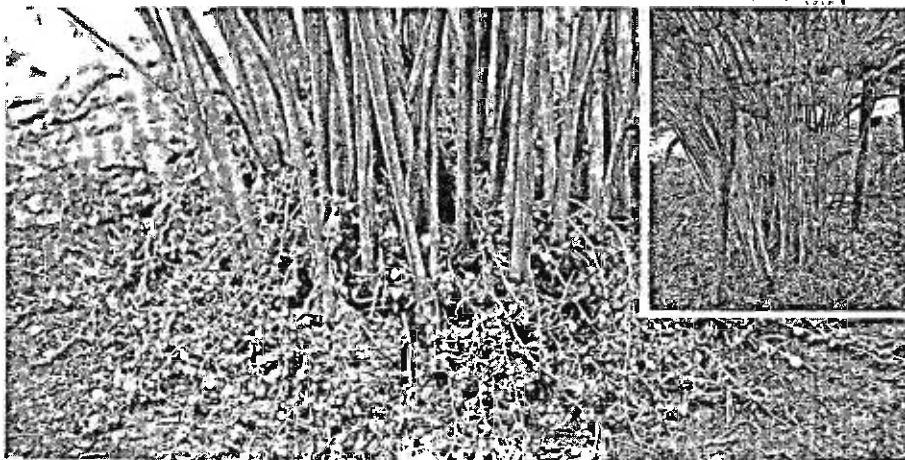


CARDAMOM SALUTES THE CARDINAL EFFORTS

Small cardamom (*Elettaria cardamomum*) popularly known as "Queen of Spices" is an important spice of export value. Productivity of this export oriented spice in the country is very low (60kg/ha) due to variety of reasons. To increase average yield of cardamom in the country, the Cardamom Research Centre of the National Research Centre for Spices at Appangala, Karnataka developed a viable technology called 'High Production Technology in Cardamom' through research of many years. Now cardamom salutes this cardinal efforts by yielding 162kg/ha under rainfed condition and 650kg/ha under irrigated condition! The major components of this High Production Technology are use of high yielding varieties, shade regulation, proper spacing, correct planting season, timely cultural operations and fertilizer application, judicious irrigation and drainage, proper soil conservation measures, maintenance of bee colonies, adequate plant protection measures and timely harvest and post harvest handling. This technology is successfully transferred to farmer's field. In order to convince the planters, 5 research cum demonstration trials were laid out at different planters plots in Coorg district of Karnataka. The cardamom planters in Coorg are now fully convinced about viability of this technique.

High Production Technology apart, what about lower altitude production potential?

Yes, traditionally cardamom is cultivated at an altitude of 600-1200 m. It is believed that at lower altitudes cardamom will not yield. However, there are occasional reports of cardamom plants yielding at plains, sea coasts and other non traditional areas. Genetic variability in cardamom to set fruit at lower elevations and other non-traditional areas is yet to be explored. Seedling progenies of cardamom may possess ability to adapt to non traditional areas and yield reasonably well. To understand this potential of cardamom seedlings,



Cardamom under high production technology. (Inset) yielding cardamom plant at Peruvannamuzhi farm.

a few seedlings of CI-37 variety of cardamom were planted during 1991 at the NRCS Research farm, Peruvannamuzhi which lies at an altitude of 35-60m above MSL. Growth and tillering of the seedlings are very good, so far! Two of the seedlings yield since last 2 years @ 300-400 cardamom/plant! However, unlike in the traditional areas, here flowers set fruit only during June-August. Further observations are in progress.

RESEARCH HIGHLIGHTS

Cytogenetics of spices:

Indexing chromosome number of 60 accessions of black pepper confirmed somatic chromosome number of $2n = 52$. The chromosome number of *Piper arboreum*, a wild species was also confirmed as $2n = 26$. Cytotypes having a range of chromosome number ($2n=52-104$) with distinct morphological features are also reported for the first time in black pepper.

Propagation of Cinnamon:

Air layering was successful in cassia cinnamon.

Defoliation Hinders Multiplication of Black Pepper:

Success of rooting and sprouting in defoliated black pepper cutting was negligible. (<1%).

Variation in Progeny Performance of Clove:

Elite clove progenies from Kallar and Burliar exhibited significant variation between themselves for growth and development.

Resistance to Pollu beetle:

Six species of wild pepper viz. *P. attenuatum*, *P. barberi*, *P. chaba*, *P. colubrinum*, *P. hymenophyllum* and *P. longum* were resistant to pollu beetle infestation on the berries.

Natural Products - Antifungal Activity:

Aqueous extracts from *P. colubrinum*, a *Phytophthora* foot rot (quick wilt) resistant wild relative of black pepper, was inhibitory to *P. capsici*, the foot rot pathogen in *in vitro* studies.

Stunted Disease - Spread to New Areas:

Fresh occurrence of stunted disease in black pepper was noticed at Coorg district (Karnataka) and Gudalur areas (Tamil Nadu).

