

MODERNISATION AND EXTRACTION OF COIR

YEAR	ACTIVITIES	ACHIEVEMENTS
<p>1991-92</p>	<p>The impact of salinity on the quality of the coir fibre was studied in the lab level by soaking coconut husks for retting in RCC cisterns using saline water and fresh water, species of efficient phenol degrading bioinoculants viz. <i>Pseudomonas desmolyticum</i>, <i>Mycoplana dinorpha</i> and <i>Mycoplana bullata</i> were seeded into one set of RCC cisterns with an aim to shorten the retting period.</p>  <p style="text-align: center;">Retting of Cocont husks in RCC tanks</p> <p>Soaking of the husks in saline water followed by inoculation of efficient phenol / pectin degrading microflora reduced the retting period to 3 months against 8 to 10 months by the traditional method and the quality of fibre was superior which yielded a fine variety of coir yarn after spinning.</p>	<p>1. The effect of salinity on improving the quality of fibre was studied.</p>
<p>1992-93</p>	<p>Field level studies were conducted by inoculating bioinoculant viz. <i>Mycoplana dinorpha</i>, <i>Mycoplana bullata</i>, <i>Pseudomonas desmolyticum</i>, <i>Pseudomonas pictorum</i> <i>Cladosporium</i> sp., <i>fusarium</i> sp. <i>Aspergillus oryzae</i> and <i>Aspergillus foetidus</i> were seeded in to lots of steeped coconut husks. It was observed that retting was complete in three months in the case of husk inoculated with microbial cultures.</p> <p>Unretted fibre from green husks were treated with 1% solution of acetic acid and acetic anhydride and also with bacterial and fungi cultures and found that the fibre treated with bacterial culture yielded fibre of brighter colour and softer feel.</p> <p>Composting of coir pith in the lab level was successful. Field level composting of retted coir pith using microbiological species was conducted.</p>	<p>1. Bacterial cultures reduce the retting period of husks to 3 months.</p>

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<p>1993-94</p>	<p>Field trials conducted in different coir producing centres confirmed that the retting period could be reduced to 3 months with bioinoculant treatment to husks and the fibre extracted from husks treated with bioinoculants was superior in quality and suitable for spinning fine quality yarn.</p> <p>Demonstrated the techniques on treating green husk fibre with selected strains of bioinoculants, COIRRET for improving the quality of green husk fibre to retted fibre within 3 days of soaking.</p>  <p style="text-align: center;">Retting by COIRRET in RCC tanks</p> <p>A project viz. Coir Retting-Process upgradation and pollution abatement through Environmental Biotechnology in collaboration with the Cochin University of Science and Technology aimed at upgradation of pollution along the coast of Kerala. Surveys of retting sites were conducted in Ernakulam, Alleppey and Quilon Districts and the hydrological parameters such as pH, salinity, colour and tidal amplitude, mode of retting, quality of fibres produced and chemical characterisation of ret liquor and husk infurion were studied.</p> <p>A collaborative project with Cochin University of Science and Technology entitled, “Coir retting – process upgradation and pollution abatement through environmental biotechnology” was under-taken to develop a process for pollution free husk retting.</p>	<ol style="list-style-type: none"> 1. Developed a bacterial cocktail known as COIRRET for the faster retting of coconut husks. 2. Demonstrated the applications of COIRRET in the field level for the faster retting of coconut husk in major coir producing areas. 3. Extended the technology of using COIRRET for quality improvement of mechanically extracted unretted green husk fibre in 3 days. 4. Pilot scale extraction of Lignosulphonate showed 10% yield from coir pith.

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<p>1994-95</p>	<p>A new technology for reducing the period of retting using certain selected bacterial cultures viz COIRRET was invented for extraction of better quality white coir fibre within a period of 3 months as against the period of 6 to 10 months required for extraction of fibre in the traditional methods.</p> <p>A pilot scale laboratory was set up for production of COIRRET.</p>  <p>COIRRET</p> <p>Seminars were held to explain the advantages of application of coirret to the retters. Field demonstrations conducted in the Anjengo and Aratory yarn producing regions at Kaniyapuram and Kayamkulam respectively.</p>  <p>Autoclave</p> <p>Techniques of converting green husk fibre to the quality and colour of retted coir fibre with in 3 days in RCC tanks were evolved by CCRI and demonstrated to the trade.</p> <p>An amount of Rs.4192 was realised from the sale of 1084 kg Coriret.</p> <p>A 3-day training programme on application of COIRRET for retting was organised.</p>	<ol style="list-style-type: none"> 1. Recognition of CCRI as a Scientific and Industrial Research Organization [SIRO] by Dept. of Scientific and Industrial Research [DSIR], Min. of Science and Technology. 2. Establishment of a Pilot Scale Laboratory for the production of COIRRET and PITH-PLUS (a fungal spawn developed for composting of coir pith in 30 days) for distribution among farmers. 3. The motorised ratt developed at CCRI was made versatile to spin 4 varieties of yarn.

