

OPERATIONAL GUIDELINES FOR SCIENCE AND TECHNOLOGY COMPONENT

Introduction

Innovative R&D activities on coir are carried out under the Board by the two research institutes; the Central Coir Research Institute, Kalavoor and Central Institute of Coir Technology, Bangalore. The Central Coir Research Institute, Alleppey was established in 1959 and the Central Institute of Coir Technology, Bengaluru in 1980. Whereas CCRI, Kalavoor concentrates on research concerning development of ecofriendly technologies for quality improvement of coir fibre, utilization of coir pith, effluent treatment, development of new machinery etc. CICT, Bengaluru concentrates mainly on technology development on coir composites. Identification of new user areas for utilization of coir and coir waste (coir pith), modernization of production infrastructure for elimination of drudgery in manual operation thereby attaining higher productivity and improvement in quality are integral parts of the research efforts of both the Institutes and research investigations have led to development of several new technologies for the coir industry.

Extensions of the results of the technologies developed/research at the laboratory level are scaled up for application at the field level together with extension of testing and service facilities to the coir entrepreneurs & exporters, carrying out of research activities with the funding support from reputed institutions are also envisaged under the programme.

Collaborative research with research organizations, institutes, industries, universities in India and abroad, having proven records on varied applications of coir, development of new products, new machinery, product diversification, development of environment friendly technologies, technology transfer, incubation, testing and service facilities are the areas which are given priority consideration. Commercialization of new products/technologies and machine developed by the R&D institutes and registering for Patent Right of these research outcomes and proper documentation etc., are also to be done.

As part of the Government of India decision to rationalize all the Schemes, the stand alone scheme of Plan S&T has brought under the umbrella Scheme of Coir Vikas Yojana.

The programmes under the S&T activities for the period 2017-18 to 2019-20 are implemented under the following components.

- Modernization of Production Processes.
- Development of machinery and equipments.
- Product Development and Diversification.
- Development of Environment Friendly technologies.
- Technology transfer, Incubation, Testing and Service Facilities.

The Director RDTE, who is heading the Research Institutes CCRI & CICT of the Board, will be the nodal officer all of the S&T programmes, fund utilization and settlement and furnishing reports to HO.

(I). Modernization of Production Processes

Objectives

- Modernization of extraction process of coir fibre leading to enhancement of productivity, upgradation of quality and elimination of drudgery.
- Development of appropriate technologies for improving the productivity and quality in spinning.
- Development of innovative technologies in weaving of coir products by improvisation of the production processes of fibre and equipments.
- Development of modern technologies for finishing operations of coir products.
- Modernization of the production and extraction process through application of biotechnology.
- Development of technologies for wet processing of coir using natural dyes.
- Extraction of good quality fiber using Mobile Fibre Extraction Machine which will be modified to produce fibre of uniform length and reduce impurity.
- Development of technologies for quality improvement of coir fibre using Bio-chem treatment and enzyme treatment.
- Development of diversified products using a superior quality fibre such as Janata Mattress, superior quality coir floor coverings.
- Productivity and quality of products need to be modernized
- Research will result in increased production of new range of coir products which will be accepted both by internal and external markets

Most of the conventional technologies used in the coir industry are of medium level. Consequently, the amount of drudgery is more and the working atmosphere is not user friendly enough for retention of a dedicated work force. The productivity and the quality of the products are not up to the mark either. Continued research activities will result in increasing the acceptance of the new technologies for processing of coir & development of new coir products both by internal and external markets.

(II). Development of Machinery and Equipments

Objectives

- Elimination of drudgery in operations
- Improvement in productivity and quality

- Bringing about cost effectiveness

The programme aims at Development of Plant Machinery and Control Systems to Spin Fine Quality Coir Yarn of Uniform Thickness and Reduced Hairiness for Weaving Superior Quality Coir Floor Furnishing Products, development of machinery for spinning coir yarn, extraction of fibre, weaving coir products etc. Most of the existing machineries are obsolete with low productivity and involve drudgery in operation. Low productivity, low technology application, reluctance to accept rapid mechanization, economic disability to modernize the sector etc. are some of the limitations for growth in the coir industry. Modernization essentially involves mechanization and application of modern processes, which necessitates developing appropriate machinery for processing of coir fibre into yarn and products with enhanced productivity.

