

## PROJECTS FUNDED UNDER TECHNOLOGY MISSION ON COCONUT

### A. COMPLETED PROJECTS

No	Name of the Project	Institutions	Year of sanction	Cost of the Project	Amount sanctioned by PAC	Amount released	Objective	Outcome
<b>1 RESEARCH PROJECTS UNDER TMOG</b>								
1	Removal of sedimentation in Coconut oil.	Indian Institute of Chemical Technology, Hyderabad	2007-08	2.247	2.247	2.247	The objective of the present study is to identify the sediments and also to develop methodology to remove the same from coconut oil.	Crude, dried and degummed coconut oil taken in transparent bottles for the formation of sediments and sediments were separated from the oil by solvent partitioning formed and its analysis was carried out. Different filtration techniques were employed for the removal of the sediments present in crude coconut oil. Crude oil was subjected to gravity settling, centrifugal separation, filtration using filters with different pore size and degumming of oil. Crude oil took longer time to become free of sediments for which it took almost 2 months.
2	Reduction of pour point of coconut oil.	Indian Institute of Chemical Technology, Hyderabad	2007-08	2.247	2.247	2.247	This study aims at identifying the root cause and also proposes interesterification with other vegetable oils by chemical or enzymatic routes to reduce the pour point of coconut oil.	The study concluded that filtration of sediments using filters with different pore size is found to be the cost effective method for removal of sediments in coconut oil. Separation of sediments by centrifugation was rapid but the centrifuged oil was slightly hazy. Crude oil becomes very clear after passing it through filters with different pore size.
3	Composition of virgin coconut oil and traditional coconut oil.	Indian Institute of Chemical Technology, Hyderabad	2007-08	1.120	1.120	1.120	The main objective of the study is generation of data on the composition of VCO and traditional coconut oil, Physio-chemical characterizations of VCO and traditional coconut oils, fatty acid composition (GC), molecular species (HPLC) etc	The study showed that the free fatty acids are slightly less in virgin coconut oil when compared with crude and refined oils. The data reveals that virgin coconut oil contains less unsaturated fatty acids compared to the other oils and contain more amount of lauric acid, which may be responsible for its uniqueness

4	Dietary coconut Oils (VCO & CO) and their health implications	Lipid Chemistry Division National Institute of Nutrition (ICMR) Jamai-Osmania, Hyderabad, Andhra Pradesh	2006-07	68.330	68.330	65.342	The objective of the project was to evaluate the impact of chronic consumption of diets prepared with coconut oil / virgin coconut oil on lipid metabolism, insulin resistance and inflammatory parameters on young adult healthy human volunteers.	The study reported that VCO feeding resulted in elevated plasma HDL-C levels without rise in total cholesterol levels and in overweight subjects, VCO consumption had elevated plasma HDL-C levels in them altering with cholesterol levels, which is a favorable trend. It has been found that higher levels of SCD40L (increased in normal subjects consuming GNO) is harmful as compared to subjects consuming VCO (where levels decreased) which is good for health
<b>2 PROJECTS FOR DEVELOPMENT OF TECHNOLOGIES UNDER TMOC</b>								
<b>a. Pest &amp; Disease Management</b>								
1	Development of mycoacaricide for the control of mite	PDBC, Bangalore	2001-02	13.310	13.310	5.539	To develop a bio formulation based on Hirsutella thompsonii	Developed 4 new formulations of Mycohit based on the fungus Hirsutella thompsonii in addition to the dust formulation already developed. Two liquid formulations (Mycohit LG-10 and 20) , an oil based formulation Mycohit – OS and a granular formulation (Mycohit GP). Multilocational trials conducted under the project did not yeild consistant results, and the project was wound up.
2	Large Scale Production of anti-serum for confirmation of disease free elite parental palms and certification of quality seedlings*	CPCRI, Kayamkulam.	2002-03	13.315	13.315	11.787	This project was aimed at producing root (wilt) phytoplasma-specific antiserum in large quantities for testing coconut samples and to refine ELISA to a simple, highly sensitive and more rapid test.	Kerala State Agricultural Department has initiated the programme on setting up of serology laboratories in four districts of the disease endemic areas for the production of root (wilt) antiserum and selection of healthy mother palms using serology tests.

3	Development, Implementation, Training and popularization of IPM of coconut black headed caterpillar ( <i>Opisina arenosella</i> )	University of Agriculture Sciences, Bangalore.	2002-03	29.670	29.670	28.035	Developemnt of an IPM Package and its popularization for control of Black Headed caterpillar	The IPM package is validated suitable for management of the pest in the agro climatic condition of Karnataka State. root feeding with azadaractin 5% @15 ml/palm or monocrotophos @ 10ml/palm along with the release of parasites G.nephantidis @ 15 parasitoids per palm, 2 releases and application of neem cake 1 kg, farm boon @ 2kg/palm in 2 applications found effective in managing the pest population.
4	Holistic approach for management of coconut waste and Biocides to mitigate pests and diseases of coconut	RRL, Bhubaneshwar.	2002-03	29.185	22.655	22.325	Coir pith, its characterization and its use in increasing tuber crop production and quality aromatic oil production, formulation of biocides for spray application fumigation and soil application to control mite in coconut.	Hyptis based organic biocide was found effective in controlling the leaf spot disease of coconut. Spraying of Hyptis based liquid formulation recorded 71.29% recovery of nuts in treated plants from mite attack as compared to 89.42% mite attacked nuts in normal plants.
5	Development of sex pheromone lures and devising suitable trapping system for management of the coconut black headed caterpillar, <i>Opisina arenosella</i>	Bio-Control Research Laboratories, Div. PCI Pvt. Ltd, Bangalore	2005-06	17.968	8.984	8.984	Identify the potential of using sex phermomes in control of BHC	Identified active pheromone component , developed protocols for synthesis of pheromone compound, Field studies were conducted . Wing traps fabricated found to perform very well. Demonstrated the potential of using sex pheromone traps as an effective tool for surveillance and monitoring of the pest. Trap catches coincide with emergence pattern of adults and hence this data can be used for planning the timely release of parasitoids and quantity of parasitoids required. The technology can also be used for managing the pest by mass trapping after standardizing trap installation height and dosage per hectare.

6	Survey and Identification of root wilt disease free palms and evolution of resistant genotypes in coconut through selection and hybridization	Kerala Agricultural University, Regional Research Station, Kayamkulam	2003-04	41.620	38.513	38.339	Large-scale production of elite seedlings and hybrid seedlings (from 10,000 seednuts and 2,500 hybrid nuts respectively per annum) with comparative tolerance to root (wilt). Evolution of resistant genotype as mentioned in the title of the project is perceived as a long-term objective of the project. As such there is no need for changing clause 9 of the MoU.	Surveys were carried out in 21 panchayaths in Alleppey, Pathanamthitta and Kollam Districts and 511 elite motherpalms (WCT) were selected from the gardens of 89 farmers by preliminary selection. 278 palms screened & 189 nos.confirmed as disease free. Hybridization programme: 50,000 elite seed nuts has been collected and 7172 hybrid seed nuts has been produced. The follow up studies were also conducted for seedling distributed during 2006-2008
7	Development of management technologies for post harvest diseases in coconut	Agricultural Research Station, Acharya NG Ranga University Ambajipeta.	2007-08	7.000	7.000	6.657	To identify effective chemical preservatives against storage rots especially of copra and their utility in reducing aflatoxin contamination and to develop management technologies for post harvest infections in coconut.	Aspergillus flavus, Penicillium spp., A. niger, Rhizopus spp. Dreshlera sp and Botryodiplodia sp and Bacillus spp. are the major mycoflora on copra. Aspergillus flavus was the most predominant mycoflora. Chemical food preservatives- Menadione at 500ppm was found to be effective against A.niger, A.flavus and Penicillium spp, and Benzoic acid at 1000 ppm was effective against Rhizopus spp while combination of Menadione at 400 ppm and Benzoic acid at 750 ppm resulted in total inhibition of Aspergillus flavus, A.niger, Rhizopus spp and Penicillium spp. Among bioagents isolated, maximum inhibition of copra rot causing mycoflora was recorded with Trichoderma longibrachiatum followed by T.hamatum, T.harzianum and T. viride. Natural preservative- methyleugenol was found to be effective against all mycoflora ie. A. flavus, A.niger, Penicillium spp and Rhizopus spp. at 0.3% concentration on fresh coconut meat.

8	Development of nutrient management strategy for improving the health of the palm to build resistance to pests	Orissa University of Agriculture and Technology, Bhubaneshwar, Orissa	2009-10	5.98	5.98	5.38	To study the efficacy of coir pith based vermi-compost enriched with bio-agents / biofertilizers, on incidence of insect pests & diseases, to study the nutrient status in the enriched coir pith based vermicompost and to manifest its effect on the plant through the analysis of nutrient profile in leaves and nuts of coconut plant and also through assessment of copra oil content and to evolve a cost-effective nutrient management strategy for adoption in the IPM of major pests of coconut and for enhancing the production of healthy coconuts.	Selection of palms & lay out of the experiment at OUAT Coconut Farm, Isaneswar, Konark FSK unit of Central Farm, OUA J , Bhubaneswar. First round of application of VC made at Bhubaneswar and konark has been made as per treatments; Second round of application of VC made at Konark as per treatments. Samples of vermicompost collected for nutrient analysis; Vermicompost collected and stored treatment wise.
9	Monitoring and surveillance of infestation of pest and disease of coconut in Andaman Nicobar Islands	Central Agricultural Research Institute (ICAR), Port Blair, A & N Islands	2009-10	7.01	7.01	6.07	Monitoring and surveillance of insect-pest and disease situation of coconut to assess the intensity of infestation in South, Middle and North Andaman and Nicobar Islands.	Multi stage random sampling has been conducted in South Andaman and it is found that almost all villages have high infestations of Rhinoceros beetle, Tirur have very high infestation of Rhinoceros Beetle and has no incidence of scale insect, Bud rot and stem bleeding. Pheromone traps were also installed in 11 locations of South Andaman and the average number of beetles trapped range from 3.5-11. It is found that comparatively, insect pest infestation is more compared to disease incidence in Andamans and the project is ongoing.

