. Cashew based cropping system (Inter crop trial).
5. Organic management of cashew

III. Entomology (Crop Protection)

1. Influence of biotic and abiotic factors on the incidence of pest complex of cashew.
2. Studies on the curative control measures of cashew tree borer-*Plocaederus ferrugineus*
3. Screening of germplasm to identify resistant types against major pests of Cashew.
4. Evaluation of insecticides for the control of foliage and floral pests of Cashew.

4. HORTICULTURAL RESEARCH STATION - CHINTAPALLI

Horticulture

I. ICAR

1. Germplasm collection, description and evaluation of cultivated Black Pepper varieties.
2. New coordinated varietal trial in Black Pepper.
3. Development of Organic package for Spices based cropping system.
4. Coordinated varietal trial in Black Pepper (2006)
5. Genotype x Environment interaction on quality of Turmeric.

II. NON PLAN

1. Collection, maintenance and evaluation of tree spices (**Cinnamon** (*Cinnamomum zeylanicum*) and **Cardamon** (*Elletteria cardomomum* (L)
2. Observational trial on the suitability of Vanilla (*Vanilla planifolia*) to the agency areas of Visakhapatnam district.

III. STATE PLAN

1. Effect of different Organic sources of Nitrogen on Growth and yield of Turmeric under Chintapalle conditions.
2. Genotype x Environment interaction on quality of ginger.

Plant Pathology

I. ICAR

1. Management of *Phytophthora* foot rot disease in black pepper (adoptive trial)
2. Management of *phytophthora* foot rot disease in black pepper (Existing Plantation)
3. Management of *Phytophthora* foot rot disease in black pepper (New Plantation)
4. Management of soft rot of Ginger (Bio fumigation using Mustard)
5. Management of soft rot of Ginger (Bio fumigation using Cabbage)
6. Management of foliar disease in turmeric.

II. NON-PLAN

1. Studies on wilt in Eggplant.
2. Studies on wilt in Rajmash.
3. Studies on mushroom cultivation in HAT zone using different straw as medium.

5. HORTICULTURAL RESEARCH STATION-KOVVUR

Banana

AICRP on Tropical fruits

1. Collection, Characterization and Evaluation of banana germplasm
2. Clonal selection in commercial banana cultivars and their evaluation
3. Evaluation of FHIA hybrids of banana
4. Varietal trail in banana

5. Evaluation of Promising Clones of Banana
6. Standardization of Nutrient requirement for banana under high density planting (to be concluded)
7. Standardization of stage wise nutrient requirements for banana (to be concluded)
8. Standardization of stage wise water requirement in banana (to be concluded)
9. Studies on irrigation and nutrient interaction in banana
10. Evaluation of different varieties of banana for fiber extraction (to be concluded)
11. Validation of fertilizer adjustment equation in banana.
12. Demonstration trial on Bunch feeding with cow dung slurry.

Non Plan

13. Studies on the effect of application of fertilizers in solution on growth and yield of banana
14. Studies on improvement of fruit quality and shelf life of choice bananas of A.P.
15. Development of Sustainable Organic Banana Production System.
16. Influence of age of micro propagated banana plants on growth and productivity.
17. Studies on breaking of dormancy in amorphophallus.
18. Study of post harvest behaviour in cultivars of different genomes of banana
19. Standardization of nutrient requirement for tissue culture banana.
20. Studies on improvement of fruit grade and quality in banana.

AICRP on Tropical fruits

Plant Pathology

1. Survey for disease of Banana/Sapota/Jackfruit
2. Integrated management of *Fusarium* wilt of Banana.
3. Screening banana genotypes for *Fusarium* wilt.
4. Management of rhizome rot disease of banana
5. Management of leaf spot diseases of banana with oils and combination of oil and fungicides.