(III). Product Development and Diversification

Objectives

- To develop innovative products from coir fibre or blending with other natural fibers.
- To develop new areas of application for coir products like coir geo-textiles
- To develop new technologies for utilization of coir pith
- To develop technology for use of coir in the automobile industry for seat cushions and upholstery
- To develop innovative designs suitable for mats, matting and carpets
- To construct rural roads under PMGSY using coir geo-textiles for inclusion in the manuals of PWD etc.
- To establish Design Clinics in the major coir clusters & *in CCIR/CICT*.

Future of coir industry depends on product development and diversification, especially into non-traditional areas. Development of substitutes for wood, synthetic products, geo-synthetics, combination products through blending with other natural fibres etc. would open up new vistas for the coir industry. Development of new application areas and new products are of vital importance for the full utilization of the potential of the industry.

The future of the industry depends on innovative eco friendly consumer acceptable products and coir wood shall bring immediate changes to the life of people especially in the building and furnishing sector. The demand for coir wood shall increase from the sunrise building sector which ultimately preserve the tropical forests from depletion and reduces the serious concern of the impact on world climatic conditions.

(IV). Development of Environment Friendly Technologies

Objectives

- To develop appropriate technologies for abatement of pollution in the production processes.

- To develop a cost effective eco-friendly effluent treatment technology for treating the effluents arising out of wet processing in coir industry.
- To develop technology for disposal of sludge in the ETPs.
- To develop new products like wood substitutes out of coir alone or by blending with other natural fibres.
- To standardize the coir composite products for different applications.
- To undertake studies in estimation of carbon credit by using coir products like composites, geo-textiles etc.
- To develop new technology for production of coir toys.

The world is becoming more environment conscious and the need for protection of water, air and other natural resources for the posterity is being realized widely. Even though coir and its products are nature friendly in the sense that they are hundred percent degradable, research efforts have to be carried out to minimize the environmental hazards caused by retting and wet processing.

(V) Technology Transfer, Incubation, Testing and Service Facilities

Objectives

- To transfer the technologies developed by the research institutes to the trade against specific requests and under agreement of technology transfer by realising appropriate fees.
- To establish technology incubation centers in one or many places for training the entrepreneurs in the new technologies developed and transferred.
- To create a tool room for maintenance of and repair of the looms and equipments established in different coir production centers.
- To establish a laboratory for testing coir composite materials and to extend service facilities to the trade.
- To demonstrate the user friendly technologies and machineries developed by CCRI/CICT in the major coir yarn production centers for the benefit of the workers/entrepreneurs.
- To extend technical assistance for interventions in clusters identified by the Board in different coir producing States.
- To undertake testing of coir and coir products, dyed samples, coir pith etc. at the laboratories of CCRI, CICT and Regional Officers and issue test certificates.
- To extend service facilities to the trade in dyeing of coir yarn/fibre at the dye house established at the CCRI.
- To undertake civil/electrical infrastructure support required for the research institutes *of CCRI/CICT etc.*

The result of the research activities need to be disseminated to the industry and trade and diversified uses of coir and coir products have to be popularized through demonstration

in the field for increasing the demand of coir. There is a need of services like testing and certification facilities required by the industry.

Phasing of expenditure during the period 2017-18, 2018-19 and 2019-20 for each S&T Schemes are detailed below:

(Rs. in lakhs)

Sl. No	Programme	Intervention	2017-18	2018-19	2019-20	Total
1	Modernization of Production Processes	Modernization of production process	75.70	180	200	455.70
2	Development of machinery and equipments	Development of new machines	62.72	280	300	642.72
3	Product Development and Diversification	Product development & diversification	128.71	180	200	508.71
4	Development of Environment friendly technologies	Development of environment friendly technologies	244.96	280	300	824.96
5	Technology Transfer, Incubation, Testing and Service Facilities	i) Field demonstration of technology. ii) Transfer of eco-friendly technologies iii) Transfer of technology to machine manufacturers. iv) New clusters to be provided with technological support v) Field demonstration of technologies. vi) Extension of testing and services facility	187.91	180	200	567.91
	Total	Total	700.00	1,100.00	1,200.00	3,000.00

