FIFTY GOLDEN YEARS OF RESEARCH

Compiled by

Dr. Vanaja, T.

Dr. Neema, V.P.

Dr. Mammootty, K.P.

PEPPER RESEARCH STATION, PANNIYUR
KERALA AGRICULTURAL UNIVERSITY

Message

Pepper Research Station, Kerala Agricultural university is a world known Research Centre solely devoted to black pepper research. The first black pepper hybrid ' 'Panniyur-1' was developed at this research station in 1967. The station has completed 50 years of research in black pepper. During celebration of golden jubilee, (1953 - 2003), I am proud to note the achievements of pepper research station over 50 years. Development of seven high yielding black pepper varieties and almost all package of practice recommendation of black pepper are the most glorious achievements. The above due to sincere hard work and dedication of scientist and staff. I am sure that this station can solve the problems of black pepper farmers especially the problem of *Phytophthora* foot rot menace. I congratulate the efforts of the station especially the head, Dr. K.P. Mammotty and his colleagues for bringing out this publication entitled "Fifty Golden years of Pepper Research Station Panniyur" and I wish all success in their endeavor

Prof. K.V. Peter, PhD
Vice Chancellor

Message

Pepper Research Station,, Panniyur is a pioneer station doing research on black pepper in India. the station started in December 1949 as a scheme flourished after it became a constitutent institution of Kerala Agricultural University. Research programme on crop improvement, made a mark with the release of first black pepper hybrid, Panniyur- I in 1967. There after, the station witnessed the release of six other black pepper varieties suited to different agro ecological situations of Kerala. The station also made significant contribution in the field of crop management and plant protection. Development of inter-specific hybrid between *Piper nigrum* and *P.colubrinum*, grafting of *P. nigrum* on *P. colubrinum* root stock and development of methods for bush pepper production are the achievements worth mentioning. Through effective extension programmes, results of research could be transferred to farmer's field without time gap. I hope that this tempo will be maintained to alleviate the problems of pepper farmers of Kerala. I am happy to note that the station is going to release a booklet in connection with the Golden Jubilee Celebration. I wish them all success

Dr. Alexander. D.
Director of Research

Message

Pepper Research Station, Panniyur under the Kerala Agricultural University, which conduct exclusive research on production and post harvest aspects of pepper- the spice king, is completing its 50 years of dedication. It is a moment of great honour and pride for the University to have pioneered the research of this socio-economically significant crop of Kerala through the station. It is also a time to commemorate the efforts of all great scientists whose relentless toil brought international fame to the station through its Panniyur series of high yielding pepper varieties.

I feel privileged in congratulating the efforts of all scientists associated with the publication of ' Fifty Golden years of Pepper Research Station, Panniyur'. Hope this will be a useful compilation of all significant achievements, ongoing research and other activities of the station. I wish all success

Dr. M.K. Sheela
Director of Extension i/c

Pepper Research Station, Panniyur was established in panniyur village of Taliparamba Taluk, Kannur district during 1953. The station has completed its best service of 50 years. This is the only institute in India solely devoted for black pepper research. Development of the first black pepper hybrid, 'Panniyur-1' fetched international fame to this pioneer institute. During these 50 golden years, seven high yielding black pepper varieties were developed and released to farmers. Most of the cultural and plant protection aspects of black pepper cultivation were standardized from this research station. It is very difficult to condense the achievements of this station in a very brief document. We tried to highlight most of them even though there is drop out. Hope that this venture will be useful at this glorious moment.

Dr. K.P. Mammootty
Associate Professor & Head
Pepper Research Station, Panniyur

Our respectful Homage

We offer our humble pranams to the retired pioneer scientists,late **Prof. Venugopalan Nambiar** and late **Prof. Sukumara Pillai,** who were the pilot navigators of this station. May their soul rest in peace

History

Pepper Research Station, Panniyur enjoys a unique position among the agricultural research stations in India as it is a pioneer in the field of research on black pepper in the country. It is the only station solely devoted for black pepper research. The station had its modest beginning as a small scheme which started on 23-12-1949 under the erstwhile Madras Department of Agriculture. The scheme for scientific aid to pepper industry in South India started functioning at Mattannur in Kannur district and this scheme was temporarily shifted to the Agricultural Research station, Taliparamba during 1950-51. The present location of Pepper Research Station, Panniyur was selected in 1952-53. Consequent to reorganisation of the state the station was brought under the Department of Agriculture, Govt. of Kerala on 1-11-1956. Later in 1972 with the formation of Kerala Agricultural University it became one of its constituent research stations.