VIRAL ETIOLOGY OF STUNTED DISEASE ESTABLISHED

Stunted disease of black pepper, otherwise known as little leaf disease, is caused by virus. This was confirmed by ELISA test carried out with infected plant sap of *Piper nigrum* and *Piper longum* at NRCS, Kozhikode in collaboration with S.V. University, Tirupati, Andhra Pradesh.

SURVEY ON PLANT PARASITIC NEMATODES

A survey was conducted to identify plant parasitic nematodes associated with turmeric in the major turmeric growing areas in Karimnagar and Nizamabad district of Andhra Pradesh by Dr. K. V. Ramana, Sr. Scientist (Nematology) during 3 - 5 December 1993.

SURVEY ON BIOCONTROL AGENTS OF GINGER RHIZOME ROT

A survey was conducted in three districts of Kerala viz. Idukki, Kozhikode and Kannur to isolate biocontrol agents against ginger rhizome rot pathogen *Pythium aphanidermatum*. About 50 isolates of *Trichoderma/Gliocladium* were isolated from rhizosphere and plant parts. Dr. T.G. Nageshwar Rao, Scientist, Sr. Scale (Plant Pathology), Mr. N. M. Usman and Mr. P. Balakrishnan, Research Associates, carried out the survey during 23 to 26 September in Idukki, 10th November and 8th December in Kozhikode and 15 - 17th December 1993 in Kannur District.

GERMPLASM COLLECTION AND CONSERVATION

A survey and collection of tree spices germplasm was made in Shevroy and Kolli hills of Salem district (Tamil Nadu) and Kodagu (Karnataka) by Mr. B. Krishnamoorthy, Scientist, Sr. Scale (Plant Breeding), NRCS along with Sri. Johnson K. George, Scientist (Genetics), NRCS, Kozhikode. Twenty cultivated cinnamon types were collected from Yercaud besides three wild types each of cinnamon and nutmeg from Kolli hills. A wild cinnamon type viz. *C. malabatum* was collected from Kodagu region. The 15 cultivated nutmeg types collected from Shevroy hills include 5 elite lines and an inter-sex type.

Another collection programme carried out by Mr. B. Krishnamoorthy in Peruvannamuzhi and Kozhikode (Kerala) resulted in the assemblage of 8 cultivated nutmeg types including one elite type and two double seeded types. A wild nutmeg collection was also added to NRCS conservatory from Peruvannamuzhi forest ranges.

In the survey conducted for black pepper germplasm at Kolli and Shevroy hills (Tamil Nadu), 16 wild *Piper* collections were made by Sri. Johnson K. George, Scientist (Genetics), NRCS, Kozhikode. In another survey for cultivated black pepper germplasm conducted by Sri. Johnson K. George, Scientist (Genetics) and Dr. B. Sasikumar, Scientist, Sr. Scale (Plant Breeding) during 13-15 October '93, 38 accessions were collected from Kannur district (Kerala). Ten wild *P. nigrum* accessions were collected from Idukki district (Kerala) by Dr. P.N. Ravindran, Principal Scientist (Genetics) and Sri. Regi Lukose, Scientist (Genetics) during November 1993. *Piper crocatum*, an ornamental species, was also added to the NRCS germplasm conservatory from RARS, Ambalavayal. Other significant additions to the germplasm conservatory during the period were a ginger accession from Jamaica (Courtesy: Chairman, Spices Board, Cochin), a few herbal spices from ICRI, Myladumpara and 18 species of *Curcuma* from NBPGR, Trissur.

EXCHANGE OF CARDAMOM GERMPLASM

As per the decision of Research Council of the NRCS Kozhikode, a group meeting on exchange of cardamom germplasm between ICRI (Spices Board), Myladumpara and Cardamom Research Centre, Appangala was held at NRCS, Kozhikode on 1-11-93. Prof. (Dr.) K. V. Peter, Director NRCS, Kozhikode chaired the meeting. Dr. P. N. Ravindran, Principal Scientist, Dr. B. Sasikumar, Scientist, Sr. Scale (Plant Breeding) from NRCS, Kozhikode, Dr. V.S. Korikanthimath, Scientist-in-charge, NRCS Cardamom Research Centre, Appangala and Dr. K.M. Kuruvilla, Scientist, ICRI, Myladumpara attended the meeting. Subsequently, Dr. P.N. Ravindran, Principal Scientist (Genetics), NRCS Kozhikode and Sri. Regi Lukose, Scientist (Genetics), Cardamom Research Centre, Appangala visited ICRI, Myladumpara during 23-25 November '93 and all the available allied taxa of cardamom at ICRI, Myladumpara were brought to NRCS, Kozhikode.

MEETING ON CARDAMOM CROP IMPROVEMENT

A discussion on the crop improvement of cardamom was held at NRCS Cardamom Research Centre, Appangala during 2-3 November '93. Dr. P.N. Ravindran, Principal Scientist (Genetics), NRCS, Kozhikode chaired the meeting. Sri. V. S. Korikanthimath, Scientist-in-charge, NRCS Cardamom Research Centre, Appangala, Dr. M. N. Venugopal, Sr. Scientist (Plant Pathology), Mr. Regi Lukose, Scientist (Genetics), Mr. Santhosh J. Eapen, Scientist (Nematology), Dr. Rajendra Hegde, Scientist (Agronomy) of Cardamom Research Centre, Appangala attended the meeting besides Dr. B. Sasikumar, Scientist Sr. Scale (Plant breeding) and Mr. Johnson K. George Scientist (Genetics) of NRCS Kozhikode. Action plans were formulated during the discussion.

