PINEAPPLE RESEARCH STATION OVER THE YEARS

Genesis

The Pineapple Research Station at Vazhakulam was established on 2nd January 1995 to give research and development support to pineapple farmers. Since then, this research institute of the Kerala Agricultural University has been steadily growing and serving as a subvention to the pineapple growers of the state and the country as well. The research institute had a humble beginning on 2.1.1995 as "Pineapple Research Station & Pest and Disease Surveillance Unit" under the Kerala Horticulture Development Programme (KHDP). For the construction of the office-cum-laboratory building of the station 15 cents of land was transferred from the Revenue Department to Kerala Agricultural University on 24.6.1996. It was delinked from KHDP and became a constituent research centre of Kerala Agricultural University under Central Zone Regional Agricultural Research Station (RARS), Pattambi on 1.7.1997 and shifted to its own new building on 27.6.1998.

Location

The research centre is located at Google Map Geo coordinates: 9.9435,76.6384 close to the pineapple market at Vazhakulam, 10 km east of Muvattupuzha on the Muvattupuzha - Thodupuzha road in Ernakulam District, Kerala, India. It is about 40 km from Cochin International Air port, Nedumbassery; 50 km from Aluva railway station and 80 km from the Cochin harbour.

Vision

Quality People, Infrastructure & work culture for Quality Technology, Products & Services.

Motto

Merit alone counts for Quality suitable for the purpose.

Thrust areas

- Collection, characterization, documentation, conservation and evaluation of germplasm of pineapple and passion fruit
- Refinement of propagation and management methods of pineapple and passion fruit
- Development of Organic and Good Agricultural practices for pineapple and passion fruit
- Management of pest and diseases of pineapple and passion fruit
- Domestication, evaluation and management of exotic varieties of the mandate fruits
- Identification of subtropical fruit varieties for plains, development of agro techniques for subtropical and temperate fruits
- Identification of fruit crops and varieties suitable for homestead cultivation
- High tech fruit culture (high density planting, fertigation, protected cultivation, canopy regulation, precision farming etc.)
- Technological interventions in fruit crops for sustainable livelihood, employment along with food, health and environment security
- Development of pre and post harvest technologies for enhancing shelf life of major fruit crops
- Product diversification, by-product utilisation and waste management of fruit crops
- Mechanisation in fruit cultivation, harvesting, post harvest handling and processing
- Influence of climatic variations in the performance of fruit crops

Mandate

- Give research and development support to the pineapple and passion fruit growers
- Provide quality technology, products and services to the fruit crops sector
- Undertake basic and applied research in pineapple and other fruit crops of Kerala

Aims

- Promote pineapple and passion fruit cultivation
- Develop viable fruit production technology and transfer to the stake holders
- Boost organic farming and Good Agricultural Practices (GAP) for safe production and health security
- Develop pineapple and passion fruit varieties resistant to virus diseases
- Facilitate processing, product diversification, utilization, export and waste management
- Real time access and use of technology for problem solutions
- 100% transparency and accountability in project management and transactions
- Acquire Quality People, Infrastructure and Work culture for Quality Technology, Products and Services

Facilities

Office: The station is managed by one scientist and one office assistant as permanent staff supported by daily wage contract laboratory and field staff. Farm advisory committee with public participation oversees the research and development activities of the station.

Laboratories: Pineapple Research Station has well equipped laboratories in biotechnology, phytochemistry, microbiology and food technology. The major items of equipment and facilities are in line with a world class research centre. Gel documentation, ELISA Reader and washer, PCR, UV vis spectrophotometer, UV- Transilluminator, Flame photometer, Cooling Centrifuge, Microfuge, Phase contrast Microscope, Compound Microscope , Horizontal

a. Elisa reader & washer b. UV vis spectrophotometer c. PCR d. Autoclave e. Flame photometer f. Phase contrast microscope g. Viscometer h. Cooling centrifuge i. Laminar air flow chamber j. UV transilluminator

Autoclave, Vertical Autoclave, AGE unit, PAGE unit, Orbital Shaker, Hot Air Ovens, Microwave oven, Electronic Weighing Balances, Magnetic Stirrer with Hot Plate, Deep freezer, BOD incubator, Laminar Air Flow chambers, still units, pH Meter, Muffle furnace, Viscometer, Penetrometer, visual display system etc. are the main equipment in the labs. All the labs are equipped with current-model, high-end PC computers with large storage capability, high-speed network and internet connectivity, an extensive collection of softwares including research oriented and simulations software. Scientific studies on novel cultivation technologies, tissue culture, nursery techniques, laboratory technologies, quality testing, fruit processing and value addition are given here. UG and PG students of other universities can do their projects here based on the rules and regulations of Kerala Agricultural University.

Field: The research station presently has 0.61 ha of farm land leased out from M/s. Vazhakulam Agro and Fruit Processing Company Ltd, Nadukkara for conducting various field experiments which is 5 km away from the station. All the field demonstrations and experiments on pineapple and passion fruit are carried out here for the development of new varieties and novel cultivation technologies.

Library: The station has various specialised books and periodicals relevant to the sector especially on pineapple and passion fruit. In addition, the station has fully networked computer systems with full time internet and Wi-Fi connectivity for searching the internet, retrieving various databases and participating in various scientific discussion groups and social networks to keep pace with the current scientific developments. It aids for research activities of the station, studying new experimental techniques for students and researchers.

Seminar Hall: The station has well equipped seminar hall with audio visual aids and modern LCD projection facilities suitable for presentations for conducting conferences, seminars, symposia, workshops etc.

Students can pursue novel technologies from the staff here. They will get well trained for becoming self-reliant and even for new start-ups. All the training programmes conducted here are under the rules and regulations of Kerala Agricultural University. Novel cultivation technologies, tissue culture, nursery management, laboratory techniques, quality assurance, fruit processing, value addition, marketing, waste management, etc. are some of the job oriented trainings conducted here. Not only they become well experienced in the sector but also could explore their inbuilt talents for a better work efficiency through hard work, punctuality, efficacy, confidence, team spirit, sincerity, good conduct, morale and social responsibility and accountability. All these could eventually lead to develop a better work culture to work together as a team to accomplish high end tasks and fulfil one's flaming dreams.

Sales centre: The research station has a sales centre for the public sale of Tissue Culture Plants (MD-2, Kew, Nendran), Pineapple suckers (MD-2, Kew, Amritha, Mauritius), Seedlings (134P, Purple, Yellow, Kaveri), Rooted cuttings (134P, Giant passion fruit), Publications, etc. Priority is always given to firm orders with advance payment and delivery will be on first-come-first-serve basis.

E-Governance: UFAST (University Functional Accountability SysTem) is established for the smooth accountability of all the projects. This helps Kerala Agricultural University to oversee the project implementation at the station simultaneously. The university can also supervise the station's research project activities through ORMIS (Online Research Management Information System).

Website: The centre has its own website at http://prsvkm.kau.in for making the research and development projects, programmes, reports and publications accessible by the public. The website of the station is regularly updated with more relevant and useful information for the public, facilitating free download of the publications of the centre.

WhatsApp groups: The station has created Pineapple and Passion fruit whatsApp groups which can help the members to interact with specialists, solve queries and share their experiences. In order to become its member you only need to give your whatsApp number.