AREA OF THE STATION AND ITS UTILISATION

- ***Total area of the station*** : ***26.52 ha***
- ***Total area under crops*** : ***12.92ha***
- ***Experimental area*** : ***10.50ha***
- ***Bulk cultivation*** : ***2. 42 ha***

Pepper Research Station
at the time of inception

Golden jubilee building of
Pepper Research Sation

KAU, HQ

Location

Pepper Research Station is situated at Panniyur village, Taliparamba Taluk, Kannur district of Kerala. It is located 8.5 Km north east of Taliparamba town enroute Alakode. Altitude of the farm is 95M above MSL. The main crop is black pepper and the sub crops include coconut, arecanut, cashew, vanilla, fruit trees and medicinal plants.

Objectives & Mandate

The station was started with a mandate to conduct research on various aspects of pepper for rehabilitating pepper industry in the country, so as to give it a firm footing and confidence to face competition from other pepper producing countries of the world. Research programmes on crop improvement, crop management and plant protection of black pepper are undertaken right from the days of inception. The first black pepper hybrid,'Panniyur-1' was released from this station in 1967, which has since then become synonymous with black pepper. This hybrid aided most in the increase of pepper production not just within the state, but the whole of India and other pepper producing countries of the world.

Organisation and Structure

The station is under the administrative and technical control of Kerala Agricultural University, head quarters at Vellanikkara. The research programmes are financed by the ICAR under the All India Co-ordinated Research Project on Spices, started during 1973. KAU plan projects and projects funded by Kerala State Council for Science, Technology and Environment are also in progress. Besides research, the station produces nucleus planting materials of black pepper varieties under seed and nursery and central sector schemes.

In addition, planting materials like cashew grafts, arecanut seedlings, vanilla cuttings, medicinal and ornamental plants are produced in the farm. Vermicompost, azolla and trichoderma production are also in progress. Scientists are involved in extension and teaching activities in addition to research. The station celebrated Silver Jubilee in the year 1978 in a colourful manner. New Krishi Vigyan Kendra for Kannur district was allotted to this centre and started functioning at this campus on 30-3-2004.

Silver Jubilee Celebration in December 1978

Jubilee inauguration by the Hon. Vice Chancellor Sri. N.Kaleeswaran

Public meet inauguration by the Hon. Minister of Agriculture Sri. A.L. Jacob

Inaugural Function Of Golden Jubilee Celebrations : In 2005

Inauguration of Golden jubilee building by Hon. Chief Minister Sri. Umman Chandy

Inauguration of Jubilee Celebrations by Sri. P. Karunakaran. M.P. Kasaragod

Presidential Address by Sri. M.V. Govindhan Master M.L.A Taliparamba

Welcome Address by Dr. K.V. Peter, Hon. Vice Chancellor (KAU)

PRS, report presentation by Dr. K.P. Mammootty. Head of Station

Felicitation by Dr. C.K. Peethambaran Director of Research(KAU)

Vote of thanks by Dr. M.K. Sheela, Director of Extension of (KAU)

Audience

Salient Research Achievements

1 Hybridization technique in pepper has been standardized which led to the evolution of hybrid pepper .

2. Panniyur -1 the first ever high yielding blackpepper hybrid in the world has been developed from this station and released to the farmers during 1967

3 The technique for raising seedlings from the seeds of pepper was perfected which led to the production of open pollinated progenies.

4. High yielding black pepper varieties Panniyur 2,Panniyur3 and Panniyur 4 were released in 1991.

5. Panniyur 5- released in 1996.

6. Panniyur 6 and Panniyur 7 -released in 2000

7 Intercropping with elephant foot yam, colocasia, ginger and turmeric was found to be advantageous

8 For the production of rooted cuttings of pepper middle 1/3rd portion of runner shoots found to be the best.

9 A low cost technology for the Rapid Multiplication Programme (RMP) of pepper evolved.

10 Dipping of pepper cuttings in 1000ppm IBA for 45 seconds produced more number of roots and better shoot growth.

11 A novel technique of raising bush pepper from the laterals has been developed for the first time which can be grown as floor crop / in pots.