PARTICIPATION IN SYMPOSIA, SEMINARS AND TRAINING

Prof. (Dr.) K. V. Peter, Dr. Y. R. Sarma, Dr. K. V. Ramana, Dr. K. Sivaraman, Dr. G. N. Dake, Mr. S. Devasahayam, Mr. B. Krishnamorthy, Mr. M. Anandaraj, Dr. B. Sasikumar, Dr. T. John Zachariah, Dr. Johny A. Kallapurackal, Mr. N. M. Usman, and Mr. P. Balakrishnan attended the National Group Meeting (XII Workshop) of Research workers of AICRPS held at Kerala Agricultural University, Trissur, July 26-29, 1993.

Dr. Y. R. Sarma, Principal Scientist, Dr. P. N. Ravindran, Principal Scientist, Mr. V. S. Korikanthimath, Scientist i/c NRCS Cardamom Research Centre, Appangala, Mr. S. Devasahayam, Scientist SG (Ent.), Dr. K. Sivaraman, Sr. Scientist (Agron.), Dr. B. Sasikumar, Scientist, Sr. Scale (Pl. Breeding) attended seminar on 'Production and Productivity of Cardamom and Black pepper' organised by Consolidated Coffee Ltd., Pollibetta, Coorg, 6-8 Aug. '93. Dr. P.N. Ravindran talked about the recent trend in black pepper breeding while Dr. B. Sasikumar discussed about the new varieties. Mr. S. Devasahayam gave a lecture on insect pest management in black pepper and Dr. M. N. Venugopal dealt with cardamom pests. Sri. V. S. Korikanthimath gave a talk on cardamom agronomy. Dr. Y. R. Sarma chaired the technical session.

Dr. K. V. Ramana, Sr. Scientist (Nematology) attended the National Symposium on 'Recent Approaches in Integrated Nematode Management of Agricultural Crops' at H.A.U, Hisar, 6-7 Aug. 1993.

Mr. Santhosh J. Eapen, Scientist (Nematology) attended the short term training course on 'Techniques in Isolation and Bioimmunological Characterisation of Proteins' sponsored by DBT, New Delhi at Institute for Research in Reproduction, Bombay 13-30 Aug. 1993.

Dr. B. Sasikumar, Scientist, Sr. Scale (Pl. Breeding) participated in the one day symposium on 'Impact of Biotechnology on Agriculture and Health care in India' organised by Centre for Biotechnology, Anna University, Madras and SPIC, Madras, 9th Sept. 1993.

Mr. S. Devasahayam, Scientist SG (Entomology) attended the seminar on 'Conservation of Endangered Fauna of Malabar', Kozhikode, 11 Sept. 1993.

Mr. Y. R. Sarma, Principal Scientist, (Pl. Pathology) attended the Third Biocontrol Workers Group Meeting, Project Directorate of Biological control, Bangalore, 19-20 Oct. 1993.

Dr. J. Rema, Scientist, Sr. Scale (Hort.) attended a short term training course on 'Techniques for Protoplast Based Plant Regeneration', sponsored by Indian Institute of Sciences, Bangalore 1-6 Nov. 1993.

Dr. Y. R. Sarma, Principal Scientist (Plant Pathology) attended 'State Level workshop on foot rot (quick with) disease of black pepper' at Thiruvananthapuram, 4th Nov. 1993.

Mr. S. Devasahayam, Scientist, SG (Entomology) attended the National Seminar on 'Changing Scenario of Bird Ecology and Conservation', Bangalore 12-14, Nov. 93.

Dr. Y. R. Sarma, Dr. K. V. Ramana and Mr. M. Anandaraj attended IVFRO Symposium - Impact of Disease and Insect Pest in Tropical Forest, Kerala Forest Research Institute, Peechi, Trissur, 23-26 Nov. 1993.

Dr. Y. R. Sarma, Mr. N. M. Usman and Mr. P. Balakrishnan, attended Indian Phytopathological Society (Southern Chapter) Annual meet and Symposium on 'Management of Plant Disease Through Resistance, Bioagents and Chemicals', University of Agricultural Sciences, Dharwad, 26-27 Nov. 1993.

Dr. K. Sivaraman, Sr. Scientist (Agron.) attended the 'Pepper Seminar' organised by Dept. Horticulture, and Plantation Crops, Tamil Nadu and Spices Board, Cochin at Nagarcoil on 2nd Dec. 1993.

Dr. A. K. Sadanandan, Principal Scientist attended the International Symposium on 'A Decade of Potassium Research' organised by Potash Research Institute of India during Nov. 18-20, 1993 at Taj Palace, New Delhi.

