*EVALUATION STUDY SERIES : ORISSA R O : NO – 12*

## COMMODITY SPECIFIC STUDY

# CASHEW NUTS IN ORISSA

**NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT**
**ORISSA REGIONAL OFFICE**
**BHUBANESWAR**

**2006-07**

# Mission

***Promote sustainable and equitable agriculture and rural prosperity through effective credit support, related services, institution development and other innovative initiatives.***

# CONTENTS

# प्राक्कथन

भारत में काजू को मुख्यत: एक मृदा-संरक्षण फसल के रूप में लाया गया था । ध ीरे-धीरे भारत ने इसके व्यापारिक महत्व को समझा तथा काजू के सवसे बड़े उत्पादक के रूप में उभर कर आया । भारत काजू के अन्तर्राष्ट्रीय व्यापार में एक प्रमुख भूमिका निभाता है ।

देश के कुल काजू उत्पादक क्षेत्र तथा उत्पादन में लगभग 14% हिस्सेदेरी के साथ ओड़िशा देश की काजू अर्थव्यवस्था में एक महत्वपूर्ण स्थान रखता है । ग्रामीण भारत तथा आदिवासियों के लिए काजू क्षेत्र में आय एवं रोजगार सृजन की असीम संभावनाएं है । गरीब परिवारों में काजू के पौधों के वितरण द्वारा गरीबी में कमी लाने के लिए काजू-बागवानी को एक साधन के रूप में प्रयोग किया जाता रहा है ।

वर्तमान अध्ययन, कोरापुट जिले से संग्राहित प्राथमिक आंकड़ो के आधार पर ओड़िशा में काजू के उत्पादन, प्रसंस्करण तथा विपणन के विभिन्न पहलुओं से सम्बधित विषयों की गहन विवेचना करता है । यह अध्ययन राज्य के काजू क्षेत्र से सम्बधित रूढ़ियों तथा अक्षमताओं के निवारण हेतु सुझाव देने का भी प्रयास करता है ।

काजू की खेती एक लाभकारी वागवानी फसल है जिसमें काजू बागवानी के परम्परागत तथा कलमी प्रजातियों से प्राप्त निवल वार्षिक आय क्रमश: रू.11750/- और रू.33325/- प्रति हेक्टेअर है । ओड़िशा के ज्यादातर बागानों में काजूकी अज्ञात किस्मों की पौध हैं । ओड़िशा में कलमी किस्मों का व्यापारिक वृक्षारोपण अभी भी प्रारंभिक अवस्था में है । काजू प्रसंस्करण एक अन्य प्रमुख कार्यकलाप है जो कि पर्याप्त मात्रा में आय और रोजगार सृजित करता है । अध्ययन से यह अनुमान लगाया गया कि काजू की एक प्रसंस्करण यूनिट में प्रतिदिन औसतन 389 लोग कार्य करते है तथा एक श्रमिक एक दिन में 50 रूपए से 70 रूपए के बीच कमाई कर लेता है । एक काजू प्रसंस्करण यूनिट की औसत वार्षिक निवल आय लगभग रू.39.79 लाख थी । कोरापुट जिले में जयपुर, काजू प्रसंस्करण के लिए दक्षिण ओड़िशा का एक प्रमुख व्यापारिक केन्द्र् बन गया है ।

हमारे देश के कृषि क्षेत्र में विदेशी-मुद्रा अर्जित करने में काजू का एक महत्वपूर्ण स्थान है । ऐसा अनुमान है कि ओड़िशा अगले पाँच वर्षो अर्थात 2008-13 में

लगभग 300 करोड़ रूपए के काजू निर्यात का सामर्थ्य रखता है । ओड़िशा जो कि प्रतिवर्ष लगभग 60 हजार टन कच्चे काजू का उत्पादन करता है उसे बढ़ाकर दोगुने से भी ज्यादा उत्पादित करने की समर्थता रखता है । आगामी वर्षो में गंजाम, खोर्धा और कोरापुट जिले एक प्रमुख काजू केन्द्र बनने की संभाव्यता रखते हैं ।

काजू से सबसे बड़ा लाभ यह है कि यह फसल हजारों ग्रामीण तथा गरीब आदिवासियों को शिथिल कृषि मौसम के दौरान रोजगार तथा आय के अवसर उपलब्ध कराता है । तथापि, ओड़िशा में काजू क्षेत्र ज्यादातर असंगठित प्रकृति के हैं । बागानों का एक बड़ा हिस्सा सार्वजनिक क्षेत्र के पास है । वर्तमान बागानों में ज्यादातर अपने आर्थिक-जीवन को पार कर चुकें हैं अथवा समाप्ति के कगार पर हैं । बृक्षारोपण हेतु कदाचित ही कोई प्रयास किया जाता है । इस क्षेत्र में आधार भूत सुविधाओं यथा पौधशाला तथा विस्तार सेवाओं के विकास हेतु प्रयत्न करके इन में उत्पदकों को काजू को एक व्यापारिक फसल के रूप में अपनाने के लिए तैयार कर सकते हैं । बहुधा फार्मगेट लागत तथा प्रसंस्करण कर्ताओं द्वारा कच्चे माल हेतु भुगतान की जाने वाली लागत में काफी अन्तराल होता हैं । हम काजू के उचित मूल्य निर्धारण हेतु कानून बनाकर इस की कीमतों नियत्रित कर सकते हैं ।

प्रसंस्करण कर्ताओं कि बीच 'कैश्यू क्लस्टर्स' की स्थापना करने से बाजार संयोजन का विस्तार गिरी की गुणवत्ता में सुधार तथा 'ओड़िशा कैश्यू' नामक ब्रॉंड को विकसित करने में सहायता मिलेगी । क्लस्टर दृष्टिकोण, अन्य अनुषंगी इकाईयों जैसे नट शेल लिक्विड दोहन यूनिट तथा काजू सेब से जैम व आचार उत्पादित करने वाली इकाईयों की स्थापना को प्रोत्साहित करेगा ।

मैं आशा करता हूँ कि यह रिपोर्ट ओड़िशा राज्य में काजू क्षेत्र के विकास में लगे सभी सम्बधित लोगों के लिए उपयोगी होगी ।

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## FOREWORD

Cashew nut was brought to India primarily as a soil conservation crop. Slowly India realized the commercial relevance of the nut and emerged as the largest producer of cashew. India plays a major role in the international trade on cashew nuts and kernels. Orissa holds a strong position in the cashew economy of the country by accounting for nearly 14 per cent of the area as well as production of cashew nuts in the country. The cashew sector has immense potential for income and employment generation in rural and tribal India. Cashew plantations have been used an instrument to reduce poverty by distributing cashew plantations among the poor households.

The present study makes an in depth analysis of the issues relating to the production, processing and marketing aspects of the cashew nuts in Orissa with reference to the primary data collected from Koraput district. It also attempts to put forth suggestions to overcome the rigidities and inefficiencies associated with the cashew sector in the state.

Cashew cultivation is a viable plantation crop with net annual income of Rs.11,750/- and Rs.33,325/- per ha. from the traditional and grafted varieties of cashew plantation respectively. In Orissa most of the plantations are of seedling origin from unknown varieties. Commercial plantation of graft varieties is still at a nascent stage in Orissa. Cashew processing is another prime activity that generates ample income and employment. The study estimated that one cashew processing unit employs on an average 389 people everyday and a labour earns between Rs.50 and Rs.70 in a day. The annual net income of a cashew processing unit was estimated to be around Rs.39.79 lakh on an average. Jaipur in Koraput district has turned out to be a commercial hub for the cashew processing in south Orissa.

Cashew is an important foreign exchange earner in the agriculture sector in our country. As per the estimates, Orissa has the potential to export cashew worth Rs.300 crore in the next five years i.e. 2008-2013. Orissa, which produces around 60 thousand tonnes of raw cashew nuts annually, has the potential to produce more than double this amount. Ganjam, Khurdha and Koraput districts have the potential to become major cashew hubs in the coming years.

The advantage of cashew is that the crop provides employment and income to thousands of rural and tribal poor particularly during the slack agriculture season. Cashew sector in Orissa however is more of unorganized in nature. A large share of the plantations is owned by the public sector. Maximum of the existing plantations have crossed or at the verge of the end of the economic life. Seldom any care is taken for the plantations. Efforts on development of infrastructure like nurseries, and extension services in the sector can pursue the cashew growers to accept the cashew as a commercial plantation crop. Unregulated raw cashew market allows a few traders take the control of the cashew sector. Often the gap between the farm gate price and the price the processors pay for the raw materials is pretty wide. A regulation of the cashew price can control the cashew price. Establishment of 'Cashew Clusters' among the processors would facilitate the expansion of market linkage, improvement of the quality of kernel, and development of a Brand Name of *Orissa Cashew*. Cluster approach will encourage the establishment of the other ancillary units like the Cashew

Nut Shell Liquid extracting units and units producing jam and pickle from the cashew apples.