Staff:

Table 1. List of permanent staff worked and currently working at the station

No.	Sanctioned Post	Incumbent	Designation	Period
1	Asst. Professor (Plant breeding)	Dr. K.P. Kuriakose	Asst. Professor & Head	02/01/1995 - 26/04/1999
			Asso. Professor (& Head 28/10/2003-)	28/02/2000 -15/10/2009
2	Asst. Professor (Plant breeding)	Dr. J. Thomas	Asso. Professor & Head	27/04/1999 - 31/05/1999
3	Asst. Professor (Horticulture)	Dr. V.S. Devadas	Asso. Professor & Head	01/06/1999 - 27/10/2003
4	Assistant	Vijayan K.	Sr. Grade Asst.	09/06/2005 - 20/06/2006
5	Asst. Professor (Horticulture)	Dr. Ancy Joseph	Asso. Professor	28/04/2005 - 09/06/2009
6	Assistant	Bapukutty D.K.	Grade I Asst.	21/06/2006 - 28/05/2008
7	Assistant	Ancy George	Sr. Grade Asst.	29/05/2008 -31/05/2011
8	Asst. Professor (Plant breeding)	Dr. P. P. Joy	Professor & Head	16/10/2009 -28/02/2018
9	Assistant	Justin T. Jose	Sr. Grade Asst.	01/06/2011 - 08/07/2014
			Asst. Section Officer	19/06/2017 onwards
10	Assistant	Iby O.M.	Asst. Section Officer	09/07/2014 -18/06/2017
11	Lab/Clerical Assistant	Abins S. Siddhique	Grade III Clerical Assistant	24/12/2014 -15/06/2015

Dr. K.P. Kuriakose
02/01/1995 – 26/04/1999
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16/10/2009 – 28/02/2018

Station Heads

Achievements

The research centre undertakes basic and applied research and development activities in pineapple, passion fruit and other fruit crops of Kerala. Following are the achievements of the station over the years obtained through continuous surveillance:

- Scientific technology for commercial cultivation of Kew and Mauritius (Vazhakulam Pineapple)
- Pure cropping and Intercropping in rubber and coconut and in reclaimed paddy fields and organic practices were recommended to the growers
- Vazhakulam pineapple has been registered in the Geographical Indication Registry to boost the export of pineapple
- Produced and sold pineapple (Mauritius, Kew, MD-2, *A. nanas*) and passion fruit (134P, Purple, Yellow, Kaveri, Giant granadilla) planting materials to farmers
- Sold out more than one lakh MD-2 pineapple tissue culture plants, 30,000 passion fruit planting materials and 20,000 banana tissue culture plants
- Identified the presence of Pineapple Mealybug Wilt Associated (PMWA) virus at Vazhakulam and suggested preventive measures
- Identified 134P passion fruit variety with better yield, quality and disease tolerance and recommended for the commercial cultivation in the mid lands of Kerala
- Consultancy and training for production, shelf life studies, processing, preservation, value addition, export of pineapple and passion fruit varieties
- Quality analysis of pineapple and passion fruit varieties with authentic reports
- Introduced a European pineapple variety, MD-2 having more shelf life and less core browning for export
- The centre's activities are being published through newspaper, magazines, TV and radio
- Active presence in digital world with its own website (http://prsvkm.kau.in)
- Live discussions and problem solutions through whatsApp groups

All the technologies developed are being transferred to the concerned extensively.

Vazhakulam pineapple

Vazhakulam Pineapple

Pineapple has been commercially grown in Vazhakulam area for more than 60 years for its excellent fruit for fresh consumption. Vazhakulam area is ideally suited for the production of pineapple for table purpose. Planting is done in almost all the months, except during the heavy monsoon days. Hence, fruits are available round the year. Vazhakulam is considered as the biggest pineapple market in India from where the fruit is being transported to all other states. It is extensively grown in the districts of Ernakulam, Kottayam, Pathanamthitta and the low elevation areas of Idukki district in Kerala. It is the centre of pineapple trade in Kerala and India. Vazhakulam pineapple was registered as Geographical Indication (GI) No. 130 under Agricultural-Horticultural product at the GI Registry, Chennai on 4th September 2009. GI registration is the process of endorsing brand protection under WTO guidelines to the producers of any product known for quality and marketed in the label of a geographic area. The registered proprietors of the intellectual property attached to Vazhakulam Pineapple are Nadukkara Agro Processing Co. Ltd (NAPCL), The Kerala Agricultural University, Vellanikkara, and Pineapple Farmers' Association Vazhakulam, Kerala. The GI registration has boosted the export of pineapple from the state considerably, besides the high reputation fetching premium price in the international market.

Vazhakulam pineapple locally known as 'Kannara' is a Mauritius variety coming under the species *Ananas comosus*. The plant is about 85-90 cm height, leaves spiny, gives yield within 12 months. The average fruit weight is 1.5-2.0 kg. The fruit has a pleasant aroma, slightly conical in shape, fruit 'eyes' deeply placed, fruit flesh is crisp and golden yellow in colour, juice is sweet with 14-18°Brix and its acidity is 0.50 - 0.70%. The fruit withstands post harvest handling damages and long distance transport. Vazhakulam pineapple is unique in aroma, flavour and sweetness due to its high sugar content and low acidity.

MD-2 pineapple

MD-2

MD-2 is a hybrid pineapple originated in the breeding program of the now-defunct Pineapple Research Institute in Hawaii, which conducted research on behalf of Del Monte, Maui Land and Pineapple, and Dole. It can be harvested by 13 months. It is the standard for the international market because of its colour, flavour, shape, lifespan and ripeness. It has excellent fruit qualities like high brix value (18 for ripe fruit), low acidity (0.4-0.5%), medium fruit size (1.5 to 2.0 kg), cylindrical shape with square shoulder, small core size, resistant to internal browning, very long shelf life (about 30 days) etc. Its sucker production is meagre and is susceptible to fruitlet core rot and more sensitive to Phytophthora rot. MD-2 will be the best pineapple variety that can be imported for cultivation in Kerala which will increase the export share of the pineapple produced in the state. IPR rules are not applicable to MD-2 variety as it is not a patented variety. MD-2 variety can be imported from Costa Rica, Ghana, Cuba, France etc. The field performance of MD-2 pineapple is established by the station and its plantlets are sold from the centre.

Amritha pineapple

Amritha is a hybrid between Kew and Ripley queen, released by Kerala Agricultural University. It has spiny leaves and 12 months duration. Fruit is cylindrical, tapering slightly from near base, weighing 1.5-2.0kg. Crown is small weighing 80-100g; ratio of fruit weight to plant weight is medium. Fruit is green when unripe and uniformly yellow when ripe; fissure and eye corking absent, spirals are left oriented. Fruit is firm with mild external aroma, skin 6 mm thick, flesh firm, non-fibrous, crisp and pale yellow in colour with rich aroma. Taste is good with high total soluble salts and low acidity. Research activities on Amritha are continuing at the centre.