AICRP on Tuber crops

Horticulture

1. Collection, characterization and evaluation of *Amorphophallus* germplasm.
2. Collection, characterization and evaluation of *colocasia* germplasm.
3. Initial evaluation trial on Amorphophallus.
4. Uniform regional trial on *Colocasia* (Taro)
5. Effect of INM on yield and acidity of Elephant Foot Yam.
6. Organic production of Elephant Foot Yam
7. Standardization of fertigation for Elephant Foot Yam
8. Standardization of storage techniques for Taro seed tubers.

6. HORTICULTURAL RESEARCH STATION - LAM

CHILLIES (HOT PEPPER)

1. Preliminary yield trial-Hot pepper
2. Advanced yield trial-Hot pepper
3. Replicated row yield trial
4. Selection in advanced generations
5. Collection, Maintenance, Evaluation, cataloguing and utilization of Chilli (*Capsicum annum* L) germplasm

PAPRIKA

6. Collection, Maintenance, Evaluation, cataloguing and utilization of Paprika (*Capsicum annum* L) germplasm
7. Preliminary Yield Trial of Paprika
8. Advanced Yield Trial of Paprika
9. Replicated Row Yield Trial of Paprika

Crop Protection (Entomology)

HOT PEPPER

10. Screening of germplasm/ Cultivars for resistance to thrips, mites and Pod borers
11. Population dynamics of chilli pest complex in relation to abiotic and biotic factors
12. Evaluation of certain insecticides against chilli blossom midge *Asphondylia capsici* Barnes (Diptera: Cecidomyiidae).
13. Evaluation of certain new molecules of insecticides and botanicals for the management of chilli thrips.
14. Evaluation of efficacy of certain acaricides for the management of chilli mite *Polyphagoparsonemus latus*
15. Evaluation of certain synthetic and bio-pesticides for the management of pod borer complex.
16. Integrated Pest management on chillies

ALL INDIA COORDINATED PROJECT ON VEGETABLE CROPS

Crop Improvement

CHILLIES

17. Collection, evaluation and maintenance of chilli germplasm
18. Initial Evaluation Trial on Capsicum (Vegetable)
19. Chilli Varietal Trial (IET-I)
20. Chilli Hybrid Trial (AVT-I)
21. Chilli Hybrid Trial (AVT-I)
22. Maintenance of genetic purity of released/ pre released varieties and parental lines of pre-released hybrids of chillies through maintenance breeding programme ie., Selection, Selfing and Progeny row evaluations.
23. Breeder seed Production as per Central indents:

BHENDI

24. Bhendi Hybrid Trial (IET)
25. Bhendi Hybrid Trial (AVT-I)
26. Bhendi Hybrid Trial (AVT-II)

COWPEA

27. Cowpea Varietal Trial (IET)
28. Cowpea Varietal Trial (AVT-I)
29. Effect of post harvest chemical and fungicidal sprays on drying and quality of chillies

Crop Management

CHILLIES

30. Standardization of Nitrogen and Potassium requirement of the pre-released hot pepper lines.(LCA-625)
31. Standardization of technology to reduce whitened pods in chilli.
32. Effect of seed coatings on germinability, Vigour Field emergence and storability of chilli seed
33. Effect of different concentrations of polymer coating on seed quality in vegetable crops. (Chilli)

Crop Protection (Pathology)

CHILLIES

34. Management of dieback and fruit rot disease in chillies
35. Screening of chilli germplasm against different diseases

VEGETABLES

36. Survey and surveillance of diseases in important vegetable crops
37. Integrated management of downy mildew in cucurbits (Ridge gourd)
38. Epidemiology of most important disease of commercially important vegetable crops of the locality
39. Okra yellow vein mosaic resistant trial (IET)

ALL INDIA COORDINATED RESEARCH PROJECT ON SPICES

Crop Improvement

CORIANDER

40. Collection, evaluation and maintenance of coriander germplasm:
41. Initial Evaluation Trial on Coriander (2008)
42. Initial evaluation trial on Coriander (2009).
43. Coordinated varietal trial on Coriander
44. Characterization of Coriander germplasm:
45. Identification of drought tolerance source in coriander

FENUGREEK

46. Collection, evaluation and maintenance of fenugreek germplasm
47. Characterization of fenugreek germplasm
48. Initial Evaluation Trial on fenugreek
49. Coordinated varietal trial on Fenugreek:

