



Short Tour Visit Attempted by B.Sc. (Hons.) Horticulture Students (2021 Batch) of Adhiparasakthi Horticultural College, Kalavai, Tamil Nadu, India

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Abstract

As a part of the course HOR 201 – Study Tour Visit (0+1), we visited various research stations and colleges in Tamil Nadu to get good exposure related to the crop varieties released and newer technologies practising there for sustainable horticulture production. The various places viz., Vegetable Research Station (Palur), Regional Research Station (Vridhachalam), Horticultural College and Research Institute (Trichy), National Research Centre for Banana (Trichy), Agricultural College and Research Institute (Killikulam), Floriculture Research Station (Thovalai), Horticulture Research Station (Pechiparai), Agricultural College and Research Institute (Madurai), Tamil Nadu Agricultural University (Coimbatore), Coconut Development Board Demonstration cum Seed Production Farm (Udumalaipet), Centre of Excellence for Cut Flower (Thally, Krishnagiry) from Tamil Nadu. Here we exposed the recent varieties released, newer technologies developed and farm practices in horticultural crops.

1. Vegetable Research Station (Palur): Established in 1905 (110 Years Old) second agricultural research station in Tamil Nadu. Functions under TNAU since 1981. It focus on crop improvement in Vegetables and Jackfruit, Rice, Pulse, Mango and Guava. The main objectives are 1) To evolve high-yielding varieties /hybrids in Vegetable crops. 2) Identification and evaluation of superior clones/varieties in Jackfruit. 3) To evolve new technologies and to enhance yield and quality in Vegetable crops. 4) To develop plant protection techniques to prevent yield losses in Vegetables. 5) Production of high-quality grafts of elite varieties in Jack and Mango and production of high-quality layers of superior varieties in Guava. The varieties released in VRS Palur are listed below.

S.No	Crop	Variety	Special Features
1.	Brinjal	PLR-1	Released in 1990. High yielding (25 t/ha) Purple colour fruits, Cluster bearing.
2.	Brinjal	PLR (Br) 2	Released in 2008. High yielding (38 -40 t/ha) Fruits are oval in shape, dark purple. Single fruit weighs 75 – 80 g Excellent cooking quality.
3.	Chilli	PLR 1	Released in 1994. High yielding (18 t/ha) Suitable for green chilli, Tolerant to salinity

4.	Amaranthus	PLR -1	Released in 2013 first of its kind variety in Sirukeerai type. Early harvest (20-21 days). High yielding (8-9 t/ ha).
5.	Jack fruit	PLR -1	Released in 1992. Bearing, 80 to 100 fruits per tree – main season. 40 fruits per tree- off-season, Sweet carpels, yellow colour.
6.	Jack fruit	PLR(J)2	Released in 2007. High yield (107 fruits/tree). Suitable for high-density planting. Very sweet and non-sticky carpels.

2. Regional Research Station (Vridhachalam): The station was established as Cashew Research Station in 1963 and subsequently, upgraded as Regional Research Station under NARP for the North Eastern zone during 1982. The mission of RRS is 1) To develop high-yielding varieties in groundnut, sesame and cashew. 2) To develop location-specific technologies for increasing the production and productivity of major crops of the region. 3) To impart training to the farmers and staff of sister departments on crop production technology. A detailed note on the pests of groundnut was given. Various pests like Red hairy caterpillar, which is a pollinator, leaf folder, miner cum folder which is a common pest. Various traps such as yellow trap and blue trap were shown in rice fields which is a very good control for white pests and aphids that prevails as a serious pest to the crops now and then. Projects on All India Coordinated research projects on Sesame, Groundnut, Cashew and seed production are being carried out. Research on cashew is predominantly carried out. Varieties such as VRI 1, VRI 2 (drought tolerant), VRI 3 (export quality), and VRI (cw) H1 (First hybrid cashew in Tamil Nadu) have been released in this station. Since the adaptability of the cashew crop is wider in this area, research is carried out on a large scale. Not only in cashew even in Groundnut and Sesame few varieties were released. Also, 7 varieties in Groundnut - VRI 1, VRI 2 (bold seeded and wide adaptability), VRI 3 (early maturing), VRI 4 (high sucrose content suitable for confectionary), VRI (gn) 5, VRI (gn) 6 (resistant to major pests and diseases), VRI (gn) 7 (suitable for rainfed areas) and 2 varieties in sesame - VRI (Sv.) 1 (short duration, brown seed), VRI (Sv.) 2 (reddish brown seed). In addition, work is in progress for rodent management in crops and control of mealy bugs which are one of the pests in papaya