Amritha

134P passion fruit

As an outcome of Kerala State Council for Science Technology and Environment (KSCSTE) project "Evaluation of passion fruit types for commercial cultivation in Kerala" a purple passion fruit type obtained from Seven Mally Estate, TATA Tea Limited, Munnar-685612 showed superior growth, yield and quality parameters and recommended for commercial cultivation in the mid lands of Kerala. The passion fruit accession 134P rooted cuttings were supplied to all the KAU research centres and farmers for evaluation as per 37th ZREAC recommendation.

134P

Operating environment

- Two permanent employees and few contract staff
- Plant Biotechnology, Phytochemistry, Plant Pathology and Food Technology Labs strengthened with almost all the relevant equipment
- Leased land for field experimentation
- Specialized books and periodicals
- Training hall with projector system
- Student projects and trainings for both UG and PG students of other universities
- Sales centre for sale of tissue culture plants, rooted cuttings and seedlings of passion fruit, banana and pineapple
- Effective eGovernance through UFAST, ORMIS, Website and WhatsApp Groups
- Right vision of 'Quality People, Infrastructure & work culture for Quality Technology, Products & Services'

Research

The research institute undertakes basic and applied research and development activities in pineapple, passion fruit, banana and other fruit crops of Kerala. The research and development projects are mainly in Participatory technology development (PTD) mode and funded by various agencies as KAU, State and central governments, ICAR, SHM, NHM, KSCSTE, KPM etc.

Projects

I. Completed projects

Name, Code no, period, agency, outlay, objective and outcome of projects are given below

1. Kerala Agricultural University Projects

1.1 Name: Evaluation of organic manures with biofertilizers for maximizing the yield and quality in pineapple var. Mauritius; **FRC code:** FR-09-00-04-2001/VZK (10) KAU; **Period:** 2000-2003; **Agency:** Kerala Agricultural University; **Objective:** To compare the effect of various forms of organic manures and biofertilizers on yield and quality of pineapple var. Mauritius; **Outcome:** NPK 8:4:8 g/plant + FYM 25 t/ha + Azospirillum 2.5 kg/ha + Phosphobacter 2.5 kg/ha gave the highest yield.

1.2 Breeding for yield and quality of pineapple

1.2.1 Name: Improvement of pineapple var. Mauritius through hybridization and induced mutation; **File No.:** R8/70507/03; **Period:** 1995- ; **Agency:** Kerala Agricultural University; **Objective:** To evolve a high yielding and early maturing pineapple variety suitable to fruit processing industry and table purpose and acceptable to farmers; **Outcome:** 14 hybrid lines were selected based on fruit weight more than 1 kg and brix value and they were planted for planting material production further evaluation.

1.2.2 Name: Intraclonal variability in pineapple var. Mauritius; **Agency:** Kerala Agricultural University; **Objective:** To develop superior clones utilizing the clonal variability available; **Outcome:** one clone suitable for processing was developed and proposed for farm trial.

1.3 Name: Selection of high yielding superior quality pineapple variety for central zone of Kerala in PTD mode; **File No.:** R8/62636/2010; **Period:** 2011-2012; **Agency:** Kerala Agricultural University; **Outlay:** ₹9,40,000/-; **Objective:** To select a high yielding superior quality pineapple variety for central zone of Kerala; O**utcome:** Based on the total yield Mauritius (120 t/ha for 3 yrs) performed the best followed by T3 (89 t/ha for 3 yrs) and MD-2 (59 t/ha for 3 yrs).

1.4 Name: KAU: State Plan Project 2013-14: Station wise funding on ongoing research projects and minor infrastructure support during 2013-14; **File No.:** EP/B1/30896/13**; Period:** 2014-2015**; Agency:** Kerala Agricultural University**; Objective:** Mass production of tissue culture plants of different varieties of pineapple for large scale distribution of their planting materials in different parts of the country, to improve infrastructure support of the station; **Outcome:** Tissue culture plants of different varieties of pineapple were produced and distributed; equipment like viscometer, penetrometer, homogenizer, autoclave, precision balance, analytical balance, micropipettes, air curtain, research materials, flag post, display system, computer accessories, refrigerator, UPS 4 kVA were purchased; repair and maintenance of equipment and the station were carried out.

2. Other projects

2.1 Name: Population density of pineapple var. Mauritius as intercrop in coconut and rubber plantations; **FRC code:** FF/15-00-06-95/VZM (15) KHDP; **Period:** 1995-1998; **Agency:** Kerala Horticultural Development Programme; **Outlay:** ₹2,46,000/-; **Objective:** To find out the optimum spacing for planting of pineapple var. Mauritius as intercrop in coconut and rubber plantations; **Outcome:** Individual fruit weight was not influenced by the different plant densities (8,000 – 15,000 in rubber plantation and 15,000 – 30,000 in coconut garden). However, the per hectare yield was maximum at the highest density in each case.

2.2 Name: Evaluation of fungicide 'SAMARTH' (Hexaconazole 2% EC) against collar rot of pineapple; **File No.:** EP/A1/6881/09; **Period:** 01.07.2010 - 31.03.2011; **Agency:** Rallis India Ltd., Bengaluru; **Outlay:** ₹1,65,450/-; **Objective:** To evaluate the bioefficacy of Samarth (Hexaconazole 2% SC) against pineapple collar rot and other diseases; **Outcome:** The evaluation of Samarth (Hexaconazole 2% SC) against pineapple collar rot and other diseases for one season during 2010-11 showed that it is highly effective in controlling the diseases. Hexaconazole 0.5% is more efficient in disease control though it slightly affected plant growth in terms of plant height and leaf length in the early stages with no marked difference thereafter. Hexaconazole 0.4% is safest with good disease control efficiency.

2.3 Name: ICAR adhoc scheme: Evaluation of pineapple hybrids for higher yield, quality and suitability for intercropping; **File No.:** EP/A3/44778/2001; **Period:** 01.01.2002-31.12.2004; **Agency:** Indian Council of Agricultural Research; **Outlay:** ₹2,86,423/- ;**Objective:** To evaluate about 5000 pineapple hybrids available at the Pineapple Research Station, Vazhakulam based on yield and quality parameters to develop an ideal pineapple hybrid suitable for the dual purpose of fresh fruit consumption and processing; it should be suitable for growing as a pure crop in garden land and reclaimed low lands/paddy fields and as an intercrop in coconut and rubber plantations

Outcome: Out of the total 5000 hybrids maintained at the station, about 2700 hybrids which yielded fruits during the period were evaluated individually for yield and quality characters. Much variability was observed with regard to all characters observed with many of the characters showing wide segregation. However, as most of the characters show seasonal variation, identification of individual hybrids with ideal characters can be achieved only by repeated evaluation over years. For this purpose the hybrids which were evaluated once could be replanted with a minimum of two suckers for further evaluation. The hybrids which are found to be better than the parents based on mean values are under multiplication and replanting for plot evaluation.

2.4 Name: KAU-IPL-KALI and SALZ (Germany) collaborative project: Studies on the use of potassium fertilizers for improving yield and quality of pineapple on main production sites of Kerala State; **File No.:** EP/A1/39320/01; **Period:** 01.11.2001-31.05.2005; **Agency:** Kerala Agricultural University – Indian Potash Limited - KALI + SALZ (Germany); **Outlay:** ₹4,35,270/-; **Objective:** This project aimed to study the response of increasing potassium rates on yield and quality of pineapple variety Mauritius, effect of two sources of potassium, MoP and SoP, on yield and quality of pineapple, impact of balanced nutrients- potassium, sulphur and magnesium on pineapple growth and quality

Outcome: Pineapple fruit yield increased marginally with increase in potassium application and the increase was clear when potassium was applied as SoP and the maximum yield was obtained with the application of 24 g K_2O as SoP/plant/year.

