Reprinted from Journal of Plantation Crops 5(1): 47-57. *June*, 1977.

RP-273

DIAMOND JUBILEE CELEBRATIONS OF COCONUT RESEARCH IN INDIA: RECOMMENDATIONS

(*December* 27, 1976—*January* 8, 1977)

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I. The Celebrations began on Monday, 27 December 1976 with an inaugural function. In his presidential address, Shri Chikke Gowda, Minister for Agriculture, Government of Karnataka called for the following actions:

(1) Growers should be properly educated in coconut culture and effective plant protection measures for increasing production.

(*Action*: State Horticulture/Agriculture Departments, Directorate of Coconut Development)

(2) Vigorous efforts are called for to evolve varieties resistant to the leaf eating caterpillar and to rear and release parasites against this pest.

(*Action*: ICAR, UAS, Horticulture/Agriculture Departments, KAU)

(3) ICAR may consider opening a regional station on the pattern of the Citrus Research Station at Chettahalli and Athur in Coorg district to give more impetus to coconut cultivation and also for tackling problems peculiar to this agroclimatic region.

(*Action*: ICAR)

(4) Researchers should evolve dwarf varieties suitable for coconut water so as to prevent the enormous wastage of husk and copra arising from the use of existing tall varieties for tender nuts.

(*Action*: ICAR, UAS.)

(5) New uses for coir may be developed to fetch better market and bring additional income to the coconut farmer.

(*Action*: Coir Board)

II. In the evening, the General Body meeting of the ISPC was held. In his presidential address entitled 'Plantation Crops Industry', Dr. KVA Bavappa stressed the following points:

(1) It is important to develop suitable methodology for cost accounting in terms of labour units and material inputs in monocropping and in different systems of gardenland management.

(*Action*: CPCRI, Centre for Develop Studies, Trivandrum)

(2) Small processing units should be established in every village or a group of

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villages in command areas to ensure larger share of profits to the farmer.

(*Action*: CPCRI, State Governments)

(3) Special efforts should be made to reduce the cost of production.

(*Action*: CPCRI)

III. On Tuesday, 28 December 1976, Dr. M. S. Swaminathan, Director General, ICAR inaugurated the International Symposium on Coconut Research and Development with a keynote address entitled "Coconut research—the next phase". In his address, Dr. Swaminathan made the following suggestions and observations:

(1) The major research problem in coconut is attacking the yield barrier.

(*Action*: CPCRI, Agri. Universities)

(2) The research gap between the best yields so far realised in the research farm and the maximum attainable yield as obtained in the super palms can be bridged through intensive interdisciplinary research efforts.

(*Action*: CPCRI)

(3) The research-cum-extension gap between the best yields obtained in the research farm and by the good farmer should be covered by research and extension workers.

(*Action*: ICAR, State Departments of Agriculture/Horticulture)

(4) The extension gap between the best average yield realised by a farmer in the State and the State average yield should be immediately bridged through concerted efforts by development, extension, and research agencies.

(*Action*: State Agriculture / Horticulture Depts.)

(5) The problem of root(wilt) should be solved with the highest priority.

(*Action*: CPCRI)

(6) The research efforts on post-harvest technology should be stepped up.

(*Action*: CPCRI)

(7) The D×T hybrids may be studied fully for their potential. The progenies of D×T and T×D hybrids may be studied critically to identify early maturing and disease resistant segregants particularly in the first combination.

(*Action*: CPCRI, Agricultural Universities)

(8) The pattern of relationship between nut yield and yield contributing characters should be studied in more detail.

(*Action*: CPCRI)

(9) Correlations between nursery characters and yield components should be studied with a view to utilising them in breeding work.

(*Action*: CPCRI)

(10) Studies may be taken up on yield index (ratio of copra weight to weight of coconut).

(*Action*: CPCRI)

(11) The various aspects of inter- and mixed- cropping may be studied more critically to identify the combinations which exhibit 'co-operation' and 'competition'. The long term implications of these farming systems should be studied.

(*Action*: CPCRI)

(12) A critical study may be taken up to establish the actual role of *Botriodiplodia* in root(wilt) disease. The association of nematodes, bacteria, and virus should also

be studied in more detail to determine their relative roles in the etiology of the disease.

(*Action*: CPCRI)

(13) Rapid propagation techniques including use of tissue culture should be developed for multiplying superior genetic material.

