

angalore

Outsiders

Vittal
C.A.R.S

C.C.R.S

Kasaragod

KERALA

1500
1000
700
RABIAN SEA

Nideshwar

Cannanore

20000

CENTRAL COCONUT RESEARCH STATION, KASARAGOD.

FIVE DECADES OF ACHIEVEMENTS

I. INTRODUCTION

1. Coconut Palm:

The Coconut Palm yields more products of use to mankind than any other tree. It is no wonder then that the palm is looked upon with reverence and affection, and given such eulogistic epithets as Kalpa Vriksha (Tree of Heaven). Coconut accounts for about 1% of the National Income and about 2% of the Agricultural Income of India. Obviously any improvement on the cultivation of coconut is of vital importance to the nation.

2. Brief History:

The Central Coconut Research Station is the premier research station in coconut research. It was founded in 1916, along with the Research Stations at Nileshwar, by the Government of Madras. It had a small beginning with an area of 33 acres and run by one or two scientific assistants under the able guidance of eminent Scientists like Dr. J.S. Patel, Shri C.M. John and Shri G.V. Narayana. The Station's development and expansion began in 1947 when it was taken over by the Indian Central Coconut Committee. The extent of the farm was increased to 83.64 hectares (185 acres) to include all the import

soil types of the major coconut-growing areas. From 1947 research of a fundamental and applied nature received great impetus under the able guidance of Shri C.M. John and Dr. K.P.V. Menon. The 2 monographs on coconuts by Indian Scientists (one by Dr. J.S. Patel and the other by Dr. K.P.V. Menon and Dr. K.M. Pandalai) were prepared mostly on the basis of research data collected at this Station. In 1966 the Station was taken over by the Indian Council of Agricultural Research in the wake of the abolition of the Indian Central Coconut Committee. Since then the approach has been to lay emphasis on problem - and production-oriented research.

3. Location:

The Central Coconut Research Station, Kasaragod is situated on the Bombay-Cape Comorin West Coast Road, 43 km. from Mangalore and 5 km. North of Kasaragod Railway Station. The Mangalore-Madras Railway track passes by the Western boundary of the Station. The nearest air port is at Mangalore.

4. Organisation and Objective:

The Head of the Institution is the Director. The main objective of the Research Station is to promote research on the fundamental and applied aspects of the coconut crop. This is being carried out in three sections, viz. Botany

including breeding and cyto-anatomy, Agronomy and Chemistry including soil survey. In addition to these 3 sections, a Production Unit has been formed very recently. The Station has also a well-equipped Library with 2,500 volumes and more than 100 scientific periodicals. The total number of staff including the 70 and odd scientific personnel comes to 90. The Station also employs about 100 monthly-and daily-rated mazdoors. One of the important subsidiary activities of the Research Station is production and supply of quality seedlings. About 30,000 seedlings are supplied every year. This includes 5,000 to 6,000 seedlings of promising hybrids and exotic varieties.

II. IMPORTANT ACHIEVEMENTS

Some of the important achievements accomplished by the Research Station are briefly stated below:-

A. AGRONOMY

Field observations carried out over a period of 35 years have demonstrated the importance of regular intercultivation and manuring. While the mean yield per tree in the regularly cultivated and manured plot was 59 nuts, that in the completely neglected plot was only 14 nuts. The mean yield of the plot receiving cultivation alone was 45. It was also found that to get maximum benefits of manuring the entire area should be cultivated instead of the cultivation being

restricted to the base of the trees, The different methods of intercultivation tried indicate that in loose soil piling mounds and levelling are better than digging, ploughing or forming basins. The different intercultivation practices did not induce any differential response to manuring. In coconut gardens raised under purely rainfed conditions burying coconut husks and dry leaves is found to have a very beneficial effect lasting for 6 to 8 years. Application of red earth (with irrigation once in 4 days) in planting pits in coarse sandy soils helps to improve the structure and water-holding capacity of the soil and results in quick and vigorous growth of the young palm. Raising of intercrops such as tapioca, cassava, sweet potato, yams, sugar cane, maize, paddy etc. in the shade of coconut palms does not show any adverse effects on the main crop, provided both are adequately manured.

On the basis of indications obtained from the trials laid out at this Station, the best fertilizer treatment is found to be a mixture consisting of 0.50 kg of Nitrogen, 0.32 kg of Phosphoric acid and 1.20 kg of Potash. Among the different methods of fertilizer application tried no significant differences were noticed. Broadcasting has been found to be as good as the conventional method of basin application.

Irrigation experiments indicated that summer irrigation increased the yields of palms growing in sandy soils.

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For palms growing in littoral soils of the sea coast, sea water has been found to be as good as fresh water.