10	Studies on light traps for mass trapping and destruction of coconut slug caterpillar moths as an ecofriendly component of IPM	Andhra Pradesh Horticultural University, Tadepalli Gudem	2009-10	7.52	7.52	5.64	To standardize the best and easy method for trapping of slug caterpillar moths, to find out the optimum height of placement of light traps, to work out number of light traps required per unit area of infested garden, to find out peak emergence time of moths and effective trapping time and to standardize easy, economical and effective attraction and trapping method of light source.	During the project period in 2010, no incidence was noted. But in 2012, pest was observed from Jan-July. The optimum height of placement for light traps is being assessed. . It was observed that more moth catches were observed in trap installed at 1 ½ feet above + water pan trap followed by 1 ½ above + sticky trap and 3 traps per Ha. has trapped the highest number of adult moths as compared to 2 and 1 trap per ha. Regarding male and female moth catches, more number of female moths were attracted to light traps Also showed that peak time of attraction towards light source was from 19.00 hrs onwards and attained peak between 21.00 and 1.00 hrs and gradually decreased to nil at 3.00 hrs.
11	Evaluation of Mass Trapping Technology for coconut black headed caterpillar (Opisina arenosella) by using indigenously developed Sex Pheromone Lures and Traps.	Bio-control Research Laboratories, Division of Pest Control (India) Pvt. Ltd., Arakere, Bangalore	2010-11	15.85	7.93	5.94	To standardize the height of the trap and trap density for maximizing capture of male Opisina arenosella adults, under field conditions, Evaluation of the potential of pheromone based mass trapping as a stand alone tool for management of coconut black headed caterpillar under farmers' field conditions and Demonstration of the utility of pheromone trap as a surveillance and monitoring tool in IPM of Opisina arenosella, in combination with release of larval parasitoids.	Nearly 60 and 120 traps per Ha were found best among all treatments (10,20,40,60 and 120 per ha.)Studies on trap type, colour and trap suspended height indicated that white colour trap is best and cross vane trap was found attracting highest number of moths and traps installed at middle of crop canopy found more moth catches than any other heights.
12	Management of Black Headed Caterpillar (BHC) menace on Coconut in Karnataka	Director of Horticulture, Govt. of Karnataka, Bangalore	2009-10	83.50	83.50	75.14	The Management of Black Headed caterpillar (BHC) menace in coconut in Tumkur district of Karnataka covering an area of 5536 ha, (830400 palms) by adoption of IPM package recommended by UAS, Bangalore	Procurement of inputs such as neem cake and Azdirachtin completed.Final report awaited.

b. Product Development								
1	Development of Technology to utilize coconut oil as alternate automobile lubricant	Cochin University of Science and Technology, Kochi	2001-02	9.920	9.920	9.920	Develop technology to utilize coconut oil as alternate automobile lubricant	The results of the comprehensive survey conducted among the users of coconut oil as two-stroke automobile engine lubricant and the encouraging results yielded on the initial attempts at the formulation of stoke engine lubricant from coconut oil with physical and chemical properties comparable to the already existing mineral lubricant are furnished in the report. Further investigation is in progress for the successful completion of the project.
2	Production of dietary fiber from coconut residue	CFTRI, Mysore.	2001-02	7.000	7.000	7.000	Development of dietary fibre from coconut residue.	Coconut fibre has maximum hydration properties as well as fat absorption capacity as compared to other fibres, which are the most desirable feature for the dietary fibre. Grinding of coconut fibre resulted in increase in the physical structure and surface area, responsible for fat absorption capacity
3	Development of technology for the production of virgin coconut oil by wet processing	Central Food Technological Research Institute, Mysore	2004-05	15.290	15.290	15.164	Production of virgin coconut oil by wet processing	The technology for developing virgin coconut oil by centrifugal method was developed and the technology is being transferred to prospective entrepreneurs
4	Coconut Oil as Base oil for Industrial Lubricants	CUSAT, Kochi	2003-04	14.620	14.620	12.012	To offer a viable Environmentally acceptable formulation based on coconut oil for the tropical and temperate climate.	Synthesis of Coconut oil based estolides and their esters was attempted in the present work. Physical properties of chemically modified coconut oil were analyzed. The chemical modification process described above could substantially bring down the pour point of coconut oil. The synthesis was done on a laboratory scale. The yield of estolide varied from time to time. Since the purification and separation are based on vacuum distillation, the process is inherently costly and cannot be recommended as a process for industrial production of coconut oil based lubricants

5	Residential training programme on packaging of food products & beverages	Indian Institute of Packaging (IIP), Mumbai	2006-07	2.250	2.250	2.250	For creating awareness about evolving packaging technologies and packaging materials, coding, marking etc	100% financial assistance at a total cost of Rs. 2.25 lakhs o for one training programme of 5 days duration for 20 No of participants. Training programme was conducted during February 2007
6	Packaging of coconut products (6 projects)	Indian Institute of Packaging (IIP), Mumbai	2006-07	13.525	13.525	13.252	To develop suitable packaging of coconut chips, Edible copra, frozen coconut meat, coconut shell handicrafts, snowball tender nuts and minimally processed tender coconut	Packaging for the products standardised.
7	Development of faster methods for making ball copra and scale up of natural convection driers with reverse hot air flow	Regional Research Laboratory, CSIR, Trivandrum	2005-06	9.700	9.700	9.700	To develop and standardize faster methods of making ball copra from freshly harvested coconuts and to develop a scale up model of natural convection driers with reverse airflow	Two models of driers with capacity to dry 3000 coconuts for production of ball copra and 1000 nuts for cup copra were developed by NIIST under the study
8	Refining of coconut oil by utilizing membrane filters as the major unit operation and development of a process to improve nutritional quality of refined coconut oil for frying and other edible uses	CFTRI, Mysore	2005-006	8.970	8.970	8.968	Lab scale refining by membrane filters to remove free fatty acids present in coconut oil.	Removal of FFA by membrane filtration was carried out at different pressures, temperatures and various concentrations of solvents. The reduction in FFA content increased with the concentration of solvent in the feed, and was high with ethanol and methanol compared to other solvents used. Very low oil loss was observed in ultrafiltration as compared to chemical refining. The temperature employed was very low compared to physical refining
9	Automation of tender coconut water processing system for large scale production	DFRL, Mysore	2006-07	25.000	32.986	32.986	To develop technologies for mechanical cleaning of tender coconuts, mechanical chopping and collection of tender coconut water, additive treatment and mixing and filling of water into pouches/cans, modification of process (hot filling) for PET bottles, conveyor system to carry pouches/cans to continuous pasteurization system.	Automatic tender coconut processing system is successfully installed and commissioned at DFRL. The system is evaluated for its performance and efficiency. The newly developed system is found adequate to meet all the requirements of FAO while it is also cost effective. The technology is being transferred to interested entrepreneurs.



10	Product development and storage status of coconut jelly	TNAU, Madurai	2006-07	5.000	5.000	4.996	To process and develop nutrient dense coconut powder using simple techniques, to standardize the process of coconut jelly using coconut powder, to study the storage behavior with respect to chemical, sensory quality and microbiological characteristics of coconut jelly, to conduct consumer acceptability test and to find out the suitable packaging material and methods for packing coconut jelly and to commercialize the product through seminars and trainings.	Process for preparation of coconut jelly from osmotically dehydrated coconut powder, tender coconut water, mature coconut water was developed and standardized. Storage studies for the jelly prepared was done and shelf life was standardized. Coconut jelly prepared, using tender coconut water was found to be the best with shelf life of 180 days in glass jars, Consumer acceptability study was also conducted locally.
11	Project for development of new coconut based products in Tetra Pak packages for commercial production	Nadukkara Agro Processing Company Ltd, Avoly P.O, Muvattupuzha	2006-07	7.141	4.746	4.747	Development of technologies for preserving and packaging coconut products in tetra packs. ie. Health drink based on coconut milk and pineapple juice, Coconut water based soft drink etc	Technology for production of the two coconut based value added products 1) Pinacolada (coconut milk with pineapple juice), 2) Coconut water based drink in tetra packs were developed & process standardized launched in the market under "JIVE" Brand.
12	Developing appropriate technology for community level production of charcoal and activated carbon from coconut stem wood and shell for industrial use	Kerala Forest Research Institute, Peechi	2004-05	29.716	29.671	28.577	Develop appropriate method for community level production of charcoal and activated carbon from coconut shell and stem wood by designing, fabricating and installing pilot plants suitable for demonstration of the concept of community level production of charcoal and activated carbon from coconut shell and stem wood and transfer the technology to entrepreneurs for taking up commercialization.	As pilot plants, a continuous vertical carbonizing plant with an input capacity of 3 tones raw material per day which can produce about one tone charcoal per day and an FBR with an input capacity of 0.25 tone charcoal which can produce 0.125 tone of active carbon was successfully designed, fabricated, installed, trial runs were conducted, optimized the process parameters for desired quality products, assessed the quality of products for industrial use. The quality of charcoal and the granular shell active carbon produced were found conforming to Indian standards.

13	Development of unconventional products based on coconut water/ pulp/ chips	DFRL, Mysore	2006-07	9.000	9.000	8.100	<p>To develop coconut water-fruit juice blend with incorporation of flavor ingredient, to develop value added products based on coconut pulp, to develop coconut chips based on different humectants, improvement of process for development of nata-de-coco and evaluation &amp; quality characteristics of developed products.</p>	<p>Process for preparation of fruit juice blended tender coconut water beverage using pomegranate, blue grapes, pineapple, mango and lemon juice. Storage studies of these products at room temperature revealed that the beverages were safe for consumption for a period of 6 months. Process for preparation of coconut jam using tender coconut pulp with a shelf life of 6 months also standardized. Developed a cost effective technology for coconut chips using sucrose, jaggery and honey as humectants. The process for preparation of nata-de-coco using coconut water as substrate were also standardized. Packaging in transparent stand-up packs done to create visibility of nata-de-coco and the product showed a shelf life of 6 months.</p>
14	Development of pourable coconut oil at winterized condition	CFTRI, Mysore	2006-07	16.500	16.500	14.850	<p>To develop a coconut oil which remains in liquid form even at lower temperature (4-8°C) by employing physical and chemical means and to utilize some of the known, harmless, permitted additives to achieve the above objective, to utilize chemical tools including interesterification to interchange lauric acid in Coconut oil with essential fatty acids to make the coconut oil pourable and nutritionally superior</p>	<p>A coconut oil developed, using low temperature solvent fractionation and chemical interesterification separately, which were flowy at low temperature and retained the characteristic coconut flavor. The study showed that coconut oil could be fractionated using an organic solvent into a pourable fraction at 7.5°C and a solid fraction</p>

15	Development of technology for value addition to the by products in coconut processing.	CFTRI, Mysore.	2006-07	45.680	31.260	28.129	Development of technologies /process for consumer based products,viz: Coconut honey from mature coconut, Coconut lassi, Coconut whey proteins, Coconut wet chutney and Coconut soufflé from by-products in coconut processing. Development of functional and cost effective package for new products.	Studies conducted has developed the Process for the production of tender coconut beverage 'Coconut less' & joint patent application submitted to patent office. The Process for the production of tender coconut water concentrate 'Coconut honey', 'Coconut spread' based on mature coconut water concentrate & coconut dietary fibre, 'coconut soufflé' and coconut whey proteins powder & Coconut wet chutney powder.
16	Developing of coconut climbing bike (Dr.V. John)	Regional Research laboratory, CSIR, Pappanamcode, Trivandrum	2006-07	12.234	12.234	7.770	To develop a mobile palm climber that works on pneumatic/hydraulic pistons, with adequate safety	A prototype of mobile coconut climbing bike that works on pneumatic piston with lifting capacity more than 75kg was developed under the study. The climbing speed of the device is 3m/min (0.2m/stroke) and descending speed of more than 7.5m/min. The climbing height is limited to the length of pneumatic hose wire.  The prototype of the device requires certain modification and improvement especially in its mode of operation, safety features, weight and speed of machine.
17	Production of Cheaper and Healthier Blends of Coconut oil with other Vegetable oils	CFTRI, Mysore	2006-07	19.400	19.400	17.492	To prepare cheaper blends of coconut oil with other vegetable oils	Seven blends for coconut oil consumers were picked up based on strong coconut oil flavor and seven blends for non-coconut oil consumers were picked up which did not have coconut oil flavour and has the flavour of constituent vegetable oil. The blending efficiencies of the oil blends prepared at pilot scale are satisfactory (95% efficiency). The prepared oil blends quality characteristics are in agreement with ISI / PFA specifications.