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The funds will be released to the Research Institutes from HO of Coir Board on a quarterly basis on certification of utilization of 70% funds released earlier. The funds will be utilized by the Research Institutes for R&D activities and creation of infrastructure & civil construction/repairs etc. relating to R&D activities only as specified in the Action Plan under different Programme Heads of the Scheme.

Industry/Research institutes will prepare proposals for various R&D activities including projects, creation of infrastructural facilities, civil constructions, repairs and maintenance etc. with the approval of competent authority. Board will prioritize the fund requirement and submit to the Ministry on quarterly and lumpsum basis.

- The Research Institutes of the Board will undertake collaborative research projects with other recognized institutions/industries who are interested to have research projects related with coir and its allied products.
- Research efforts will be pursued through public private partnership basis after giving due transparency.
- Advertisement will be released for inviting the collaborators online as well as.
- Advertisement will be released for inviting interested entrepreneurs, industrialists, research organizations etc. for utilizing the facilities available at Board's research institutes for a consideration fixed by mutual discussion.
- If necessary, the collaborators of the projects will be invited for making presentation on the project before the Board.
- Preference will be given to the collaborators having experience of research works pertaining to coir or any other natural fibre.
- The outcome of the project must be for the benefit of the coir industry
- The collaborating institute should provide counterpart contribution in terms of kind or cash for the project.
- An Advisory Committee will be constituted consisting of Chairman, Coir Board, **CEO(CB)**/ Secretary, Coir Board, Joint Director (Plg.), Director, NCRMI, Chairman, FICEA, Chairman, TN Dist. Coir manufactures Association, Officer in-charge of coir industries from Govt. of Kerala, Tamil Nadu, Karnataka and Odisha, etc. experts from National R&D institutes having expertise in the relevant field will validate the project proposals before approval of S&T committee. Board etc. The Director, RDTE will be the member and convener of the Committee.
- A Project Review Committee consisting of Director (RDTE), Joint Director (Res.), Joint Director (Tech.), Deputy Director (S&T), the Nodal Officer of the project concerned, the nominee of **Finance & Accounts Section**, Coir Board will review the progress of the projects periodically (at least once in three months) and recommend for the release of Board's share for continuing the project.
- The Chairman, Coir Board shall be the appellate authority and his decision on all matters connected with the project shall be final and binding on both the parties.

- In the case of collaborative projects tenure will be specific and a MoU will be signed between the Board and the collaborator.
- There will be nodal officers for all the collaborative projects who will function under the Director, RDTE. The collaborative projects should be monitored by the nodal officers effectively and the progress report of each of the collaborative projects should be submitted by the Director, RDTE before the S&T Committee/ Board Meeting with due recommendation of the review and advisory committee in time.
- Data base may be prepared and upgraded on available technologies as well as RDTE experts available in the country and outstanding consultants may be identified.
- Building two-way linkages with RDTE experts and field level units.
- Constantly improving the quality of coir products and facilitating the compliance with pertinent standards.
- Identify a few products on which major thrust would be given in a well coordinated manner for the increase in their market penetration.

Development “outcomes” and “outputs” of the scheme/project

The Scheme being a Research & Development Activity, the outcome of the Scheme may not be measured in financial terms but the expected outcome of the Scheme are as detailed below:

- Continued implementation of the Scheme will result in development of new technologies for reducing drudgery and improving the quality and productivity of the coir products. Continued research activities will result in increasing the acceptance of the coir products both by internal and external markets.
- The development of more sophisticated machinery with the features of automation will result in enhanced productivity and income. Elimination of physical strain and better income would attract younger generation to engage themselves into coir activities.
- The use of coir products for environment friendly activities will result in environment protection.
- Development of new value added products and identification of new areas for application of coir will result in the generation of more national income from a waste material.