







PRODUCT DEVELOPMENT AND DIVERSIFICATION

YEAR	ACTIVITIES	ACHIEVEMENTS
<p>1990-91</p>	<p>57 novel designs were evolved for FF mats, mattings and jacquard mattings. An album containing new designs was prepared. 75 design photographs for weaving products of novel designs were supplied to the trade. 375 samples of rubberised coir were tested. A Rubberised Coir Testing Laboratory was set up at Central Institute of Coir Technology, Bangalore. Rectified the initial warping defect observed in the composite board from coir-needled felt coated with PF resin.</p>	<p>3.Woven carpets from yarns spun from blends of softened coir / wool / goat hair.</p> <p>4.Evolved coir needled felt with jute and High Density Poly Ethylene scrim/web.</p> <p>5.Developed coir gypsum composites in collaboration with Regional Research Laboratory, Jammu Tawi and successfully used as panelling/ ceiling material.</p>
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Coir Ply Board</p> </div> <div style="text-align: center;">  <p>Coir Matting Board</p> </div> </div> <p>The project for development of gypsum coir composite panels in collaboration with Regional Research Laboratory, Jammu Tawi was implemented. The collaborative project on utilisation of coir pith for agricultural farms for retention of moisture content with TNAU was continued.</p>	

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<p>1991-92</p>	<p>The 4 shaft semi -mechanised loom was put to intensive performance run and achieved an output of 50 sq. meters of matting with a 160 picks per meter in 8 hours of work.</p> <p>Developed samples of composites were made from coir needled felt and phenol formaldehyde resin under the collaborative project with Regional Research Laboratory, Thiruvananthapuram.</p>	<p>1. Composites were made from coir needled felt and phenol formaldehyde resin under the collaborative project with Regional Research Laboratory, Thiruvananthapuram.</p>
<p>1992-93</p>	<p>Sample matting with novel designs and ribbed mattings with design embossed on the face of the matting with multi shaft combination weave were woven on the jacquard loom.</p> <p>Constructional modifications were effected in weaving of ribbed matting and panama matting by switching over to 4 shaft weave from 2 shaft weave.</p> <p>103 designs suitable for FF mats, mourzouks/carpets, jacquard matting and half oval matting were developed.</p> <p>Extracted lignosulphonate from coir pith successfully in the lab level.</p> <p>Developed polymer composite boards of improved appearance and finish by vapour cure coating.</p> <div style="display: inline-block; vertical-align: middle;">  </div> <p>The wood veneered particle boards were tested at Indian Plywood Industries Research Institute, Bangalore that conformed to IS-3097.</p> <p>Developed gypsum boards by sandwiching layers of coir needled felt with layers of gypsum, which have properties like low thermal and sound conductivity, smooth finish and easy machinability.</p> <p>Cationic softeners and polymer emulsion were used for imparting softness to coir fibre.</p>	<p>14. Lignosulphonate was extracted from coir pith.</p> <p>2. Softening of coir fibre using reverse soaps.</p> <p>3. Developed coir polymer composite boards of improved appearance and finish by vapour cure coating.</p>


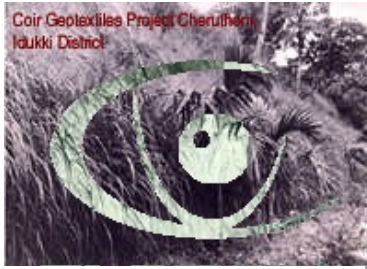
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1993-94	<p>Admixed coir with cotton and a new variety of coir mat was developed using cotton waste as brush and coir yarn as base fabric, which has a soft feel.</p> <p>Samples of cushion and pillows were produced using softened coir fibre.</p> <p>Studies were conducted on stiffening with emulsions of acrylic and rubber latex.</p> <p>The technology of preparation of polycoir from coir needled felt and PF resin was transferred to M/s Saurashtra Cements and Chemicals Ltd., Bombay</p> <p>90 new designs were supplied to interested parties.</p> <p>Pilot scale studies in extraction of sodium lignosulphonate from coir pith yielded 10 % lingnosulphate.</p> <p>Polycoir boards in various sizes were produced including polycoir boards of 7¹ x 4¹ boards with lamination paper and fancy design paper.</p> <p>Samples of rubber-coated coir needled felt tile boards were made.</p>	