I hope this report will be useful for all those concerned with the development of the cashew sector in the State of Orissa.

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# Credit List

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**Acknowledgement**

The study team gratefully acknowledges the support provided by the officials of Soil Conservation Department, Forest Department, Horticulture Department, Cashew Development Corporation, District Industries Centre, State Bank of India, Utkal Gramya Bank at Koraput and Jaipur. The team also acknowledges the cooperation of the cashew processors, cashew plant owners at Koraput. The cooperation and support provided by Shri. A K Padhi, DDM, Koraput District are highly acknowledged.

## ABBREVIATIONS

| | |
|---|---|
| APC | Agriculture Production Commission |
| APICOL | Agriculture Promotion and Investment Corporation |
| BPL | Below Poverty Line |
| CNSL | Cashew Nut Shell Liquid |
| DPAP | Drought Prone Area Programme |
| ESI | Employees' State Insurance |
| ICAR | Indian Council of Agricultural Research |
| ICDP | Integrated Cashew Development Programme |
| INM | Integrated Nutrient Management |
| IPM | Integrated Pest Management |
| IRR | Internal Rate of Return |
| LWP | Large White Pieces |
| MT | Metric Ton |
| NHM | National Horticulture Mission |
| NLG | Next Lower Grade |
| NLSG | Next Lower Size Grade |
| OFDC | Orissa Forest Development Corporation |
| OHDS | Orissa Horticulture Development Society |
| OSCDC | Orissa State Cashew Development Corporation |
| OUAT | Orissa University of Agriculture and Technology |
| PF | Provident Fund |
| Qu. / Qu. | Quintal |
| SCD | Soil Conservation Department |
| SWP | Small White Pieces |
| VAT | Value Added Tax |
| WW | White Wholes |

## BASIC DATA SHEET

| Sl. No. | Particulars | Details |
|---|---|---|
| 1 | Name of the District | Koraput |
| 2 | Reference Year | 2005-06 |
| **3** | **Economics of Cashew Plantation - (per hectare) Traditional Varieties** | |
| A | Cost of Plantation (for first three years) | Rs.9,195 |
| B | Stabilised Gross Income ($14^{th}$ year onwards) | Rs.13,500 |
| C | Stabilised Net Income per annum (from $14^{th}$ – $30^{th}$ year) | Rs.11,750 |
| D | FRR | 23 % |
| **4** | **Economics of Cashew Plantation - (per hectare) Improved Varieties** | |
| A | Cost of Plantation (for first three years) | Rs.19,515 |
| B | Stabilised Gross Income ($10^{th}$ year onwards) | Rs.37,800 |
| C | Stabilised Net Income (from $10^{th}$-$25^{th}$ year) | Rs.33,325 |
| D | FRR | 38 % |
| **5** | **Economics of Cashew Processing** | |
| A | Investment Cost | Rs.54.92 lakh |
| B | Operating Cost (per annum) | Rs.386.15 lakh |
| C | Sales Proceeds from Cashew kernel (per annum) | Rs.416.79 lakh |
| D | Sales Proceeds from Cashew Nut Shell (per annum) | Rs.9.16 lakh |
| E | Total Sales Proceeds (per annum) | Rs.425.95 lakh |
| F | Net Income (per annum) | Rs.39.79 lakh |
| G | FRR | > 147 % |
| **7** | **Economics of Cashew Nut Shell Liquid Extraction Unit** | |
| A | Investment Cost | Rs. 95.00 lakh |
| B | Operating Cost | Rs. 184.00 lakh |
| C | Gross Income (per annum) | Rs. 302.64 lakh |
| D | Net Income (per annum) | Rs. 118.64 lakh |
| E | FRR | 137 % |

# निष्पादन सारांश

काजू एक बहु-उपयोगी काष्ठफल है । इसकी शुरूआत गरीब की फसल से हेती है तो अन्त सम्पूर्ण विश्व में अमीर लोगों के प्रिय नाश्तें से होता है । विश्व के लगभग 28 देशों मे काजू का उत्पादन किया जाता है । ये देश एशिआ, आफ्रीका तथा लैटिन अमेरिका के विभिन्न क्षेत्रों में फैले हुए हैं । काजू का बैशिक्क औसतन उत्पादन लगभग 500 किग्रा प्रति हेक्टेयर है । कुछ देशें को विशिष्ट स्थानीय कारणों से इस के अधिक उत्पादन में सुगमता होती है । भारत में इसका व्यापक सामाजिक और आर्थिक महत्व है, क्योंकि इस में 0.3 मिलियन लोग संलग्न है तथा काजू प्रसंस्करण देश में अन्य 0.3 मिलियन लोगों को रोजगार उपलब्ध कराता है । इस क्षेत्र के बारे में एक सुखद तथ्य यह है कि यह मंद कृषि मौसम के दौरान रोजगार प्रदान करता है जिसमें अधिकतर आर्थिक रूपसे पिछड़े ग्रामीण व आदिवासी क्षेत्रों की महिलाएं हैं ।

भारत विश्व में कच्चें काजू का सबसे बड़ा उत्पादक है जो कि विश्व में कुल काजू उत्पादन का एक तिहाई से भी अधिक उत्पादन करता है । इसके अलावा, भारत विश्व का सबसे बड़ा कच्चे काजू उत्पादक होने के साथ ही यह प्रसंस्कृत काजू गिरी का सबसे बड़ा निर्यातक भी है । इस क्षेत्र को वर्ष 2005-06 में राष्ट्रीय बागवानी मिशन के आरंभ होने के पश्चात् अतिरिक्त बल मिला जिसमें आगामी 7 वर्षो में बागवानी फसलों के उत्पादन को बढ़ाकर दोगुना करने का लक्ष्य है । राष्ट्रीय बागवानी मिशन में काजू को एक संभाव्य फसल के रूप में अभिनिर्धारित किया गया है ।

भारत में काजू बागान, वर्षो 2005-06 में 855 हेक्टेयर भूमि पर स्थित थे । उस वर्ष के दौरान काजू का कुल उत्पादन 573 हजार मि.टन था और प्रति हेक्टेयर औसतन उत्पादकता 815 किग्रा थी । देश के कुल काजू उत्पादक भू-भाग तथा उत्पादन में भारत के सात तटवर्ती राज्यों, यथा-केरल, आन्ध्रप्रदेश, गोवा, महाराष्ट्र, कर्नाटक, तमीलनाडु एवं ओड़िशा का हिस्सा 95 प्रतिशत है ।

वर्ष 2005-06 के दौरान 120 हजार हेक्टेयर क्षेत्र एवं 78 हजार मि.टन उत्पादन के साथ ओड़िशा का हिस्सा देश के कुल काजू उत्पादन क्षेत्र तथा उत्पादन में 14 प्रतिशत था । राज्य में काजू की प्रति हेक्टेयर पैदावार 860 किग्रा थी जो कि इसी दौरान 815 किग्रा प्रति हेक्टेयर अखिल भारतीय स्तर से उँची थी ।

### अध्ययन का उदेश्य

पण्य विशिष्ट अध्ययन का विस्तृत उद्येश्य ओड़िशा में काजू के उत्पादन दशाओंकी प्रकृति, रूढ़ियों और इससे जुड़ी अक्षमताओं, प्रसंस्करण, विपणन, मूल्य व्यवहार और अन्य सम्बन्धित पहलुओं की गहन विवेचना करना था तथा विभिन्न रूढ़ियो (अवरोधों) को दूर करने हेतु सुझााव देना था ।

### नमूना चयन

अध्ययन के निष्कर्ष ओड़िशा के काजू क्षेत्र से एकत्रित किए गए प्राथमिक तथा समर्थक आंकड़ों की विवेचना पर आधारित हैं । प्राथमिक आंकड़े एक पूर्व-निर्धारित प्रश्नावली के माध्यम से काजू कृषकों, व्यापारियों, काजू बागानों के पट्टाधारक, काजू प्रसंस्ककरण कर्ताओं, प्रसंस्करण यूनिट में कार्य करने वाले श्रमिकों व थोक विक्रेताओं और काजू आयातकों से प्राप्त सूचनाओं से एकत्रित किए गए थे । प्राथमिक आंकड़े ओड़िशा के कोरापुट जिले में फील्डसर्वे अन्तग्रत एकत्रित किए गए थे । कोरापुट का चयन, राज्य में काजू के उत्पादन तथा प्रसंस्करण में इसके आधिपत्य के कारण किया गया था । समर्थक आंकड़े हार्टीकल्चर (बागबानी) विभाग, वन विभाग, ओड़िशा वन्य विकास निगम, ओड़िशा राज्य काजू विकास निगम, भूमि संरक्षण विभाग, भारतीय स्टेट बैंक, उत्कल ग्राम्य बैंक, जिला उद्योग केन्द्र इत्यादि से एकत्रित किए गए थें । अध्ययन में वर्ष 2005-06 को संदर्भ हेतु लिया गया था । निष्कर्ष प्रतिपादन तथा आंकडों के विश्लेषण हेतु सरल सांरिव्यकीय तकनीकी जैसे-औसत, प्रतिशत विस्तार, विकास इन्डि़सेस और ग्रौफिक प्रजेन्टेशन का प्रयोग किया गया था ।