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1995-96	<p>A significant breakthrough has been made in treating of coir fibre extracted by mechanical means and treatment of effluent liquor of retted coir fibre.</p> <p>A cost-effective method for treatment of ret liquor and recycling it for further retting has been developed. This invention has resulted in production of white fibre without any pollution.</p> <p>The first treatment plant inaugurated at CCRI on 28.03.1996.</p> <p>A total quantity of 784 kg COIRRET valued at Rs. 29,792/-was sold from the pilot scale laboratory set up at CCRI.</p>	<p>1.A cost effective method for treatment of effluent arising from retting /green husk fibre retting. Pilot plant established at CCRI</p>
1996-97	<p>Developed bacterial cultures (one strain of bacteria and two strains of fungal cultures) capable of degrading phenolic compounds suitable for bio bleaching of fibres extracted from green/dry husk for quality improvement which yielded fibre of better colour and feel.</p> <p>Analysed the lignin content of fibres produced in Anjengo, Alapat, Vycome, Quilandy and Beach areas. Analysed the lignin content of coir pith and of fibres extracted from green and dry husk.</p> <p>Conducted a study on the extent of biodegradation of coir yarn on burial in the soil.</p> <p>A total quantity of 556 kg. COIRRET valued at Rs. 21,128/- was sold from the Pilot Scale Laboratory.</p> <p>Lyophilised form of COIRRET was treated on green husk fibre to produce comparable results with the semi solid COIRRET.</p>	<p>1. Lyophilised form of COIRRET was produced and applied on green husk fibre to produce comparable results.</p>
1997-98	<p>Conducted industrial scale demonstration on the application of COIRRET as a measure of popularisation for the use of “COIRRET” in conversion of green husk coir fibre to the quality of retted fibre</p> <p>Achieved freeze drying of “COIRRET” the bacterial cocktail for reducing the retting period of coconut husk so as to ensure easy handling and increase the marketability of the products.</p> <p>Training was extended to 56 trainees in 11 batches under the training programme on treatment of COIRRET/PITHPLUS to coir fibre and composting of coir pith. Analysed lignin, pectin and hemi- cellulose in coir fibre derived from different retting regions.</p> <p>A total quantity of 976.5 kg. COIRRET valued at Rs. 37107/- was sold from the pilot scale laboratory.</p> <p>The Australian Quarantine and Inspection Services(AQIS) recognised the CCRI as a testing centre for phyto sanitary certification for export of coir pith to Australia.</p>	<p>1.Recognition of CCRI by AQIS (Australian Quarantine Inspection Service) for phytosanitary certification for export of coir pith to Australia.</p> <p>2.Carried out Freeze drying of COIRRET for easy handling.</p>

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1998-99	<p>An amount of Rs. 50160/- was realised from the sale of 1320kg COIRRET. Industrial scale demonstration in the application of “COIRRET” was conducted as a measure of popularisation for the use of COIRRET in retting of 9000 husks. Training was provided to 32 trainees in 10 batches under the training programme on COIRRET/PITHPLUS on coir pith for composting of coir pith.</p> <p>A preliminary experiment on application of COIRRET in retting of crushed husks in RCC tank indicated that the retting period reduced to 2 months.</p>	<p>1. The retting period was reduced to 2 months using crushed husks and COIRRET.</p>
1999-2000	<p>As part of the studies on reduction in the period of retting, COIRRET was applied on the crushed/uncrushed husks in retting of 1,62,500 coconut husk in different natural retting sites. The entire coconut husks have been found properly retted within two months period. 33 entrepreneurs in 10 batches were trained on the application of COIRRET, treatment of ret liquor and application of PITHPLUS for manufacture of organic manure from coir pith through composting.</p> <p>Lab level studies were carried out for drying of COIRRET culture using talc and anhydrous calcium carbonate. A total quantity of 1600.4 kg. COIRRET valued at Rs.61,749.20 was sold from the Pilot Scale Laboratory.</p>	<p>1.National award on the First Technology Day, 11 May, 1999 for COIRRET Technology.</p>
2000-01	<p>Two field demonstrations in retting of coconut husk in RCC tank were carried out using COIRRET at Kumarapuram CVCS and Edayar.</p> <p>9 field demonstrations in the vycome yarn producing centres were conducted with 3 demonstrations each at Pallipuram, Poochackal and Panavally for improving the quality of green husk fibre using a total quantity of 737 kg COIRRET. Samples of water, fibre and yarn were collected from the sites for analysis of phenol content, break load, brightness for comparison of the improvement of quality of the fibre by the treatment. The yarn spun from the COIRRET treated fibre has better colour and texture than the yarn spun from untreated fibre.</p> <p>An experiment was conducted in composting of coir pith by incubating schizophyllum commune alone and another with urea + schizophyllum. Composted samples of coir pith were analysed for NPK, E.coli, pH, salinity and lignin. The results revealed that the degradation of lignin by schizophyllum is very slow compared to that of Pleurotus sajor caju (PITHPLUS). The urea + schizophyllum composted coir pith showed more amount of N,P,K than that of schizophyllum alone.</p>	