AJOWAN

50. Collection, evaluation and maintenance of Ajowan germplasm:
51. Characterization of Ajowan germplasm.

FENNEL

52. Characterization of Fennel germplasm.

Crop Management

CORIANDER

53. Production of leafy type coriander in off season
54. Large Scale Demonstration of the role of Rhizobacteria in growth promotion of Coriander
55. Irrigation management for sustainable coriander production

FENUGREEK

56. Large Scale Demonstration of the role of Rhizobacteria in growth promotion of Fenugreek

7. MANGO RESEARCH STATION - NUZVID

Horticulture

1. Varietal trial in mango
2. High density planting in mango
3. Pruning for rejuvenation of over crowded orchards
4. Effect of intercropping in mango

Entomology

1. Population dynamics of insect pests of mango
2. Management studies on major sucking complex in mango
3. Management studies on mango fruit borer, *Deanolis albizonalis*
4. Pesticide compatibility studies in Mango ecosystem (new research proposal)

8. HORTICULTURAL RESEARCH STATION - PANDIRIMAMIDI

A. Non Plan

1. Collection and maintenance of germplasm plants yielding economic forest produce in agency tract of East Godavari Dist.
2. Studies on the performance of rubber clones under high altitude conditions.
3. Identification of Cinnamon varieties suitable for rainfed conditions of agency tract of East Godavari Dist.
4. Evaluation of the performance of Gladiolus (*Gladiolus byzantinus*) varieties for the Agency area of the district.

5. Effect of different moisture regimes on yield of rubber cv.RRIM-600 or PB 28/59
6. Standardization of variety and training system of passion fruit for the agency areas of East Godavari Dist.
7. Observational trial on the performance of heliconium varieties in the agency areas of East Godavari Dist.
8. Observation trial on the performance and quality in mango variety Alphanso in coastal districts of AP
9. Studies on the production of capsicum under polyhouse conditions.
10. Studies on the performance of improved varieties of turmeric in the agency areas of East Godavari Dist.
11. Studies on the performance of improved varieties of ginger in the agency areas of East Godavari Dist.
12. Studies on the production of gerbera under poly house conditions.
13. Studies on the production of anthurium under polyhouse conditions.
14. Observational trial on performance of bird of paradise.

B. Plan

15. Survey, collection and evaluation of Palmyra germplasm.
16. Studies on the influence of different levels of defoliation on neera yield in Palmyra
17. Growth and development studies in Palmyra (*Borassus flabellifer*)
18. Standardization and Commercialization of Inflorescence Sap Extraction and Inflorescence Sap Based Products (Jaggery, Palm Sugar and Candy)
19. Standardization of Tuber flour Based Food Products (Like Pizza, Bakery items, confectionery, health mix etc.)
20. Standardization of Preservation Technique for Palmyrah Tender Fruit Endosperm

9. HORTICULTURAL RESEARCH STATION - PEDDAPURAM

- I. Collection, conservation, characterization, cataloguing of tapioca germplasm
- II. Varietal Evaluation Trials
 - a. Seedling evaluation programme
 - b. IET ON Cassava Mosaic Resistant Lines (IET Ca MR 09)
 - c. URT on Cassava (URT Ca 09)
- III. Agrotechniques
 - a. Use of Cassava leaves for eri silk worm rearing for production of eri silk/Ahimsa silk
 - b. Standardization of fertigation through micro irrigation for cassava.
 - c. Low input technology for cassava production
 - d. Integrated weed management in cassava
- VI. Plant protection
 - a. Evaluation of cassava lines for mosaic tolerance/resistance

* Technical programme discussed during the X biennial group meeting of AICRP on tuber crops during October 2009 and the proceedings yet to be communicated by the Project Coordinator.