MEETINGS

General Council meeting of Kerala Agricultural University Thiruvananthapuram 31st July 1993 - Prof. (Dr.) K. V. Peter.

Research Council meeting of KAU, 26th Aug. 1993 - Prof. (Dr.) K.V. Peter.

Spices Board meeting, Cochin, 28th August, 6th Sept. 17-18th Sept. 1993 - Prof. (Dr.) K.V. Peter.

Research Advisory Committee meeting of National Horticultural Research and Development Foundation, New Delhi 31st Aug. and 28th Dec. 1993 - Prof. (Dr.) K. V. Peter.

Meeting convened by the Govt. of Kerala to formulate plans to establish spices districts in Idukki and Wynad. 14th Sept. 1993 - Prof. (Dr.) K. V. Peter.

International seminar on managing red and laterite soils for sustainable agriculture, Bangalore 24-29th Sept. 1993 - Dr. A. K. Sadanandan.

Task force meeting convened by DBT, New Delhi and presented progress report, New Delhi, 1st Oct. 1993 - Prof. (Dr.) K. V. Peter.

Director's conference convened by Director General, ICAR New Delhi, 5-6th Oct. 1993 and the same convened by DDG (Hort.) on 7th Oct. 1993 - Prof. (Dr.) K. V. Peter.

National Group Meeting of workers of Tuber Crops - Plenary session, Thiruvananthapuram 5-6th Nov. 1993 - Prof. (Dr.) K. V. Peter.

Group meeting to discuss the implementation of central sector schemes for development of plantation crops, spices, medicinal and aromatic plants during VIII Plan, Hyderabad 9-10 Nov. 1993 - Dr. K. Sivaraman presented paper on 'Technologies for Transfer in Spices'.

ISPC Executive Committee meeting, CPCRI, Kasaragod, 17 Dec. 1993 - Dr. Y. R. Sarma.

State Bank of India Managers Training Programme at Staff Training Centre, SBI, Mangalore - Mr. B. Krishnamoorthy presented a paper on 'Techno-Economic Aspects of Tree Spices' 29 Dec. 1993.

Assessment Committee meeting, UAS, Dharwad, 30th December 1993 - Prof. (Dr.) K. v. Peter.

NATIONAL MEETING (XII WORKSHOP) OF AICRP ON SPICES

The National Group Meeting (XII Workshop) of the Research Workers of AICRP on Spices (AICRPS) sponsored by Indian Council of Agricultural Research (ICAR) was hosted by Kerala Agricultural University (KAU), Vellanikkara, Trissur during July 26-28, 1993.

Shri. P. P. George, Hon'ble Minister of Agriculture, Govt. of Kerala, inaugurated the workshop on the forenoon of 26th July 1993. Dr. K. L. Chadha, Deputy Director General (Hort.) ICAR, New Delhi presided over the function. The Agriculture Minister in his inaugural address called for need in augmenting production and productivity of spice crops by adopting modern, economically viable and socially acceptable technologies developed by scientific research. The minister called for concerted effort of scientists of ICAR and KAU to find solution to the serious disease problems of pepper, cardamom and ginger affecting crop productivity.

Dr. K. L. Chadha in his presidential address emphasised the need for conservation of genetic resources and called for integrated approach in producing quality spices by scientific research to meet the growing export demand.

Dr. A. M. Michael, Vice chancellor, KAU, highlighted significant contributions made by KAU towards spices production. Dr. M. Aravindakshan, Director of Research, KAU gave welcome address. Felicitation addresses were made by Shri. T. Nandakumar, Chairman, Spices Board; Dr. M. K. Nair, Director, Central Plantation Crops Research Institute, Kasaragod; Dr. K.V. Peter, Director, NRCS, Kozhikode and Dr. C. C. Abraham, Associate Dean, College of Horticulture, KAU, Trissur. Dr. A. K. Sadanandan, Project Co-ordinator (Spices) in charge presented the progress report. Dr. P. Rethinam, Asst. Director General (PC), ICAR, New Delhi gave vote of thanks.

The meeting was attended by a total of 93 delegates drawn from different states of India covering 14 coordinating centres and one voluntary centre under AICRPS.

The workshop recommended release of 3 new varieties of spices, one each in black pepper, cardamom and coriander. During the workshop, a separate discussion was also held under the chairmanship of Mr. E. Velappan, Director, Directorate of Cocoa, Arecanut and Spices Development, on production of different spices planting materials.

PUBLISHED ARTICLES

Balakrishnan, P., Usman, N. M and Sarma, Y. R. 1993. Management of rhizome rot disease of ginger by soil solarisation. In: Proceedings of Symposium on Management of Plant Diseases through Resistance, Bioagents and Chemicals. (Abstract): Indian Phytopathological Society (Southern Chapter, Bangalore) No. 25-26, 1993.

Devasahayam, S. and Abdulla Koya, K. M. 1993. Additions of the insect fauna associated with tree spices. Entomon. 18 : 101-102.

Devasahayam, S. and Abdulla Koya, K. M. 1993. Effect of top shoot

borer (*Cydia hemidoxa*) infestation on young vines of black pepper (*Piper nigrum*). Indian J. Agric. Sci. 63 : 762-763.