12 Fertilizer recommendation of NPK @ 50:50:150 g/vine / year

13 Irrigating pepper vines at IW/CPE ratio of 0.25 @ 100 l /vine from December to March at an interval of 8-10 days increased pepper yield.

14 integrated disease management techniques for the control of *Phytophthora* foot rot disease and slow decline were developed.

15 Fungal 'pollu' can be managed by spraying 1% BM during July - August and September-October.

16 Diseases in nursery can be managed through an integrated approach

17 Insect 'pollu' can be managed by spraying 0.05% of Quinalphos during July - August and September- October.

18 Underplanting is recommended after 18-22 years of planting.

19 Pongalyam (*Ailanthus malabaricus*) is a suitable standard for pepper in drought prone areas.

20 Novel method of raising nursery using polythene sheet covering .

21 The best irrigation method to bush pepper is in the form of spray rather than basin application.

22 Irrespective of varieties the best season for grafting black pepper scion on *P. colubrinum* root stock is February- March

23 In the nursery, spraying the cuttings with 5% cashew leaf extract at fortnight interval was found to enhance growth of vine.

24. For the first time in the history of black pepper cultivation, a promising interspecific hybrid having partial resistance to the dreaded disease *Phytophthora* foot rot was developed through hybridization between *Piper nigrum* with the wild species *Piper colubrinum*.

25. North Eastern Fragrant pepper, a wild genotype of black pepper was identified as an alternative source for *Phytophthora* foot rot resistance in black pepper- First report

Head of Station

Sl. No.	Name	Period	
		From	To
1.	Prof. P.K. Veugopalan Nambiar	1972	1979
2.	Prof. V. Sukumara Pillai	1979	1993
3.	Dr. K.P. Mammootty	1993	1997
4.	Prof. P.K. Unnikrishnan Nair	1997	2002
5.	Dr. Neema V.P.	April 2002	Sep2002
6.	Dr. K.P. Mammootty	2002	Till date

On Going Research Programmes

CROP IMPROVEMENT IN BLACK PEPPER

1. Germplasm collection, conservation and evaluation in black pepper (AICRP) (PI : Dr. Neema V.P.): Maintains 167 nos of cultivated genotypes and 22 nos of wild genotypes. Panniyur -4 and Panniyur-6 were developed through this programme

Some wild genotypes

Piper attenuatum

North Eastern Fragrant Pepper

Piper colubrinum

Plot of cultivated genotypes

2.Intervarietal hybridization in black pepper (AICRP)(PI: Dr. Neema,V.P): Aim is to develop varieties through intervarietal hybridzation and open pollinated progeny selection. Panniyur-1, Panniyur-2, Panniyur-3, Panniyur-5 and Panniyur-7 were developed through this programme

Hybrid plot

A promising hybrid
Culture HB 20051

Open pollinated progeny plot

3.Co-ordinated Varietal Trial (AICRP) (PI. Dr. Neema, V.P.) : Evaluation of promising cultures of black pepper . Five Panniyur cultures and six IISR cultures are evaluated with Panniyur-1 and Karimunda as check.

4.Breeding for *Phytophthora* foot rot resistance in black pepper (KSCSTE) (PI: Dr. Vanaja.T): Aim is to develop *Phytophthora* foot rot resistant / tolerant black pepper variety. Developed a promising interspecific hybrid having partial resistance to *Phytophthora* foot rot disease. North Eastern Fragrant pepper, a wild genotype of black pepper was identified as an alternative source for *Phytophthora* foot rot resistance in black pepper. Collected 142 genotypes from hot spots and 217 open pollinated progenies/wild genotypes of black pepper from 17 'Kavus' and 6 Forests of Kannur and Kasaragode districts.

Culture P5 PC-1-A promising interspecific hybrid

Survey of hot spot areas

Survey of 'Kavus'

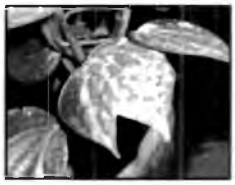
Survey of forests

5.Evaluation of black pepper varieties for growing as bush pepper (KAU Plan) (PI: Dr. Vanaja, T.). Aim is to identify best Panniyur variety to grow as bush pepper and to identify best method of irrigation pattern to bush pepper.

6.Creating variability through mutation breeding in black pepper (KAU plan) (PI : Dr. Vanaja, T). Aim is to evolve black pepper varieties tolerant / resistant to *Phytophthora* foot rot disease / drought through mutation.