18	Batch/continuous transesterification process for utilization of coconut oil for bio diesel production	Indian Institute of Petroleum P.O.IIP, Mohkampur Dehra Dun	2006-07	44.640	36.228	18.345	To develop batch/continuous chemical (catalytic process for the conversion of coconut oil into bio-diesel) and to evaluate bio-diesel from coconut oil against the proposed BIS specification to ascertain its applicability as bio-diesel.	Optimized conditions for batch transesterification process for conversion of coconut oil in to bio-diesel. Result on optimization of biodiesel sample by acid value and viscosity clearly indicate that the biodiesel is meeting both ASTM as well as BIS specifications.
19	Development of special coconut shaping lathe	Vayalar Invention Center	2006-07	0.438	0.219	0.175	To design a simple machine/manually operated cutting and shaping device for tender coconut	A simple machine/manually operated cutting and shaping device for tender coconut was developed.
20	Bioconversion of tender coconut waste into high quality organic manure using promising bio agents	ARS, Ambajipetta	2006-07	8.000	8.000	7.292	Bio conversion of tender coconut shell wastes into organic manure with bio agents, evaluation of various bio agents for bio conversion of tender coconut shell tissues (bits) into organic manure and identification of a promising bio agent and to standardize the process of composting.	The process of composting tender nut waste was standardized and it was found that vermi-composting with Eudrilus eugeniae significantly reduces the time of composting with highest compost recovery, reduced CN ratio, lignin cellulose content highest major micronutrients and microbial population.
21	Design and fabrication of an equipment and technique for composting of tender coconut husk	Central Coir Research Institute, Coir Board, Kochi	2007-08	13.990	13.990	13.190	To design and fabricate machinery for shredding and pulverization of the tender coconut husk and to compost the pulverized material into organic manure.	5 machines namely; tender coconut husk slicer, hand operated chopping machine, power operated chopping machine, tender coconut husk shredder, mini beater has been handed over to CDB, Kochi. Demonstration of the equipments for dehusking coconut and technique of composting tender nut husk was also done
22	Design, Development and Fabrication of a multipurpose equipment for punching & Cutting Tender Coconut and Dehusking & Grading Ripe Coconut	Shri V.P.David, Vadassery House, Pariyaram P.O.,Chalaky	2007-08	15.000	1.200	1.200	To design, develop and fabricate multipurpose equipment for punching & Cutting Tender Coconut and Dehusking & Grading Ripe Coconut.	A Tender coconut punch cum cutter Dehusking and grading equipment called "Veepees Tender Coconut Punch cum Cutter" with optional attachments for de-husking and grading of coconut has been developed under the study. The device is manually operated and is portable.

23	Design and Development of New Machines for Integrated Coconut Processing	CFTRI, Mysore	2006-07	25.360	22.824	22.818	To design and develop grating machine, flaking machine , trimming machine , continuous shelling of coconut, paring machine and cutting machine	Design and development of grating machine for coconut, flaking machine for tender coconuts, trimming machine for tender coconuts, continuous shelling and cutting of coconut were developed.
24	Technology of value added coconut based products	CFTRI, Mysore	2008-09	5.520	5.520	4.880	The objective of the project is (1) to scale up the technology for three coconut based value added products namely, Coconut based instant rice mix, Chutney powder/mix, Filling powder, Coconut bites (Ready-to-eat sweet snack), (2) to conduct shelf life studies after standardizing packaging, (3) to conduct physico-chemical analysis of value added products, (4) to advance quality specifications and to lay out technology demonstration plant for prospective entrepreneurs.	Scaling up of technology for four value added coconut products viz. Coconut based instant rice mix, Chutney powder/mix, Filling powder, Coconut bites (Ready-to-eat sweet snack) were done. Specification for machineries for setting up processing units with 250 kg capacity has been standardized under the study. The technology has also been demonstrated to 10 prospective women entrepreneurs identified by CDB.
25	Development of Processes and Herbal formulations based on Virgin Coconut Oil	AVT Institute for Advanced Research (AVTAR), Coimbatore	2008-09	20.36	10.36	8.29	To evaluate VCO obtained through different processes and as per APCC standards and selection of a suitable VCO, optimizing methodology to blend VCO with poly herbal extracts (Vyoshadi yogam), Phytochemical studies to standardize the blended VCO and physiological & pathological studies of the formulation on animals for hyper lipidemia.	The data from limited samples of Commercial Virgin Coconut Oil, Traditional Coconut Oil, Kitchen Virgin Coconut Oil, Commercial Coconut Oil, and a blend of Traditional Coconut Oil with coconut milk, physiochemical properties of all these forms were comparable except for polenske value and unsaponifiable matter with reference to APCC and CDB standards. All oils exhibited significant antioxidant activity after blending with herbs. Commercial Virgin Coconut Oil appear to have exhibited marginally better and stable antioxidant activity after blending with herbs. The results of animal study also furnished. Final report to be presented.

26	Project proposal for Diversified uses of Diseased Coconut Wood	Central Coir Research Institute (CCRI), Kalavoor, Alleppy	2008-09	21.39	21.39	17.11	To isolate cellulose and hydrolyze it for producing bio-fuel, to extract valuable chemicals like bio-oils from it, to use it as a raw material for particle boards without any resin, to convert it into pulp for making hand made paper and to set up a pilot plant for demonstration of technologies.	The study reveals that the diseased soft wood portion can be utilized for pulp production. An environmental friendly organosolv process has been developed. Further, the liquor produced as a result of the pulping process can be reused for further pulping thereby indicating that the process is economical and eco-friendly.
27	Development of technology for preparation of particle boards & diversified products from tender coconut waste	Central Coir Research Institute (CCRI), Kalavoor	2009-10	12.08	12.08	12.08	Develop a technology for production of particle boards from tender coconut fiber. Develop and standardize a process for pulping of tender coconut fiber for production of diversified products. Explore the possibility of utilization of tender coconut husk in bio-fuel production.	Different types of moulds were fabricated one with 300 diameter size, having 150 mm stoke length and 12mm thickness was experimented to produce boards using tender husk. Organosolv pulp bleached with hydrogen peroxide used in production of writing paper due to good paper formation and surface smoothness. The pulp moulded into articles such as egg baskets, paper plates, cups, glass covers, paper pots etc. for seedling and packaging purposes. Lignin recovery was done after organosolv pulping by precipitation. Bench scale pyrolysis unit constructed of heat resistant borosilicate for extraction of pyrolysed oils. The conditions for pyrolysis have to be optimized so that yield of oil can be maximized. The bio char(charcoal) is found to be a valuable co product of bio oil production.

28	Development of tractor mounted and self propelled coconut climber for coconut harvesting	B.S. Konkan Krishi Vidyapeeth, Dapoli	2009-10	17.24	17.24	16.65	To develop and modify tractor mounted hydraulic elevator (TMHE), to conduct the component testing of TMHE, to conduct the field demonstration and testing of TMHE on university farm and farmers field, to demonstrate the use of TMHE to coconuts growers and to link the TMHE with machinery / equipment manufacturers for commercialization.	The project completed and tractor mounted self propelled coconut climber developed. Demonstration of the developed machinery also completed.
29	A pilot study on Development of a nutraceutical preparation using nut water	Amrita school of Pharmacy, AIMS, Ponekkara	2010-11	13.50	13.50	10.91	To conduct a pilot study at the Amrita School of pharmacy laboratories for formulating a nutraceutical preparation using coconut water, to study the stability issues related to preservation of coconut water and tender coconut water covering the natural sources and commercial products available in the local market, to study the problems associated with the fortification of coconut water with nutraceuticals including antioxidants.	Tender coconut water was fortified with different concentrations of Guva extract, pomegranate juice and amla extract. Biochemical analysis of prepared juices showed presence of antioxidant principles like Tannins, phenol, ascorbic acid. It was found that all formulations of guava, pomegranate and amla were able to provide at least 10% of RDA of Vit C and polyphenols showing value as nutraceutical. Formulations with combination of fortifying agents were also prepared. The formulation containing Tender coconut water with 10% pomegranate juice and added vitamin C and $\beta$ -carotene was found to have high nutritional value, good acceptance as well as stability and antioxidant potential of 4 months.

30	Proposal for development of tender coconut punch cum splitter and hand opener	M/s.Apex Design center, Coimbatore	2012-13	8.50	4.25	2.13	To develop a robust machine to make a hole in the Tender Coconut to drink the water and mechanism to split for taking the inside meat, the Punch cum Splitter and Tender Coconut Opener prototypes till now developed will be taken as Benchmark, the system has to be cost effective and easy for use and manual controls with Levers have to be adopted.	Project completed and patenting initiated
31	Setting up of pilot project for coconut wood utilization for joineries	Forest Industries (Travancore) Limited, Thaikkattukara, Aluva	2009-10	24.80	24.80	18.60	To setup a pilot project for the successful utilization of coconut wood for manufacture of joineries ie. window and door frames in addition to staircase fittings and ventilators.	The project was completed successfully in 4 months i.e. by 8.6.2010 as per approved schedule and the final report had also been submitted in June 2010 (SI.No.14). Further, FIT has also initiated the project for setting up a commercial Unit for coconut wood furniture at Attingal .
<b>3 PROJECTS FOR DEMONSTRATION OF TECHNOLOGIES UNDER TMOc</b>								
<b>a. Pest &amp; Disease Management</b>								
1	Increasing Productivity and income in root-wilt affected areas - a farmer participatory demonstration	CPCRI, Kayamkulam	2002-03	10.739	10.739	7.856	To establish the project area as a profitable coconut farming model for small and marginal farmers and motivate them for further dissemination and adoption	On farm training programmes were conducted on various aspects like Mushroom cultivation, Vermicomposting, Azolla production, Coconut product diversification, Root (wilt) management practices of coconut, Banana cultivation.
2	Mass production of biological agents, demonstration and adoption of technology for management of Coconut leaf eating caterpillar	Coconut Research Station, TNAU, Aliyarnagar	2002-03	28.740	28.740	27.566	Control and management of Black Headed Caterpillar in Tamilnadu.	A Bio-control Laboratory was established at CRS, Aliyarnagar for mass production of bio-control agents for Opisina arenosella and an IPM package has been validated
3	Project for enhancement of production and productivity of coconut by laying out demonstration plot	Dept. of Horticulture, Govt. of Karnataka.	2002-03	25.000	25.000	25.000	For demonstrating the integrated management of pest and diseases in Karnataka	The project has been implemented by the State Govt. during the year 2003-04 and 2004-05
4	Project for demonstration of the Integrated Management of Rhinoceros beetle and Red Palm weevil in coconut	Commissioner of Agriculture, Cheapuk, Chennai	2003-04	25.000	2.500	2.500	Demonstrating the IPM package for control of red palm weevil and rhinoceros beetle	The scheme was implemented in 11 districts of Tamil Nadu and the IPM practices were demonstrated in the field.