3. Horticultural College and Research Institute (Trichy): We have visited the Department of Fruit Science. It was established in 2017 in HC and RI, Thiruchirapalli. This department works on High-Density Planting in guava and the Evaluation of genotypes of guava. High-Density planting in Guava requires 3x1.5m and normal spacing of 5x5m. It is propagated by layering, grafted - softwood or cleft grafting. Usually, drip irrigation is followed. On mango farms, we see different varieties viz., Alphonse, Banganapalli, Senthura, Rumani, Mulgos, Kalipad, Peter, PKM-1, PKM-2, Himayudin, Kasaladdu, Pathin, Pottalama, Bangalora. Also, we visited the Department of Floriculture and Landscape Architecture, it was formed in 2018 and it has a medicinal and aromatic park. We have seen many of medicinal crops viz., Vallarai-*Centella asiatica*; Gymnema- *Gymnema sylvestre*; Tulsi-*osimum sanctum*; *Aloe Vera*; Glory lily-*gloriosa superba*; Nilavembu - *Andiographis paniculata*; Poduthalai -*Phyla nodiflora*; Neer nochil- *Justicia gendarussa*; Thoothuvalai- *solanum trilobatum*; Nila avarai- *Cassia angustifolia*; *Raunolfia tetraphylla*; *Raunolfia Serpentina* - Serpaganta. In the Arid zone fruit block, we have seen crops viz., Wood Apple, Aonla, Custard apple, Jamun, Bael, West Indian Cherry, Manila Tamarind.

4. National Research Centre for Banana (Trichy): We have visited the prestigious National Research Centre for Banana, Trichy. There we have learnt a lot from Dr C. Karpagam. An introduction was given by Dr P.Ravichamy, Assistant Chief Technical Officer of NRCB. India is the first leading producer of banana in the world. In Tamilnadu, an undivided Trichy district covers a large area of banana cultivation. NRCB, Trichy has

released 6 varieties such as Udhayam, Kaveri Kalki, Kaveri Kanya, Kaveri sugantham, Kaveri Haritha, and Kaveri Saba. NRCB also developed DNA fingerprinting using Simple Sequence Repeats (SSR) and Interspersed Sequence Repeats (ISSR). Then Dr C. Karpagam gave a brief explanation about Crop improvement, production and protection. G 9 variety was propagated by the tissue culture method which is prevalently cultivated in Maharashtra, which results in disease-free plants, uniform growth and a success rate is also high. NRCB had developed its own fertigation and drip irrigation schedule. Also developed Banana Shakti which has five micronutrients (B, Fe, Zn, Cu, Mn) with increased yield by 5 - 10%.

5. Agricultural College and Research Institute (Killikulam): This Institute has a largest area about 1200 acres under Tamilnadu Agriculture University. There are three types of lands are maintained viz., wetland, garden land and dry land. In wetlands, they cultivate rice and green manure crops. In dry land, they grow the Palmyra plant Also, this Institute falls under a semi-arid zone, it receives rainfall less than 750 mm. so mostly rice is cultivated in North East monsoon season with 42 rainy days. The evaporation rate here is 6 to 8 mm per day. They also released varieties like KKM 1 (Brinjal), VRM (Brinjal), KKM1 (Chilli), and KKM 1 (Kambu Napier grass). They also grow fruit crops like Mango, Sapota (Cricket ball), and Amla (BSR 1 and BSR 2).