Krishnamoorthy, B., Sasikumar, B. Rema, J and Jose Abraham. 1992. Variability and association studies in cinnamon (*Cinnamomum verum*). J. Spices and Aromatic Crops, 1 : 148-150.

Nair, R. R and Ravindran, P. N. 1992. Induced polyploidy in black pepper (*Piper nigrum*). J. Spices and Aromatic Crops, 1 : 151-153.

Nirmal Babu, K., John Zachariah, T., Minoo Divakaran., Samsudeen, K and Ravindran, P. N. 1992. *In vitro* proliferation of nutmeg aril (mace) by tissue culture. J. Spices and Aromatic Crops, 1 : 142-147.

Nirmal Babu, K., Rema, J., Geetha S. Pillai., Minoo Divakaran., Ravindran, P. N and Peter, K.V. 1993. Micro propagation of betel vine (*Piper betel* L.). J. Spices and Aromatic Crops, 1 : 160-162.

Peter, K. V. 1993. Genetic resources in Spices. Gregor Mendel Foundation Souvenir, University of Calicut.

Peter, K.V. 1993. High Production Technology for Spices Research at NRCS, Kozhikode. Indian Perfumer, 37 : 1-4.

Peter, K.V., Sadanandan, A. K and Thambi, C. J. 1993. Land evaluation and suitability factors for dominant spices in Kerala state. 'International Seminar on Managing Red and Laterite Soils for Sustainable Agriculture' held at Bangalore, Sept. 24-29, 1993.

Regy Lukose., Saji, K.V., Venugopal M. N and Korikanthimath, V.S. 1993. Comparative field performance of micropropagated plants of cardamom (*E. cardamom*). Indian J. Agric. Sci., 63 : 417-419.

Ramana, K.V. and Sarma, Y. R. 1993. Efficiency of *Paecilomyces lilacinus* in suppressing nematode infestations in black pepper (*Piper nigrum* L.) (Abstract). National Symposium on

Recent Approaches in Integrated Nematode Management of Agriculture Crops, HAU, Dec. 6-7, 1993.

Ravindran, P. N., Nirmal Babu K., Ramana, K. V., Nair, M. K., Mohandas, C. 1992. Pournami - A high yielding black pepper selection tolerant to root knot nematode (*Meloidogyne incognita*). J. Spices and Aromatic Crops, 1 : 136-141.

Rajan, P. P and Sarma, Y. R. 1993. Biocontrol programme on foot rot of black pepper (*Piper nigrum* L.) caused by *Phytophthora capsici*. Phytophthora Newsletter, 19:20.

Sarma, Y. R and Anandaraj, M. 1993. Metalaxyl residue in black pepper. Phytophthora Newsletter, 19 :21-22.

Sarma, Y. R. 1994. Management of *Phytophthora* foot rot and slow decline disease of black pepper. Planters Chronicle 89 : 29-30.

Santhosh, J. Eapen, 1993. Plant parasitic nematodes of small cardamom and their management. Planters Chronicle 88 : 169-171.

Sasikumar, B., Rema, J and Ravindran, P. N. 1992. Vanilla. Indian Cocoa Arec. and Spices J. XVI :6-10.

Sarma, Y. R., Nambiar, K. K. N and Anandaraj, M. 1993. Foliar Yellowing and root rot in coconut seedlings caused by *Phytophthora* sp. In: Advances in Coconut Research and Development. (Eds.) M. K. Nair., H. H. Khan., P. Gopalasundaram and E. V. V. Bhaskara Rao. Indian Society for Plantation Crops, Oxford and IBH New Delhi P.P. 629-630.

Sadanandan, A. K. 1993. Potassium in soils growing black pepper (*Piper nigrum* L.) and response of applied potash. In: Potassium for plantation crops (Eds.) Mahatim Singh and M. K. Mishra. Potash Research Institute of India. Gurgaon, Haryana, India, P.75-88.

Sadanandan, A.K., Korikanthimath, V. S and Hamza, S. 1993. Potassium in soils of cardamom (*Elettaria*

cardamomum M.) plantations. In: Potassium for Plantation Crops (Eds.) Mahatim Singh and M. K. Mishra. Potash Research Institute of India, Gurgaon, Haryana India. P. 88-101.

Sadanandan, A. K. and Hamza, S. 1993. Nutrition management of red and laterite soils for sustainable spices production in India. (Abst.) Paper presented at the International Seminar on Management of Red and Laterite soils for Sustainable Agriculture held at Bangalore on Sept. 24-25, 1993.

Sadanandan, A. K., Hamza, S and Johny, A. K. 1993. A decade of Potassium nutrition research of spices crops in India (Abst.) Paper presented at the International Symposium on 'A decade of Potassium Research' held at New Delhi Nov. 18-20, 1993.

Sadanandan, A. K., Jose Abraham, Anandaraj, M and Hamza, S. 1993. Effect of coconut - pepper mixed cropping on soil fertility and crop productivity. In: Advances in Coconut Research and Development (Eds.) M. K. Nair., H. H. Khan., P. Gopalasundaram and E. V. V. Bhaskara Rao Indian Society for plantation crops. Oxford and IBH New Delhi. P.P. 433-435.