Pepper seedlings subjected to gamma irradiation

Change in leaf morphology due to mutation



7.Compatibility of grafting *P.nigrum* on *P.colubrinum* root stock (KAU Plan) (PI : Dr. Vanaja, T.): Main objectives are to control *Phytophothora* foot rot disease through grafting with *P. colubrinum* and testing the establishment period of graft in the field and extent of occurrence of the disease

Graft nursery

Graft bush pepper

Runner graft of Panniyur 1

CROP PRODUCTION IN BLACK PEPPER

1. Effect of biofertilizer, Azospirillum on the yield of black pepper (AICRP) (PI: Dr. Neema, V.P.) Objective : to study the efficacy of the biofertilizer azospirillum on black pepper

2. Effiect of biofertilizer P- solubilizer on the yield of black pepper(AICRP) (PI: Dr. Neema, V.P.) Objective : to study the efficacy of P- solubilizer on black pepper

3. Organic farming in black pepper (AICRP) (PI : Dr. Neema V.P.) Objective : to study the effect of different organic manures on black pepper.

4.Partial substitution of nitrogen through organic manures on black pepper. (KAU plan) (PI : Dr. Neema . V.P.): objective : To supplement the nitrogen requirement through neemcake and vermicompost.

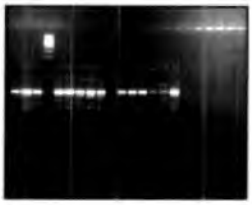
CROP PROTECTION IN BLACK PEPPER

1.Control of *Phytophthora* foot rot disease management in black pepper in farmersfield - observational trial. (AICRP) (PI : Dr. K.P Mammootty). Aim is to formulate management strategies for the control of foot rot disease.

2. Trial on *Phytophthora* foot rot incidence in black pepper under different plant densities in an arecanut garden - (AICRP) (PI : Dr. K.P Mammootty). Aim is to observe *Phytophthora* foot rot disease incidence in black pepper under different plant density in an arecanut garden.

CROP IMPROVEMENT IN RICE

Recently the station has taken the endeavor of research in rice, considering the location specific problem of salinity in rice tracts of northern Kerala.



1.Identification of putative RAPD molecular marker (s) linked to salinity tolerance / resistance in rice. (KSCSTE) (PI : Dr. Vanaja, T.)

2.Evolution of high yielding rice varieties suitable to pokkali tracts of northern Kerala through farmers' participatory breeding approach (KAU Plan) (PI: Dr. Vanaja. T). Developed promising saline tolerant rice lines suited to Kaipad saline tracts of northern Kerala and they are now under F_4 generation stage.

F_2 harvest inauguration and farmers' participation in selection of F_2 progenies

Sri.C. Govindhan Nambair, Ezhome - Selected progressive farmer of the experimental plot

A promising F_2 progeny

Revenue Generating Activities

MAIN SOURCE OF INCOME FROM.....

1. Nucleus planting material production and sale of black pepper varieties

2. Sale of high yielding arecanut seedlings- Mohitnagar, Mangala, Sumangala and Kasargodan

3. Sale of dry pepper 4.Sale of coconut

5. Sale of cashew nut 6. Sale of arecanut

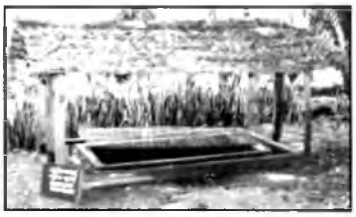
ADDITIONAL INCOME FROM.....

1.Production and distribution of propagules of medicinal plants

2. Sale of vanilla cuttings

3. Production and distribution of bush pepper

4.Sale of vermicompost and earth worm



5.Sale of Azolla

6. Sale of Fruits like Mango, Jackfruit, sapota etc.

Other Activities In The Farm

Crop cafeteria of released varieties of black pepper

Trial to assess the efficacy of brick standards for pepper

Bush pepper germplasm

Crop museum of black pepper

Extension Activities

Agricultural seminar to farmers

Conduct of exhibition to public

KAU Pavilian in the National Agrifest 2003 at Kannur-Organised by PRS, Panniyur

KAU Pavilian inaugurated by Sri. M.V. Govindhan M.L.A

Training

Training to unemployed youth

Training to farmers of national repute

Training to school students.

