Proforma -1

Validation of Developed/ Released/ Adopted Production Technologies/ Innovations

1. Title of the Sub-project: : A Value Chain on Cashew for Domestic and Export market
2. Name of CPI/CCPI: Dr. V. P. Potty
3. Title of the Technology: **Reinforcement of polymerized residol with fibers like cotton, coconut husk fiber, jute fiber**
4. Information on Existing farming Systems, Practices, Productivity Levels and Income in the Target Area: NA
5. Key Intervention(s) Introduced: A novel and cheaper liquid crystalline polyester has been synthesized from residol and its reinforcement was done with fibers like cotton, coconut husk fiber, jute fiber that can substitute for polymer fibres and films in specialty applications.
6. Results

   Status of Dissemination/ Commercialization; and, Extent of Adoption and Success, If Applicable; with Supporting Data (with Tables and Photographs as Annexure): Technology is under progression

   1) ***Reinforcement of polymerized residol with fibers like cotton, coconut husk fiber, jute fiber***
      a) With cotton fiber
      b) With coconut husk fiber
      c) With jute fiber

2) ***Maudling the polymerized residol as well as fiber reinforced residol in various products***

Fig 1. Product from cotton fiber reinforced

Fig 2. Product from coconut fiber reinforced

Fig 3. Product from jute fiber reinforced

7. Brief Description of Technology for Release:

   Polymerization of residol was carried out in the presence of polymerizing agents like Urea and formaldehyde at various proportions and their characteristics were studied. It provides resistance to moisture and weathering, good green strength and surface finish to moulded articles. Different combinations were tried to select the best ones. A novel and cheaper liquid crystalline polyester has been synthesised that can substitute for polymer fibres and films in specialty applications

8. Expected Outcome/Impact of the Technology:

   (8.1) Expected Increase in Area, Production and Net Income

   Various industries

   (8.2) Others

9. Whether findings have been published? If so, give the citation and enclose copy of the publication. No

Proforma -1

Validation of Developed/ Released/ Adopted Production Technologies/ Innovations

10. Title of the Sub-project: : A Value Chain on Cashew for Domestic and Export market

    Name of CPI/CCPI: Dr. V. P. Potty

11. Title of the Technology: **Development of mechanical peeler**

12. Information on Existing farming Systems, Practices, Productivity Levels and Income in the Target Area: NA
13. Key Intervention(s) Introduced: simplest and cheap cashew peeler has been developed using blower and brush
14. Results

    Status of Dissemination/ Commercialization; and, Extent of Adoption and Success, If Applicable; with Supporting Data (with Tables and Photographs as Annexure): Technology is under progression

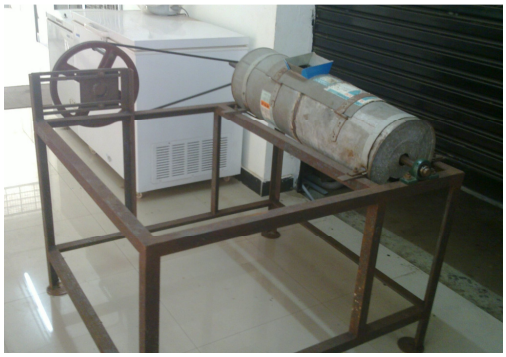

Fig.1. Peeling machine developed by CEPCI

15. Brief Description of Technology for Release:

In cashew processing industries, peeling of cashew is done manually. In market the some of the peeling machine have been developed but it cost around 7-13 lakhs. So to reduce the cost, a simplest and cheaper peeler for cashew production has been manufactured using air blower and a brush. It will cost only below Rs.20,000/. But the technology is under progression and not installed in any of the cashew production industry.