5	Sustainable management of proven technology on control of insect pest and diseases in coconut and establishment of 'Demonstration cum seed production technology'	Kerala Agricultural University, Vellanikkara.	2002-03	40.000	25.000	22.443	Demonstration of all the proven technologies on management of insect pests and diseases in Coconut.	Demonstration for inter cultivation of coconut plantation with medicinal plants (safed musli, thippali, stevia, patchouli and sathavari planted), vegetables (amaranthus, ash gourd, pumpkin, amorphophallus, cowpea and bhindi), banana (poovan, njalipoovan and palayankodan) was done in three blocks. Soil and moisture conservation measures using coirpith compost was also demonstrated
6	Demonstration and evaluation of the integrated pest management package for coconut eriophyid mite in Coimbatore district, Tamil Nadu	Centre for Plant Protection Studies, Tamil Nadu Agricultural University, Coimbatore	2003-04	73.580	23.947	23.141	Demonstration of integrated management package for coconut eriophyid mite.	44 demonstration trials have been initiated in farmers fields in Coimbatore and Pollachi Blocks during August,2004 covering 1.5 acre(100 palms /farmer) for each demonstration.Application of organic and inorganic fertilizers in all the fields and spot application of ecofriendly pesticides viz;Azadirachtin 1% and Neem oil 3% (three rounds / year) for the 1st,2nd and 3rd year as per recommendation of IPM Package has been completed.
7	Mass Production and Demonstration of Bio-control agents for the management of Stem Bleeding disease, Rhinoceros beetle and Black headed caterpillar of Coconut	CPCRI, Kasaragod	2004-05	19.752	19.752	17.146	To demonstrate the integrated management practices for control of diseases and pests, by incorporating a large input of biocontrol agents and neem-cake application coupled with tridemorph treatment along with prescribed dose of fertilizers and organic manures.	The data on the incidence of stem bleeding disease in the demonstration plots in different locations before and after adopting the integrated management practices indicate that the disease could be effectively controlled by adopting the recommended management practices.
8	Integrated pest and disease management of coconut in heavily root (wilt) disease affected districts of Kerala State to develop model coconut farms	CPCRI, Regional Station, Kayamkulam	2004-05	20.000	20.000	14.214	To create awareness in implementing the economically viable technologies to get sustainable yield or to improve the yield, and to train farmers of the selected plots.	The farmers were convinced about the importance of application of fertilizer and manures and management of pests and diseases in increasing the yield. They also understood that the yield can be further increased if the recommended technologies are adopted every year.

9	Demonstration of technology for mass trapping Red Palm Weevil and Rhinoceros beetle of Coconut using Aggregation pheromone lures and traps	Bio-Control Research Laboratories, Div. PCI Pvt. Ltd, Bangalore	2005-06	16.080	8.040	6.030	Demonstration of technology in selected areas in Karnataka, Tamilnadu, A.P., and Kerala	Studies conducted on Red Palm Weevil adults clearly indicated the presence of 2 distinct activity peaks between 11.00 to 13.00 hrs and 17.00 to 20.00 hrs, majority of the captured adults were females and most of these females were either virgin or gravid and adults are attracted to the pheromone traps from distances up to 1.5 Km.
10	Increasing productivity and income from coconut through Integrated Disease Management Technology in Basal stem rot affected area - a farmer participatory demonstration-training programme	CRS, Veppankulam	2005-06	13.480	12.190	12.190	Demonstration for Integrated disease management practices in Coconut	Validated the IDM package for management of basal stem rot disease. The package involved agronomic practices like basin irrigation, neem cake & farmyard manure application, inorganic fertilizers, green manure crops, intercropping, pesticide application and bio-control agents etc., The results of the study also revealed that soil application of Tricoderma viride and Pseudomonas fluorescence each @ 200 gm per palm per year significantly increased their rhizosphere population.
11	Multi locational Technology Demonstration on Coconut Mite Control in Coconut Growing States	Regional Research Laboratory (CSIR), Bhubaneswar	2006-07	42.683	42.683	42.070	Technology Demonstration on Coconut Mite Control in Coconut Growing States	The treatments - biocides spray & soil application was repeated at quarterly intervals. The results revealed that on an average the level of infestation of mite has shown reduction from 75% to 22.5% after 5 treatments.

12	Integrated Management of Bud Rot Disease of Coconut in Endemic Area	CPCRI, Kasaragod, Kerala.	2007-08	20.609	20.609	20.609	<p>The objectives of the project are to(a) develop an integrated disease management strategy along with KAU and Dept. of Agriculture for bud rot disease control in the endemic areas and (b)to find out the efficiency of promising bio-control agents such as Bacillus amyloliquefaciens and Trichoderma and fungicides in controlling bud rot disease of coconut.</p> <ul style="list-style-type: none"> <li>• Early diagnosis of the disease is very important in the effective control of the disease.</li> <li>• All disease advanced palms and palms died due to bud rot should be cut and infected crown should be destroyed to reduce the inoculum load in the garden.</li> <li>• Crown cleaning should be done before onset of monsoon. Control of rhinoceros beetle attack is also imp.</li> </ul> <p><u>Curative treatment</u></p> <ul style="list-style-type: none"> <li>• Remove the infected tissue completely with a sharp knife. Apply 300 ml mancozeb solution (5g mancozeb in 300 ml water) to the wound.</li> <li>• Place 2 sachets of mancozeb (5g in each perforated sachet) in the innermost leaf axils. Cover the wound with polythene cover / sheets by loosely trying it for aeration.</li> <li>• Destroy the cut and removed infected tissues by deeply burying in the soil. Control rhinoceros beetle.</li> </ul>
13	Production and distribution of seedlings from Ganoderma disease tolerant and mite resistant elite coconut palms of Arsikere Tall Cultivars tolerant to drought from the farmers fields in the Maidan Tracts of Karnataka	UAS, GKVK, Bangalore	2007-08	5.21	5.21	4.18	<p>11, 660 nos. of superior mother palms have been identified in 33 coconut gardens from 8 taluks of 4 districts- Hassan Dt, Tumkur dist, Chitradurga dist. and Chikmagalur dist. Characterization of selected mother palms and analysis of seednuts for copra traits and oil recovery are being carried out. 5000 seednuts were procured from a seedgarden in Arsikere Taluk for raising nursery at UAS.</p> <p>To identify the genetically superior, high yielding mother palms from the farmer's fields by extensive surveying of the tract, and its documentation.</p>

14	Control of Black Headed Caterpillar outbreak in Erode district of Tamil Nadu	Department of Agriculture, Tamil Nadu	2007-08	40.42	11.49	11.49	To control heavy infestation of Black Headed caterpillar in the endemic area of Erode district.	The project period has been completed and detailed final report submitted.
15	Demonstration of recommended IPM/INM technologies for the management of Eriophyid mite in the affected areas of Gujarat	Director of Research, Junagadh Agricultural University, Junagadh, Gujarat	2007-08	29.46	19.38	15.24	To demonstrate the efficacy and feasibility of recommended IPM/INM technologies for the management of Eriophyid mite in the farmer's field in a compact area, to impart need based training to the farmers and to workout the cost benefit ratio of the feasible package and to evaluate the package.	Pretreatment observations on mite population and nut damage, Procurement and distribution of green manure seeds, Demonstration of plant protection treatment/ Farmers training programme, Adoption of phyto-sanitary measures as Cleaning orchard, Collection of infested nuts and burning, Crown cleaning in the selected area, Application of Neem cake, farm yard manure and recommended dose of inorganic fertilizers, Root feeding with 5% Azadirachtin . It has been reported that there has been considerable improvement in the nut quality after adoption of recommended practices for mite control. Utilization certificate for the fund released has been furnished as on 31.03.2009. An amount of Rs.1,94,050/- is remaining as unspent balance.
16	Production of Disease free Elite planting material for improving the productivity of coconut in Bay islands	Central Agricultural Research Institute (ICAR), Port Blair, A&N Islands	2009-10	18.29	18.29	13.15	Survey and identification of high yielding disease resistant/free elite coconut genotypes from palm growing areas and from World coconut Germplasm centre and multiplication and distribution of elite genotypes for distribution to the farmers.	Extensive survey carried out for selection of diseased free and high yielding palms from various parts of South Andaman. A total number of 5000 nuts comprising 18 different varieties were collected from World coconut germplasm and sown at Garacharma and Sippighat Farm. All seedlings were sown successfully and 3000 seedlings were available at Sippighat Farm and 2000 seedlings at Garacharma. A total of 20,744 mother palms were surveyed from different parts of South Andaman, out of which 5000 nuts were selected based on their phenotypic observation. Among these nuts ,3297 nuts were Andaman ordinary Tall variety collected from WCGC, Sippighat and Kurmadera. Seedlings of 18 varieties were raised.

17	Demonstration of technologies for management of Red Palm Weevil of Coconut by sanitation & pheromone based mass trapping in Alappuzha District, Kerala on a pulse polio immunization mode with the participation of Farmers/ Panchayat	Bio-Control Research Laboratories, Division of Pest Control (India) Pvt. Ltd., Bangalore	2007-08	2.97	2.97	0.72	To demonstrate technologies for management of Red Palm Weevil of Coconut by sanitation & pheromone based mass trapping in Alappuzha District, Kerala in a campaign mode with the participation of Farmers / Panchayath.	In order to ensure participation of farmers in the programme, the 25th PAC approved only the 1st phase of programme for conducting awareness programme. After assessing the impact of the awareness seminars, the possibility of implementing the large scale setting up of trap in the endemic areas of the district would be considered. Pest Control (India) Pvt. Ltd has already conducted 6 Taluk level seminars and a District level seminar. Comments on the technical programme of the project from CPCRI and report on the impact of awareness seminars from PCI are awaited for considering the 2nd phase of the project.
18	A study on the quality of coconut in Andhra Pradesh in terms of output of copra, oil, coconut water, shell and husk	Andhra Pradesh Horticultural University Tadepalligudem, West Godavari District, Andhra Pradesh	2009-10	2.50	2.50	1.75	To study the quantitative and qualitative parameters of coconut in major coconut growing districts (East Godavari, West Godavari and Srikakulam) of Andhra Pradesh	Survey was conducted in three major coconut growing districts (East Godavari, West Godavari and Srikakulam) of Andhra Pradesh . nuts from Ayinavelli mandal of East Godavari district showed the highest whole nut weight and husk weight of 1307.50g/nut and 850.50g/nut husk weight whereas dehusked nut weight (504.50g/nut) was observed in nuts collected from Rajahmundry mandal The analysis of samples for oil characters ,survey and collection of nuts for remaining two seasons is in progress.