(*Action*: Universities, CPCRI)

(14) The available genetic variability in different countries should be systematically sampled to develop a global grid of genetic resource centres for preserving and classifying pure as well as panmictic populations for use at breeding centres.

(*Action*: IBPGR, NBPGR, CPCRI)

(15) A concrete plan for establishing a global grid of coconut genetic resource centres may be prepared.

(*Action*: IBPGR, NBPGR, CPCRI)

IV. The inaugural address was followed by the scientific session on Genetics and Breeding (Chairman: B. R. Murthy). Eight papers were presented and the following recommendations came out of them:

(1) The response of diverse genotypes to various management practices including increased manuring should be studied using tracer techniques.

(*Action*: Agricultural Universities, CPCRI)

(2) Biochemical criteria may be developed for identifying high yielding types at the seedling stage.

(*Action*: Universities, CPCRI)

(3) The dwarf genotype may be characterised through a critical analysis of segregation pattern in different progenies of natural dwarfs. Possibilities of genetic or zygotic elimination should be examined.

(*Action*: Agricultural Universities, CPCRI)

(4) Callus culture may be utilised for nondestructive screening for isolation of disease resistant types.

(*Action*: Agricultural Universities, CPCRI)

(5) The location effects of male-female plant ratio in hybrid seed production may be critically analysed.

(*Action*: State Agriculture/Horticulture Departments, CPCRI)

(6) Anatomical, physiological, and biochemical studies may be carried out to find out the causes for large scale wastage of reproductive potential in the coconut plam.

(*Action*: Agricultural Universities, CPCRI).

V. The Agronomy and Soil Science session was held in the afternoon (Chairman: H. R. Arakeri). Ten papers were presented in it and the following were the major suggestions.

(1) There is urgent need for developing methods of predicting coconut yield from the expected drought index for the year and for reducing by watering, possible losses in yield caused by immature nut fall.

(*Action*: Agricultural Universities, CPCRI)

(2) In future selection programmes, the behaviour of selections in different environmental conditions should be studied to identify types which are able to give stable yields under variable conditions.

(*Action*: Agricultural Universities, CPCRI, AICCAIP)

(3) In all agronomic studies it is imperative to provide information on soil and basic

characteristics of the particular site including initial fertility.

(*Action*: Agricultural Universities, CPCRI, AICCAIP)

(4) The characteristics of coconut growing soils and climatic data may be collected for relating them to coconut production trends in various coconut growing regions.

(*Action*: Agricultural Universities, CPCRI, AICCAIP)

(5) Cost accounted studies may be taken up on intercropping and mixed farming systems with emphasis on employment opportunities, to project suitable models for large-scale adoption.

(*Action*: Agricultural Universities, CPCRI)

(6) The methodology of leaf analysis should be standardised for various agroclimatic conditions.

(*Action*: Agricultural Universities, CPCRI)

(7) The problem of luxury consumption of potash and its resultant imbalance with calcium and magnesium nutrition may be examined critically. The possibilities of partially supplementing potash by a cheaper element like sodium may be looked into.

(*Action*: CPCRI)

(8) The problem of P nutrition may be studied in relation to possible soil conditions which limit the uptake of P.

(*Action*: CPCRI)

(9) Follow up studies may be taken up to ascertain the ameliorative role of zinc, manganese, and iron on root(wilt) disease affected palms.

(*Action*: CPCRI)

VI. On Wednesday, 29 December 1976, the session on Physiology and Biochemistry was held in the morning (Chairman: R. D. Asana). The following lines of research were identified in the seven papers presented.

Research should be intensified to develop (*a*) reliable methods of foliar diagnosis; (*b*) the uptake of iron by roots of diseased and healthy palms; and (*c*) carbohydrate metabolism.

(*Action*: Agricultural Universities, CPCRI)

VII. This was followed by the Session on Technology (Chairman: V. Subramaniam). Five papers were presented and the following recommendations came forth from them.

(1) Concerted efforts should be made to improve the yield and quality of processed products.

(*Action*: CFTRI, CPCRI)

(2) Studies on protection of copra during drying through acetic acid application may be taken up to prevent infection.

(*Action*: CFTRI, Agricultural Universities, CPCRI)

(3) Loss of coconut in storage due to *Staphylococcus* infection needs to be effectively controlled.

(*Action*: CFTRI, Agricultural Universities, CPCRI)

(4) Research to determine factors influencing taste and flavour of coconut kernel may to taken up.