16. Expected Outcome/Impact of the Technology:

    (8.1) Expected Increase in Area, Production and Net Income

Cashew processing industries

(8.2) Others

17. Whether findings have been published? If so, give the citation and enclose copy of the publication: No

Proforma -1

Validation of Developed/ Released/ Adopted Production Technologies/ Innovations

1. Title of the Sub-project: : A Value Chain on Cashew for Domestic and Export market

   Name of CPI/CCPI: Dr. V. P. Potty

2. Title of the Technology: **Polymerised compound from residol**
3. Information on Existing farming Systems, Practices, Productivity Levels and Income in the Target Area: NA
4. Key Intervention(s) Introduced: A novel and cheaper liquid crystalline polyester has been synthesised that can substitute for polymer fibres and films in specialty applications.
5. Results

   Status of Dissemination/ Commercialization; and, Extent of Adoption and Success, If Applicable; with Supporting Data (with Tables and Photographs as Annexure): Technology is under progression

Fig 1. Product from polymerized residol

6. Brief Description of Technology for Release:

   Polymerization of residol was carried out in the presence of polymerizing agents like Urea and formaldehyde at various proportions and their characteristics were studied. It provides resistance to moisture and weathering, good green strength and surface finish to moulded articles. Different combinations were tried to select the best ones. A novel and cheaper liquid crystalline polyester has been synthesised that can substitute for polymer fibres and films in specialty applications

7. Expected Outcome/Impact of the Technology:

   (8.1) Expected Increase in Area, Production and Net Income

   Various industries

   (8.2) Others

8. Whether findings have been published? If so, give the citation and enclose copy of the publication. No

Proforma -1

Validation of Developed/ Released/ Adopted Production Technologies/ Innovations

1. Title of the Sub-project: : A Value Chain on Cashew for Domestic and Export market

   Name of CPI/CCPI: Dr. V. P. Potty

2. Title of the Technology: **Bioremediation Of cashew nut shell liquid (CNSL)**
3. Information on Existing farming Systems, Practices, Productivity Levels and Income in the Target Area: NA
4. Key Intervention(s) Introduced: Microbial bioremediation and methanogenesis of CNSL has been standardized to reduce BOD and COD value

5. Results

   Status of Dissemination/ Commercialization; and, Extent of Adoption and Success, If Applicable; with Supporting Data (with Tables and Photographs as Annexure): Technology is under progression

6. Brief Description of Technology for Release:

Bioremediaton and Methanogenesis studies being carried out with Cashew Nut Shell Liquid (CNSL) and Microbial flora cultured from there. Six different bacteria *Pseudomonas pseudoalcaligenes*, *Enterobacter sakazakii, Sphingomonas paucimobilis, Pseudomonas stutzeri, Enterobacter cloacae, Escherichia coli* have been cultured and

identified. Methanogenesis analysis of CNSL has been produced methane gas and it was analysed with GC-MS for the confirmation as methane gas.

7. Expected Outcome/Impact of the Technology:

   (8.1) Expected Increase in Area, Production and Net Income

   Cashew processing industries

   (8.2) Others:

8. Whether findings have been published? If so, give the citation and enclose copy of the publication. No

Proforma -1

Validation of Developed/ Released/ Adopted Production Technologies/ Innovations

1. Title of the Sub-project: : A Value Chain on Cashew for Domestic and Export market

   Name of CPI/CCPI: Dr. V. P. Potty

2. Title of the Technology: **Development of storage management protocols for raw cashew nut**
3. Information on Existing farming Systems, Practices, Productivity Levels and Income in the Target Area: NA
4. Key Intervention(s) Introduced: Different parameters was optimized for the storage of raw cashew nut
5. Results Status of Dissemination/ Commercialization; and, Extent of Adoption and Success, If Applicable; with Supporting Data (with Tables and Photographs as Annexure):

Table 1. Storage management protocol developed from analytical and survey of processing units

No	Characters	Standards developed for storage shed	Basis
1	Humidity of the storage shed	Humidity should be around 70%. In places where outside humidity is very items enhancing humidity should be avoided inside the storage shed.	Moisture isotherm studies conducted under NAIP
2	Ventilation	Maximum cross ventilation should be provided so as to reduce humidity and temperature.	Baseline survey studies conducted under NAIP
3	Temperature	Temperature inside the storage shed to be maintained at 37^0C so as to keep the raw cashew nut with out any chemical change	Moisture isotherm studies conducted under NAIP
4	Aeration	Proper aeration to be provided so as to reduce humidity inside the storage place	Baseline survey studies conducted under NAIP
5	Leak proof	The storage shed should be free from any leaks .During rainy	Baseline survey