## अध्ययन के प्रमुख निष्कर्ष

### काजू बागवानी

- वर्ष 1954-55 में भूमि संरक्षण विभाग द्वारा ओड़िशा में एक सहायक फसल के रूप में काजू बागवानी का आरम्भ किया गया था । कालांतर में राज्य में राज्य वन विभाग तथा ओड़िशा वन विकास निगम अपशीण वन-भूमि के पुनर्वास हेतु काजू-बागवान में शमिल हो गए थे । बाणिज्यिक आधार पर काजू के विकास हेतु वर्ष 1979-80 में ओड़िशा काजू विकास निगम की स्थापना राज्य के काजू फसल के इतिहास की एक क्रान्तिकारी घटना थी । आज ओड़िशा में तीन प्रकार के काजू उत्पादक है यथा सरकारी विभाग जैसे भूमि संरक्षण विभाग, वन विभाग और उद्यानिकी विभाग, कारपोरेट संस्थाए जैसे उेड़िशा राज्य

काजू विकास निगम, ओड़िशा वन विकास निगम तथा निजी कृषक । राज्य में काजू बागानों का एक बड़ा हिस्सा काजू विकास निगम के पास है ।

राज्य के काजू क्षेत्र में अज्ञात किस्मों की पौधो द्वारा वृक्षरोपण की प्रधानता है । इस वृक्षरोपण की विशेषता यह है कि इसमें उँची जेस्टेशन पीरियड़ (पक्वनावधि) (6-7 वर्ष), नट्स का छोटा आकार (4-6 ग्राम), तथा निम्न उत्पादकता (12-14 वर्ष के सर्वोच्च उत्पादक स्तर 3-4 कि.ग्रा.) होति है । जब कि उन्नत किस्म के कल्मी पौधों के वृक्षारोपण से उत्पादन 4 वर्ष में ही प्रारंभ हो जाता है, 10-12 वर्ष आयु होने तक प्रति वृक्ष उत्पादन 6-8 कि.ग्रा. हो जाता है तथा नट्स का आकार बड़ा (6-8 ग्राम) होता है।

- काजू बागानों के परम्परागत अज्ञात किस्मों से प्रति हेक्टेयर अनुमानित वार्षिक आय 11750 रूपए है । भूमि संरक्षण विभाग ने गरीव आदिवासियों को गरीबी रेखा से उपर लाने हेतु प्रति परिवार लगभग दो एकड़ काजू बागानों का वितरण किया है । काजू की उन्नत किस्मों के कल्मी बागान से प्रति हेक्टेयर 33325 रूपए की वार्षिक आय हो सकती है । इस लाभ के वावजूद राज्य में कदाचित ही उन्नत किस्मों का प्रयोग किया जाता है । इसका कारण यह है कि रज्य में अच्छी गुणवत्ता वालें पौधों की पर्याप्त मात्रा में उपलब्धता का सर्वथा अभाव है ।

- काजू नट वित्तीय रूप से एक लाभकारी बागावानी फसल है । परम्परागत पद्धति से वृक्षारोपण करने के मामले में वित्तीय प्रतिफल दर 23 प्रतिशत थी जबकि यह दर उन्नत/कलमी पद्धति के मामले में 38 प्रतिशत थी । यह तथ्य स्पष्ट रूप से कलमी किस्मों की लाभकारिता को इंगित करता है । कलमी पौध की अपर्याप्त आपूर्ति के कारण उन्नत किस्मों का प्रयोग धीमी गति से बढ़ रहा है ।

- काजू की कीमतों पर अधिकतर बड़े व्यापारियों का नियंत्रण है जो कि हार्वेस्ट सीजन (तोड़ाई मौसम) में ही कच्चे काजू का संग्रहण तथा भण्डारण कर लेते हैं । मुश्किल से 10 प्रतिशत काजू ही सीधे किसानों से प्रसंस्करणकर्त्ताओं तक पहूँच पाता है । कच्चे काजू का औसत मूल्य 30 रूपए से 48 रूपए प्रति कि.ग्रा. के बीच होता है ।

## ।।. काजू प्रसंस्करण

- नमूना प्रसंस्करण यूनिट्स की निवेश लागत 54.92 लाख रूपए थी जिसमें भूमि, फैक्टरी व भवन तथा प्लान्ट व मशीन की लागत शमिल है ।

- नमूना प्रसंस्करण यूनिट्स प्रति वर्ष औसतन् 818 मि.टन काजू का प्रसंस्करण कर रही थी। ये इकाईयाँ एक वर्ष में लगभग 287 दिन काम कर रही थीं । सभी प्रसंस्करण इकाइयों ने काजू के प्रसंस्करण हेतु क्वथन पद्धति (व्वायलिंग मेथड) को अपनाये हैं ।

औसत परिचालन लागत 386.15 लाख रूपए थीं । इनमें कच्चें माल की लागत 70 प्रतिशत से अधिक, श्रम लागत (16 प्रतिशत), बिक्री कर (4 प्रतिशत) और अन्य सभी वस्तुओं की लागत 10 प्रतिशत थी ।

- गिरी की उपज, कच्चे काजू का 30 प्रतिशत थी । सर्वोत्कृष्ट काजूगिरी डब्लू डब्लू 180 थी जिसकी फर्म गेट पर बिक्री दर 270 रूपए प्रति कि ग्रा. थी । छोटे आकार व खंडित गिरी की कीमत कम थी । रोचक तथ्य यह है कि काजू फल के हर भाग को बेच दिया गया था तथा उनमें कुछ भी अवशिष्ट नहीं था ।

- प्रसंस्करण इकाइमों की कुल बिक्री आगम 425.95 लाख रूपए थी जिसमें काजू गिरी की बिक्री से प्राप्त आय (रू.416.79 लाख) तथा काजू फल के छिलरों की बिक्री से प्राप्त आय (रू.9.16 लाख) शामिल थे ।

इकाई की वित्तीय प्रतिफल दर (एफ.आर.आर) 147 प्रतिशत होने से यह वित्तीय रूप से व्यवहार्य थी ।

- ऐसा अनुमान लगाया गया कि काजू फल के एक बैग के प्रसंस्करण से 312 रूपए का निवल प्रतिफल प्राप्त होता है जो औसत प्रसंस्करण लागत का 8 प्रतिशत है । प्रतिदिन औसतन 35 बैग्स का प्रसंस्करण करके एक प्रसंस्करण इकाई 503 दिनों के परिचालन में लाभ अलाभ की स्थिति (ब्रेक-इवेन) में पहुँच सकती है ।

- काजू प्रसंस्करण उच्च श्रम प्रधान कार्य है क्यों कि ज्यादातर प्रसंस्करण कार्य हाथ से (मैन्युली) किया जाता है ।एक प्रसंस्करण इकाई में प्रतिदिन नियोजित श्रमिकों की औसत संख्या 389 थी ।

- मजदूरों को प्रतिदिन दी जाने वाली औसत मजदूरी 55 रूपए थी जो जिलें के कृषि कार्य में लगे श्रमिकों को दी जाने वाली मजदूरी से ज्यादा थी ।

उच्च मजदूरी, बेहतर कार्य-वातावरण, आने-जाने हेतु परिवहन तथा इन इकाईयों के नियमित परिचालन आदि कारण समाज के कमजोर तबके की महिला श्रमिकों को इन इकाईयों में कार्य करने के लिए प्रोत्साहित किया ।

- प्रसंस्कृत गिरी को 10 किग्रा के टिन में बंद करके उसे नागपूर, पूणे, दिल्ली, रायपुर, विशाखापट्नम इत्यादि शहरों के व्यापारियों में बेचा जाता है

## कैश्चूनट रोल लिक्विड (सी एन एस एल ऑयल) यूनिट

(काजूफल के खोल से तरल तेल बनान की इकाई)

एक मात्र सीएनएसएल यूनिट अपनी स्थापना के प्रथम वर्ष में प्रतिदिन 16 टन काजूखोल निकाल रही थी तथा प्रतिवर्ष लगभग 300 दिनों के लिए कार्य कर रही थी । खोल से तेल दोहन की दर 19.4 प्रतिशत थी । सीएनएसएल तेल यूनिट की निवेश लागत 95 लाख रूपए थी तथा औसत परिचालन लागत प्रतिवर्ष 109 लाख रूपए था । यूनिट का बिक्री आगम 141.41 लाख रूपए था जिसमें सी एन एस एल तेल तथा खली की बिक्री से प्राप्त आय क्रमश: रू.139.68 लाख व रू.1.73 लाख था । यूनिट की वित्तीय प्रतिफल दर 137 प्रतिशत होने से यह वित्तीय रूप से व्यवहार्य थी ।