10. HORTICULTURAL RESEARCH STATION - VIJAYARAI

Non Plan

1. Collection, maintenance and evaluation of cooking melon germplasm.
2. Evaluation of germplasm and generation of breeding material for improvement of Bhendi
3. Studies on the effect of different levels of NPK on yield of coconut variety East coast tall in red sandy soils.
4. Evaluation of promising tomato selections.
5. Organic farming in French bean (*Phaseolus vulgaris* L).
6. Effect of NPK fertilizers in combination with coco peat organic substratum on the growth and yield of Heliconia.
7. Cocoa varietal trial as an inter crop under coconut and oil palm plantations.
8. Effect of shade and NPK fertilizers on the growth and yield of Red Ginger in coconut and oil palm.

II AICRP ON OIL PALM

1. Studies on fertilizer application in oil palm through micro irrigation.
2. varietal studies in oil palm
3. Studies on the performance of exotic and indigenous tenera hybrids in oil palm
4. Evaluation of new cross combinations in oil palm.

11. HORTICULTURAL RESEARCH STATION, VENKATARAMANNAGUDEM

PLAN - AICRP ON TROPICAL FRUITS

SAPOTA

1. Collection and evaluation of Sapota germplasm.
2. Varietal trial on Sapota
3. Spacing trial on Sapota
4. Effect of organic and inorganic fertilizer on growth and yield of Sapota variety Kalipatti.
5. Studies on effect of fertigation on Sapota variety Kalipatti.
6. Orchard efficiency analysis in Sapota variety Pala.
7. Canopy arrangement under high density planting in Sapota.
8. Studies on the residual and cumulative effects of nutrients in Sapota.
9. Standardization of stage wise requirement of nutrients in Sapota.

JACKFRUIT

1. Survey, identification and selection of jackfruit mother trees to establish high yielding superior clonal stocks.
2. Standardization of propagation methods for jackfruit.
3. Varietal trial on jackfruit.
4. Effect of rootstocks on the performance of jackfruit.

RAMBUTAN

1. Performance of promising rambutan clones.

ANNEXURE-II

List of Participants - Farmers

S.No.	Name of the Farmer	Address
Sarvasri		
1.	Bandaru Sreenivasa Rao, Prograssive Farmer, Award winner	A.V.Padu, Vatticherukuru, Guntur
2.	B. Venkata Rao	Chemuleum, Kovvur Mandal, W.G.Dt., A.P.
3.	K.Nageswara Rao	Kovvur, W.G.Dt., A.P.
4.	Toleti Rambabu	Kovvur, W.G.Dt., A.P.
5.	Akkapatia Radha Krishna	P.Savaram, Kovvur Mandal, W.G.Dt.
6.	G.V.S.R.Prasad	Sagipadu, K.Kota Mandal, W.G.Dt.
7.	P.Satyanarayana	Ravurupadu
8.	A. Rama Chandra Rao	Peda Tadepalli, W.G.Dt.
9.	M.Radha Krishna	Peda Tadepalli, W.G.Dt.
10.	M.Suryanarayana Raju	Peda Tadepalli, W.G.Dt.
11.	D.Daneedi	Tadepalligudem
12.	V.V.Bhadra Rao	T.P.Gudem
13.	M.S.S.Satti Raju	Lakkavaram, E.G.Dt.
14.	M.Murthy	Lakkavaram, E.G.Dt.
15.	Palacharla Viswanadham	J.Thimmapuram
16.	M.V.V.S. Sai Babu	R.B.Kothuru
17.	M.Buchi Raju	J.Thimmapuram
18.	G.Chalamayya	Kada Konda, Vija Dt.
19.	M.Jasuzeedha Reddy	Penugonda.
20.	S.V.V.Satyanarayana	Teeparru (P.O.), Peravali mandal
21.	S.Kommu Reddy	Tadepalligudem
22.	M.Murali Krishna	Kaluvalepalli
23.	K.Venkateswara Rao	Kaluvalepalli
24.	K.Srinivasa Rao	Area Manager, Cheminova India Ltd.
25.	M.Sngem Rao	Vijayawada
26.	K.Madhu Babu	Pedavulu
27.	Vidimala Satyanarayana	Pedavulu
28.	E.V.Ram Kishore	Pedavulu
29.	A.Suryanarayana	Kadiyam
30.	K.Ganga Raju	Kadiyam
31.	Valluri Seshagiri Rao	Nallajerla
32.	K.Ganga Rao	Nallajerla
33.	P.V.V.Satyanarayana	Narayanapuram
34.	G.Satyanarayana	Wazuyanp
35.	P.Narayana Rao	Executive Syngenta