		season the raw nuts gets wet and starts degradation of quality	studies conducted under NAIP
6	Waste storing place	The storage place for the waste like cashew shell and testa should be as far away from the raw nut storage place. The waste storage place become the breeding ground for many of storage pests particularly *Tribolium castaneum*	Baseline survey studies conducted under NAIP
7	In and around storage shed	The spills over of the CNSL in and around create contamination of surroundings. Application of microbial techniques reduces the contamination and creates green atmosphere	Biodegradation studies conducted under NAIP
8	Hygiene condition to be followed	Personal and environmental hygiene should strictly adhered	Baseline survey studies conducted under NAIP
9	Stacking		Baseline survey studies conducted under NAIP
10	Use of pallets	Chemically untreated wooden pallets or metallic pallets of 2.5 to 3" height should be used so as to give aeration around the sacs.	Baseline survey studies conducted under NAIP
11	Stacking of bags away from wall	Stacking should be 2" away from the wall	Baseline survey studies conducted under NAIP
12	Providing space between stacks	A minimum of 1.5" space should be provided	Baseline survey studies conducted under NAIP
13	Duration of raw cashew nut stocking under go down condition	3months preferred but maximum 4 months	Storage and biochemical studies conducted under NAIP
14	Moisture content of store cashew nuts	Moisture content of the raw cashew nut should be at 8% .The studies showed that as the moisture content increases the PV is found be increased leading to the formation of rancid kernels.	Moisture isotherm studies conducted under NAIP
15	Pre processing treatment of raw cashew nuts	Do not use any chemicals for pre processing treatment of raw cashew nuts. Preprocessing treatment with antioxidants like BHA have significantly reduced formation of rejects but on the long run this may be giving problems like formation of chlorophenol, anisols etc in the cashew kernels	Biochemical studies conducted under NAIP

6. Brief Description of Technology for Release:

In order to improve the shelf life of raw cashew nuts, storage management studies were conducted. Moisture sorption isotherm experiments on raw cashew nuts were completed and the analysis results were assessed to increase shelf life during storage condition as relative humidity and temperature are very important and decisive factors .

The moisture, carbohydrates, protein content and fat were found to be in the suitable range in the case of harvested raw cashew nut and during its shelf life .

Biochemical quality assessment of raw cashew nuts stored in gunny bags under godown conditions of cashew industry were also studied up to 8 months. It was found that only the moisture is the major active factor deciding the extent of damage to fat component leading to rancidity. The peroxide value is changing as the duration of storage increases as well as increased moisture content. Other chemical parameters remains unchanged.

Regarding the insect pest damage particularly storage pest –*Tribolium castaneum* gama ray irradiation found to be very effective. It is observed that no chemical parameters are being affected by the gama radiation even after storage for long period of treatment and the technology can be adopted for warding off the storage pest damage.

7. Expected Outcome/Impact of the Technology:

   (8.1) Expected Increase in Area, Production and Net Income

   Cashew processing industries

   (8.2) Others:

6. Whether findings have been published? If so, give the citation and enclose copy of the publication. No

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Validation of Developed/ Released/ Adopted Production Technologies/ Innovations

1. Title of the Sub-project: : A Value Chain on Cashew for Domestic and Export market

   Name of CPI/CCPI: Dr. V. P. Potty

2. Title of the Technology: **Polymerised compound from CNSL**
3. Information on Existing farming Systems, Practices, Productivity Levels and Income in the Target Area: NA
4. Key Intervention(s) Introduced: A novel and cheaper liquid crystalline polyester has been synthesised that can substitute for polymer fibres and films in specialty applications.
5. Results

   Status of Dissemination/ Commercialization; and, Extent of Adoption and Success, If Applicable; with Supporting Data (with Tables and Photographs as Annexure): Technology is under progression

Fig 1. Product from polymerized CNSL

6. Brief Description of Technology for Release:

   Polymerization of CNSL was carried out in the presence of polymerizing agents like Urea and formaldehyde at various proportions and their characteristics were studied. It provides resistance to moisture and weathering, good green strength and surface finish to moulded articles. Different combinations were tried to select the best ones. A novel and cheaper liquid crystalline polyester has been synthesised that can substitute for polymer fibres and films in specialty applications

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   (8.1) Expected Increase in Area, Production and Net Income

   Various industries

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