Interface between farmers and scientists

Celebration of Karshakadhinam

Agro clinic

Sharing the experience of award won and speciality farmers

Sri. K.V. Gopi, Kannur
(Karshkasree award winner 2006)

Sri. Benny Augustin, Idukky

Sri. Francis Cheruvallil, Kozhikode

Publications

Research papers : 64

Booklets : 4

Book chapters : 4

Scientific papers in symposia : 20

Radio talks : 25

Popular articles : 312

Awards and Honours

Award to
Prof. P.K. Venugopalan Nambiar
for the release of Hybrid Pepper,
Panniyur-1

Good service entry to
Prof. V. Sukumara Pillai
by KAU for his best service.

Young scientist award 2003
(16th Kerala Science Congress) received
by Dr. Vanaja, T. Asst. professor
(Plant Breeding & Genertics)

Laurels for sincerity of purpose

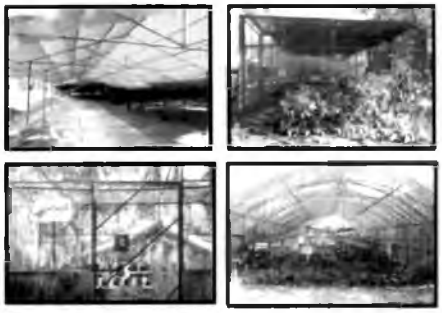
Infrastructural Facilities

Laboratory studies strengthen the field results

Sufficient literature collection enables smooth running of research

Seminar hall with sufficient facilities

Propogation sheds : enables efficient production of planting materials and smooth conduct of various research programmes.



Guest house for comfortable stay and rest.

Quarters : All types of quarters suitable for various categories of staff.

Faculty Position

Scientific staff : 3, Technical staff : 8, Administrative and supporting staff : 6, Labour strength : 20

Scientists few in number but excellent in quality under the magnanimous leadership of Dr. K.P. Mammootty

K.P. Mammootty M.Sc (Ag), PhD.
Associate professor
(Plant Pathology) & Head of station.

V.P. Neema M.Sc (Ag), Ph.D
Associate professor
(Plant Breeding & Genetics)

T. Vanaja M.Sc (Ag), Ph.D
Assistant Professor
(Plant Breeding & Genetics)

Sincere and dedicated Technical Staff under the energetic supervision of the Farm Supervisor, Sri. P.J. Joseph

An efficient team of Administrative and Supporting Staff under the leadership of Smt. T. Lakshmikutty, Administrative Assistant

Labourers- the back bone of the station

RETIRED STAFF & LABOURERS OF PEPPER RESEARCH STATION, PANNIYUR


Prof. P.K. Venugopalan Nambiar
Scientist & Head of Station


Prof. P.K. Unnikrishnan Nair
Scientist & Head of Station


Sri. Raghvan. P.
Farm Super Visor Gr.I


Smt. Merly Sarojini
Administrative Assistant


Sri. K. Unnikrishnan
Field Super Visor


Sri. Sreedharan K.
Driver


Sri. P. Narayanan
Peon


Sri. K. Chindan Nair
Peon


Sri. V. Kunhiraman
Peon


Sri. M.P. Narayanan
Peon


Smt. P. Janaki
Peon


Sri. T. Kunhiraman
Peon


Sri. V. Achuthan
Lab Assistant


Sri. M. Govindhan Nair
Permanent Labourer


Sri. T.V. Krishnan
Permanent Labourer


Sri. O. Velayudhan
Permanent Labourer


Smt. K. Cheyeyi
Casual Labourer


Sri. P.P. Kunhiraman
Permanent Labourer


Smt. K. Kalyani
Casual labourer


Smt. C. Cheyeyi
Permanent labourer


Smt. M. Devaki
Permanent labourer


Smt. M. V. Janaki
Permanent labourer


Smt. M. Janaki
Permanent labourer


Smt. K. Janaki
Permanent labourer


Smt. P.V. Lakshmi
Permanent labourer


Smt. T. Lakshmi
Permanent labourer


Smt. M. Paru
Permanent labourer


Smt. K. Narayani
Permanent labourer


Sri. K.K. Balakrishnan
Permanent labourer


Sri. K.V. Kannan
Permanent labourer


Sri. P. Sankaran
Permanent labourer


Smt. P. Yesodha
Permanent labourer


Sri. N.K. Kunhiraman
Permanent labourer


Sri. K.M. Sahadevan
Permanent labourer


Sri. C. Govindhan
Permanent labourer

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