36.	Sivarama Krishna Reddy	Syngenta
37.	Jujjavarapu Satyanarayana	Venkataramannagudem
38.	P.Satyanarayana	Venkataramannagudem
39.	Medikonda Ramesh	Venkataramannagudem
40.	Kondedd	Ungutur
41.	B.V.V.Satyanarayana	Venkataramannagudem
42.	B.V.V.Raghavalu	Venkataramannagudem
43.	J.Krishna	Venkataramannagudem
44.	Mullapudi Naga Venkata Satish	Venkataramannagudem
45.	P.V.N.N.Satyanarayana	Venkataramannagudem
46.	Bh. Achyut Rama Raju	Palakol
47.	P.Meharji	Chebrolu
48.	Mutyala Sreee Ram	Chebrolu
49.	G.C.Satyanarayana	Ambajipeta, E.G.Dt.
50.	Bassava Bhatla Srinivas	Ambajipeta, E.G.Dt.
51.	S.S.Subrahmanyam	Mukkamala, E.G.Dt.
52.	N.Yesu Babu	Ambajipeta, E.G.Dt.
53.	Uvukali Nagaraju	Rajulapalem
54.	S.Ram Chandram	Mukkamala.
55.	N.Sri Tri	M.Nagula palem, W.G.Dt.
56.	K.Rajesh	Pullalapdu, W.G.Dt.-534112
57.	T.Rajachari	Yagreswaram
58.	Katta Bhaskara Rao	M.Nagupalli
59.	Danda Veeranjanyulu	Bobbepalli
60.	U.Bhaskara Rao	Bobbepalli
61.	M.V.S.R.Anjaneyulu	Bobbepalli
62.	A.Raja Mohan	Pullatikuram, E.G.Dt.-533239
63.	Sulla Appa Rao	Magamda, P.Gannavaram Mandal
64.	Pumcharla Pullam Raju	Magamda, P.Gannavaram Mandal
65.	R.Subba Raju	Pangidigudem, (D.T.L.Man.)
66.	K.Rukminiadh	Pangidiguem (D.T.L.Man.)
67.	V.Prem	Pangidiguem (D.T.L.Man.)
68.	Bhujjavarapu Subrahmanyam	Pangidiguem (D.T.L.Man.)
69.	P.Pulla Rao	V.R.Gudem
70.	P.Madhusudhana Rao	V.R.Gudem
71.	T.Satyanarayana	President, LSC.Kpu
72.	Sk.Jilani	Chintalapudi (NREGS HFC)
73.	P.Rahul	Chintalapudi, D.C.C
74.	M.Naresh	Chintalapudi, D.C.C
75.	N.Jagadish Babu	Chintalapudi
76.	M.Venkata Ramana	Chintalapudi, D.C.C.

77.	B.Naga Malleswara Reddy	Ganapavaram
78.	K.V.Bhaskar	Tanuku
79.	V.V.Prem Kumar	Vedurupalem
80.	Bhommanu Venkata Rao	Ganapavaram
81.	Ramisetti Mohan Rao	A.Koduru
82.	Vellanki Srinivasa Rao	A.Koduru
83.	A.Udaya Bhaskara Reddy	A.Koduru
84.	Vempati Vinnayya	A.Koduru
85.	Kudumula Jamili Reddy	A.Koduru
86.	A.Satyanarayana	A.Koduru
87.	K.Venkateswara Rao	A.Koduru
88.	K.Krishna	A.Koduru
89.	G.Krishna	A.Koduru
90.	Vempati Raghavulu	A.Koduru
91.	G.Rama Naidu	A.Koduru
92.	G.Vasya Nayak	A.Koduru
93.	G.Gopi	R.Kummari Kuntla
94.	Budha	Kummarigunta
95.	B.Dharshan	Kummarigunta
96.	U.Daddi	Kummarigunta, Krishna
97.	M.Kannayya	Machavaram
98.	T.J.Prasad Babu	Eluru
99.	M.Venkateswara Rao	T.P.Gudem
100.	V.Ramesh	T.P.Gudem
101.	P.Babu Rao	V.R.Gudem
102.	A.Raja Rao	Mukamala
103.	Satyanarayana	V.R.Gudem
104.	B.Venkata Rao	V.R.Gudem