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<p>1994-95</p>	<p>7 novel designs were produced in jacquard power loom A few samples of coir matting using 12 shaft were evolved for weaving on doobby loom. Bicoloured warp was used for weaving novel designs on Jacquard loom. Samples of coir matting with thick Quilandy yarn as warp was woven on the semi automatic loom for conducting experiments in surface evaporparative cooling of roof of the buildings.</p>  <p>A laboratory spray drier was installed for spray drying of organic compounds from coir pith and ret liquor</p> <p>A field demonstriation on use of mesh matting covering an area of 1000 sq.m was laid on the banks of Muvattupuzha Irrigation Canal.</p> <p>Muvattupuzha Irrigation Canal</p>  <p>82 new designs were evolved for stencilling on fibre mats, rugs of matting and creel mat 73 design cards were supplied to the exporters at a total cost of Rs. 1612 /-</p> <p>Samples of coir needled felt were coated with different binders.</p> <p>A pilot scale laboratory for production of "PITHPLUS" was set up for composting coir pith. An amount of Rs. 14702/- was realised from sale of 816.8 kg pithplus.</p> 	<p>1. Commenced testing of coir pith for nutrients and issue of phytos-anitary certification for coir pith.</p>

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	<p>The Board extended 3-day training course on use of pithplus.</p> <p>Road slopes of a housing colony covering an area of 640 sq.m at Elite Gardens, Thrissur was laid with coir mesh mattings planted with vetiver grass for soil stabilisation.</p> <p>The technology for manufacture of coir ply/coir matting decorative boards was transferred to M/s Duroflex Coir Industries Pvt.Ltd, Bangalore</p>  <p style="text-align: center;">Elite Gardens, Thrissur</p>	
<p>1995-96</p>	<p>Operationalised pile wire loom and samples of creel mat produced.</p> <p>Samples of curled coir, Jacquard matting and brush mats were treated for fire retardancy and evaluated the efficiency of treatment</p> <p>Monitored the field demonstration of application of geotextiles at Moovattupuzha Valley Irrigation Project and Thrissur.</p> <p>Tested NPK content in raw/composted coir pith 11,340 PITHPLUS valued at Rs.257040/- was sold from the Pilot Scale Laboratory.</p> <p>19 new designs suitable for coir mats, 26 designs for printing on mats/mattings were developed.</p> <p>12 new patterns of matting were woven on jacquard power loom.</p>  <p style="text-align: center;">Pile Wire Loom</p>	

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<p>1996-97</p>	<p>Developed 68 designs suitable for weaving and printing on coir products like mats, mattings and carpets. 3 novel designs suitable for weaving matting on jacquard loom were evolved and woven 82.5 sq.mtr. of matting.</p> <p>Sample of chrome lignosulphonate extracted from coir pith was assessed for its properties as a drilling mud additive at Institute of Drilling Technology, Dehradun. Sample of sodium lignosulphonate was submitted for testing at Jadavpur University at Calcutta. 3 sites were identified for laying of coir geo-textiles in the District of Idukki, Kerala. Laid 500 m² of coir geotextiles at Upputhodu in the District of Idukki in Kerala State. Rs.962623/- was realized from sale of coir needled felt of various nominal densities. Initiated an experimental field study in the application of coir geotextiles in soil stabilization of bunds for control of irrigation of paddy fields at Moncombu in Kuttanadu in collaboration with Rice Research Station, Kerala Agricultural University, Kerala by laying coir geotextiles of basket weave for reinforcing the mud wall.</p>	<p>1. Field demonstration on application on coir geotextiles at Upputhodu, Idukki.</p> <p>2. Field study on the application coir geotextiles on mud wall reinforcement.</p>
<p>1997-98</p>	<p>Samples of sodium lignosulphonate extracted from coir pith was tested by M/s Business Universal Incorporation., Pune and reported that the sample could withstand 26 charge and discharge cycles on application on two different types of lead acetate batteries.</p>	



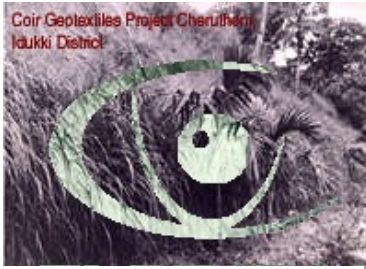
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	<p>Sample of lignosulphonate was sent to Gumpro Limited, Bombay for testing its suitability for their requirements.</p> <p>A mesh matting of H2M1 quality was developed on the Jacquard machine with suitable modification which can be unfolded to a width of 3.4 mtrs even though the width of Jacquard loom is only one meter which is beneficial to the industry as a wider fabric can be woven on the small width machine.</p> <p>A field demonstration on laying of coir geotextiles for prevention of soil erosion was carried out in Sikkim covering an area of 2000 m² of land with coir geotextiles and grass slips were planted as vegetable cover.</p> <p style="text-align: center;">Geotextiles laid site - Sikkim</p> <p>Monitored the work on coir geotextiles carried out at Upputhodu in Idukki District and planted fresh grass slips before the outset of monsoon in the areas affected with serious draught.</p> <p>Laid 1530 m² of coir geotextiles at Kudal under Konkan Railway Project for controlling the soil erosion on the slopes of railway embankments.</p> <div style="display: flex; justify-content: space-around;"> <div>  </div> <div>  </div> </div> <p style="text-align: center;">Geotextile laid site - Cheruthoni</p> <p>A total area of 1240 m² of eroded land slope was protected with coir geotextiles of H2M5 quality at Cheruthoni in Idukki District.</p>	<p>1. Conducted a International Workshop on Wet Processing of Coir for disseminating the find-ings of Food and Agric-ultural Organisation fun-ded project</p>