## काजू विपणन

- कच्चे काजू तथा काजूगिरी दोनों के बाजार थोक बिक्रताओं द्वारा नियंत्रित है जो एक समन्वित तथा संगठित तरीके से आपूर्ति शृंखला के केन्द्र में बने रहते हैं । प्रसंस्करण इकाईयाँ कच्चें काजूफल के एक बड़े हिस्से का प्रापण व्यापारियों के माध्यम से करती है । इन व्यापारियों द्वारा किसानों को प्रसंस्करण इकाईयों को सीधी बिक्री की अनुमति नहीं दी जाती है । बड़े अथवा छोटे व्यापारियों द्वारा नियुक्त एजेन्ट कोरापुट तथा पड़ोसी जिले से काजूफल एकत्रित करते हैं । बड़े व्यापारी पड़ोसी राज्यों तथा छत्तीशगढ़, आन्ध्रप्रदेश, महाराष्ट्र, केरल और पांडिचेरी से भी काजू फल एकत्रित करते हैं । इसके अलावा वे अपने एजेन्टों के माध्यम से काजू का आयात भी करते हैं । कोरापुट जिलें में यद्यपि 10 व्यापारियों के पास आयात लाइसेंस था लेकिन उनमें से कोई भी सीधे आयात नहीं कर रहा था ।

- कोरापुट जिले की प्रसंस्करण इकाईयों की प्रसंस्करण क्षमता 20000 मि.टन प्रतिवर्ष तथा जिले का औसत उत्पादन 10000 मि.टन प्रतिवर्ष था । इससे पड़ोसी जिलों व अन्य राज्यों से काजू के प्रापण के साथ ही कच्चें काजू के आयात की असीम संभावनाएं है ।

- भारत बीस से भी अधिक देशों से कच्चे काजू का आयात करता है जिसमे लगभग 85 प्रतिशत की आपूर्ति आइवरी कोस्ट, गायना, विस्यू, मोजाम्बिक, तंजानिया, इण्डोनेशिया और बेनिन से होती है ।

## काजू क्षेत्र का बैंकिग पक्ष

काजू क्षंत्र बृक्षारोपण तथा प्रसंस्करण कार्यकलाप दानों में बैंक ऋण के अधिनियोजन के लिए व्यापक संभात्यताएं पेश करता है । कोरापुट जिले में वृक्षारोपण कायकलापों बैंक ऋण शून्य था । इसका कारण यह था कि काजू के पेड़ सरकारी विभागों की पहल पर लगाए गए थे तथा परिपक्व बागाने गरीब परिवारों में वितरित कर दिए गए थे । निजी बृक्षारोपण के अन्तर्गत किसान भूमि विकास तथा खाद, उर्वरकों आदि के प्रयोग के बिना ही पौद्यों का रोपण कर रहे थे । उनका यह मानना था कि काजू के पेडों को किसी रख रखाव की आवश्यकता नहीं होती ।

जबकि प्रसंकरण इकाईयों को यूनिट संस्थापित करने के साथ-साथ कच्चे काजू फल के प्रापण हेतु बड़ी मात्राा में निधियों की आवश्यकता होती है । वे बैंकों से सावधि ऋण के साथ-साथ कार्यशील पूँजी हेतु ऋण प्राप्त कर सकते हैं । बैंकों द्वारा नमूना काजू प्रसंस्करण इकाई को दियागया औसत सावधि ऋण रू.35.2 लाख था । प्रसंस्करण कर्त्ताओं ने न्यूनतम तीन महीने प्रसंस्करण के लिए पर्याप्त काजू का भंडार रखे थे जिससे कार्यशील पूँजी के लिए मांग बनी रहती थी । पुनश्च, प्रसंस्करण इकाई के आधुनिकी करण, विस्तार तथा पूर्ण क्षमता के उपयोग हेतु अतिरिक्त पूँजी की आवश्यकता होती है ।

## अवरोध

- ओड़िशा में केवल 10 नर्सरी (पौधशालाएं) हैं जिसमें से 7 निजी क्षेत्र तथा 3 सार्वजनिक क्षेत्र में हैं । उच्च गुणवत्ता वाले कलमी पौध उत्पादित करने वाली इन पौधखालाओं की उत्पादन क्षमता राज्य में वृक्षारोपण की मांग का केवल 10 प्रतिशत ही है । चूँकि कोरापुट जिले में कोई पौधशाला नहीं है इसलिए पाध तथा कलम सूदूरवर्ती राज्यों यथा गोवा तथा महाराष्ट्र से मंगाई जाती हैं । इससे पौधों की मृत्यु दर बढ़ जाता है जिसके कारण कोरापुट जिले के साथ-साथ राज्य में उन्नत कलमी काजू के वृक्षारोपण में अपेक्षित प्रगति नहीं हो पा रही है ।

- कोरापुट जिले में ज्यादातर बागान 30 वर्ष से भी अधिक पुराने तथा अज्ञात किस्मों के हैं । ऐसे बागानों की पौदावार अत्यन्त कम हैं । इन्हें भूमि संरक्षण विकास द्वारा विकसित कर गरीबों में वितरित कर दिये गए थे । आज इनके मालिक इन पुराने तथा अवक्षमित बागानों के जीणोद्धार के लिए खासे चिन्तित हैं ।

प्रसंस्करण इकाईयां निर्यात लाइसेंस मिलने के बावजूद अभी तक निर्यात बाजार पर कब्जा नहीं कर पाए हैं ।

- प्रसंस्करण इकाईयां 'पलासा कैश्यू' की तरह राष्ट्रीय एवं अतंराष्ट्रीय बाजार में एक सामान्य ब्रांड नाम को अभी तक विकसित नहीं कर सकी हैं । यद्यपि कि ऐसे ब्रांड नाम के विकास हेतु पर्याप्त अवसर हैं , तथापि प्रसंस्करण इकाईयाँ अपने नाम से बाजार में काजू गिरि की आपूर्ति करती हैं ।लेकिन इससे राष्ट्रीय तथा अन्तराश्ष्ट्रीय बाजार में मजबूत पकड़ हेतु एक ख्यातिलब्ध ब्रांड नहीं स्थापित हो पाता है ।

- कच्चें काजूफल के प्रसंस्करण, हेतु विशेषकर कार्यशील पूँजी के लिए ऋण की बहुत आवश्यकता थी ।

- जिले में कैश्यूनट तथा 'केश्यू एप्पल के उपोत्पादों का विदोहन नही किया जा रहा था ।कैश्यू एप्पल, जिसमें मूल्य संवर्धन तथा रोजगार आयोपार्जन की संभाव्यता होती है उसे विना किसी प्रसंस्करण के ही फेक दिया जाता है ।

- काजू ओड़िशा की एक बहुत ही संभाव्यतायुक्त फसल है । इसमें ग्रामीण गरीबों के लिए आयोपार्जन तथा रोजगार सृजन की असीम संभाव्यता है । इससे बंजरभूमि तथा सीमांत भूमि का उत्पादक तरीके से उपयोग किया जा सकता है । सबसे महत्वपूर्ण है की इससे मृदा संरक्षण, पारिस्थितिक तथा पर्यावरण संबंधी कई लाभ हैं । तथापि राज्य में इसका एक भी संरक्षक नहीं है । काजू विकास निगम कदाचित ही इस क्षेत्र के विकास के लिए कोई प्रयास करता हो क्यों कि उसके पास स्वयं की भूमि तथा निलामी एवं आयेपार्जन की योजनाएं हैं । भूमि संरक्षण विभाग, उद्यानिकी विभाग, वन विभाग, ओड़िशा वन विकास निगम, (जो कुछ अन्य कार्यक्रमों के अन्तर्गत इस फसल के वृक्षाारोपण का कार्य करते है), के बीच कोईं समन्वय नहीं है । अब समय आ गया है कि किसी एक विभाग द्वारा इस फसल का अनुप्रवर्तन, नियंत्रण, सम्बर्धन तथा आंकडों का अनुरक्षण किया जाये ।

## कार्यनीति

- राज्य के काजू क्षेत्र में सुधार लाने हेतु राष्ट्रीय बागवानी मिशन के अन्तर्गत कई प्रयास लिए जा रहें हैं और इन प्रयासों में कोरापूट जिले का स्थान सबसे आगे है । इसके अलावा इस क्षेत्र में सुधार लाने हेतु अन्य प्रयास भी किए जा सकते है ।

- राज्य और जिलों के लिए अनुशांसित काजू किस्मों के लिए पौधखालाओं की स्थापना करके काजू के क्षेत्रफल को बढ़ाया जा सकता है ।

- निर्यात बाजार की जरूरतों को पूरा करने के लिए निजी क्षेत्रों में छोटी पौधखालाओं की स्थापना की आवश्यकता है । जिले के इन पौधशालाओं में बैंक साध्य सेंभाव्यता अवश्य हानी चाहिए ।