2.5 Name: NAPC-KAU Co-Operative Research Project on Passion Fruit- Collection and evaluation of passion fruit germplasm for selection of varieties for low altitude areas; **File No.:** BG/A1/31889/03 ; **Period:** 01.04.2003-31.03.2009 ; **Agency:** Nadukkara Agro Processing Company and Kerala Agricultural University; **Outlay:** ₹1,60,000/- + ₹40,000/-; **Objective:** To identify a passion fruit variety suitable for low altitude areas in Kerala; **Outcome:** 131 types were planted and evaluated for its yield and quality for the first year. During the next year, two yellow types and one purple types were found to be promising. For a detailed study

they were planted extensively. As a result of the evaluation, a yellow type obtained from the Fruit & Vegetable Farm, Nelliampathy was found to perform well than other types and was decided to produce its planting materials and sell to growers.

2.6 State Horticulture Mission Projects

2.6.1 Name: Strengthening of Tissue Culture Laboratory and Related Units for Production of Plantlets of Pineapple and Other Tropical Fruit Crops; **File No.:** EP/A1/8056/06; **Period:** 07/03/2006-31/03/2007; **Agency:** State Horticulture Mission; **Outlay:** ₹8 lakh; **Objective:** The broad objective of the proposed programme was to meet the planting material requirement of pineapple and other tropical fruits crops by producing tissue culture plantlets; **Outcome:** Additional equipment were purchased for the tissue culture lab. Green house and humidity chamber were constructed and work area was improved for the production of tissue culture plantlets of pineapple, banana and other tropical fruit crops.

2.6.2 Name: Small Nursery for Production of Quality Planting Material of Improved Varieties of Pineapple; **File No.:** EP/A3/11633/07; **Period:** 2/4/2007-31/03/2008; **Agency:** State Horticulture Mission; **Outlay:** ₹3 lakh; **Objective:** The broad objective of the proposed programme was to meet the quality planting material requirement of new varieties of pineapple; **Outcome:** Construction of potting shed, purchase of racks, production of tissue culture plantlets of pineapple were carried out. The centre has already sold out more than 1 lakh MD-2 plants, more than 30,000 passion fruit plants and more than 20,000 banana tissue culture plants.

2.6.3 Name: Establishment of Plant Health Clinic at Vazhakulam; **File No.:** EP/A3/26044/07; **Period:** 18/08/2007-31/03/2009; **Agency:** State Horticulture Mission; **Outlay:** ₹14.76 **lakhs**; **Objective:** To give situation specific recommendations to farmers for pest, diseases, nutrient and other management problems; **Outcome:** Partitioning of laboratory and creating facility for installation of equipment, equipment purchase, identification of diseases and pests and soil nutrient estimations were carried out

2.6.4 Name: Establishment of Pest and Disease Forecasting Unit for Pineapple; **File No.:** EP/A3/11520/07; **Period:** 24/3/2007-31/03/2009; **Agency:** State Horticulture Mission; **Outlay:** ₹2.89 lakh; **Objective:** The broad objective of programme was timely identification and control of diseases and pests affecting pineapple cultivation; **Outcome:** Equipment were purchased for training and laboratory. Farmers' fields were visited and diseases and pests problems were identified. Suitable control and preventive measures were suggested. Training programmes were conducted; pest and disease problems were documented and leaflets were prepared. pH meter, flame photometer, UV vis spectrophotometer, electronic balance, laboratory ovens, laminar air flow chamber, ELISA reader & washer, cooling centrifuge, deep freezer, BOD incubator, orbital shaker and microscope were purchased.

2.7 Name: KSCSTE-SRS: Evaluation of passion fruit types for commercial cultivation in Kerala; **File No.:** EP/A1/4077/12; **Period:** 03.03.2012-02.03.2015; **Agency:** Kerala State Council for Science Technology and Environment; **Outlay:** ₹13,03,389/-; **Objective:** To identify a high yielding superior quality passion fruit variety for commercial cultivation in Kerala so as to harness the full potentials of the growing situation giving maximum benefit

to the growers in terms of more employment, higher income and better standard of living; **Outcome:** The scheme involved comparative evaluation of 14 promising passion fruit types selected from more than 150 types collected and established at the Pineapple Research Station, Vazhakulam for selecting the best type for commercial cultivation in Kerala. Among the 14 types evaluated in the study, 134P obtained from Seven Mally Estate, TATA Tea Ltd., Munaar- 685612, was identified and selected based on its superior growth, yield and quality parameters and recommended for commercial cultivation in the mid lands of Kerala. 134P had high productivity and juice production. It had single fruit weight 104.54 g, juice recovery 33.54%, yield 24.92 fruits/plant/year, totally weighing 2.52 kg/plant/year or 2800 kg/ha/year, producing 937 kg/ha/year of juice as the mean of first two years. Large scale production and distribution of planting materials of the superior type and popularization of the variety will go a long way in boosting the production of passion fruit in the state improving food and health security of the people.

2.8 Name: Organic versus inorganic nutrient management of pineapple varieties for safe and sustainable production; **File No.:** EP/B3/5256/15; **Period:** 01.06.2015-31.05.2016; **Agency:** Kerala Pineapple Mission; **Outlay:** ₹7 lakh; **Objective:** To evaluate critically organic versus inorganic nutrient management of pineapple varieties for safe and sustainable production; **Outcome:** The maximum yield recorded was 37.89 t/ha for Mauritius with organic treatment. Only the main effect was significant and not the interaction. Organic, inorganic and integrated treatments with the mean yield were all statistically on par. Therefore, organic application has no specific advantage over integrated or inorganic application. Hence Vazhakulam Pineapple (Mauritius) (34 t/ha) or even MD-2 with any source of nutrient application organic, inorganic or integrated can be followed. However the highest benefit: cost ratio of ₹3.82 validates cultivation of Mauritius pineapple with inorganic fertilizers having most economic viability and that is what is followed now. Farmers prefer Mauritius over MD-2 due to profuse suckering and easy marketing of Mauritius. Suckering is very meagre in MD-2 and there is no sure market. Recording of a lower average fruit weight and number of leaves per plant in this field experiment with Package of Practices recommended dose of organic manure and inorganic fertilisers at PRS, Vazhakulam indicates a relatively inadequate nutrition of the plant highlighting the need for more nutrition. This requires a review of the Package of Practices recommendation and suitable revision of fertiliser recommendation based on different multi-location field experiments with thorough scientific discussion among the crop scientists.

II. Ongoing projects

1. Name: Research on Pineapple; **File No.:** R/8/66091/04; **Objective:** To conduct research on pest and diseases in pineapple and to provide farming assistance to growers**; Work done so far:** overall development in pineapple sector, recommendations to pineapple growers, experimenting in processing technology, production of pineapple tissue culture plants, a major step in transfer of technology through the initiation of pineapple tissue culture protocol transfer.