Geotextiles laid site - Sikkim







Geotextiles laid site- Konkan Railway






Geotextile laid site - Cheruthoni


A total area of 1240 m² of eroded land slope was protected with coir geotextiles of H2M5 quality at Cheruthoni in Idukki District.

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<p>1998-99</p>	<p>Bench scale trials on manufacture of paper from coir fibre rendered high-grade paper pulp and paper confirming the potentials of coir bit fibres for a new end use.</p> <p>A total area of 4000m² land was laid with coir geotextiles and 200 coco- logs in the field demonstration for prevention of soil erosion at Itanagar in Arunachal Pradesh and grass slips were planted as vegetative cover.</p>   <p>Monitored the work on coir geotextiles carried out at Cheruthoni in Idukki District and the growth of vegetation was found to be satisfactory, protecting the slope against soil erosion.</p> <p>Organised a demonstration on the application of coir geotextiles against soil erosion in the reservoir of the Hydro-electric project, Kakkayam using H2M5, covering an area of 3000 m² in association with the Charankattu Coir Manufacturing Co., Cherthala.</p>  <p>Conducted an experiment on reinforcement of mudwal at Moncombu with coir matting in association with the Rice Research Station, Moncompu. The matting was fixed to the bamboo and coconut poles at a distance of ½ meter to give it a stable structure.</p> <p>Produced 250m² of matting on jacquard loom and 25 sq.m of matting in semi mechanised loom.</p> <p>False ceiling in the Institute was done using coir matting as demonstration.</p> <p>Mesh mattings were woven from Mangadan, Aratory and Brown coir yarn made from bristle fibre</p>	<p>6. Demonstration on the application of coir geotextiles at Itanagar, Arunachal Pradesh.</p> <p>7. Demonstration on the application of coir geotextiles for dam site protection at Kakkayam in Kerala</p> <p>8. Establishment of a Computer Aided Design Studio for producing innovative designs.</p> <p>9. Coir Research and Extension Centre was established at Tenkasi, Tamil Nadu.</p>

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<p>1999-2000</p>	<p>Memorandum of Understanding on the following collaborative projects were signed with Kerala Agricultural University.</p> <p>Use of coir Bhoovastra (coir geotextiles) for soil and water conservation at varying slopes.</p> <p>Use of Coir Bhoovastra for regeneration of exposed rock patches.</p> <p>Use of Coir Bhoovastra for template planting and as soil mulch.</p> <p>Providing canal bank protection and assessing the bio-degradability of Coir Bhoovastra.</p> <p>30 nos. of pillows were made out of softened coir fibre and put to trial for actual use. CCRI has succeeded in extracting pure sodium lignosulphonate from coir pith. Experiments revealed that Calcium, Magnesium and Potassium lignosulphonate could be extracted from coir pith.</p> <p>Monitored the progress of filed demonstrations conducted for protection of hill slopes and road embankment using coir geotextiles at Cheruthoni, Kakkayam and Moncompu and documented.</p>  <p>A field demonstration was conducted in Kuttanadu for the prevention of erosion of canal bank by laying coir geotextiles at a total length of 30 mtr.</p>  <p>Demonstrated the application of coir geotextiles for protection of soil erosion on river banks of Periyar at Chowara, Alwaye.</p>	<p>1.Nucifix dyes in collaboration with Triade bv and ATODLO (Agro Technological Research Institute), The Netherlands</p>