Usman, N. M., Balakrishnan, P and Sarma, Y. R. 1993. Biological control of rhizome rot of ginger (Abstract). In: Proceedings of Symposium on Management of Plant diseases through Resistance, Bioagents and Chemicals. Indian Phytopathological Society (Southern Chapter) Nov. 25-26, 1993.

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Krishnamoorthy, B. 1993. Storage method of ginger seed rhizome. Spice India (Tamil), 6(9) : 6-7

Krishnamoorthy, B. 1993. Economic uses of tree spices. Spice India (Tamil), 6(10) : 2-4.

Krishnamoorthy, B. 1993. Let us cultivate cinnamon. Spice India (Tamil), 6(12) : 14-16.

Nirmal Babu, K., Rema, J., Ravindran, P.N., Peter, K.V., 1993. Biotechnology in Spices. Indian Hort. 38(3) : 46-51.

Peter, K.V. 1993. Future of plant technology in spice crops. Souvenir 3rd International Food Convention. 7-12 Sept. 1993.

Rao, T. G. N., Reddy, B. N and Sasikumar, B: 1993. Production constraints of turmeric in Andhra Pradesh. Spice India, 6(10) : 8-10.

Sasikumar, B: 1993. 'Sex appeal' of Turmeric. Spice India (Mal.), 6 (7) : 5.

Sasikumar, B. 1993. Genetic engineering and black pepper. Spice India (Mal.), 6(8) : 5-6.

Sasikumar, B. 1993. Genetic resources of ginger. Spice India (Mal.), 6 (9) :5.

Sasikumar, B. Johnson George, K and Ravindran, P. N. 1993. Diversity in black pepper germplasm. Spice India (Mal.), 6(10) : 17-19.

Sasikumar, B. 1993. Genetic Engineering in Agricultural Crops. Yojana, (Mal.), 22(4) : 5-7.

Usman, N. M. 1993. Quick wilt of black pepper can be controlled. Madyamom Daily (Mal.) 15 Nov. 1993.

STUDY CIRCLE

The NRCS Study Circle met 6 times during the period of July-Dec. 1993.

Dr. V. K. Damodaran, Secretary, Dept. of Science, Technology & Environment, Govt. of Kerala and Prof. G.M. Reddy, Director, Centre for plant Molecular Biology, Osmania University, Hyderabad delivered guest lectures.

TECHNICAL PUBLICATIONS/ REPORTS

Annual Report 1992-93, AICRP on Spices, NRCS, Kozhikode - A. K. Sadanandan and Johny A. Kallapurackal.

Research Highlights 1992-93, AICRP on Spice, NRCS, Kozhikode - A. K. Sadanandan and Johny A. Kallapurackal.

Annual Report 1992-93, NRCS, Kozhikode - K. Sivaraman., C. K. Thankamani and K. Kandiannan.

TRANSFER OF TECHNOLOGY

Training programmes conducted:

Date : 7 & 8th Sept. 1993

Course: Nursery Management of Spices

No. of participants : 24

Nature of positions : 19 officials from different organisations and 5 managers/supervisors from private plantations.

Date : 22-27th Nov. 1993

Course: Spices production Technology

No. of Participants : 7

Nature of positions : Officials from different States and Central Government Agricultural Departments

Establishment of Spices Orchard and Demonstration Plot

Model spices garden at Calicut-University Campus under KVK/NRCS Kozhikode.

In order to educate students and extension personnel, a spices garden was inaugurated at Calicut University campus by Dr. A. N. P. Ummer Kutty, Vice Chancellor, Calicut University in a function organised at Botany Department, Calicut University on 2.11.93. The garden was set up under the KVK/NRCS, Peruvanna muzhi. Dr. K. V. Peter, Director, Mr. Jose Abraham, Scientist-in-charge, KVK and Mr. B. Krishnamoorthy, Scientist Sr. Scale (Plant breeding), NRCS, Kozhikode attended the function. Potted plants of bush pepper, allspice and elite lines of clove, cinnamon and nutmeg were provided by NRCS, Kozhikode.

Demonstration plot of spices at St. Michael's Church, West Hill, Kozhikode.

A spices demonstration plot of mixed cropping of tree spices (nutmeg & clove) with coconut was established as

part of KVK/NRCS, Kozhikode activity at St. Michael's Church, West Hill, Kozhikode during Aug. 1993.

Production and supply of quality spices planting materials

Period : July - December 1993

Black Pepper : 12,000 (Rooted cuttings)

Bush Pepper : 115 (Rooted cuttings)

Clove : 1000 (Seedlings)

Nutmeg : 900 (Seedlings & grafts)

Cinnamon : 850 (Seedlings)

Radio talks

Prof. (Dr.) K.V. Peter: Marketing of black pepper Oct: 10, 1993, AIR, Kozhikode.

Mr. Balakrishnan: Azhukal disease of cardamom and its management. AIR, Kozhikode.