2. Name: Breeding for yield and quality of pineapple; **File No.:** R 8/70507/03; **Objective:** To develop pineapple varieties suitable for processing and table purpose through hybridization; **Work done so far:** As a result of years of research 14 promising types were selected. They are being evaluated.

3. Name: Research in Passion fruit; **File No.:** R2/60024/12; **Objective:** To give recommendations for improving passion fruit cultivation; **Work done so far:** Passion fruit types collected from different parts of the country are conserved; passion fruit seedlings of purple and yellow types and rooted cuttings of passion fruit varieties are being produced; as per 37th ZREAC recommendations the purple passion fruit type 134P identified and selected based on its superior growth, yield and quality parameters was recommended for multilocation testing at different KAU centres and for commercial cultivation in Kerala. As part of the programme, the planting materials (cuttings and seedlings) were distributed to KAU centres and farmers across the Kerala state. It was identified that passion fruit wilt and rot diseases are caused due to *Fusarium* sp. and *Phytophthora* sp. infections respectively.

4. Name: Organic Versus Inorganic Nutrient Management of Pineapple Varieties for Safe and Sustainable Production; **File No.:** R4/65231/13; **Objective:** To evaluate critically organic versus inorganic nutrient management of pineapple varieties (Mauritius, MD-2, Amritha) for safe and sustainable production; **Work done so far:** The Kerala Pineapple Mission Project on Organic versus inorganic nutrient management for safe and sustainable production was proposed for three years. The first year programme was sanctioned, fund released and executed successfully. The Second year programme was sanctioned but fund release was not effected. Hence the Project was merged with the KAU Plan Project Research on Pineapple and being continued. During the 2nd year of the project, bimonthly applications of the fertilizers are being imposed. How the varieties are affected by the different nutrient applications are being studied.

5. Name: GoK plan - Network centre for planting material production; **File No.:** R8/65991/13; **Objective:** Establishment of new progeny plots and strengthening the existing collections of fruits of the station with recent varieties to enable their multiplication and distribution to farmers; Production and supply of planting materials of fruits; **Work done so far:** Planting materials of pineapple, passion fruit and banana are being produced and distributed to growers throughout the country

6. Name: KAU State Plan project 2015-17. Station wise funding on going research projects and minor infrastructure support during 2015-17; **File No.:** R 8/65516/13; **Objective:** To boost pineapple production and productivity through comprehensive technology; **Work done so far:** Providing recommendations to farmers and young aspiring industrialists, extension of technology through discussions, trainings, palmlets, newspapers, magazines etc.

7. Name: Production of Seed and Planting materials- Revolving Fund mode; **File No.:** R 1/68289/02; **Objective:** To produce tissue culture plants of pineapple and banana and planting materials of passion fruit, to give trainings on nursery technology, tissue culture production, processing technology, value addition and related subjects; **Work done so far:** Planting material production of pineapple, passion fruit and banana and extension technology activities are being carried out


Dr. Beena, Plant Pathology Dept., CoH, Vellanikara, Dr. Babylatha, PRC, Vellanikara visiting the station's pineapple field and collecting samples


Dr. Kosy Abraham, Dr. Jim Thomas, Dr. Devadas visiting the station's passion fruit field and discussing with Dr. P.P. Joy

Diagnostic team visits

Serious diseases and insect pests were observed both in pineapple and passion fruit. Diagnostic team of specialists from KAU visited the station experimental fields at Vazhakulam Agro and Fruit Processing Company Ltd, diagnosed various field problems and gave suitable recommendations. Diagnostic teams from RARS, Pattambi and College of Horticulture and several others from the KAU research team visited the experiment plots and suggested preventive measures.

Farm Advisory Committee

Pineapple Research Station, Vazhakulam has no field of its own and hence no Farm Advisory Council was formed till 2015. In 2015, according to the directions from the Kerala Agricultural University a Farm Advisory Council was constituted having Station Head as Chairman and General Council member, Administrative staff representative, Lab staff representative, Field staff representative as members. It was reconstituted with the addition of local MLA, Panchayat president, and Associate Director (Farms) as Special Invitees.

FAC meeting

Nursery, Planting material production and sale

The station undertakes large scale production of Tissue Culture Plants of different varieties of Pineapple, Passion fruit and Banana and Seedlings and Rooted cuttings of Passion fruit. They are available for sale at the centre. Priority is always given to firm orders with advance payment and delivery will be on first-come-first-serve basis.



a. Nursery, b. Passion fruit plants, c. Tissue culture banana plants

Extension activities

Technology transfer is effectively carried out through personal discussions, field visits, phones, emails, website, posts, radio, TVs, newspapers, periodicals, publications, pineapple fests, seminars, trainings, etc. Publications such as leaflets, palmlets, books, CDs, DVDs, etc covering various aspects of cultivation and utilization of the mandatory crops of the station are also being undertaken. Recommendations, training and support for the production, preservation, shelf life, processing, value addition, quality testing, marketing and export of pineapple and passion fruit varieties.

Publications

Brochures

Pineapple Research Station, Vazhakulam 2012

Pineapple Research Station, Vazhakulam (Malayalam) 2012

Passion Fruit Recipes (Malayalam) 2014

Passion Fruit (Malayalam) 2017

Pineapple Recipes (Malayalam) 2014

Pineapple (Malayalam) 2014

Jackfruit Recipes (Malayalam)

Fruit processing (Malayalam)

Articles

Over 100 scientific papers/articles in English (accessible from the website http://prsvkm.kau.in/article/pineapple-research-station-r-d) and 50 in Malayalam (accessible from the website http://prsvkm.kau.in/malayalam-publications) have been published by the station.

Joy PP. 2010. Benefits and uses of pineapple.

Joy PP. 2010. Passionfruit-*Passiflora edulis* Sims-Passifloraceae.

Joy PP. 2010. Passionfruit Production Technology.

Joy PP. 2010. Production technology for Pineapple Variety Kew.

Joy PP. 2010. Pineapple Research Station Vision 2030.

Joy PP. 2010. Status and Prospects of Passion Fruit Cultivation in Kerala.

Joy PP. 2011. Evaluation of fungicide Samarth (Hexaconazole 2% SC) against collar rot of pineapple, Final Report.

Joy PP. 2011. Annual Research and Development Report for 2010-11.

Joy PP. 2012. Annual Research and Development Report for 2011-12.

Joy PP. 2012. Leaflet on Pineapple Research Station.

Joy PP. 2012. Leaflet on Pineapple Research Station (Malayalam).

Joy PP. 2013. Annual Research and Development Report for 2012-13.

Joy P. P. and Minu Abraham. 2013. Fruits, benefits, processing, preservation and pineapple recipes.

Joy P. P., Anjana R. and Prince Jose. 2013. Protocol for micropropagation of pineapple (MD-2).

Joy P. P., Anjana R. and Prince Jose. 2013. Protocol for micropropagation of banana.