19	Survey for the occurrence and severity of root (wilt) disease of coconut in Dakshina Kannada District of Karnataka".	University of Agricultural Sciences, GKVK, Bangalore	2009-10	2.47	2.47	2.22	i) survey on the incidence and intensity of root (wilt) disease of coconut in Dhakshina Kannada District of Karnataka (UAS), ii) to prepare disease hot spot area maps for systematic rouging of diseased palms to prevent further spread of the disease (UAS) and iii) simultaneous cutting & removal of disease affected palms by the Dept. of Horticulture, Govt. of Karnataka.	Study has identified the root wilt affected/suspected palms in 5 taluks of South Canara District and disease area maps have also been prepared. Director of Horticulture, Karnataka has been requested to submit a separate proposal to the Board for taking up the cutting and removal of the root wilt affected palms identified in the study so as to prevent further spread of the disease.
20	Survey on incidence and severity of Ganoderma wilt of coconut with respect to agronomic practices in dry tracts of southern Karnataka	UAS, GKVK, Bangalore	2009-10	2.76	2.76	2.48	Survey on the incidence and intensity of Basal stem rot (Ganoderma wilt) disease of coconut in dry tracts of southern Karnataka and to assess influence of different agronomic practices followed by farmers on incidence and severity of fatal disease (Ganoderma wilt) of coconut.	Study completed. Final report awaited

21	Improving productivity and income from Coconut through recommended technologies and diversified products in the disease affected area of W.B. – A farmer participatory demonstration and training programme	Bidhan Chandra Krishi Viswa Vidyalaya, WB	2004-05	12.23	12.23	6.52	To demonstrate the efficacy and feasibility of recommended farming technologies in coconut on a group action basis in disease-affected area, to involve all stake holders like extension officials, farmer leaders, NGOs, rural youth, farm/SHG women, etc. for an integrated transfer of technologies to be demonstrated, to design and impart need based trainings to different client groups on product diversification and cropping system with relevant literature support and to study the perception of the participating farmers in terms of attributes of technologies which are being recommended.	Project period was over by 6th October 2008 and final report is awaited from BCKV.
22	Demonstration and adoption of technologies under Technology Mission on Coconut	Department of Horticulture, ORISSA	2006-07	25.00	25.00	22.17	For demonstration of the effectiveness of IPM and INM technology in the Maheswari Coconut Farm and Kerandia Coconut Farm covering 3150 palms	6,25,000 palms were treated with the pesticides (azadirachtin) through root feeding covering 41900 beneficiaries. A committee constituted by the Chairman, CDB with representatives of O.U.A.T., Dept. of Horticulture and C.D.B. made an independent field level assessment and submitted a comprehensive report. The damage score on one to five scales was in the range of 3 to 4 i.e. about moderate intensity (26-50%) which was comparatively less than the untreated palms where 100% infestation was noticed with the intensity of moderate to high. This indicates that implementation of the project has its impact in bringing down the mite infestation.

23	Integrated Coconut Development Scheme	District Panchayat, Kozhikode	2006-07	324.88	10.60	8.05	To increase the productivity and income from unit holdings by promoting the adoption of management practices like INM, IPM including inter cropping and mixed farming in an area of 575 ha, covering 23 Grama Panchayaths of 11 Block Panchayaths and to promote production, processing, storage and marketing of the agricultural produce produced by the self-help group directly to the consumers by which the intermediaries can be wiped off from the marketing channel.	Adopted IPM and INM practices in selected area.
24	Bio- hedging village programme	Mararikulam North Grama Panchayath, Alappuzha	2007-08	27.57	9.82	7.52	To rejuvenate and develop a 25 Ha compact block of existing coconut palms as a model in the coastal belt, to demonstrate how productivity and returns could be improved with the adoption of a judicious management system in the coastal homesteads and to promote organic farming, bio-hedging and to generate gainful employment to the farm family labour.	Project has been completed and detailed final report awaited.



25	Soil and plant health management through organic recycling in coconut based production system	Central Plantation Crops Research Institute (CPCRI), Indian Council of Agricultural Research (ICAR), Kasaragod	2008-09	62.63	25.00	21.445	To demonstrate location specific technologies for organic recycling aiming at developing sustainable organic production system in coconut growing areas including root wilt disease affected tracts, to develop low cost crop residue recycling systems to produce high quality vermi-compost and vermi-wash for soil health management in coconut based organic production system, to assess the efficacy of vermi-wash as bio pest repellent and prophylactic agent for disease and soil health stimulant.	All farmers have started producing compost and vermiwash using biomass available in their farm, The project has been successfully completed and possibility of location specific technologies for organic recycling for sustainable organic production system in coconut growing areas was demonstrated.
26	Organic group farming project for coconut based farming system in Vechoor	Manarcadu Social Service Society, Manarcadu, Kottayam	2008-09	81.60	20.24	19.68	To enhance the production and productivity of coconut and intercrops like vegetables tuber crops and fruit crops in the project area for improving the standard of life of the people, to improve the soil fertility and soil health to ensure sustainable farming and production, to adopt prophylactic measures against pest and disease insurgence, to avoid hazardous agri chemicals with ultimate objectives of avoiding residues, resurgence and resistance in crop production system.	Project has been completed in 50 ha. and have set up 37 vermicomposting units and one weed cutter. The farmers are aware of the practice of re-cycling of organic waste and also practice mixed farming, Inter crop farming and multi tier farming techniques. Farmers have changed from their inorganic farming methods to organic farming method and the farm produces have been certified Organic by Lacon Quality certification (P)Ltd. as per National Standard for Organic Production (NSOP), EU and NOP (USDA). Production of coconut has been increased from 35 to 48 nuts per palm per year and the total production have been increased to about 4.25 lakhs nuts from a total of 8900 coconut trees.

27	Field demonstration of integrated disease management technology for management of leaf rot disease including bio agents	CPCRI, Kasaragod	2009-10	13.69	13.69	12.32	To assess and demonstrate latest technologies (involving chemical and bio-control agents in a comparative manner) on integrated management of coconut leaf rot disease with farmer participation and to document the impact of the technology demonstration on coconut palm and farmer profile.	Keerikadu (Evoor south) under Pathiyoor panchayat in Alapuzha district is selected as operational area. Local farmers were contacted involving state Dept and Pathiyoor coconut devpt. council. implementation of the project has resulted in reduction in disease incidence and intensity, thereby enhancing the yield. Technological facilitation by CPCRI coupled with farmer participation was proved to be ideal for adoption of disease management technology by small and marginal farmers. Farm level production of bioagents, enriched organic manure and bioprimered seedlings could ensure additional income coupled with availability of quality inputs.
	Management of Black Headed Caterpillar (BHC) menace on Coconut in Karnataka	Director of Horticulture, Govt. of Karnataka, Bangalore	2009-10	83.50	83.50	75.14	The Management of Black Headed caterpillar (BHC) menace in coconut in Tumkur district of Karnataka covering an area of 5536 ha, (830400 palms) by adoption of IPM package recommended by UAS, Bangalore	Procurement of inputs such as neem cake and Azdirachtin is in progress.

<b>b. Product diversification &amp; value addition</b>								
1	Training and demonstration of technologies for coconut processing units of convenient foods	Neyatinkara Paramparagatha Ennayattu Thozhilali Sahakarana sangham, Thiruvananthapuram, Kerala	2002-03	5.300	5.000	4.481	To acquire technology for processing of coconut based convenient foods and to establish a demonstration-cum-training centre.	Unemployed youths were trained on processing of coconut based convenient foods
2	Project to set up of a Technology Training Centre at Perambra Block Panchayat in Calicut District	M/s.Subicsha Coconuts Producer Company Ltd. promoted by Perambra Block Panchayat, Perambra P.O., Calicut	2005-06	93.000	20.000	12.599	Establishment of a Quality Control Laboratory- for testing the coconut based convenience foods produced and marketed by the SHGs under Subicsha - including a mini microbiological lab, chemistry lab and physical testing lab	The civil works as well as the installation of the equipment has been completed and the training center is in operation. Chairman, Coconut Development Board inaugurated the same on 7.2.2007.
3	Project for setting up of a demonstration cum training centre for production of coconut chips and vinegar	Kerala Agro industries corporation Ltd., Ernakulam	2006-07	19.50	4.25	4.25	Setting up a demonstration cum training centre for coconut based value added products viz. coconut chips, vinegar, chutney powder, biscuit etc.	The demonstration cum manufacturing unit has been established at Arimbur. Trial production of the products-chips-"coconut crispy"and "coco vinegar" was launched by Hon'ble Minister of Agriculture, Kerala on 25.09.2007
4	Grama Lakshmi Coconut Shell Daily Utility Product by Women at Home	Grama Lakshmi Coconut Shell Production and Training Centre, Thumponathumalayi, Amanakara.P.O., Ramapuram, Kottayam	2006-07	26.10	4.15	3.78	To expand the production capacity of the coconut shell based products manufacturing unit to 3 times by creating additional infrastructure and making the present unit as a production cum training center giving employment to 20 women per day.	Training imparted to 42 unemployed women in each batch of three months. Four trainees started their own units on completion of the training. Twenty two women are working in the unit on daily basis.

5	Assessing the techno commercial feasibility of converting softwood waste from coconut trees into value added particle boards	Ecoboard Industries Limited	2009-10	28.19	28.19	16.75	To establish whether the waste soft wood from coconut trees can be chipped to desired size with desired geometry and to see whether the chipped wood from coconut tree can be boned into raw particle boards, to see whether particle boards can be laminated, to evaluate whether particle boards meets the norms of IS specifications & also study how the market accept them and to prepare techno commercial feasibility report.	Developed high quality particle boards from 837 palms it was possible to make 10.7 tones of pre laminated particle boards each weighing about 39 kg exceeding ISI standards with high termite and moisture absorption resistance. The quality of plain and pre laminated boards confirms to FPT 2 OF IS:3087-2005. It was found that only if the current cost of cutting, removing, sawing, drying and transporting wood, fronds and other portions to manufacturing units is substantially reduced, the particle board and furniture making will be commercially viable
<b>4 PROJECTS FOR ADOPTION OF TECHNOLOGIES UNDER TMOC</b>								
<b>a. Pest &amp; Disease Management</b>								
1	Adoption of technology for the control of mite in Karnataka	Department of Horticulture, Karnataka	2001-02	238.000	238.000	238.000	To control eriophyid mite in Karnataka	Conducted large scale demonstration in compact areas of 50 acres,each covering 3000 palms in severely mite affected 12 districts.
2	Project for containing root wilt diseases in Border districts of Kerala	Department of Agriculture, Govt. of Kerala.	2002-03	4413.132	942.400	941.998	Cutting and removal of disease affected palms and planting of quality seedlings.	694261 rootwilt diseased palms were cut and removed and replanted with 336807 Nos. of quality seedlings and also adopted better management practices covering an area of 73524 ha.
3	Project for control of the out break of Black Headed Caterpillar in Erode District of Tamil Nadu	Commissioner of Agriculture, Chepauk, Chennai	2003-04	28.820	9.605	9.605	The programme was for release of parasitoids in Modakurichi Block, Erode	The scheme was implemented in Modakurichi Block, Erode including 661 farmers. Number of Trees treated with Parasitoids were 2,64,983 Nos. and an Area of 1514 Ha. The affected palms completely rejuvenated without any mortality and entire palms restored the yield potential

4	Management of eriophyid mite infestation in Andhra Pradesh	Department of Horticulture,AP.	2004-05	4380.000	480.000	366.540	Management of Eriophyid Mite Infestation in six major coconut growing districts of Andhra Pradesh in a contiguous blocks of 40,000 ha.	The state govt. conducted three rounds of root feeding in 40,000 ha in six districts in AP.
5	Control of Bud rot disease of coconut in Kozhikode district .	Director of Agriculture, Govt. of Kerala.	2003-04	6.803	1.700	1.700	The objective of the project is to control the bud rot disease mainly seen spreading in Kunnummel, Thuneri, Kunnamangalam and Koduvally blocks of Kozhikode district.	The subsidy amount of Rs.1.70 lakhs was released to the Department of Agriculture, Kerala during the year 2004-05 for implementing the project, AND PLANT protection operations have been carried out.
6	Modernization of the existing Parasite Breeding Laboratory at DSP Farm, Mandya	CDB with the guidance of PDBC, Bangalore.	2002-03	27.800	27.800	17.483	To modernize the existing parasite breeding lab.	Modernization of lab building structures has been completed.
7	Biological Pest control in coconut-(Biological control of leaf eating caterpillar in Karnataka)	Dept. Horticulture, Govt. of Karnataka	2003-04	20.000	20.000	19.319	The project aims at demonstration of the integrated pest management practices for the control of leaf eating caterpillar in selected endemic areas of Tumkur and Chikmagalur district including large scale multiplication and release of parasitoids	Two parasitic labs were established in Tumkur Dt. and in Chickmagalur Dt.Equipments required for production of 10 lakh parastoids in each lab was purchased under the project and training given to the staff. During the year 2005-06, 10 lakh parasitoids have been produced from Chickmagalur lab and during 2006-07, 10 lakh parasitoids have been produced from Tumkur LAB. The two laboratories are now in a position to produce and supply parasites to the farmers as and when required.