ANNEXURE-III

List of Participants - (Department of Horticulture & other institutes)

S.No.	Name of the Officer	Designation
Sarvasri		
1.	P. Padmavathi	HFC, J.R.Gudem
2.	I. Dayakar	Chief Manager, Andhra Bank, T.P.Gudem
3.	K. Vijaya Kumari,	PEX, AIR, VJA
4.	S.Rama Mohan	A.D.Horticulture, Visakhapatnam
5.	G. Srinivas	ADH, Srikakulam
6.	T.V. Subba Rao	ADH, Srikakulam
7.	G.V.Lakshmi	H.O., Devarapalle, Visakhapatnam dt.
8.	M.A.Rahim	H.O., Bobbili, Vizianagaram dt.
9.	T.Anita	H.O., Nakkapalli, Visakhapatnam dt.
10.	A. Rajasekharam	Horticulture Officer, Saluru
11.	K. Mani Bhushana Rao	Horticulture Officer, Cheepurupalli
12.	T.Veera Cyril	Horticulture Officer, Inovicei, E.G. dt.
13.	K. Nagamani	Horticulture Officer, Bhogapuram
14.	T.Sindhur	Horticultural field, Denduluru
15.	K.A.Anand Kumar	Horticultural Officer, KGM & NJL
16.	K.Swathi	Horticultural Officer, Rajahmundry
17.	K.Santhosh	Horticultural Officer, J.P.Gudem
18.	P.Aparna	Horticultural Officer, Jaygampeta
19.	G.Satish	PHO, ITDA, K.R.Puram, W.G.Dt.
20.	M. Ravi Prakash Rao	ADH - I, W.G.Dt.
21.	P.V.S.Ravi Kumar	Asst. Director of Horticulture -II, Eluru
22.	DVL. Ravindran	DDH, Rajahmundry
23.	A.Durgaih	ADH, Kakinada
24.	B.Suryamurthy	Asst. Director of Horticulture, RDJ
25.	P.M.Subhani	ADH, OPSU, Rajahmundry.
26.	K.V.S.Suryanarayana Rao	Horticulture Officer, I/C, Jaggampeta
27.	P. Srinivasa Rao	Horticulture Officer, Kothapeta
28.	N.Mallikharjuna Rao	Horticulture Officer, Navalipum, W.G.Dt.
29.	Y. Satyanarayana	Horticulture Officer, Kovvur
30.	D.Suhasini	DDH (AE2), Vijayawada
31.	Smt. B.Padmavathi	A.D.Horticulture - II, Guntur.
32.	R.Rama Mohan	A.D.Horticulture-II, Vijayawada
33.	P.Prabasa Rao	
34.	P.Nageswara Rao	
35.	P.Jyothimani	H.F.C., T.Narasapuram
36.	B.Jyothi	H.F.C., Lingapalem
37.	Dr. E.Sunil Anand	Sr. Scientist & Head i/c B.R.S., V.R.Gudem
38.	S.Murali Mohan Reddy	Horticulture Officer, Tiruvur, Krishna dt.
39.	K.Jagannadham	Horticulture Officer, Pedavegi

ANNEXURE-IV

List of Participants - (Scientists of APHU)