6. Floriculture Research Station (Thovalai): The Floriculture Research Station, Thovalai was established in the year 2008. The total extent of land is 11.5 acres receiving an annual rainfall of 1450mm. Dr Nalaperumal enlightened us with his knowledge about loose flowers, cut flowers, fillers and ornamental aquatic plants. He also explained to us about the activities and research carried out in this station. This research station maintains the germplasm of cut flowers like orchids and heliconia. We came to know about the to-be-released variety Thovalai-1 of Nerium flower which has big petals and is pink in colour. They have also developed technology to increase the production of Jasmine in Tamil Nadu during winter as the price of the loose flower hikes 30-40 times due to off-season. In this technology “Mepiquat chloride-0.5ml” is sprayed twice after pruning which gives a 75% yield as of good season.

7. Horticulture Research Station (Pechiparai): Horticulture Research Station was established in 1989 at Pechiparai under Tamil Nadu Agricultural University, Coimbatore. The Institute of Horticulture was started in 2008. The area falls under a high rainfall zone with an annual rainfall of 2000-2500mm. Since it is a high rainfall zone, the type of soil is mostly laterite soil. Soil is mostly acidic in nature. The main objective of this station is the selection and evaluation of high-yielding varieties. Standardization and management of spices, fruits and vegetables. Integrated pest management (IPM) is well-developed. HRS, Pechiparai focuses on spice crops like Nutmeg, Clove, Allspice, Pepper, Cinnamon, and kokum and crops like Pineapple, Jack fruit, Red banana, and Mangosteen. Training on local farmers conducting seminars for tribal peoples about the management of crops. The varieties that are released in HRS, Pechiparai are listed below.

S.No	Crop	Variety	Year of Release	Special Features
1.	Jack Fruit	PPI 1	1996	The tree is a medium-sized (6 feet tall), off-season bearer (November to December). The fruit has a tasty fresh aroma, Yield is about 107 fruits per tree per year
2.	Brinjal	PPI 1	2001	Moderately resistant to shoot and fruit borers Pearl green long fruit. Yield is about 35-40t/ha
3.	Cinnamon	PPI 1	2002	It has a high oil recovery per cent of leaves (3.3%) and bark (2.3%)

In addition, the institute has different types of banana like red banana, karpuravalli, matti and pepper varieties like karimunda, IISR shakthi, panniyur, panniyur 1, panniyur 2, panniyur 3, panniyur 4, panniyur 5, panniyur 6, and Nutmeg varieties like vishvasree which are used for pickle purpose. The institute has well-developed, Integrated Pest Management (IPM) in crops like bananas for pseudo stem borer, and aphids. HRS, Pechiparai also has colonies of honeybees like Indian bees, stingless bees and Italian bees.

8. Agriculture College and Research Institute (Madurai): We visited the seed processing unit. In that seeds are harvested at physiological maturity with 18 to 20% moisture. Drying is usually done by sundry, the moisture content in the seed is reduced to 13%. And then winnowing is done by the winnower, the main principal of the winnower is gravity and airflow. The seeds are sent to the sieving machine which has three layers bottom, middle and top. These sieves have standard sizes and then the seeds are collected in Gunny bags and packed and labelled. A floating test is conducted in paddy seeds, For which, 1000 seeds are tested and 2% of floating seeds are allowed. seeds having greater than 2% of floating seeds the seeds are rejected. A germination test is conducted in which the seed should have 12% moisture content and the germination rate should be greater than 80%. Tagging: White tag is used for foundation seed; Azure blue is used for certified seeds; Breeder seed tag colour is a golden yellow colour. In addition, they have practised apiculture and explained about rock bees, Italian bees, Indian bees, little bees, and stingless bees also explained the beekeeping practises.