Mrs. C. K. Thankamani: Fertilizer requirements of Tree Spices. Aug. 15, 1993, AIR, Kozhikode.

Mr. N. M. Usman: Control of quick wilt of pepper. July 6, 1993, AIR, Kozhikode.

Mrs. N. K. Leela: Importance of quality control in spices. Aug. 27, 1993, AIR Kozhikode.

QUINQUENNIAL REVIEW TEAM

The Indian Council of Agricultural Research constituted the Quinquennial Review Team (QRT) for review of the work of NRCS and AICRPS with Dr. P. C. Sivaraman Nair, Director of Research (Rtd.), Kerala Agricultural University as Chairman and Dr. P. C. Sundra Babu, Prof. and Head, Dept. of Entomology, TNAU, Coimbatore, Dr. K. I. Wilson, Prof. & Head (Rtd.), KAU, Dr. K. R. Maurya, Prof. & Head, Dept. of Horticulture, RAU, Bihar as members and Dr. R. Vikraman Nair, Professor, Cadbury-Cocoa Programme, KAU as member secretary. The team also co-opted Dr. K.V. Peter, Director, NRCS and Dr. A.K.

Sadanandan. (P.C. i/c Spices, NRCS, Kozhikode). The committee reviewed the work of NRCS (April 1985-March 1992) and AICRPS (April 1982-March 1992). The team visited 8 ACIRPS coordinating centres and submitted the two reports to ICAR.

DEPUTATION ABROAD

Sri. K.M. Abdulla Koya, Scientist, Sr. Scale (Entomology) was selected for a three year assignment to the Kingdom of Saudi Arabia as a specialist of the Red Palm Weevil Project under the Agriculture Improvement Scheme. He was relieved on 12.11.93 to take up the assignment at Saudi Arabia.

Dr. G. N. Dake, Sr. Scientist (Plant Pathology) attended the second ACIAR Crawford Fund Master Class in Plant and Microbial Molecular Genetics 1993 organised by the Australian Centre for International Agricultural Research, Crawford fund for International Agricultural Research and Monash centre for Agricultural Biotechnology at the Department of Genetics and Developmental Biology, Monash University, Wellington Road, Clayton, 3168, Melbourne, Victoria, Australia, Nov. 15th - Dec. 3rd 1993. He also presented the work on bacterial wilt of ginger of NRCS, Kozhikode.

POST GRADUATE STUDIES

Academic Council of KAU, Trissur has recognised the National Research Centre for Spices, Kozhikode as a centre for post graduate research.

Mrs. R. Suseela Bhai, Jr. Scientist, ICRI, Myladumpara registered for Ph.D studies on 'Capsule rot ('Azhukal') Disease of Cardamom' at Calicut University under the guidance of Dr. Y. R. Sarma, Principal Scientist (Pl. Pathology), NRCS, Kozhikode.

Mr. S. Devasahayam, Scientist, S G (Entomology) registered for Ph.D on 'Bioecology of leaf gall thrips infesting black pepper' on part time basis under Dr. U. V. K. Mohammed, Professor and Head, Department of Zoology, University of Calicut.

NEW SCHEME SANCTIONED

An ICAR ad-hoc scheme in Nematology viz. 'The Plant Parasitic nematode *Trophotylenchulus piperis* sp., Mohandas, Ramana & Raski 1985 and its interaction with black pepper' was sanctioned by ICAR, New Delhi during August 1993.

HINDI EXAMINATION

Mr. B. Krishnamoorthy, Scientist, Sr. Scale (Plant breeding) passed **PRABODH (HINDI)** Examination (May 1993) conducted under Hindi teaching scheme, Dept. of official language, Ministry of Home Affairs, New Delhi by correspondence course wing (Hindi language), Central Hindi Training Institute, New Delhi.

DISTINGUISHED VISITORS

Prof. V. K. Damodaran, Secretary, Department of Science, Technology and Environment, Govt. of Kerala.

Dr. G. M. Reddy, Director, Centre for Plant Molecular Biology, Hyderabad, 23 July 1990.

Dr. V. S. Seshadri, Assoc. Director (R & D), Indo-American Hybrid Seeds, New Delhi, 26 Aug. 1993.

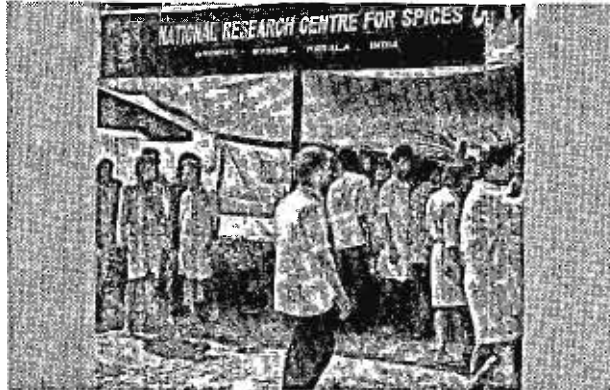
Mr. P. J. Joseph, Ex. Revenue Minister, Govt. of Kerala, 2nd Nov. 1993.