S.No.	Name of the University Officers/Scientist	Designation
Sarvasri		
1.	Dr. K.V. Seshadri	DE. APHU.
2.	Dr. P.Suryanarayana Reddy	Registrar
3.	Dr. K.Hari Babu	DSA, APHU
4.	Dr. B.Srinivasulu	COE, APHU
5.	Dr. D.V.Raghava Rao	Dean, APHU
1.	Dr. B. Narsimha Rao	Principal Scientist, DOPR, Pedavegi
2.	Dr. V.Vijaya Bhaskar	Sr. Scientist (Hort.), HRS, Vijayarai
3.	M.Satti Raju	Scientist & Head, HRS, Pandirimamidi
4.	B.Pratap	Scientist (Agro), HRS, Vijayarai
5.	K.Ravindra Kumar	Scientist (Hort.), HRS, Chintapalli
6.	D.Aparna	Scientist (Hort.) MRS, Nuzvid
7.	Dr.K.Rajendra Prasad	Scientist (H), HRS, Pandirimamidi
8.	P.C.Vengaiah	Scientist (Food & Tech.) HRS, Pandirimamidi
9.	Dr.G.Ramanandam,	Sr. Scientist & Head, HRS, Peddapuram
10.	Dr. B.V.K.Bhagavan	Sr.Scientist ,(of) HRS, Kovvur
11.	Dr.N.B.V.Chalapathi Rao,	Sr. Scientist (Hort.) & Head, MRS, Nuzvid.
12.	K.Mamatha	Scientist (Hort.), HRS, Kovvur
13.	K.Giridhar	Scientist (H), HRS, Lam
14.	Dr.K.T.Venkataramana	Sr.Scientist, CRS, Bapatla
15.	Dr.S.Surya Kumari	Sr.Scientist (H), HRS, Lam
16.	Dr.C.Sarada	Scientist (H), HRS, Lam
17.	Dr.P.Venkata Reddy	Principal Scientist (H) & Head, HRS, Lam
18.	Dr.C.Venkata Ramana	Scientist (H), HRS, Lam
19.	Dr. Gowtham Bojja	Principal Scientist (H) & Head, HRS, Ambajipeta
20.	Dr. N.Emmanuel	Scientist (E), HRS, Ambajipeta
21.	T.Naga Lakshmi	Scientist (PP), HRS, Ambajipeta
22.	Dr.A.Sujatha	Principal Scientist (E), HRS, Ambajipeta
23.	R.Naga Lakshmi	Scientist (Hort.), HRS, Pndirimamidi
24.	K.Sesha Kiran	Scientist (PP), HRS, Chintapalli
25.	T. Rajasekharam	Scientist (PP), HRS, Kovvur
26.	Dr.B.Prasanna Kumar	To to DH, APHU
27.	Dr. A.Bhagwan	FRS, Sangareddy
28.	R.V.S.K.Reddy	Sr.Scientist (Hort.) VRS, ARI, R.J.Nagar, HYD
29.	Ch. Chinnesbai	Scientist (Ent.) CRS, BPT.
30.	P.Rama Devi	Scientist (PP) & Head, i/c AINRP on MAP & Betelvine, Bapatla
31.	B. Tanuja Priya	Scientist (H), AICRP on MAP & Betelvine, Bapatla,
32.	M.Rajasekhar	Scientist (Hort.), HRS, Venkataramannagudem
33.	R.Rajyalakshmi	Scientist (Hort.), HRS, Venkataramannagudem
34.	Dr.A.Girwani,	Sr. Scientist (H), FRS, Sangareddy.
35.	D.V. Swami	Asst. Professor, College of Horticulture, V.R.Gudem
36.	Dr.P.B.Ratan	Senior Scientist (Hort.) HRS, V.R.Gudem

ANNEXURE-V

List of Participants - (Press and Media)

S.No.	Name	Address
	Sarvasri	
1.	T. Nageswara Rao	DPRO Office, Eluru
2.	Ch. Rambabu	Andhra Jyothi
3.	S.S. Chary, S.R.Reporter	The New Indian Express
4.		Doordarshan, Vijayawada
5.	M. Ravi Kiran	Eenadu
6.	Y. Murali Krishna	Sakshi