Joy P. P. 2013. Pineapple- Cultivation and utilisation. Krushiyankanam 17(4, 5): 18-22

Joy P. P. 2013. Passion fruit- Cultivation and utilisation. Krushiyankanam 17(4, 5): 34-38

Joy P. P. 2013. Passion fruit-Vallipadarppile seethalakani. Kerala Karshakan 58(8):46-47

PRSVKM. 2013. Vipaniyil athbhuthamayi Vazhakulam pineapple (Malayalam). Haritham, pp.45-50
PRSVKM 2013. Kaithachakkayude naattil. Flower World, July 2013: 48-49
Joy P. P. 2014. Pineapple krushiyil puthiya pradeekshakal (Malayalam). Kerala Karshakan 60(3):10-13
Joy P. P. 2014. Pineapple pedi (Malayalam). Karshakasree 2014 Decemeber: 58-59
Joy PP. 2014. Annual Research and Development Report for 2013-14.
Anjana R and Joy PP. 2014. A Plant Biotechnology Laboratory Manual.
Joy P.P., Justin T. Jose and Anjana R., Leaflet on Pineapple. 2014.
Joy P.P., Rashida Rajuva., 2014. Leaflet on Pineapple Recipes (Malayalam).
Joy P.P., Rashida Rajuva, 2014. Leaflet on Passion Fruit Recipes (Malayalam).
Joy P.P. and Anjana R., 2014. Blooming pattern of passion fruit (Passiflora Edulis) in Kerala plains
Joy P.P. 2014. Protocol for pineapple "Kerala Mauritius" variety for export to shorter duration (15-18 days)
Joy P.P., 2014. Production technology for vazhakulam pineapple (Mauritius)
Joy P.P., 2014. Vazhakulam pineapple
Joy P.P., 2014. Ad-hoc recommendation for organic production of the pineapple variety Mauritius
Joy P.P., 2014. Benefits and uses of pineapple
Joy P.P., Anjana R., 2014. Pineapple varieties
Joy P.P., 2014. Pineapple sector in Kerala: status, opportunities, challenges and stake holders
Joy P. P. 2014. Pineapple krushiyil puthiya pradeekshakal (Malayalam). Kerala Karshakan 60(3):10-13
Joy P.P., Rashida Rajuva. 2014. Chakka oru poshaka kalavara (Malayalam).
Naveena Varghese and Joy PP. 2014. Microbiology Laboratory Manual.
Rashida Rajuva TA and Joy PP. 2014. A Food Technology Lab Manual.
Joy PP. 2015. Annual Research and Development Report for 2014-15.
Joy PP. 2015. Pineapple Research Station - Vision 2050.
Joy PP and Ancy Joseph. 2015. KSCSTE SRS on Evaluation of passion fruit types for commercial cultivation in Kerala 2012-15, Final Report.
Joy P.P. and Anjana R. 2015. Evolution of pineapple
Joy P P, Surya S. and Aswathy C. 2015. Laboratory Manual of Biochemistry.
Joy PP. 2015. Pineapple sector in Kerala: Status, opportunities, challenges and stakeholders.
Joy P. P., Ancy J. and Anjana R. 2015. Economics of passion fruit production.
Varghese Naveena, Anjana R and Joy P P. 2015. Antimicrobial activity of pineapple and passion fruit juices. Proc. 27th Kerala Science Congress, 27-29 January, 2015, Alappuzha, Kerala. 8p.
PRSVKM 2015. Passion fruit pazhakkalle panamakkam (Malayalam). Karshakasree 2015 October: 18-19
Joy P. P. 2016. Passion fruit for health and profit (Malayalam). Krushiyankanam 21(5): 40-42
Joy. P. P. and Divya. B. 2016. Post-harvest handling of passion fruit.
Rashida Rajuva TA and Joy PP. 2016. Pazhasamskarana reethikal (Malayalam)
Joy PP, Rashida Rajuva TA, Divya B. 2016. Multiple uses of pineapple in food industries.
Joy P. P. 2016. Profitable Pineapple cultivation. Pineapple Fest 2016, 5-7 Feb 2016, Vazhakulam, Muvattupuzha.

Joy P. P. 2016. Good Agricultural Practices (GAP) in Pineapple. APEDA CII Training program on Pineapple (GAP, POP's, GHP), 19th Feb 2016, Seminar Hall SCB 751, Vazhakulam, Muvattupuzha.

Anjana Ratheesh, Anjana R. and Joy P.P. 2016. Chemical characterization of different varieties of passion fruit. AF29, 28th Kerala Science Congress, 28-30 January 2016, Calicut University Campus, Thenhippalam, Malappuram.

Anjana R. and Joy P.P. 2016. Evaluation of passion fruit types for commercial cultivation in Kerala. AF13, 28th Kerala Science Congress, 28-30 January 2016, Calicut University Campus, Thenhippalam, Malappuram.

Naveena Varghese and Joy P.P. 2016. Plant tissue culture contaminants identification and its response to fumigation.

P.P. Joy and C.G. Sherin. 2016. Chapter 23. Insect Pests of Passion Fruit (*Passiflora edulis*) and their Management, pp. 437-452. In Insect pests management of fruit crops

P.P. Joy and C.G. Sherin. 2016. Chapter 24. Diseases of Passion Fruit (*Passiflora edulis*) and their Management, pp. 453-470. In Insect pests management of fruit crops

P.P. Joy, R. Anjana and K.K. Soumya. 2016. Chapter 25. Insect Pests of Pineapple and their Management, pp. 471-493. In Insect pests management of fruit crops

P.P. Joy and G. Sindhu. 2016. Chapter 26. Diseases of Pineapple (*Ananas comosus*) and their Management, pp. 493-510. In Insect pests management of fruit crops. 2016. (Eds: Ajay Kumar Pandey Dr. Pramod Mall). Biotech Books, New Delhi.

Rashida Rajuva T. A., Divya B. and Joy P.P. 2016. Non thermal process- pulsed electric fields, pulsed light, ionizing radiation and high hydrostatic pressure.

Joy PP. 2016. Status and Prospects of Passion Fruit Production and Processing, Food and Beverage News, Saturday, 16 January, 2016

Joy PP, Rashida Rajuva TA, Divya B. 2016. Multiple utility of pineapple in various food industries. AAHAR 2016, Food and Beverage News, March 16 2016, pp.34-38

Joy P. P., Anjana R., Rashida Rajuva T.A. and Anjana Ratheesh. 2016. Fruits as a functional food.

Naveena Varghese, Soumya K.K. Aswathy C., Divya B. and Joy P.P. 2016. Microbiological and chemical testing of food items.

Joy PP and Rashida Rajuva TA. 2016. Pazhasamskaranam (Malayalam Brochure)

Joy P. P. 2016. Susthiravilavinu samyojitha pineapple krushi (Malayalam). Karshakamithram, Rashtradeepika, pp.298-301

Joy P. P. 2016. Success Tips For Learning, Career, Business, Life, Quotes, Plus.

Joy PP. 2016. Pineapple for healthy living.

Joy PP. 2016. Annual Research and Development Report for 2015-16.

Joy P. P. 2016. Pineapple for health and wealth.

Joy PP and Anjana R. 2016. Kerala Pineapple Mission Project on Organic versus inorganic nutrient management of pineapple varieties for safe and sustainable production, Project Report 2015-16.

Joy PP and Rashida Rajuva TA. 2016. Harvesting and post-harvest handling of pineapple.