- काजू कलम (ग्राफ्ट) जहाँ अखिल भारतीय स्तर पर कुल काजू क्षेत्र के 30 प्रतिशत भाग में रोपित किए गए हैं, वही ओड़िशा में यह अत्यन्त कम केवल 10 प्रतिशत ही है । काजू की उन्नत किस्मों के पौधों के क्षेत्रफल में वृद्धि से राज्य के काजू क्षेत्र का और भी तेजी से विकास होगा ।

- कोरापूट जिले में खेती भोग्य बंजरभूमि 71494 हेक्टेयर, अपक्षयित वन भूमि 9000 हेक्टेयर, झूम खेती और अन्य कृषि अधिक्रमण 19500 हेक्टेयर है । इन तीन श्रेणीयां के अन्तर्गत कुल 100000 हेक्टेयर भूमि है जिसमे से लगभग 30 प्रतिशत क्षेत्र में काजू बागवानी की जा सकती है । बन विभाग, उद्यनिकी विभाग, भूमि सरक्षण विभाग तथा ओड़िशा राज्य काजू विकास निगम के माध्यम से इन क्षेत्रों को काजू बागवानी के अन्तर्गत लाने के लिए सरकारी प्रयास (पहल) की जरूरत है ।

  किसानों को भूमि से अधिकतम लाभ प्राप्त करने हेतु बेहतर कृषि तकनीक उपनाने के लिए प्रोत्साहित करने की आवश्यकता है । वन क्षेत्रो में काजूफल के रोपण हेतु संयुक्त वन प्रबंधन समूहों को गठित तथा प्रोत्साहित किया जा सकता है ।

- कोरापुट तथा तटवर्ती क्षेत्रों के अलावा अन्य जिलों जैसे ढ़ेंकनाल, क्योंझर, सुन्दरगढ़ में भी काजू बागवानी की संभाव्यता है ।

- कोरापुट जिले में उत्पादित किए जाने वाले काजू में कोई रासायनिक खाद एवं कीटनाशक का प्रयोग नहीं किया जाता है और इसे 'आर्गैनिक कैश्यू' (जैव काजू) माना जा सकता है । राष्ट्रीय तथा अन्तराष्ट्रीय बाजार में आर्गैनिक कैश्यू की बड़ी मांग है । जिले में उत्पादित काजू को प्रमाणित करने की आवश्यकता है, जिससे कि राष्ट्रीय तथा अन्तराष्ट्रीय बाजार मं बेहतर कीमत (मूल्य) मिल सके ।

- विपणन स्तर पर बड़ी संख्या में मध्यस्थों की भागीदारी से बचा जाना चाहिए जिससे किसानों की पहुँच सीधे काजू बाजार हो सके । हिन्टरलैण्ड बाजार से टार्मिनल बाजार के बीच एक संग्रह प्रणाली को प्रात्साहित करना होगा तथा मानकीकरण के पश्चात् सार्वजनिक नीलामी के द्वारा थोक बिक्री की जानी चाहिए । इससे न केवल व्यापारियों तथा

पट्टाधरकों के एकाधिकार को तोड़ने में मदद मिलेगी वरन् किसानों को काजू का बेहतर मूल्य भी मिल सकेगा ।

- प्रसंस्करण इकाईयों के नियमित परिचालन, व्यापक रोजगार संभाव्यता तथा कोरापुट जिले में प्रसंस्करण हेतु कार्यशील पूँजी की मांग के परिप्रेक्ष्य में बैंको के पास ऋण प्रदान करने के बेहतर अवसर हैं ।
- बड़ी संख्या में प्रसंस्करण इकाईयों के सफल परिचालन को दृष्टि में रखते हुए कोरापुट जिले में काजू प्रसंस्करण क्लस्टर की एक बहुत अच्छी संभावना है । इनमें से ज्यादातर प्रसंस्करणकर्ता एक ही वंश से सम्बन्धित होने के कारण, संकट की घड़ी में एक दूसरे की सहायता के लिए आगे आ जाते है । ऐसे वातावरण में एक क्लस्टर की स्थापना से मूल्य नियंत्रण, बाजार संयोजन के विस्तार, एक ब्रांड स्थापित होने तथा काजूगिरी की गुणवता में सुधार लाने में सहायता मिलेगी ।

- इससे गुणवता सुधार और पैकेजिंग, प्रसंस्करण के क्षेत्र में अनुसंधान एवं विकास, जैविक प्रमाणपत्र तथा भारतीय मानकं संगठन (आई.एस.ओ), हेजार्ड एनालिसिस एण्ड क्रिटिकल कंट्रोल प्वाईट (एच.ए.सी.सी.पी) प्रक्रिया तथा प्रसंस्करण इकाईयों के तकनीकी कर्मचारियों को प्राशिक्षित करने में भी सहायता मिलेगी ।

- इस तरह के क्लस्टर से अन्य अनुषंगी इकाईयों जैसे – कैश्यूनट शेल लिक्विड दोहन इकाई तथा काजूफल से जैम, आचार तैयार करने वाली इकाईयों आदि की स्थापना को प्रोत्साहन मिलेगा । इनसे लोगों को रोजगार तथा आयोपार्जन के अवसर भी उपलब्ध हो सकेंगे ।

# EXECUTIVE SUMMARY

Cashew is a versatile nut. Beginning as a poor man's crop, it ends up as a rich man's favourite snack food all over the world. There are around 28 countries in the world, scattered around Asiatic zone, African zone and Latin American zone, involved in production of cashew. The average global productivity of cashew is about 500 kg. / ha. Location specific reasons facilitate some countries for higher yields as well. The crop involves wider social and economic significance in India as cashew plantation engages around 0.3 million people and cashew processing provides employment to another 0.3 million people in the country. One heartening point about this sector is that it gives employment in the lean agricultural season and mostly to women from economically backward strata of rural and tribal belts.

India is the largest producer of raw cashew nuts in the world, accounting for more than one third of the global production. India is also the largest importer of raw cashew nuts and the largest exporter of the processed cashew kernel as well. The cashew sector has received additional impetus after introduction of the National Horticulture Mission in the country in 2005-06 with an aim to double the production of horticulture crops in seven years, in which cashew has been identified as a potential crop.

During 2005-06, the cashew plantation in India occupied 855 thousand hectare of land. The total production of cashew nuts during the same year was 573 thousand MT and the average productivity was 815 kg. per hectare. Seven states in Coastal India i.e. Kerala, Andhra Pradesh, Goa, Maharashtra, Karnataka, Tamil Nadu and Orissa accounted for around 95 per cent of the area and production of cashew in the country.

With an area of 120 thousand ha. and production of 78 thousand MT during the year 2005-06, Orissa accounted for 14 per cent of both area and production of cashew nuts in the country. The productivity of cashew nuts in the state at 860 kg. per ha. was higher than the all India level of 815 kg. per ha during the year.

**Objectives of the Study**

The broad objective of the Commodity Specific Study was to make an in depth analysis of the nature of production conditions of cashew nuts in Orissa, rigidities & inefficiencies connected with it, processing, marketing, price behaviour and other related aspects of cashew nuts and to suggest recommendations to remove the various rigidities.

**Sample Selection**

Inferences are based on the analyses of secondary as well as primary data collected pertaining to cashew sector in Orissa. Primary data were collected through pre-designed questionnaires from cashew farmers, cashew traders, leaseholders of cashew plantations, processors of cashew nuts, labourers working in processing units, and wholesalers, retailers and importers of cashew nuts. Primary data were collected

under a field survey in Koraput district in Orissa. Koraput district was purposively selected for its dominance in production and processing of cashew nut in the State. The secondary data were collected from the Horticulture Department, Forest Department, Orissa Forest Development Corporation, Orissa State Cashew Development Corporation, Soil Conservation Department, State Bank of India, Utkal Gramya Bank, District Industries Centre, etc. The reference year of the study was 2005-06. Simple statistical techniques such as mean, percentage distribution, growth indices and graphic presentations were used for analysing the data and arriving at conclusions.

**Major Findings of the Study**

**I. Cashew Plantation**

- In Orissa cashew plantation started by the Soil Conservation Department in 1954-55 mainly as a cover crop. Later on, the State Forest Department and Orissa Forest Development Corporation were involved in the cashew plantation for rehabilitation of degraded forestlands. The establishment of Orissa State Cashew Development Corporation in 1979-80 for development of cashew on commercial basis was a major niche in the history of cashew crop in Orissa. Now there are three sets of cashew growers in Orissa, i.e. Govt. Departments like Soil Conservation Department, Forest Department and Horticulture Department; Corporate bodies like Orissa State Cashew Development Corporation, Orissa Forest Development Corporation, and individual farmers. A major portion of cashew plantations in the state are with the Cashew Development Corporation.

- The plantation through the seedlings of unknown varieties predominate the cashew area in the state. Such plantations are featured with high gestation period (6-7 years), small sized nuts (4-6 gm) and low yield (3-4 kg on peak yield at 12 – 14 years). On the other hand, plantations through grafts of improved varieties start production at the age of 4 years, reaches its peak production of 6 – 8 kg. per tree at 10-12 years and nuts are of large size (6-8).