9. Tamilnadu Agriculture University, Coimbatore: We have visited Tamilnadu Agriculture University, Coimbatore. Orchard's total area is 56 acres with which vegetables are 24 acres and fruit 22 acres. The soil type is clay-loamy soil. In vegetables, they have Solanaceae crops like Tomato, Brinjal, and Chilli. Cole crops, Tuber crops like sweet potato, Taro, Elephant Foot Yam, Colocasia, Dioscorea, tapioca. In lab lab (CO15, CO 16), Brinjal (CO 2), Bhendi Hybrid (CO 4), Pumpkin (CO 2), Ridge Gourd hybrid (CO 1), Snake Gourd (CO 2), Bitter Gourd (CO 1) were released. They also sale seedlings of papaya and issue cultured banana plants to farmthey also have semi arid crops like vilvam , wood apple and also have some other crops like almond, fig, manila tamarind.AICRIP -ICAR 70% sponsors and 25% state. They also Sale vermi composed, 1 kg=12 rupees and they also explained about production Technology of vegetables. we also visited botanical garden of medicinal crops, where we have seen Adathoda, aromatic grass, citronella lemongrass, PalmaRosa, Vettiver, iruvelli, karpuravalli, sacred grass, Aloe vera, pirandai, neermulli, serpaganta, java tea, screw pine, masipatti, periwrinkle, ponnaganni, Ashwagandha, ranakalli. we also seen Thulasi, coleus, solanum nigrum, Poduthalai, karisalai, zimmu, Senna, gymnema, Fiddle wood tree, night Jasmine, phycus Krishna, noni, gloriosa. we also visited insect Museum in Tamil Nadu Agricultural University where we have seen many orders of insects like Lepidoptera(moths and butterflies), Coleoptera (beetles and weevils), Odonata (dragon flies and damsel flies), Hymenoptera (bees, wasp, ants), Hemiptera (true bugs), Neuroptera (lace wings, antlions, mantidflies), Diptera (flies), Orthoptera (grasshopper,crickets), Dictyoptera, Phasmida, Thysanoptera(thrips) , Ephimeroptera.

10. Coconut Development Board Demonstration Cum Seed Production Farm (Udumalaipet): The coconut development board was established on 12th Jan 1981. It has a 1200 Sq.ft area, 102 acres, and 16 blocks. The main objective is the production and distribution of new varieties. They released tall, dwarf, hybrid and exotic varieties. Varieties released are viz., Malaysian yellow dwarf, Centrally orange dwarf, Gangapondam, Malaysian green dwarf,

Chowghat. Recently CPCRI released the kalpasankara variety. It is tolerant of Kerala wilt. In Lakshadweep, 2 varieties were released. In the area, Indonesia ranks first, followed by the Philippines and India. The temperature required is 27°C, RH:60 per cent. Early splitting of

leaves is an important physiological disorder. A triangular method of planting is preferred in this board. In this board, many byproducts were introduced. They are coconut milk, kernel flour, tender coconut chips, milkshake, vinegar, coal, coconut oil, chocolate, virgin oil, skimmed milk, natady coconut, dry powder, and honey. so it is called as Kalpavriksha. The life span of tall varieties is 75yrs, for dwarf varieties 40-45yrs and for hybrids 45-50 years. Horizontal planting shows vigorous growth.

11. Centre of Excellence for Cut Flowers (Thally, Krishnagiri): Centre of Excellence for Cut Flowers, Thally, Krishnagiri was established based on Indo – Israel Agricultural project. They grow cut flowers in a controlled environment. They gave information about cut flower production and practices followed in the Centre of Excellence. First, we saw the Gerbera flower and its varieties. Then we saw about its pest and diseases. Secondly, we saw the Carnation flower crop and its types and varieties, Netting is followed in the Carnation crop. Next, we saw Gypsophilla and its propagation method, spacing etc. We explored different methods followed in rose varieties. Then Bird of Paradise and it's various. Then we visited the Ornamental flower garden and get to know about many ornamental flower crops and their values.



SHORT TOUR VISIT AT DIFFERENT RESEARCH STATIONS OF TAMIL NADU AGRICULTURAL UNIVERSITY