(*Action*: CFTRI, Agricultural Universities, CPCRI)

(5) A method may be developed to extract a part of the oil from edible flour of kernel.

(*Action*: CFTRI, CPCRI)

(6) The method for direct extraction of oil from fresh coconut through solvent extraction may be standardised.

(*Action*: CFTRI)

(7) The wet processing of coconut for extraction of oil through solvent extraction method may be standardized.

(*Action*: CFTRI)

(8) A combined chemical and microbiological method for retting of husk may be developed.

(*Action*: Coir Board)

(9) Work should be taken up to produce better quality products from coconut pith, shell, and other components.

(*Action*: Coir Board, CSIR, ICAR)

(10) A chemical treatment may be developed for protecting the coconut leaves used for thatching against damage by molds and fire.

(*Action*: CSIR, Universities, ICAR)

VIII. The session on Basic Studies (Chairman: H. Y. Mohan Ram) was held in the afternoon. Six papers were presented and the following points were raised for further action.

(1) Pollen and embryo culture work should also be taken up along with tissue culture for rapid propagation of elite coconut material.

(*Action*: Agricultural Universities, CPCRI)

(2) A survey of natural occurrence of vegetative propagules should be made to assess their potential for large scale application.

(*Action*: Agricultural Universities, CPCRI)

(3) Relationship between male flowers and fruit set should be critically analysed in view of the reported observation that removal of male parts stimulate fruit set and yield.

(*Action*: CPCRI)

IX. On Thursday, 30 December 1976 the session on Diseases (Chairman: G. Rangaswamy) was held in the forenoon. Five papers were presented. The following were the recommendations:

(1) Methods should be developed for early detection of *Ganoderma* infection. It may also be determined if the same strain of *Ganoderma* is responsible for the infection of a large number of hosts. There is necessity for developing efficient methods for controling the *Ganoderma* disease.

(*Action*: UAS, TNAU, APAU, CPCRI)

(2) The extent of crop losses resulting from bud rot should be assessed in areas of infection.

(*Action*: KAU, CPCRI)

(3) The role of bacteria in the incidence of bud rot and its relationship with *Phytophthora* in causing the disease should be studied.

(*Action*: KAU, CPCRI)

(4) The relationship between night temperatures and bud rot infection may be studied as a preliminary to forecasting the disease.

(*Action*: KAU, CPCRI)

(5) There was a general consensus that the name of root(wilt) disease does not call for any change at this time.

X. This was followed by the session on Pests (Chairman: K. K. Nirula). Six papers were presented and the following suggestions were made for further action.

(1) The use of systemic insecticides may not be recommended in view of the residue problem, and as such, it may not be recommended for controlling cockchafer beetle.

(*Action*: Agricultural Universities, CPCRI)

(2) Strict surveillance may be observed in India against the introduction of *Promecotheca cumingi* from Sri Lanka and Eriophyid mite from Africa.

(*Action*: Directorate of Plant Protection)

(3) An integrated project should be developed for controlling rats in coconut gardens which is assuming a serious problem in most of the countries.

(*Action*: ICAR)

(4) International research efforts should be mounted for the control of rhinoceros beetle. Work on using viruses, nematodes etc. for its control should be intensified.

(*Action*: FAO, ICAR)

(5) Work on biological control of *Nephantis serinopa* should be intensified. In the mean while, this pest may be controlled during summer months by using insecticides.

(*Action*: Agricultural Universities, CPCRI)

(6) Parasite breeding centres may be strengthened in all the states for controlling *N. serinopa* more effectively.

(*Action*: State Agriculture/Horticulture Departments, Agricultural Universities, CPCRI)

(7) The possibility of employing chemosterilants for the control of red palm weevil along with intensifying work on parasites and predators may be studied

(*Action*: Agricultural Universities, CPCRI)

(8) More research efforts should be made to study white grubs which have become a severe problem in coconut gardens.

(*Action*: Agricultural Universities, CPCRI)

XI. The Session on Diseases of Uncertain Etiology followed in the afternoon (Chairman: K. Ramakrishnan). Seven papers were presented in this. The following were the recommendations:

(1) It is necessary to extend cultural practices such as mixed cropping to healthy plantations especially in border areas of the diseased tracts in order to curtail the spread of the disease.