CELEBRATIONS

Independence Day was celebrated on 15th August 1993. Director, NRCS, hosted the National Flag.

Sadbhawana Diwas was observed on 28th August to promote national integration and harmony among people of all religion, languages and regions and goodwill towards everyone to preserve our heritage of tolerance, harmony and unity in diversity. The entire staff took the **National Sadbhavana Diwas Pledge**.

NEWS IN PICTURES



People making a beeline at the NRCS/KVK stall arranged at CSI Cathedral ground, Kozhikode in connection with the All Kerala Farmers' day on 17.8.1993.



Hon'ble Minister of Agriculture and Animal Husbandry (Govt. of Kerala) Sri. P.P. George inaugurating the XII National Group Meeting of Research Workers of AICRP (Spices) at KAU, Trissur. Dr. M. Aravindakshan, Director of Research, KAU; Dr. M.K. Nair, Director, CPCRI, Kasaragod; Dr. K.L. Chadha, DDG (Hort.), ICAR; Dr. A.M. Michael, Vice-Chancellor, KAU; Dr. C.C. Abraham, Associate Dean, College of Horticulture, KAU; Dr. P. Rethinam, ADG (PC), ICAR and Sri. T. Nandakumar, Chairman, Spices Board are also seen.



Prof. (Dr.) K.V. Peter, Director, NRCS, Kozhikode garlanding Hon'ble Union Minister for Agriculture, Dr. Balram Jakhar on the eve of the Golden Jubilee Symposium on 'Horticulture Research - Changing Scenario', organised by the Horticultural Society of India, Bangalore.

COMING EVENT

The Indian Society for Spices (ISS) is organising the third National Seminar during 7-8 April 1994 at Kozhikode in collaboration with NRCS, Kozhikode; Spices Board, Cochin and other Agencies. The theme of the seminar is 'Diseases of Spices'. For further details please contact:

Dr. G. N. Dake, Convenor (Programme)
NRCS, P.B. No. 1701
Marikunnu P.O., Kozhikode 673 012, Kerala.

INSTITUTE MANAGEMENT COMMITTEE

The Institute Management Committee meeting was held at NRCS, Kozhikode on 30th September 1993.

FARM ADVISORY COMMITTEE

The Farm Advisory Committee of NRCS, Kozhikode met at the NRCS, Peruvannamuzhi farm on 12.1.1993 under the chairmanship of Prof.(Dr.) K. V. Peter, Director, NRCS, Kozhikode. The meeting convened by Dr. T. G. Nageshwar Rao, Scientist-in-charge, Peruvannamuzhi was attended by Dr. Y. R. Sarma, Dr. P. N. Ravindran, Dr. K. V. Ramana, Dr. K. Sivaraman, Mr. B. Krishnamoorthy, all scientists of NRCS, Kozhikode besides Mr. V. K. A. Koya, Farm Superintendent, Peruvannamuzhi farm, Mr. K. M. Prakash, Technical Assistant (KVK), Ms. K. Usha, A. A. O and Mr. T. Gopinathan, Asst. Accounts Officer, NRCS, Kozhikode. Various farm development programmes were discussed.

INSTITUTE JOINT COUNCIL

The second meeting of the second IJC was held at NRCS Kozhikode on 21.7.93 under the chairmanship of Director, NRCS, Kozhikode. Pending issues regarding service matters and other grievances of the staff were discussed and resolved.

PERSONNEL

APPOINTMENTS

Name	Designation	Posted at	Date of joining
Sri. B. Satheesan	<i>Mali, IPDS Scheme</i>	Peruvannamuzhi	05-07-1993
Sri. K.M. Prakash	<i>Training Asst. cum Tech. Asst.</i>	KVK, Peruvannamuzhi	20-09-1993
Sri. T.T. Soman	<i>Lab Attender</i>	NRCS, Kozhikode	22-09-1993
Dr. Rajendra Hegde	<i>Scientist (Agrom.)</i>	NRCS, Appangala	29-10-1993

TRANSFERS

Name & Designation	From	To
Smt. S. Vasantha, <i>Scientist (Plant Physiology)</i>	NRCS, Kozhikode	SBI, Coimbatore
Sri. Santosh J. Eapen, <i>Scientist (Nematology)</i>	NRCS CRC Appangala	NRCS, Kozhikode
Sri. C. V. Ravindran, <i>S S Grade</i>	CTCRI, Trivandrum	NRCS, Kozhikode

WEDDING

Sri. N. M. Usman, Research Associate, NRCS, Kozhikode with Ms. Aneesa Ali (19.12.1993). Congratulations and Best Wishes to the married couple!

OBITUARY

The staff of NRCS Chelavoor, Peruvannamuzhi & Appangala condoled the demise of Mr. D. Sankaran, J T A (T-1-3) on 4.8.93.

Published by Prof. (Dr.) K. V. PETER, Director, NRCS, Kozhikode

Editor: Dr. B. SASIKUMAR; Members: Dr. JOHNY A. KALLUPURACKAL, Mr. P.A. SHERIF, NRCS, Kozhikode - 673 012, Kerala

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