Rashida Rajuva TA and Joy PP 2016. Technology for beverage processing - Fruit pulp.

Joy PP and Anjana R. 2017. Passion fruit for Health and Profit (Malayalam)

Anjana R. and Joy P.P. 2017. Organic versus inorganic nutrient management of pineapple varieties for safe and sustainable production. 29KSC0025, 29th Kerala Science Congress, 28-30 January 2017, Mar Thoma College, Thiruvalla.

Rini Mohan, Naveena Varghese, Anjana R. and Joy P.P. 2017. Diseases of immature and mature pineapple and passion fruits and their control measures 29KSC0677, 29th Kerala Science Congress, 28-30 January 2017, Mar Thoma College, Thiruvalla.

Joy P.P., Anjana R. and Rini Mohan. 2017. Medicinal Plants and Health Benefits.

Anjana R., Soumya K.K. and Joy P.P. 2017. Algae as Functional Food.

Rashida Rajuva T. A. and Joy P.P. 2017. Designer Functional Foods.

Joy P.P., Anjana R., Rashida Rajuva T. A. and Rini Mohan. 2017. Passion fruit- A promising functional food.

Rashida Rajuva T.A., Joy P.P., Anjana R. and Rini Mohan. 2017. Pineapple as a Functional Food.

Anjana R., Joy P.P., Rashida Rajuva T.A. and Rini Mohan. 2017. Vitamin C: A Miracle Functional Ingredient.

Joy P.P., Rashida Rajuva T.A. and Anjana R. 2017. Pineapple (*Ananas comosus*).

Joy P.P. and Anjana R. 2017. Pineapple the heavenly fruit (*Ananas comosus*) (Malayalam).

Joy P.P. and Anjana R. 2017. Pineapple Research Station over the years (Malayalam).

Joy P.P. and Anjana R. 2017. Pineapple Research Station over the years (English).

Radio talks

Radio Talks and discussions on Pineapple and passion fruit cultivation were broadcast by AIR, Kochi, Thrissur and Thiruvanandapuram and FM stations.

Media coverage

Following are some of the printed media where pineapple and passion fruit articles were published

In 2012- metro vaartha, Malayala Manorama, Kerala Karshakan, Mangalam, ; in 2013- Krishiyanganam, Flower World, Mathrubhumi; in 2014- Kerala Karshakan, Deepika, Mangalam, Karshakasree; in 2015- Karshakasree, Krishiyankanam; in 2016- Food and Beverage News; in 2017- Krishiyankanam, Kalpadenu, Harithabhumi etc.

Trainings

- Training on Pineapple and Passion fruit cultivation to farmers and students
- Classes to growers from other south Indian states like Andhra Pradesh, Tamilnadu, Karnataka
- Tissue culture, plant biochemistry, plant pathology classes were given to VHSE students of Muvattupuzha and Thodupuzha
- Pineapple, passion fruit, banana, jack fruit, papaya processing classes were given to Kudumbasree people and some aspiring business people

The centre has actively participated in Kerala Science Congress during 2015, 2016 and 2017 and also in Pineapple fests, agriculture fests etc.

Student projects

Meritorious students from other universities can do their project work at this centre on payment basis subject to terms and conditions issued by Kerala Agricultural University from time to time. Outstanding students having excellent academic records, strong aptitude for research and long term interest at this centre will be given preference. They will get

excellent opportunities to become well-versed with scientific research methodologies and protocols in Biotechnology, Microbiology, Biochemistry, Food Technology, Information Technology, etc. Around 12 students from the University of Calicut, Mahatma Gandhi University, KUFOS, Amity University Rajasthan have done their projects at the station and copies of dissertations are accessible in the station library.

Quality testing

Quality testing services on payment basis are offered for determining precision weights, moisture content, TSS, pH, reducing, non-reducing and total sugars, acidity, ascorbic acid, etc.

Agro clinic, advisory and consultancy

Subject to the terms and conditions stipulated by Kerala Agricultural University from time to time, consultancy services on payment basis are provided in micropropagation of pineapple, passion fruit and banana (consisting of multiplication, hardening, management in mist chamber, poly house and in main field) and in large scale cultivation of pineapple and passion fruit covering all aspects from planting material selection to harvest, preservation, processing and value addition.

Opportunities

- Crop diversification from pineapple, passion fruit and banana to other relevant tropical fruit crops like jack fruit, mango, papaya, rambutan, mangosteen, etc
- Geographic Indication of Vazhakulam pineapple
- Kerala Pineapple Mission exclusively for pineapple development in Kerala
- Farmers are familiar with the scientific cultivation practices
- Advent of large scale lease land farming and agribusiness in pineapple, passion fruit, etc
- Facilitating agencies in pineapple sector– financial, input and other
- Well established farmers and merchants associations for pineapple
- Wide acceptance of pineapple as intercrop in rubber and coconut plantations
- Favourable bank and government policies
- Technical know-how through research stations already available
- Active presence and involvement of SHGs like Kudumbasree
- Real-time information access through UFAST, ORMIS, Website and WhatsApp Groups

Pineapple Research Station Development Plan

Presently seven plan projects are operational at PRS, Vazhakulam. The research projects of this station are undertaken in 0.61 ha of leased farm of Vazhakulam Agro & Fruit Processing Company, Nadukara. It is 5 km. A permanent farm with adequate fencing and security is an urgent felt need of the station. Lack of own farm and adequate area is the basic hurdle for the development of the station. If adequate area and infrastructure are available research and development efforts can be greatly strengthened in the following lines for the agricultural development of the district and socioeconomic uplift and livelihood of the people.

- Identification of specific suitable varieties for fresh fruit, canning and juice segments for cultivation ensuring sustained economic return

- Boost tissue culture production of pineapple and passion fruit
- Exploration of new fields viz. high-density planting, tissue culture, organic farming, vermi-composting, precision farming, etc.
- Post-harvest management and value addition
- Pineapple fiber extraction and utilization
- Extraction of Bromelain enzyme and its commercialization
- Storage and marketing support
- Crop specific training support to the stakeholders
- Safe bio- waste management

Way Forward

Pineapple Research Station, Vazhakulam visualizes to be Fruit Crops Research Centre of Excellence (FCRCE) in the future. This advanced research centre of excellence dreams to be the ultimate authority and provider of excellent quality technology, products and services in tropical fruit crops through concerted research and development efforts sustained by best human resource and infrastructure development in line with Our Motto 'Quality People, Infrastructure & Work culture for Quality Technology, Products & Services and Merit alone counts for Quality suitable for the purpose'.

The FCRCE comprises the following

Technology division

- Crop Improvement
- Crop Production
- Crop Protection

Products division

- Crop Processing and Product Development
- Quality Assurance

Services division

- Transfer of Technology, Other Services

Vazhakulam and neighbouring areas are well-known for other fruit crops like banana, mango, jack, papaya, passion fruit, rambutan, mangosteen, etc, and there is no research station in the district catering to the needs of these farmers. This advanced research centre of excellence dreams to be the ultimate authority and provider of excellent quality technology, products and services in tropical fruit crops through concerted research and development efforts sustained by best human resource and infrastructure.