(*Action*: Kerala Agriculture Department, CPCRI)

(2) Critical and definitive studies on the role of the nematode *Radopholus similis* in the causation of root(wilt) disease should be carried out.

(*Action*: CPCRI)

(3) It is necessary to see whether there is floral damage in root(wilt) diseased palm.

(*Action*: CPCRI)

XII. The session on Development Programmes in India and Other Countries was held on Friday, 31 December 1976 (Chairman: A. Venkataraman). Sixteen papers were presented and the following points emerged out of these:

(1) Available data may be analysed critically to determine the causes for the low production of coconuts in the 60's and 70's in India in spite of expansion of area.

(*Action*: Directorate of Coconut Development, CPCRI)

(2) The accuracy of the present method of collecting data on area and producion may be examined.

(*Action*: Bureau of Statistics and Economics, Economics and Statistics Adviser)

(3) A systematic analysis of different factors responsible for increasing producti-

vity and profitability may be carried out.
(*Action*: Bureau of Statistics and Economics, Economics and Statistics Adviser, Agricultural Universities, Directorate of Coconut Development, CPCRI).

(4) Lack of irrigation is identified as one of the major constraints for stepping up productivity of coconut.

(5) Agronomic recommendations should be tested in local verification trials before being recommended for general adoption.
(*Action*: State Agriculture/Horticulture Departments, Agricultural Universities, CPCRI)

(6) The extension organization in the Andamans needs to be strengthened.
(*Action*: Andamans Administration)

(7) The sale of seed coconuts and seedlings may be subsidised in Goa.
(*Action*: Agriculture Department, Goa)

(8) The practice of using 2-3 year old seedlings in Karnataka may be studied to see its effects.
(*Action*: UAS, Karnataka Horticulture Department)

(9) In root(wilt) fiffected areas attention may be directed towards adopting better management practices along with replanting with fresh healthy seedlings.
(*Action*: Kerala Agriculture Department, Directorate of Coconut Development, CPCRI)

(10) The practice in vogue in Orissa State of planting coconut on irrigation canal bunds may be adopted by other states also.
(*Action*: Directorate of Coconut Development, State Agriculture/Horticulture Departments)

(11) To check the production of spurious hybrid coconuts, the Seed Certification Act should be strictly enforced by the appropriate agency.
(*Action*: State Agriculture/Horticulture Departments, Directorate of Coconut Development)

(12) The integrated control campaign being used by Lakshadweep Administration in controlling rats may be adopted in other states also to reduce the rat menace.
(*Action*: State Agriculture/Horticulture Departments, Directorate of Coconut Development).

(13) Methods for the economic utilization of the husk of tendernuts may be developed.
(*Action*: CSIR, Coir Board)

(14) The organizational structure of Research and Development work in Sri Lanka may be adopted in other countries also. The system prevalent in Jamaica of collecting cess from coconut industry and using it in coconut production and protection and also for meeting the expenditure involved in facing natural calamities, may be studied critically by other countries for possible adoption.
(*Action*: FAO, Governments of Different Countries, Directorate of Coconut Development)

XIII. The Plenary Session was held in the afternoon of 31 December 1976 (Chairman: Y. Fremond). After the presentation of sessional reports, the following points were adopted:

(1) Mr. E. V. Nelliat presented a set of definitions for various terms used in plantation crops. The delegates were requested to send their comments to Mr. Nelliat.

(2) Dr. Bavappa then presented a working paper on international collaboration and

co-operation in coconut research and development. The following areas were identified for collaborative action in the papers based on the results of the group discussions held during the Symposium: (*i*) Genetic resource collection and conservation; (*ii*) Disease of uncertain aetiology; (*iii*) Production physiology of coconut; (*iv*) Vegetative propagation; and (*v*) Post-harvest technology.

(3) He also proposed that a permanent secretariat may be formed for continuing contacts among the coconut scientists of the world for mutual benefit. This proposal was approved.

(4) The Plenary Session also identified the following areas for meeting the developmental needs through international collaboration: (*i*) Exchange or research personnel for solving specific problems; (*ii*) Germplasm collection and supply; (*iii*) Establishing communication centres for indexing latest work in different areas; (*iv*) Product processing and market indices; and (*v*) Area development.