- One hectare of cashew plantation of traditional unknown varieties reaps an estimated annual income of Rs.11,750. The Soil Conservation Department thus distributed cashew plantations of around two acres each to the poor tribal households to lift them above Poverty Line.

- The improved varieties of graft plantation of cashew nuts can yield a net annual income of Rs.Rs.33,325 for one hectare of plantations. Despite this advantage improved varieties are seldom adopted in the state because of non availability of adequate and quality grafts.

- Cashew nuts is a financially viable plantation crop. The Financial Rate of Return in case of the plantation by traditional method was 23 per cent and in case of the improved / grafted method was 38 per cent. This clearly indicates the profitability of grafted varieties. Improved varieties are picking up slowly owing to inadequate supply of grafts.

- The large traders who collect and stock the raw nuts during the harvest season mostly control cashew price. Hardly ten per cent of the cashew reaches directly to the processors from the growers. The average price of the raw cashew nuts varied between Rs.30 and Rs.48 per kg.

**II. Cashew Processing**

- The average investment cost of the sample processing units was about Rs.54.92 lakh, which includes cost of land, cost of factory and building, and cost of plants and machinery.

- The sample processing units were processing on an average 818 MT per annum. The units run about 287 days in a year. All the processing units adopt boiling method for processing the nuts.

- The average operating cost amounted to Rs.386.15 lakh, of which the cost of raw materials was more than 70 per cent, cost of labour (16 per cent), sales tax (4 per cent) and the other items taken together 10 per cent.

- The yield of kernel was 30 per cent of raw nuts. The best quality of cashew kernel produced was WW 180 and was sold at Rs.270 per kg at the farm gate. The smaller size and broken pieces fetched lower price. Interestingly, each and every part of cashew nuts were sold and there was no waste as such.

- The total sales proceeds of the processing unit was Rs.425.95 lakh, which comprised of proceeds from sale of cashew kernel (Rs.416.79 lakh) and proceeds from the sale of cashew nut shells (Rs.9.16 lakh).

- The FRR of the unit was estimated at more than 147 per cent making the unit financially viable.

- It was estimated that processing one bag of cashew nut yields a net return of Rs.312, which is 8 per cent of the average processing cost. With an average processing of 35 bags in a day a processing unit can break even in 503 days of operation.

- Cashew processing is highly labour intensive since the processing work is mostly done manually. The average number of labour employed in one processing unit was 389 everyday.

- The average labour wage of Rs.55 per day was higher than the wage paid to the agricultural labour in the district. The higher wage, better working atmosphere, to and fro transportation and regular operation of the units encouraged the female labour from the weaker strata of the society to work in these units.

- The processed cashew kernels are packed in tins of 10 kg. and sold to traders in Nagpur, Pune, Delhi, Raipur, Vishakhapatnam, etc.

**III. Cashew Nut Shell Liquid (CNSL) Oil unit**

- The only CNSL unit in its first year was shelling 16 tonnes of cashew shells every day and working for about 300 days per annum. The extraction of oil from the shell stood around 19.4 per cent. The investment cost of the CNSL oil unit was Rs.95 lakh and the annual average operating cost was Rs.109 lakh. The total sales proceeds of the unit were Rs.141.41 lakh, which comprised of proceeds from sale of CNSL oil (Rs.139.68 lakh) and proceeds from the sale of cake (Rs.1.73 lakh). The FRR of the unit was estimated at 137 per cent making the unit a viable one.

**IV. Cashew Marketing**

- The market for both the raw cashew as well as cashew kernel is controlled by wholesalers who center around the supply chain in a coordinated and organized fashion. The processing units procure major portion of raw cashew nuts through the traders. The farmers are not allowed to sell directly to the processing units by these traders. The agents employed by large traders or the petty traders collect nuts from the farmers in Koraput and neighbouring districts. The large traders also collect cashew nuts from neighbouring states like Chattisgarh, Andhra Pradesh, Maharashtra, Kerala and Pondicherry. Apart from, they also import cashew nuts through their agents. In Koraput district, even though 10 traders were having import license, no one was importing directly.

- The processing units in Koraput district have a processing capacity of 20,000 MT per annum and the average production in the district was 1,000 MT per annum. This leaves the scope for procuring raw nuts from neighboring districts, other states like Andhra Pradesh, Maharashtra, etc; and also through import of raw nuts.

- India imports raw cashew nuts from more than 20 countries, out of which, Ivory Coast, Guinea Bisseu, Mozambique, Tanzania, Indonesia and Benin supply almost 85 per cent. Almost all of the entire import comes through the Tuticorin and Cochin ports.

**V. Banking Aspects in Cashew Sector**

- The cashew sector offers wider potential for deployment of bank credit both in the plantation and processing activities. In Koraput district, the bank credit for plantation activities was nil as the cashew trees were planted under initiatives of the Govt. Departments and mature plantations were distributed among the poor households. Under individual plantations, the farmers were planting the seedlings with out much of land development work and application of manure, fertilizers, etc. The farmers believed that cashew trees did not require any maintenance.

- The processing units on the other hand require huge amount of funds for establishment of the units as well as procure raw nuts. They avail both term loans as well as working capital from the banks. The average Term Loan by banks to sample cashew processing units was Rs.35.2 lakh. The processors maintain the stock of cashew sufficient for processing for at least three months, thus there is demand for working capital by the processing units. Further, expansion,

modernization and the full capacity utilization of the processing units require additional capital.

**Constraints**

- There are only 10 nurseries in Orissa, out of which 7 are in private sector and 3 are in public sector. The capacity of these nurseries to produce quality grafts of cashew is only about 10 per cent of the demand for plantation in the state. Since there is no nursery in Koraput district, the seedlings and grafts are procured from far off states like Goa and Maharashtra. This increases the rate of mortality for which plantation of improved cashew grafts is not taking off in Koraput district as well as in the state.

- Most of the plantations in Koraput district are older than 30 years and of unknown variety. Yield of such plantations is very low. These gardens were developed by the Soil Conservation Department and distributed among the poor. The owners are now apprehensive about rejuvenation of these old and depleted plantations.

- The export market has not yet been tapped by the processing units eventhough one unit has already obtained the export license.

- The processing units have not yet been able to develop a common brand name in the national and international market in the line of 'Palasa Cashew' although there is scope for developing the same. However, the units supply the cashew kernel to the market with their own brand name. But this does not lead to the establishment of a reputed brand to have a stronghold in the national and international market.

- There was huge requirement for credit, especially, the working capital for processing of raw cashew nuts.

- The exploitation of by products of cashew nut and apple, etc. were not undertaken in the district. The cashew apple, which has value added and employment, income generating potential, is being thrown out without any processing.

- Cashew is a potential crop in Orissa. It has immense potential for income and employment generation in rural areas. It can productively use the wastelands and marginal lands. Above all, the crop has soil conservation, ecological and environmental benefits. However, there is not a single patron to the crop in the State. Cashew Development Corporation has its own area and plans for auction and income generation seldom looking forward for the development of the sector. There is little coordination among the Soil Conservation Department, Horticulture Department, Forest Department and Orissa Forest Development Corporation who take up plantation of the golden crop under some or other programmes. It is high time that the crop should be monitored, regulated, promoted and statistics are maintained under direct supervision of a single Department.

**Strategies**

- Several initiatives have been undertaken under the National Horticulture Mission to improve the cashew sector in the state and Koraput district has been in the forefront of the initiatives. Apart from that, other interventions can be made to improve the sector.

- The area under cashew can be increased by establishing nurseries to accommodate the nucleus material of variety of cashew recommended for the state and also the districts.

- Small nurseries in the private sector need to be established for catering to the export market. Nurseries do have bankable potential in the district.

- Since cashew grafts are planted in only 30 per cent of the area under cashew at the all India level and the same in Orissa being very low at only 10 per cent, cashew sector in the state will grow stronger on increasing the area under improved varieties of cashew plants.

- Koraput district has the culturable waste area of 71,494 ha., degraded forest land of 9,000 ha. and shifting cultivation and other agricultural encroachment of 19,500 ha. The total land under these three heads amounts to one lakh ha., of which, around 30 per cent can be brought under cashew plantations. Govt. initiatives through the Forest Department, Horticulture Department, Soil Conservation Department and Orissa State Cashew Development Corporation are warranted to bring this area under cashew plantation.

- The farmers need to be encouraged to adopt better farming technique to get maximum benefit out of the land. The Joint Forest Management Groups may be formed and encouraged to plant cashew nuts in the forest areas.

- Apart from the coastal belt and also the Koraput district, some other districts like Dhenkanal, Keonjhar, Sundargarh offer potential for cashew plantation.

- The cashew nuts produced in Koraput district, do not use any chemical fertilizer and pesticides and can be considered as 'Organic Cashew'. There is demand for organic cashew in the national and international market. The cashew kernel produced in the district need to be certified so as to fetch better price in the national as well as international markets.