8	Project for Control of Eriophyid Mite on Coconut in Maharashtra	Department of Agriculture, Government of Maharashtra.	2004-05	188.900	23.047	23.047	Based on the request of State Govt. to implement the programme covering 288088 palms, Rs.23,04,704/- was released as Board share during the year 2005-06 @ Rs.8/- per palm for 3 rounds of treatment using azadirachtin	The project was implemented during 2006-07 and completed. A total of 133.72 Ha in the 4 Dts. of Thane, Raighad, Rethnagiri & Sindurg were covered benefitting 375 farmers. State share incurred is Rs.23.05 lakh.
9	Project for Control of Eriophyid Mite in Coconut in Orchards of Orissa	Agricultural Department, Govt. of Orissa.	2004-05	8927.700	50.000	50.000	to Control of Eriophyid Mite on Coconut in an area of 29,000 ha in Orissa.	Against the target of 6.25 lakh palms as per latest report submitted, 15,314 Nos. of palms were treated as on October 2005.
10	Production of root (wilt) resistant / tolerant coconut seedlings for root (wilt) disease prevalent tracts"	CPCRI, RS, Kayamkulam	2004-05	44.950	44.400	38.871	Production of rootwilt tolerant seedlings	28508 seedlings have been distributed during the project period upto July 2009. and 3033 seedlings have been distributed during the project period [by July 2009].
11	Control of Red Palm weevil in Tamil Nadu during the year 2007-08	Department of Agriculture, Chepauk, Chennai.	2006-07	5.000	5.000	4.750	For control of red palm weevil by placing 5000 Nos. of pheromone traps @ 1 pheromone trap per Ha and crop sanitation which includes removal of palms beyond recover stage as well as dead palms from the field and burning of the affected plant parts	The programme covers 8.75 lakh trees affected by red palm weevil in 5000 ha in 16 districts of the State viz; Kanchipuram, Thiruvallur, Vellore, Cuddalore, Salem, Dharmapuri, Coimbotore, Erode, Trichy, Karur, Thanjavur, Theni, Dindigul, Virudhunagar, Tirunelveli and Kanyakumari.
	Project for control of Eriophyid Mite on coconut	The Department of Agriculture, Tamil Nadu	2007-08	2277.40	569.30	284.68	To control of Eriophyid Mite infestation on coconut in hot spot areas of 11 coconut growing districts of Tamil Nadu.	A final report on the physical progress indicating achievements made under different components of the programme or a revised schedule for completion of the programme is pending from the Dept. of Agriculture.
12	Project for management of Black headed Cater Pillar on coconut in Kasaragod District	Department of Agriculture, Kerala	2006-07	26.175	20.400	12.972	Management of Black headed caterpillar in Kasaragod in a farmer participatory mode.	The farmers were given training in root feeding. Parasitoid, Goniozus nephantidis from the Parasite Breeding laboratory of CDB, Regional Office, Bangalore were procured and released in the field.

13	Integrated Coconut Development for Budrot affected area	Kasaragod District, Civil station, Kasaragod	2008-09	1846.37	335.75	332.31	<p>The project envisages supporting the farmers of severely Bud rot affected areas of Kasaragod district by providing compensation for the removal of completely damaged Budrot affected palms and to contain the spread of the disease by adopting disease management practices as recommended by CPCRI.</p>	<p>Project has been completed and 66875 disease affected completely damaged palms have been removed. The quantity of innoculum was reduced due to the implementation of the project, but strict surveillance of the disease incidence in these panchayats and continuation of adoption of prophylactic measures during peak season favorable for multiplication of the fungus is necessary to prevent the spread of the disease in future.</p>
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<b>b. Product diversification &amp; value addition</b>								
<b>Sl. No.</b>	<b>Name of the Unit &amp; Address</b>	<b>State</b>	<b>Year</b>	<b>Total Project Cost (Rs.)</b>	<b>Amount sanctioned (Rs.)</b>	<b>Amount released (Rs.)</b>	<b>Capacity (Nuts/day)</b>	<b>Products</b>
1	Jain Agro Foods Pvt Ltd, Mysore	Karnataka	2002-03	13140000	2230000	2230000	10000	Preserved & packed tender coconut water
2	Amrutha coconut products, Madavana, Kodungallor	Kerala	2002-03	2960000	740000	740000	10000	Desicated coconut, vinegar, coconut chips
3	Chaithanya Food Products Pvt Ltd, Payyannur, Kannur	Kerala	2002-03	3000000	750000	750000	10000	Preserved & packed tender coconut water
4	Peekay Traders, Moothakunnam, Ernakulam	Kerala	2002-03	1060000	125900	125900	5000	Edible/milling copra
5	Chinnu products, Muttithadi, Thrissur	Kerala	2002-03	1000000	185000	185000	500	Coconut chips
6	Kaanaan coconut products, Kanjampuram, Kanyakumari Dist.	Tamil Nadu	2002-03	3300000	545300	540200	10000	Shell charcoal, Edible copra
7	Sreelakshmi coconut complex, Arattupuzha village, Thrissur	Kerala	2002-03	4700000	1093700	1022800	10000	Packed, Branded Coconut Oil & edible copra
8	Adsorbent Carbons Limited, Sipcot Industrial Complex, Tuticorin	Tamil Nadu	2002-03	14651000	3662700	3662700	6 MT per day	Activated carbon (6 tons AC per day)
9	Sakthi coconut products, Pollachi	Tamil Nadu	2002-03	3770000	907400	907400	10000	Preserved & packed tender coconut water
10	Kundoor Coconuts Pvt Ltd, Kundoor, Thrissur	Kerala	2002-03	1988000	489000	451800	2500	packed, Branded Coconut Oil, coconut chips & vinegar
11	Vijayalakshmi Agro Industries, Avinashi, Coimbatore	Tamil Nadu	2002-03	2352000	569200	569200	5 MT per day	Coconut shell powder (5 tonnes shell/day)
12	M/s. Prakranthi Enterprises, Aduvassery South PO	Kerala	2002-03	800000	125000	123700	2500	Coconut vinegar (500 lit. coconut water/day)
13	Sevashram, Angamaly	Kerala	2002-03	19036000	4365254	2550129	46000	milling copra coconut chips & vinegar
14	Benzy Foods & Beverages Pvt Ltd, Ponnani, Mlappuram	Kerala	2002-03	23500000	4175000	3757500	25000	packed, Branded Coconut Oil, coconut chips & vinegar
15	Integrated Coconut Processing Unit - Karalam SCB, Thanissey Thrissur.	Kerala	2002-03	15000000	2513400	2468700	25000	packed, Branded Coconut Oil, coconut chips & vinegar
16	Integrated Coconut Processing Unit - Kallamkunnu, SCB, Thrissur	Kerala	2002-03	16000000	3339500	3339500	10000	packed, Branded Coconut Oil, coconut chips & vinegar
17	Fortune Beeverages Pvt. Ltd., Gujarat.	Gujarat	2004-05	8946000	1885000	1053600	10000	Preserved & packed tender coconut water
18	Jai Matha Coconut based Vinegar Industry Kottayam Dist., Kerala.	Kerala	2005-06	1607800	401900	401900	5000	Coconut vinegar (500 litres vinegar per day)



19	A.P.Agro Industries Coimbatore, Tamil Nadu.	Tamil Nadu	2005-06	3635000	858800	858800	5 MT per day	Coconut shell powder (5 tonnes of shell powder per day)
20	M/s. Apex Pyro Char Ltd., Vakavadi Village, Kundapur Taluk, Udipi.	Karnataka	2005-06	5028000	941500	896300	9 MT per day	Shell charcoal (9 tons of shell charcoal per day with pyro-lignious acid as by products which can be converted into acetic acid)
21	Jyothi Foods Pvt. Ltd., Cherthala, Allepy, Kerala.	Kerala	2005-06	1750000	398800	376250	2500	packed, Branded Coconut Oil, coconut chips & vinegar
22	West Bengal Awadhooth Agro Foods Hasinabad, W. Bengal.	West Bengal	2005-06	20004000	5000000	5000000	25000	Preserved & packed tender coconut water
23	M/s.Essen Trading Company, Kallor Thekumuri, Annamada, Thrissur	Kerala	2005-06	8555000	2138700	2063800	20000	packed, Branded Coconut Oil, edible copra & vinegar
24	M/s.Nirmal Oil Mill, Paingottoor, Kothamanagalam	Kerala	2005-06	1233300	308300	302809	1000	Coconut Oil , copra & vinegar
25	M/s.Active Char Products Pvt.Ltd, Maradu, Kundannoor, Cochin	Kerala	2005-06	60000000	5000000	4961000		12 MT of activated carbon/day (4 tonne per kiln)
26-36	VCO (RUBCO Technology -11 units )	Kerala	2006-07	22935000	5733750	5733900	22000	Virgin Coconut Oil (2000 nuts per day /unit)
37	Kerala Malanad Karshka Produce Co-operative Marketing Society -I	Kerala	2006-07	5928000	1113200	1113200	21000	Coconut Oil (20 tones of copra per day 7000 nuts for 1 ton copra 500 litres of coconut water per day.
38	M/s. Genuine Shell Carb Private Limited, Erode	Tamil Nadu	2006-07	54500000	5000000	5000000	9.2 MT per day	Activated carbon (9.2 MT of activated carbon/day)
39	M/s. Raj carbon, Tuticorin	Tamil Nadu	2006-07	14000000	2882000	2882000	4 MT per day	Activated carbon (4 tonnes activated carbon per day)
40	M/s. Vellur Service Co-operative Bank Ltd. , Kannur	Kerala	2006-07	11991000	3383500	2710000	25000	packed, Branded Coconut Oil, Virgin Coconut Oil-Rubco & vinegar
41	M/s. Golden Vintage Farmers Industry, Koratty, Trissur	Kerala	2006-07	17500000	3033000	2023400	8000	Virgin Coconut Oil (350-400 L VCO per shift)
42	M/s. Monsons Extractions, Industrial Estate, Palayad, Thalassery	Kerala	2007-08	7475000	1125000	1125000	5000	V C O - 2500 coconut per day Cooking oil - 2500 coconut
43	M/s.R.P. Agro Industries, Arsikere	Karnataka	2007-08	2270000	387500	387500	3.2 MT per day	3.2 M Tons Shell Powder per day
44	M/s.Kalpaka Chemicals Pvt.Ltd, Tuticurion, TN	Tamil Nadu	2007-08	16276000	3305700	3305700	14 MT per day	14 T of activated carbon/day