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	 <p>Assistance was given for application of coir geotextiles for prevention of soil erosion at hill slopes and cuttings on the Konkan Railway.</p> <p>Collaborative research project with Kerala Agricultural University on the application of coir geotextiles for soil and water conservation, regeneration of exposed rock patches, template planting and as a soil mulch, canal bank protection and assessing biodegradability</p>	
<p>2000-01</p>	<p>Laying of Coir Bhoovastra at Bidadi Industrial area, KIADB, Karnataka was completed.</p> <p>Products evolved from Mangadan coir yarn were consigned to 19 Coir Board Show Rooms and Sale Depots for assessing the consumer receptivity as part of popularisation of the coir products developed from Mangadan coir yarn.</p> <p>Coir Bhoovastra evolved from Mangadan / brown coir yarn were laid at the banks of railway over bridge near Cochin International Airport Ltd. in controlling soil erosion.</p> <p>Laid coir Bhoovastra in the campus of Indian Institute of Management, Kozhikode and Soil Conservation Research Station, Konni for controlling soil erosion at various slopes.</p> <p>Monitored the Coir Bhoovastra laid site at Kakkayam hydro electric reservoir.</p> <p>A few products like bags, chappals etc. were evolved from softened coir yarn.</p>  	<p>1. Testing of Sodium Lignosulphonate as expander in lead acid batteries in collaboration with Central Electro Chemical Research Institute, Karaikudi.</p> <p>2. Field demonstration on application of coir geotextiles at Bidadi Industrial Area, Karnataka, at the campus of Indian Institute of Management, Kozhikode, Kerala, at Konni, Soil Conservation Research Station, Kerala and at Nedumbasseri, Cochin International Airport, Kerala.</p>

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	 <p>Samples of coir materials treated for imparting fire retardancy, oil and water repellency were sent to reputed Institutes for testing the improvement in comparison to the untreated materials as control. The test result confirmed perceptible improvement to the coir materials treated for imparting fire retardancy, oil and water repellency.</p> <p>Evolved 21 new designs to incorporate in fibre mats/mattings and printing. 6 designs were developed for making inlaid door mats and 48 designs for publication in Coir News.</p> <p>An amount of Rs.6300/-was realised as service charges from sale of copies of design cards.</p> <p>A collaborative project with Central Electro Chemical Research Institute,(CECRI), Karikudi on testing of lignosulphonate extracted from coir pith as expander in lead batteries is in progress.</p> <p>A two week creative workshop on Design Development and Product Diversification was held in association with National Institute of Design(NID), Ahmedabad at CCRI.</p> <p>Participated in the Exhibition and Seminar organised by International Geotechnical Society at Mumbai.</p> <p>Monitored the work related to the rehabilitation of coir processing units affected by the super cyclone in Orissa.</p> <p>Identified two sites for conducting field demonstration in laying of coir Geo-textiles in Orissa.</p> <p>Selected a site for laying of coir boovastra for protection of ash pond bund in the campus of Neyveli Lignite Corporation Ltd.</p> <p>A seminar on coir products was organised at Shillong on 5.8.2000 in association with the North Eastern Council on development initiatives in the North East.</p> <p>The following collaborative projects with various Universities and Research Institutes on different areas relating to the diversified application of coir were undertaken.</p> <p>Collaborative project with Indian Institute of Packaging , Mumbai on development of Coir Composite Board for sheathing crates for heavy equipments and machine tools.</p> <p>Collaborative project with Indian Institute of Packaging, Mumbai on development of Coir Composite Board for Pallet Decks.</p> <p>Collaborative project with Indian Institute of Packaging, Mumbai on development of Coir Composite Board for top and bottom closures for fibre board drums.</p>	<p>3. A two week creative workshop on design development and product diversification was held in association with National Institute of Design, Ahmedabad at CCRI.</p>

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	<p>Collaborative project with Kerala Agricultural University for testing on the bioefficacy of C-POM. (Coir Pith Organic Manure)</p> <p>Collaborative Project with Indian Plywood Industrial Research and Training Institute, Bangalore for making moulded coir products.</p> <p>Collaborative Project on Bio-softening and bio-bleaching/brightening of coir fibre with a view to find diversified end uses of the fibre.</p> <p>Collaborative Project with Project “Sewak” of Border Roads Organisation for the use of Coir Geotextiles at a road embankment site in Dimapur-Kohima road.</p> <p>Collaborative project with Project “Pushpak” of Border Roads Organisation on the use of Coir Geotextiles at Silchar-Agarthala road.</p> <p>Collaborative Project with Project “Setuk” of Border Roads Organisation on the use of Coir Geotextiles in an area of about 4000 sq.mtr. at Karimganj bypass in Assam.</p> <p>Collaborative Project with Project “Deepak” of Border Roads Organisation on the use of Coir Geotextiles at an area of 400 mtrs. x 6.10 mtrs. on a marshy land at 80.000 kms. On Monali – Sarchu road in Himachal Pradesh</p> <p>Collaborative Project with Project “Udayak” of Border Roads Organisation on the use of Coir Geotextiles at Mon-Naginimari road in Nagaland and Hunli-Amini road in Arunachal Pradesh.</p> <p>Collaborative Project with Project “Chetak” of Border Roads Organisation on the use of Coir Geotextiles for sand dune stabilisation at Jaisalmer</p> <p>Collaborative Project with Central Road Research Institute, New Delhi on the use of Coir Geotextiles on the protection of road embankment in Assam.</p>	