B. BOTANY

The endeavour to undertake intensive cultivation, using fertilizers, irrigation water, pest control measures etc. will not yield expected results unless basically good strains are available to work upon. Different aspects of improving genetic potential of the plant, like use of improved local variety, introduction and evaluation of exotic varieties, hybridisation and selection, have received the attention of early Indian workers of this crop. Germplasm collection was first initiated in India nearly 47 years ago with a view to assessing the economic characters of different coconut varieties under Indian conditions and for use in hybridisation work. Several exotic varieties have been introduced in the Agricultural Research Station at Pilicode and the first generation of these varieties were planted at the Central Coconut Research Station, Kasaragod in 1940-'41. Considering the performance of direct introduction and their progenies, Laccadive ordinary is the best among the earlier introductions and superior to the local tall variety. It thus offers further scope for large scale introduction and straight propagation.

In recent years introduction of coconut varieties from foreign sources has been given greater emphasis. At the Central Coconut Research Station, Kasaragod, there is, at present, a fine collection of 47 varieties, perhaps the best in the World. Every effort is being made to introduce more varieties to make it a fully representative collection of World varieties. These introductions are being studied to assess their adaptability and suitability for direct introduction. These exotic varieties have also been utilised to exploit the genetic diversity found in them, in intervarietal crosses. Crosses between and within the exotic and indigenous varieties have been performed and progenies studied in detail. Laccadive X Gangabondam, a cross involving an exotic and indigenous variety appear to be the most promising. Among the crosses between the indigenous varieties, a hybrid between Tall x Dwarf variety is found to be early bearing economic type. An equally interesting group of palms are the natural cross palms. They are found to be as good if not better than T x D hybrids. Selections from high yielding local tall varieties based on well established criteria for the selection of mother palms and seedlings are also found to be promising. Planting of these hybrids namely T x D, Natural Cross dwarfs from promising dwarfs, direct introduction of promising exotic varieties and selection from the local

tall variety are, therefore, recommended for the cultivators.

Fundamental investigations having a direct bearing in the problem-oriented research projects have also been taken up. Study of the relative contribution of different yield components toward the final yield and their heritability, when completed, will go a long way to rationalise our breeding programme. Systematic investigations on the problem of barren nut production have indicated the possibility of converting the total wastage of nuts into valuable products of economic importance. Study of the developmental morphology of nuts have helped to determine the effects of environmental factors on the rate of growth of nuts at different stages of development. This valuable information is very much useful for providing optimum conditions of growth, as and when required by the developing nuts.

Shedding of buttons of female flowers is a common phenomenon and on an average only 25 per cent of the buttons produced develop to maturity. Studies have shown that spraying the inflorescence with 2,4-D (60 ppm) mixed with equal quantity of nut water induces better setting. However, to maintain the beneficial effects and to ensure proper development of nuts, proper manuring is essential.

Cytological investigations indicate that the tall varieties are more stable,

cytologically, while the dwarf palm are heterozygous for chromosomal rearrangements like translocation, inversion etc. Evidently these could reduce the recombination potential in the heterozygosity of the palms. Evidence from the cytology of Tall and Dwarf palms considered along with their morphological characters and vegetative vigour tend to suggest that the dwarf palms occurring in nature are the products of various generations of inbreeding in the normal tall strains.

C. CHEMISTRY

A detailed survey of the soils in the coconut-growing areas (about 75,000 acres) in Cannanore District has been completed and the soils have been classified into six major groups. The physical and chemical characteristics of these soils have been studied. Study of the nutrient status showed that the coastal plain and the low land valley soils are very poor and are adversely affected by drought conditions. The laterite, alluvial and reclaimed soils are fairly well-supplied with nitrogen and organic matter but low in potash and phosphate. The red soils while possessing favourable physical features are lacking in plant nutrients, especially nitrogen and potassium. Studies on the soil-plant nutrient correlations showed that manuring has remarkable influence on

the foliar nitrogen and potash status.

Studies carried out on the enzyme activities in developing nut, nut water and haustorium of germinating seedlings have enabled the identification of a large number of enzymes and the assessment of their activities. Enzyme activities are influenced considerably by cultural and manurial practices and thus these may serve as an index to the nutrient and cultural needs of the palm.

III. PROSPECTS AND RETROSPECTS

Judged by the unperturably long life span of the palm, the achievements listed above are remarkable, many and varied. These have been rewards of untiring and patient efforts of sincere minds. But much more work has yet to be taken up and completed. The scientific personnel of this Station are now investigating over 25 different projects in different disciplines with special stress on problem- and production-oriented research.

Introduction and evaluation of exotic varieties, improvement of indigenous varieties by hybridisation and selection, standardisation of new agro-techniques to suit different soil types and to different genotypes, are the main objectives of the projects in hand.

IV. EXTENSION PROGRAMME

This Station intends to lay out a few demonstration plots in private gardens at different important coconut-growing

areas of the country. Enquiries received from the coconut growers from different parts of the country on the suitability of particular tracts of particular types of soils, on the manurial requirements etc. are answered promptly by the personnel of this Station. The Central Coconut Research Station, Kasaragod will thus continue to serve the coconut growers in solving their multifarious problems and in helping them to secure more returns from their crop.

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