- Involvement of large number of intermediaries in the marketing stage need to be avoided and farmers should have direct access to the cashew market. A collection system from hinterland market to terminal market has to be encouraged and bulk quantity should be sold through public auction after standardization. This will not only break the monopoly of the traders and leaseholders but also offer better price for the cashew plantation owners.

- In view of the huge employment potential and the regular operation of the cashew processing units and greater demand for working capital for processing in Koraput district, the banks have better avenues for lending.

- There is a very good scope for the establishment of Cashew Processing Cluster in Koraput district in view of successful operation of a large number of units. A majority of processors belong to one clan and come to the rescue of one another at the time of crises. A development of a cluster in such an environment may facilitate control over price fluctuation, expand market linkage, establish brand name and improvement of quality of kernels. It may also facilitate in Research and Development in the field of quality analysis and packaging, processing, organic certificate and the Indian Standard Organisation (ISO) / Hazard Analysis and Critical Control Point (HACCP) procedure and training the technical staff of the processing units.

- Such a cluster will also encourage the establishment of the other ancillary units like the Cashew Nut Shell Liquid extracting units and units producing jam and pickle from the cashew apples, etc. These will provide both the employment opportunities to the people and generate income.

# CHAPTER-I

## *CASHEW : THE GOLDEN CROP*

The Cashew tree is a native of Brazil in South America. The term ‘cashew’ has originated from the Brazillian word 'acaju'. It became 'caju' in Portuguese, 'cashew' in English, 'cajuil' in Spanish and 'acajou' or 'darcassou' in French. From Brazil the species came to South Africa. Madagascar, Mozambique, Indonesia, West Indies and India.

1.2 In India, the Portuguese traders during the 16th century first introduced cashew as an anti-soil erosion measure to the Malbar Coast. The attributes of the tree made it suitable and popular throughout the southern part of the country in the subsequent years. Cashew plantations have been raised widely from Goa on the West coast to Mahanadi delta on the East Coast in Orissa. It is named as *Kappamavukum, Kasumavu* and *Parangimavu* in Kerala; *Andimaram, Mundiri* in Tamil Nadu; *Jeedi Mamidi, Muntha Mamidi* in Andhra Pradesh; *Kaju, Cashew* in Maharashtra; and *Kaju, Caju* in Goa. In different parts of Orissa cashew is known as *Lanka Amba, Lanka Bhalia, Bhalia, Kaju* and *Veluan Amba*.

**The Cashew Tree**

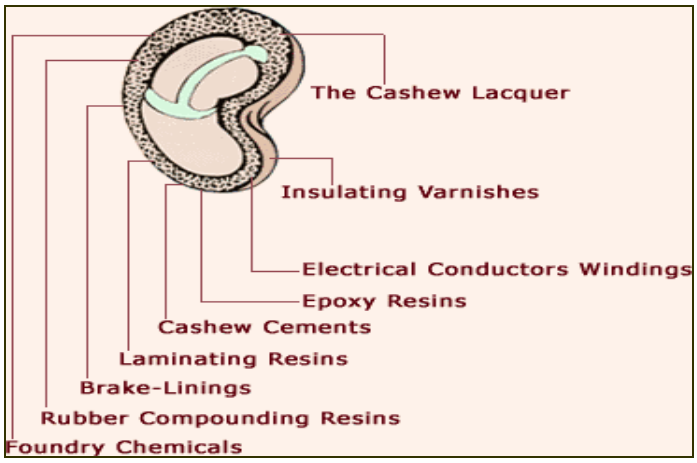
1.3 The cashew tree belongs to the genus *Anacardium Linn*. Carl Linnaeus, the Swedish botanist placed it under the family Anacardiaceae and coined its botanical name as *'Anacardium Occidentale L'*. This family of the tropics and subtropics is composed of about 60 genera and 400 species of trees and shrubs with resinous bark bearing alternative leaves. The cashew tree is a fast growing and low spreading evergreen tree with a height of 10 to 15 metres. Its stem is erect and often tortuous. It grows in symmetrical, conical and umbrella shaped canopy, depending upon the growing conditions. The plant usually branches close to the ground and the low lying branches generally tend to trail. The tree normally has a wide canopy cover. Its leaves are alternate, simple, smooth, obovate, rounded, relatively thick, pale-green in colour and often notched at the apex. The leaves are tapering at the base and have short petioles of 1 to 2 cm long and are commonly crowded at the end of the branches. Its leaf size varies from 6 to 24 cm in length and 4 to 15 cm in width having about 20 pairs of prominent reticulated veins. Cashew is mainly propagated by seed. The plants, which are raised by seed, develop both lateral roots and taproots. The wood that cashew plant produces is moderately soft and light having density of 0.50. It looks reddish-yellow in colour and mostly used as fuel wood.

1.4 The cashew trees bear flowers throughout the year. However, panicles bearing both male and hermaphrodite flowers are only produced during the major flushing period according to the seasonal periodicity of the climate. Cashew flowers are small, whitish-green or red in colour and sweet scented. The ratio of bisexual to male flowers is generally six to one. In cashew tree female flowers have also been observed. It is observed that even one year old cashew plants bear flowering. Generally the tree starts flowering after two years and regular cropping starts after five years. The trees yield good crops for about 30 to 35 years, after which they begin to decline. It is stated that the tree substantially does not grow after 40-50 years. The flowering starts during dry season. The wind and insects facilitate pollination of cashew.

**The Cashew Apple**

1.5 The cashew apple, often mistaken for fruit, is, in fact, the swollen stalk. It is the pseudo fruit of the tree, to which the nut or the real fruit is attached. The peduncle is unique in several ways. Yellow and reddish-yellow are the common colours of the ripe cashew apple. It is fleshy, juicy and has a pear-shaped appearance. The apple is sweet but astringent and is rapid microbial spoilage in nature. It is 10 to 20 cm in length and 4 to 8 cm in width and weighs on an average 75 grams. Usually, the cashew apple is, about 10 times the weight of the nut.

**The Cashew Nut**




1.6 The cashew nut is kidney-shaped and greyish-coloured. It dangles to the apex of the cashew apple. The nut measures about 3 to 5 cm in length and 2.0 to 3.5 cm in width. It has two shells, which is about 2-3 mm thick. The outer shell is smooth, thin and of olive-green colour until it matures. The inner shell is harder and is cracked like the shell of other nuts. The two layers are separated by a honey-comb like structure and that contains a viscous liquid, which is reddish-brown in colour and has a blistering effect on the skin. The inner shell encloses a slightly curved white kernel, covered by a thin reddish-brown skin known as cashew testa. The cashew kernel is edible and comprises approximately 20-30% of the whole nut. The tender nut reaches its maximum size, in about four weeks. The peduncle starts swelling after the nut attains its full development. Both the cashew apple and the nut ripen in two to three months. The entire fruit falls when it is fully ripe.

**Nature of the Crop**

1.7 In India, cashew has been accepted as a high value plantation crop though it was introduced as a tree crop for soil conservation. Area as well as production of cashew in the country is steadily increasing. The cosmopolitan habit of cashew adapts itself to a very wide range of ecological conditions. It is a drought resistant plant, thriving under a variety of soil and climatic conditions. But it is very sensitive to frost and extreme cold. Usually, high temperature and too much of rain affects the fruiting of the trees. Cashew can be grown in all types of soil, from the sandy seacoast to laterite hill slopes, up to an elevation of 700 m above sea level. It grows in areas where the rainfall is 600 mm and above. Temperature is very important for good growth of cashew. The best crops of cashew have been reported from areas with maximum temperature of 35°C, However, the optimum range for cashew is 24°C

to 29°C. Pure sandy soils to sandy loam, laterite soil, deep loam and red latosoils are the best soils for cashew crop. It cannot flourish in bad drainage, water logged lands. It abhors to alkaline soils. It comes to bearing faster in red sandy loams and light coastal sands.

1.8 The lateral root system makes the cashew plant a good soil binder. Its tap-root penetrates deep into the soil and enables the plant to thrive soon and conserve the soil. The cashew crop is effective in stabilising sand dunes. The profuse litter fall of the plant facilitates improvement of the fertility of the soil.

**Pests and Diseases**

1.9 Cashew like other crops is attacked by pests and diseases during different stages of development. The crop is ravaged by 196 arthropod pests. The stem and root borer (*Plocaederus ferrugineus L.*), tea mosquito (*Helopeltis antonil S.*), leaf and blossom webber (*Macalla moncusallis Walker*) and shoot-tip caterpillar (*Cheleria hebgramma M.*) are some of the pests that attack cashew plants. The most important and most damaging among them are the stem and root borer and the tea mosquito that are capable of killing the tree outright. The cashew plantations also suffer from a few diseases. Die-back or pink disease, drying up of shoot and inflorescence, apple rot, leaf spot and seedling blight are some of the important diseases which attack cashew tree. The intensity of damage caused by pests in comparison to diseases is very high in cashew.