45	Malabar Coconut Products, Onchiyam, Chombala, Badagara, Kozhikode District	Kerala	2007-08	2500000	566500	566500	5000	5000 nuts per day into milling copra 2 tones of copra / day into oil
46	M/s. S.S Agro Mills, Samba District, Jammu	Jammu & Kashmir	2007-08	13607000	1592000	1592000	6.4 MT per day	6.4 Tons Shell Powder per day
47	M/s.Sritara Agrotech, Ongole, AP	Andhra Pradesh	2007-08	19150000	3966750	3966750	25000	Coconut Processing Unit - VCO
48	M/s. Sneha Oil Mill, Chandiroor, Alappuzha	Kerala	2007-08	1420000	355000	355000	5000	Agmark std.coconut oil
49	M/s. Anand Oil Mills, Thrikkalathoor, Muvattupuzha	Kerala	2007-08	2000000	318700	318700	24000	Coconut Oil
50	M/s. Kairaly Coconut Products, Anandapuram Thrissur	Kerala	2007-08	3541000	673000	639600	5000	Coconut Oil
51	M/s. Sreya Oil Extractors, Chellanam, Ernakulam Dt.	Kerala	2008-09	5599900	1128900	1124900	30000	Coconut Oil
52	M/s. Vittal Agro Industries, D.No. KM-VIII-577, Govt. Hospital Circle, Hosdurg, Kanhangad	Kerala	2008-09	24299000	5000000	5000000	50000	4.80 tons of DC per day
53	M/s. Jain Agro Food Products Private Ltd., Bangalore	Karnataka	2008-09	3106000	776500	776500	8000	Tender Coconut water preservation and packaging unit
54	M/s Modern Oil Mills, Palakkad	Kerala	2008-09	586500	493800	493800	10000	Coconut oil
55	M/s. SKM Animal Feeds and Foods (India) Ltd. Coconut Oil Division, Nanjaiuthukuli. P.O., Erode, T.N	Tamil Nadu	2008-09	32144000	5000000	5000000	1400000	Coconut oil
56	Shri.K.B .Sivadas, Managing Director, Keramitra Coconut Oil Manufacturing Unit, Engadiyoor, Thrissur (Expansion)	Kerala	2008-09	3414000	853500	853500	10000	Roasted Coconut oil palm fiber , organic compost
57	M/s. Shawn D.M.E.& Associates, Chathanad, Ezhikkara.P.O. North Paravur,	Kerala	2008-09	3278000	819500	819500	8000	Roasted Coconut oil Venegar
58	Kairali Virgin Coconut Oil, Thirumangalam West, Engandiyoor.P.O., Thrissur	Kerala	2008-09	3116000	779000	779000	50000	Roasted Coconut oil Venegar
59	M/s. Adsorbents Pvt. Ltd., Tuticorin (Expansion)	Tamil Nadu	2008-09	1000000	1338000	1338000	5 MT per day	Acid wash Activated carbon (5 tons per day)
60	M/s.Green Kera Enterprises,Kolachery	Kerala	2008-09	1281900	236500	236500	6000	Coconut Processing Unit
61	M/s. Sri Lakshmi Trading Company, Salem District, Tamil Nadu	Tamil Nadu	2008-09	7047500	1552362	1552362	12 MT per day	Coconut shell powder installed capacity 12 MT shell / day
62	M/s Global Eco carbon Pvt. Ltd., Tumkur, Karnataka	Karnataka	2008-09	39000000	5000000	5000000	4 MT per day	Four tons of activated carbon per day.

63	M/s. Ganesh Kalpathau Industries, Kundapura Taluk, Udipi	Karnataka	2008-09	2825000	706250	706250	35000	D.C. powder
64	M/s. Keratech Coconut Oil Manufacturing Company (P) Ltd., 1/332 B, P.O. Engandiyur, Trichur	Kerala	2008-09	5879000	1469700	1469700	10000	Virgin Coconut Oil
65	M/S. Indo German Carbons Ltd, Edayar Industrial Area , Binanipuram, Ernakulam	Kerala	2008-09	20600000	4100000	3725000	1200 MT of special grade powder activated carbon and 1500 MT Washed activated carbon per annum.	Activated Carbon
66	M/s. Kongunad Anglo Products, SF No. 1468/1, Panchapalayam Village, Olappalayam. P.O. Kangayam	Tamil Nadu	2008-09	22500000	5000000	5000000	4.5 MT per day	Shell powder
67	Shri. Mohammed Jaleel, Moosan Kakkada Moosankakkada House, Andrott Island, Lakshadweep	UT of Lakshadweep	2008-09	1930000	320000	262180	10000	Copra
68	Integrated Coconut Processing Unit- Kallamkunnu, SCB,Thrissur - II (Expansion)	Kerala	2008-09	5850000	1356000	1353000	10000	Packed, Branded Coconut Oil
69	M/s. K.M.R. Industries, Chinnakannara Street, Mayiladuthurai.	Tamil Nadu	2008-09	3695000	923700	668723	10000	Desiccated Coconut

70	M/s ABI Technochem (p)Ltd, Tuticorin	Tamil Nadu	2009-10	26600000	5000000	5000000	4 MT per day	Activated Carbon (1200 MT per year )
71	Smt. S.Janaki, Thiru Kumaran Enterprises	Tamil Nadu	2009-10	8639000	1777100	1777100	16 MT per day	Coconut shell charcoal (200 MT Shell Charcoal per month)
72	M/s. Sri Raman Agro Products, Tamilnadu	Tamil Nadu	2009-10	13956000	3489000	3489000	18 MT per day	Shell powder (18 Tons per day)
73	M/s. Sterling Coconut Products, Malappuram	Kerala	2009-10	4768000	1192000	1192000	25000	Coconut oil
74	M/s.Cheekanal Industries & Trading Company, Omalloor, Pathanamthitta (Expansion)	Kerala	2009-10	1325000	331200	331200	5000	Coconut oil
75	M/s. Vaishnavi Co-co Foods, Tumkur Dt. Karnataka	Karnataka	2009-10	7600000	1097600	910250	10000	Desiccated Coconut
76	M/s. Taj Oil Mills, Thiruvambady	Kerala	2009-10	2040000	510000	510000	10000	coconut oil
77	M/s. MRT oil industries, Pollachi	Tamil Nadu	2009-10	12356000	2406000	2406000	70000	Copra (10 MT per day)
78	M/s. KCM Industries, Erode	Tamil Nadu	2009-10	9118400	2277600	2277600	21000	Coconut oil (3 Tons per day)
79	M/s. Sundar Carbon, Fisheries College, Backside, Tuticorin	Tamil Nadu	2010-11	53000000	5000000	5000000	12 MT per day	Activated Carbon (12 tons per day)
80	M/s. Vaishnavi Co-Co Products, Annapura, Tiptur	Karnataka	2010-11	10286000	2000100	2000000	50000	Desiccated Coconut
81	M/s. Little Flower Oil Mill and Proessing unit, Malappuram	Kerala	2009-10	1344000	336000	327300	7500	coconut oil
82	M/s. Srinivas Coconut Products , Trichy, TN	Tamil Nadu	2009-10	473900	111000	110100	10000	copra
83	M/s. Universal Carbon, Trichy, Palladam	Tamil Nadu	2009-10	31222000	5000000	4833800	3 MT per day	Activated carbon (3 MT per day)
84	M/s. AMS group, Pattambi	Kerala	2009-10	31074000	5000000	5000000	40000	Coconut Oil
85	Tellicheri Cooperative Marketing and Processing Society, Mattanoor, Kannur	Kerala	2007-08	5200000	1081000	955110	5000	Coconut Oil
86	M/s. Sri. Balaji Oil Industries, Uduppi, Karnataka	Karnataka	2009-10	4369000	716800	716750	14000	Coconut Oil
87	M/s. Jaimatha Agro Industries, Tiptur, Karnataka	Karnataka	2009-10	12796000	3165500	3165500	100000	Desiccated Coconut
88	M/s. Super Coco Company, Pollachi	Tamil Nadu	2009-10	7647500	1961800	1961800	50000	Desiccated Coconut (5 Tons per day)
89	M/s. Shri Vigneshwara Coconut Industries, Elimale, Sullia	Karnataka	2010-11	3200000	372000	372000	10000	Copra
90	M/s. GeeDee Mills, Elenthikara, Puthenvelikara, Ernakulam Dist.	Kerala	2010-11	5174000	591000	585000	7500	Coconut oil (9000 kg copra per day)
91	M/s. Srinithi Agro Industries, Nallampalayam, Alathur, Salem, Tamil Nadu	Tamil Nadu	2010-11	9235000	2015000	2015000	15 MT per day	Shell powder
92	M/s. VG Tinder Products (P) Ltd, Nagar Main Road, Reddiyur, Salem, Tamil Nadu	Tamil Nadu	2010-11	9243000	1935200	1935200	12 MT per day	Shell powder

**5 PROJECT FOR MARKET RESEARCH AND PROMOTION**

No	Name of the Project	Year of sanction	Cost of the Project	Amount sanctioned by PAC	Amount released
a.	<b>Market Research</b>				
1	Demand, cost and supply of nontraditional coconut products on consumers buying behaviour in Tamil Nadu: Market assessment – Gandhigram Rural Institute, Gandhigram	2001-02	5.128	5.128	4.615
2	Risk management instruments and capacity building in market intelligent for copra micro enterprises in India - Indian Institute of Plantation management, Bangalore	2002-03	5.623	5.623	5.623
3	Strategies for Sustainable Development of Coconut Industry – "Marketing and Promotion of Desiccated Coconut Powder" & "Coconut Oil in the emerging scenario" submitted by M/s. Foretell Capital Trust Private Limited, Bangalore at a total cost of Rs.2.70 lakhs & Rs. 2.20lakhs respectively.	2002-03	4.900	2.450	2.215
4	Marketing of Coconut Oil as two stroke Automobile Engine oil - Ajithkumar G, Lecturer in Mechanical Engineering, School of Engineering, CUSAT,Kochi,Kerala	2003-04	8.300	8.300	8.300
5	Impact of Value added tax on proces of coconut products in Kerala by Centre for Taxation studies,TVM.	2005-06	1.000	1.000	1.000
6	Study on "Coconut –Copra complex in Karnataka, Andhra Pradesh and Kerala streamlining structure,functioning and inter-market price-Indian Institute of Management, Bangalore.	2005-06	10.000	10.000	10.000
7	Study on the Import and Export of Coconut Oil and Other Edible Oils in India - submitted by Centre for Development Studies, Thiruvananthapuram	2004-05	3.200	3.200	2.880
8	Economic analysis of marketing and value addition in coconut in Konkan Region" - Directorate of Research, Dr. B.S.Konkan Krishi Vidyapeeth, Dapoli, Ratnagiri District, Maharashtra	2005-06	5.610	5.610	2.805
9	Project proposal for construction of forecasting model for coconut prices in India, Kerala Statistical Institute, Trivandrum	2006-07	11.08	11.08	11.08