The station has both field experiments and tissue culture production of planting materials of pineapple, passion fruit and banana. If adequate area and infrastructure are available research and development efforts can be greatly strengthened. Acquisition of new farm land for the station and development of adequate infrastructure will go a long way in the agricultural development of the district and socioeconomic upliftment of the downtrodden beside generating rural employment especially for the unemployed youths and ensuring livelihood and fruit security of the people.

Goals/Targets

Goal	***Strategy***
Mechanization of cultivation practices	Use of machines for land preparation, planting, weeding, plant protection, fertilizer application and harvesting reducing the labour expenses and dependence
Production of virus and disease resistant plants	Development of new pineapple varieties resistant to PMWA virus and fungi through molecular modelling of crops
Economic optimization of production technology	Ways and means for maintaining maximum production and profit in cultivation
Promoting pineapple and passion fruit cultivation	Through a network of field demonstration units owned by farmers set by research centres
Organic farming and Good Agricultural Practices (GAP)	Put forward Organic farming and Good Agricultural Practices (GAP) for pineapple and passion fruit curtailing the use of chemicals causing environmental pollution
Boosting processing, product diversification and export	Learn the setbacks faced by processors and exporters and undertake studies to resolve them
Ensure product diversification and full utilization throughout the value chain	Develop economically viable and sustainable technology for pineapple fruit products, fibre, bromelain, vine, bio gas, bio fuel, compost, etc.
FPO registered food technology lab	Establish full-fledged food technology lab for production of new and refined products from pineapple and other fruits
Quality control lab	Assessing the quality of fruits and products available for export and suggesting the maintenance protocols for quality assurance
Internet and mobile technology	Ready availability of novel technologies to the farmers Availability of all the latest technologies in pineapple/passion fruit cultivation through internet Farmer queries and all technical support accessible through the latest mobile technology by putting up an application in the name of the research station, making a novel technology for marketing and export
Outsourcing	Making available even the high cost latest technologies in any part of the world
Professional management, coordination, monitoring and control system	Linkage between all the research centres, industries, associations in both private and public sectors for a combined R & D efforts and exchange of technologies
Precise, fast and sophisticated work environment with autonomy	Best human resource, Infrastructure, equipment, automation, work culture & self-sustenance

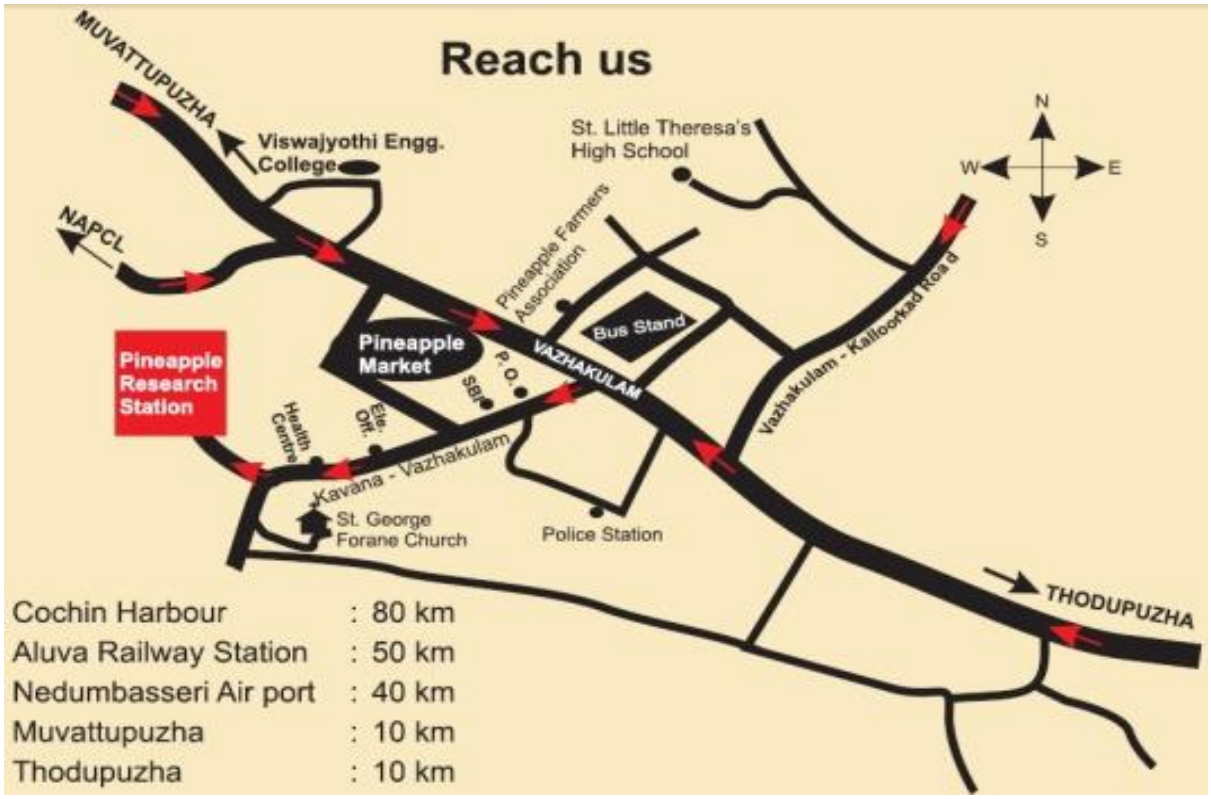
Challenges

- A permanent farm of its own for research and development
- Adequate quality staff, infrastructure & work culture for quality technology, products & services
- A full-fledged food technology lab with FPO registration is yet to be realized
- A separate sales counter is also a need for proper movement of sales subjects
- Office, Lab and field facilities for full-fledged research and development environment
- Research funding in pace with the needs
- Excellent working environment with satisfied minds
- Fruit Crops Research Centre of Excellence (FCRCE) & advanced research centre of excellence with autonomy is still a dream

You are welcome….

You are welcome to this research centre of Kerala Agricultural University any time preferably with intimation. But please visit our website http://prsvkm.kau.in to know more about Pineapple Research Station and call us before you come. Pineapple and passion fruit whatsApp groups help the members to interact with specialists solve queries and share their experiences. In order to become its member you need to give your whatsApp number only. Whenever, you pass-by Vazhakulam/Muvattupuzha please drop in to our station for a friendly discussion. Your constructive comments, suggestions and criticisms can be send through mail (prsvkm@kau.in), WhatsApp Groups, phone (0485 2260832) or personally. They are gratefully appreciated and acknowledged as they help us advance in the right direction. Let's together strive for a better morrow.

Reach us




Vadakara
Kalpetta
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Idappadi
Koyilandy
Meppadi
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Gobichettipalayam
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Pineapple Research Station (KAU)
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183A
Rajapalayam
Chengannur
Kayamkulam
Karunagappally
Punalur
Kadaiyanallur
Tenkasi
Kollam
208
Alangulam
Kilimanoor
Tirunelveli
Chirayinkeezhu
7
Thiruvananthapuram
Nanguneri
Neyyattinkara
Poovar
Cochin Harbour : 80 km
Aluva Railway Station : 50 km
Nedumbasseri Air port : 40 km
Muvattupuzha : 10 km
Thodupuzha : 10 km
Google
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