(*Action*: FAO, APCC)

XIV. Based on the suggestions made by Dr. M. S. Swaminathan, study groups were organised in the following areas: (*i*) Genetic resource collection, and conservation; (*ii*) Vegetative propagation; (*iii*) Production physiology; (*iv*) Post-harvest technology; and (*v*) Diseases of uncertain aetiology. The following were the major recommendations made by these study groups:

(1) A collector's handbook on coconut germplasm should be prepared by a competent international team which should include a plant pathologist.

(*Action*: KVA Bavappa, K. Satyabalan)

(2) A survey should be made to collect and catalogue all indigenous coconut types, including identification of all the 'super palms'. The farmers who produce over 200 nuts/palm/year may also be located and the management practices adopted by them should be ascertained. The sample size should also be fixed.

(*Action*: Agricultural Universities and Agriculture/Horticulture Departments of each State, CPCRI)

(3) Experimental approaches towards vegetative propagation using both naturally occurring propagules such as bulbils and suckers as well as artificial methods like tissue culture should be initiated. Possibilities of using pollen and anther culture for haploid production should also be explored.

(*Action*: Agricultural Universities, CPCRI)

(4) Establish correlations between seedling characters and yield using physiological parameters and also establish whether coconut is a C_3 or C_4 plant. A suitable procedure and a concept should be developed for harvest index and the partitioning of dry matter in coconut.

(*Action*: Agricultural Universities, CPCRI)

(5) Nutritional studies of important genotypes to assess their translocation rates and effect of microbial associations in mixed cropping on nutrient uptake should be studied using isotope dilution techniques.

(*Action*: CPCRI)

(6) For eradicating root(wilt), research cum demonstration plots should be laid out very carefully in core taluks of diseased areas to demonstrate the efficacy of mixed cropping and good management on ameliorating the condition of root (wilt) diseased palms. Further, a suitable replanting project should be prepared for the border areas of this disease to prevent its spread.

(*Action*: Kerala Agriculture Department, CPCRI)

(7) A compendium on coconut diseases of uncertain aetiology, a directory of scientists working on these diseases, and an International Newsletter may be prepared for exchange of information on these diseases.

(*Action*: CPCRI, ISPC)

(8) An economical and least cumbersome drier for copra that can be used even by small farmers should be developed so that among other advantages it also helps to reduce mycotoxin contamination.

(*Action*: CFTRI, CPCRI)

(9) Work may be taken up to improve the efficiency of existing oil expeller units.

(*Action*: CFTRI, CPCRI)

(10) Improved methods of retting coir should be developed for producing better quality fibre and reducing pollution of backwaters.

(*Action*: Coir Board, CPCRI)

XV. A two-day Travelling Seminar was organized by the CPCRI to discuss the diseases of uncertain aetiology of coconut in India, with special reference to the root (wilt) disease of Kerala. The main decisions of the Seminar are given below:

(1) The research programmes on root (wilt) disease should emphasise both etiology and management aspects in existing as well as fresh plantings.

(*Action*: CPCRI)

(2) The movement of seednuts and seedlings from disease affected zones to other areas should be restricted by invoking the Pest Act.

(*Action*: Government of Kerala)

(3) Efforts should be made to create a disease-free belt along the border. For this, infected palms occurring in healthy areas should be cut and burnt after spraying with 0.05% carbaryl to kill vectors. Suitable rewards may be given to those who help in locating such palms and the farmers should be compensated for their loss.

(*Action*: Government of Kerala)

(4) The possibilities of developing cooperative research projects with internationally renowned institutions such as Waksman Institute, East Malling, John Innes, and Rothamsted should be fully explored, for obtaining a clear understanding of the nature of the pathogen in volved in root(wilt).

(*Action*: ICAR)

(5) An interdisciplinary approach in monitoring the disease is most vital for understanding the root(wilt) in its totality. Methods for early diagnosis through serology and other biochemical means should be perfected using double blind checks in order to apply them in the eradication programme.

(*Action*: CPCRI)

XVI. On 6 January 1977, the Diamond Jubilee Celebrations were presided over by Mr. N. N. Wanchoo, Governor of Kerala, In his address, Mr. Wanchoo called for the following:

(1) The extension service should be widely used to make available the benefits of research to farmers.

(*Action*: State Agriculture/Horticulture Departments)

(2) A vigourous joint effort should be made by CPCRI, Agricultural Universities, and State Departments of Agriculture/Horticulture in south India to reduce the harm being done by root(wilt) disease.