b.	<b>Market Promotion</b>				
1	Project proposal for market promotion activities for Coccojal by participation in exhibition, Delhi, India- Kejrival Enterprises, New Delhi.	2003-04	7.725	3.041	1.851
2	Carrying out market promotional activities of the products - Chettoor Agro Products, Peringazha, Muvattupuzha, Kerala-686 673.	2003-04	2.000	1.000	1.000
3	Market promotional activities for launching the tender coconut - packed tender coconut water by Sakthi Coconut Products.	2002-03	1.629	0.450	0.450
4	Ahara 2002	2001-02	9.914	9.914	9.914
5	International Food fair , Sharjah (2002-03)etc. -Coconut Development Board	2002-03	16.803	16.803	16.560
6	Participation of CDB in AHAAR 2003 at New Delhi (2002-03)-CDB	2002-03	15.000	15.000	15.282
7	Participating in International Trade Fair – 2003 at Chennai - Director, Coconut Development Board, Regional Office, Chennai	2003-04	1.600	1.600	0.955
8	Market promotion activities-Allocation of fund from Technology Mission on Coconut submitted by CDB at a total cost of Rs.10 lakhs.	2003-04	10.000	10.000	0.089
9	Proposal for organizing National Seminar on Coconut and its Products at Hyderabad during October 2003-submitted by CDB.	2003-04	17.301	17.301	15.393
10	Proposal for financial assistance to Coconut Based Industries – Modernization of Coconut processing by the introduction of improved copra dryers/ other processing machineries/ equipments by CDB.	2003-04	20.000	20.000	16.955
11	Participation in the International Food, Drink and Hospitality Exhibition at Pragathi Maidan, New Delhi.	2003-04	10.000	10.000	7.526
12	Project for market promotion of coconut products through participation in coconut festival, Colombo, Sri Lanka - (2003-04) Participation in other exhibitions by Coconut Development Board during 2003-04 - Global Food Tech and Hospitality Exhibition, 2003, Mumbai. - Organisation of Coconut Festival at Patna by CDB on 20th to 21st April, 2003	2003-04	9.250	9.250	4.250
13	Participating in India International Trade Fair, 2003, New Delhi	2003-04	36.659	36.659	36.229
14	Project proposal for Market Promotion Activities for Medicated oil MAR-CO-PHARMA, (Manufacturers of Ayurvedic Medicines) Kottayam	2003-04	7.800	1.500	1.500

15	Project proposal for sanction of subsidy for market promotion of Tender coconut water (Cocojal)-Jain Agro Food Products (P), Ltd,Bangalore.	2003-04	11.250	5.600	5.339
16	"Participation in Aahar 2004 exhibition, at New Delhi, from 11th to 15th March 2004.". Coconut Development Board	2003-04	20.000	20.000	15.012
17	Farm level processing and value addition-modernization of coconut processing by the introduction of improved copra dryers/other processing machineries/equipments-CDB,Kochi	2004-05	25.000	25.000	10.888
18	Proposal for Participation in India International Trade Fair-2004 at New Delhi- CDB	2004-05	35.000	7.000	6.111
19	Participation in Aahar,2005 Exhibition-CDB	2004-05	6.000	6.000	4.648
20	Participation in Prithvi, 2005 International Exhibition Trivandrum by -CDB	2004-05	4.300	4.300	4.042
21	Market promotion of Elaneer concentrate through installation of 31 Kiosks at different places-Miracle Food Processing International Ltd.Perinthalmanna, Kerala.	2002-03	20.000	9.950	3.175
22	Project proposal for Market Promotion of Coconut Products- Coconut biscuits- Lapt Coconut Products, Thiruvambadi, Kozhikode.	2002-03	5.000	1.000	0.487
23	Market Promotion of Coconut oil Based Ayurvedic Products - Managing Director, Vasudeva Vilasam Herbal Remedies Pvt Ltd Fort, Thiruvanthapuram	2003-04	18.540	9.270	1.910
24	Proposal for Advertisement on Tender Coconut through various agencies submitted by CDB, Kochi	2003-04	61.080	36.115	36.115
25	Market Promotion Activities -M/s V.K.P.Industries,Main Road,Thrippunithura.	2003-04	4.450	2.250	1.400
26	"Proposal for producing a T.V Film in coconut products-for releasaing in different T.V Channels-in health care & current affairs programmes".P.P.Ahmed Kutty, Managing Director,Miracle Food Processors International Ltd.,Post Box No.73, Perinthalmanna	2003-04	7.550	2.500	2.500
27	"Project proposal for Market promotion of Coconut Products".M/s. Green Indus Group, Mathilakom, Thrissur	2003-04	10.600	1.500	1.500
28	"Modernization of coconut processing by introduction of Copra driers" - Department of Agriculture, Government of Tamilnadu	2004-05	27.000	6.750	6.750

29	Proposal for reimbursing the expenditure incurred for quality accreditation certificate of I S O 9004 : 2000 and H A C C P - M/s. Sakthi Coco products , Pollachi, Coimbatore	2004-05	0.840	0.420	0.420
30	Sponsoring of Indo-Pak Cricket series- Prasar Bharati(BCI), Hyderabad- by Coconut Development Board at a total cost of Rs.10,00,000/-	2004-05	10.000	10.000	9.348
31	Farm level processing and value addition- Modernization of Coconut processing by the introduction of improved Copra Dryers/other processing machineries/equipments' -for direct implementation by the Board under market promotional activities during the year 2005-06	2005-06	25.000	25.000	5.780
32	Project for participation in AAHAR -2006 at New Delhi ,8th to 12th March'2006	2005-06	15.000	9.918	9.918
33	Market promotion of tender fresh (minimally processed tender nut) M/s Health Magic,Bangalore	2005-06	8.100	3.350	3.350
34	Market promotion activities for coconut products- Shriram Coconut Products Ltd. Dindigul Road, Batlagundu.	2003-04	25.000	10.000	9.457
35	Project Proposal for Market Promotion - Proprietor, Kera Products, Kanjikode west, Palakkad, Kerala.	2003-04	26.500	10.000	7.875
36	Project proposal for carrying out Market Promotion Activities of coconut products- M/s.Karshaka Bandhu Agri-Tech (India) Ltd., Karshaka Bandhu Building, Kolathur P.O., Kasargod	2003-04	12.000	1.250	4.008
37	Market promotion for "Benco" brand coconut products - by Benzy Food & Beverages P. Ltd.	2004-05	38.450	10.000	8.827
38	Project for participation in the Agri food exhibition at Johannesberg under market promotion – Coconut Development board	2006-07	4.895	4.895	5.268
39	Farm level processing and value addition- Modernization of Coconut processing by the introduction of improved Copra Dryers/other processing machineries/equipments'-by CDB	2006-07	42.000	42.000	14.750
40	Project for participation in the food festival in Sharjah under market promotion – Coconut Development board	2006-07	8.000	8.000	6.328
41	Project for Market Promotion(Hoardings)- Coconut Development Board	2006-07	200.000	200.000	178.190
42	Market Promotional Campaigns through All India Radio for the year 2006-07- CDB	2006-07	28.153	28.153	28.328



43	Proposal for organizing 'Coconut Festival' by the Coconut Development Board during May 2007	2006-07	21.000	21.000	30.379
44	Miscellaneous expenditure incurred by the Board towards market promotion -cost of mobile tender coconut machine,	2006-07			0.263
45	Propagation of improved modern copra dryers under TMOC for primary processing of coconut – Coconut Development Board.	2007-08	15.000	15.000	9.954
46	Market Promotion of Nutri-Ko VCO - Kerala State Rubber Co-operative Ltd., (Rubco), Kannur	2007-08	100.000	25.000	25.000
47	Project for carrying out market promotion activities for coconut products - Secretary, Kerala Malanad Karshaka Producer Co-operative Marketing Society Ltd., Thiruvambady.	2002-03	21.150	12.900	6.637
48	Project for Market Promotion activities for coconut products submitted by Managing Director, KERAFED, Thiruvananthapuram.	2002-03	35.000	25.000	21.235
49	Project for financial assistance for marketing of branded coconut oil Kerajam- Kerala Cooperative Marketing Federation (MARKETFED)	2005-06	19.000	18.000	5.328
50	Project proposal to promote and to generate consumer awareness for the 'Benfresh' brand Packed Tender Coconut Water-West Bengal Awadhoot Agro (p) Ltd.(Kolkata	2006-07	33.525	10.000	10.000
51	Project proposal on coconut push cart- Fruit hut beverages Pvt. Ltd, Vijayanagar, Hyderabad	2006-07	13.400	3.900	3.811
52	Market Promotional Programme - M/s.Fly Do Exim India, Room No.XIII/TMC/242/V10 & VII, Star Complex, Court Road, Taliparamba, Kannur, Kerala	2006-07	22.000	7.125	6.675
53	Setting up a unit for the production and Marketing of Snow Ball Tender Coconut at Munoorppally, Angamaly by KDV Agencies, Kalluprambil, Ezhattumukhom, Munoorppally, Angamaly	2007-08			0.313
54	Proposal for participation in Foreign Exhibitions - India Show, 2008 Muscat	2007-08	6.156	6.156	5.197
55	Marketing of Tender Coconut Water using Push Cart in Vasai, Dist. Thane – Chairman, Agriculture Produce Market Committee (APMC) Co-operative Building, 2nd floor, Bhabola Naka, Sandor, District Thane, Maharashtra	2007-08	2.25	1.13	1.13

56	Market Promotion of 'AMRUTHAM' Brand Coconut water based vinegar.- M/s. Jaimatha Estates, Monippally P.O. Kottayam Dist, Kerala.	2008-09	6.50	3.25	3.25
57	Market Promotional Programme- Monson Extractions	2008-09		10.00	10.00
58	Market Promotional Programme for 'Sneha' Brand Coconut Products - M/s.Chettoor Agro Products, Peringazha, Perumballoor P.O., Muvattupzuha	2008-09	7.00	3.50	3.50
59	Farm Level Processing and Value addition for Coconut – Introduction of Modern Copra Dryers.	2008-09	5.26	5.26	5.26
60	Participation in major National and International Exhibitions by the Board	2008-09	9.31	9.31	9.31
61	Market Promotional Programme (Dapoli-Mandangad Shilkshan Mandal) - M/s. SGK Industries, Hyderabad	2008-09	2.50	1.25	1.25
62	Market Promotional Programme for promoting KERAL Brand coconut vinegar- M/s. Green Indus Group, Mathilakam, Thrissur	2010-11	18.60	2.36	2.36
63	57 <sup>th</sup> summer fancy food show 2011 held at Walter-E Washington Convention center, Washington DC, USA from 10th to 12th July 2011 - Final settlement of TA Claim	2011-12		8.450	8.652
64	M/s. Kotassery Co-operative Marketing Society, Kasaragod	2011-12	24.5	24.500	24.500
65	Shri Ajay Goyal, Lakshmi Nagar, New Delhi(Push Cart)	2011-12	0.53	0.530	0.266