Dr. K. V. A. Bavappa, Director, CPCRI, reviewing the progress made during the six

decades of coconut research in India, paid tributes to the foresight of early planners and said that the investment of Rs. 40 lakhs for coconut research during the last year was very meagre considering the fact that the crop contributes 1% of our GNP and provides livelihood to ten million people.

XVII. Mr. Shah Nawaz Khan, Union Minister of State for Agriculture and Vice-President of ICAR, pointed out that additional facilities should be provided for taking up work on the five major areas that have been identified by the Symposium for intensive research.

(*Action*: ICAR, CPCRI)

He also called for: (*i*) strengthening the coconut genetic resources and for establishing a germplam bank at a suitable area in Lakshadweep; (*ii*) preparing a critical inventory of all mother palms yielding over 200 nuts/year and initiate research on tissue culture; (*iii*) more intensive interdisciplinary research towards solving the root (wilt) problem; (*iv*) develop a strategy to reach higher yield levels in coconuts; (*v*) pay more attention to post-harvest technology and wet process extraction for oil.

(*Action*: CPCRI, ICAR)

XVIII. Mr. Vakkom Purushothaman, Kerala Minister for Agriculture in his speech called for the formation of a Coconut Board by the Central Government at the earliest, and urged the scientists to leave no stone unturned in finding an early remady for root(wilt) disease to save the loss of Rs. 28 crores to the State annually.

(*Action*: Ministry of Commerce, CPCRI)

Dr. K. G. Adiyodi, Minister for Irrigation and Forests, Government of Kerala and Mr. N. K. Balakrishnan, Minister for Health, Government of Kerala, also called for determined efforts by scientists to find an everlasting solution to root (wilt) and other diseases.

(*Action*: CPCRI)

XIX. Dr. M. S. Swaminathan, who welcomed the gathering, later read out the inaugural speech of the President of India, Mr. Fakhruddin Ali Ahamed, on his behalf. In his speech, the President of India proposed a six-point programme to take coconut research to greater heights of accomplishment and give a boost to the industry as a whole. These consist of the following:

(1) Find a solution to the root (wilt) problem and prevent it from spreading to other parts;

(*Action*: CPCRI)

(2) Develop suitable intercropping and mixed farming schedules for different parts of the country supported by national demonstrations to convince farmers of their value. While doing this, emphasis should be placed on recycling principles and productivity improvement;

(*Action*: Agriculture Universities, Directorate of Coconut Development, CPCRI)

(3) Establish agro-industrial complexes based on coconut and its products linking production with processing, marketing, and utilisation;

(*Action*: CSIR, ICAR)

(4) Intensify research on by–product utilization and the use of coconut shells which are now being discarded;

(*Action*: CSIR, ICAR)

(5) Intensify programmes for the multiplication and distribution of coconut hybrids

and superior planting material for replanting schemes;

(*Action*: Directorate of Coconut Development, State Agriculture/Horticulture Departments)

(6) Introduce crop-livestock-fish integration techniques in coconut gardens, and plant casuariana, cashew, and coconut in successive belts and along the coastline, to provide energy, nutrition, and additional income to fishermen and prevent sea erosion as well.

(*Action*: ICAR, State Agriculture/Soil Conservation/Horticulture Departments)

XX. On 8 January 1977, the valedictory function was addressed by Mr. A. C. George, Union Minister of State for Civil Supplies and Cooperation. He made a strong plea to central and state governments and also the industry to consider giving a subsidy-cum-loan to coconut cultivators and to institute jointly a 'coconut fund' similar to the rubber cess for effectively implementing on a large scale the slaughter killing of diseased trees and taking up a rapid replantation programme. He justified this investment by pointing out that Kerala was producing annually about Rs. 400 crores worth of coconut oil and by-products, and the Union Government was getting a sizable foreign exchange from export of coconut products.

(*Action*: Commerce & Agriculture Ministries of Govt. of India, Kerala Government).

XXI. Dr. Seyid Muhammed, Union Minister of State for Law, Justice, and Company Affairs, stressed the importance of striking a balance between farmers' price for raw coconut and the price consumer paid for the oil.

(*Action*: Union Ministries of Agriculture and Civil Supplies).

He also called for a phased programme of mechanisation of coir industry in order to complete effectively in international markets with the mechanised coir industries of Europe.

(*Action*: State Governments of Kerala, Karnataka, and Tamil Nadu, Coir Board)