**Economic Uses of Cashew**

**Cashew Tree**

1.10 The properties of the cashew tree make it ecologically and economically significant. It is a good soil binder and has wide canopy cover. It is drought-resistant and suitable to a wide range of edaphic condition. The dried tree though do not have any timber value due to its softness, it forms a quality fuelwood.

**Cashew Kernel**

1.11 Cashew kernel is the main commercial product of the plant. It is popular as a dry fruit and has a delicious and delightful taste. From kernel, cashew milk and curd are prepared. Cashew kernels are used as an ingredient in Chocolates, biscuits, cakes and sweets. In the cashew growing areas the green kernels are used in the preparation of curries. The kernel is a nutritive and valuable food. It contains magnesium, phosphorus, protein, iron and vitamin-A. Cashew kernel can be taken for loss of appetite, general depression, nervous weakness, scurvy, anaemia, urinary, liver disorders and diabetes. It is also taken to check infant mortality. Cashews have a lower fat content than most other nuts. Approximately three-fourth of their fat is unsaturated fatty acids. About 75 per cent of this unsaturated fatty acid content is heart-healthy monounsaturated *oleic acid*. Studies show that *oleic acid* promotes good cardiovascular health, even in individuals with diabetes. Studies of diabetic patients show that monounsaturated fat, when added to a low-fat diet, can help to reduce high triglyceride levels. *Triglycerides* are a form in which fats are carried in the blood, and high triglyceride levels are associated with an increased risk for heart disease, so ensuring you have some monounsaturated fats in your diet by enjoying cashews is a good idea, especially for persons with diabetes. The nutrient profile of Cashew is given in Annexure 1.1.

**Cashew Nut Shell Liquid**

1.12 Cashew Nut Shell Liquid (CNSL) is another important economic product of the plant, which is extracted from the shell of the raw nut. It is a rich source of phenol and has numerous industrial applications. It is used in preparation of wood preservatives, type writer rolls, drying enamels, water-proof coating for cement and brick flooring, oil soluble dyes used in hair oils and linoleum cloth, in manufacture of printing inks, paints, varnishes, bakelite and plastics. It is used in smearing native canoes and boats to facilitate easy gliding over water and to make wood, waterproof. Usually the fishermen rub the net with the oil to make the net strings strong. Like cashew kernel, the CNSL is also used as medicine. It is applied in healing certain kinds of leprosy and cracks of the feet. The liquid is sprayed with kerosene or high speed diesel as an anti-mosquito measure.

**Cashew Apple**

1.13 Cashew apple, the false fruit of the plant, has a fibrous flesh and is full of juice. It possesses an exotic flavour with fine and pleasing aroma. The juice of cashew apple is a valuable source of sugar, minerals and vitamins. The vitamin-C it contains is five times as much as in the citrus fruits. Palatable drinks like juice, squash and *fenni* and various food products such as candy, pickle, jam, chutney and syrup are prepared from cashew apple. Cashew juice has medicinal and alcoholic properties. It is taken for the ailments like diarrhoea, dysentery, cholera and post-natal treatment of women and as an anaesthetic in leprosy and as a blister in warts, corns and ulcers. The cashew apple residue after juice extraction is utilised as cattle feed after drying.

**Cashew Leaves**

1.14 Cashew leaves have medicinal value. Young leaves are used for flavouring rice and. Dry leaves are useful as domestic fuel. Green manure and compost are prepared from decomposed cashew leaves.

**Cashew Gum**

1.15 The sap of the cashew tree is useful in preparing indelible ink. The gum, popularly known as 'Cashew gum' is used in book binding and in tanning industries. The root of the tree is considered as an excellent purgative. The different parts of the cashew tree have numerous economic uses, which have been summarised in Table 1.1.

1.16 Cashew is an important commercial crop in India. Since it is a versatile nut with no cholesterol, its potential for exports is very high. It is, in fact, a poor men's crop but the favourite snack of the rich all over the world. Though cashew is indigenous to Brazil, it was India, which nourished this crop and made it a commodity of international trade and acclaim. India is among the largest producers, processors, exporters and consumers of cashew in the world.

**Table 1.1 : Uses of Different Parts of the Cashew Plant**

| Sl. No. | Part of the tree | Product (s) prepared | Use (s) |
|---|---|---|---|
| 1 | Root | -- | Excellent purgative. |
| 2 | Wood | Charcoal, tool handles | Fuel and packing materials. |
| 3 | Bark | -- | Dyeing fishing nets. |
| 4 | Sap | -- | Preparation of indelible ink and gum for book binding. |
| 5 | Leaves | -- | Flavouring rice, fuel, green manure and |

| | | | |
|---|---|---|---|
| | | | as medicine. |
| 6 | Apple | Fenni, syrup, jams, jellies and chutny. | Juice taken for diarrhoea, dysentery, cholera and as an anesthetic in leprosy. Cashew apple residues (after extraction of juice) used as cattle feed. |
| 7 | C.N.S.L | Phenol | Waterproof coating for cement and brick flooring, preparation of printing inks and varnishes, smearing native canoes and having medicinal uses. |
| 8 | Testa | -- | Used in leather industry and as poultry feed. |
| 9 | Kernel | Cashew milk and cashew curd | Used against loss of appetite, general depression, scurvy, anaemia, diabetes, to check infant mortality and preparation of curries. It is used raw, roasted, fried and salted. |

# CHAPTER – II

# AREA, PRODUCTION AND YIELD OF CASHEW NUTS

Cashew plantations in India occupied 855 thousand hectares of land as on 2005-06 and produced 573 thousand tons of raw cashew nuts with an average productivity of just 815 kg per hectare. In India, cashew is grown mostly in Southern States. The six states in Southern part of India i.e. Kerala, Karnataka, Maharashtra, Tamil Nadu and Andhra Pradesh occupy more than three fourth of the area under cashew plantation in the country. Cashew is cultivated to some extent in Chhatisgarh and North-Eastern States like Assam, Manipur, Tripura, Meghalaya, Nagaland and in Andaman Nicobar Islands. Area, Production and yield of cashew nuts across states in India between 1993-94 and 2005-06 is given in Annexure 2.1. Area under cashew plantations in India has steadily increased over the years from 565 thousand hectares in 1993-94 to 855 thousand hectares in 2005-06 (Table 2.1).

**Table 2.1: State-wise Area under Cashew Cultivation in India**

(Area in '000 Ha)

| ***Year / State*** | **Kerala** | **Karnataka** | **Goa** | **Maha-rashtra** | **Tamil Nadu** | **Andhra Pradesh** | **Orissa** | **West Bengal** | **Others** | ***Total*** |
|---|---|---|---|---|---|---|---|---|---|---|
| 1993-94 | 156 | 75 | 46 | 51 | 97 | 72 | 60 | 7 | 1 | 565 |
| 1994-95 | 156 | 75 | 48 | 58 | 97 | 73 | 61 | 7 | 2 | 577 |
| 1995-96 | 119 | 84 | 50 | 67 | 77 | 118 | 102 | 9 | 10 | 635 |
| 1996-97 | 119 | 85 | 51 | 80 | 79 | 121 | 105 | 9 | 10 | 659 |
| 1997-98 | 120 | 87 | 52 | 104 | 80 | 121 | 109 | 9 | 16 | 701 |
| 1998-99 | 122 | 89 | 53 | 119 | 83 | 101 | 114 | 9 | 16 | 706 |
| 1999-00 | 122 | 91 | 54 | 121 | 85 | 103 | 84 | 9 | 17 | 686 |
| 2000-01 | 100 | 91 | 55 | 121 | 86 | 130 | 90 | 8 | 19 | 700 |
| 2001-02 | 100 | 90 | 55 | 143 | 90 | 135 | 110 | 9 | 18 | 750 |
| 2002-03 | 100 | 92 | 55 | 148 | 92 | 136 | 120 | 9 | 18 | 770 |
| 2003-04 | 101 | 94 | 55 | 148 | 95 | 136 | 124 | 9 | 18 | 780 |
| 2004-05 | 102 | 95 | 55 | 160 | 105 | 150 | 126 | 9 | 18 | 820 |
| 2005-06 | 98 | 100 | 55 | 160 | 121 | 170 | 120 | 10 | 21 | 855 |
| G | (-37) | 33 | 20 | 214 | 25 | 136 | 100 | 43 | - | 51 |

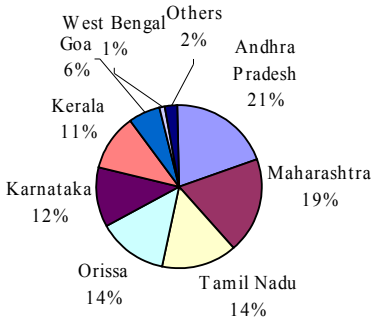
G = Percentage Growth between 1993-94 and 2005-06.

Source : WWW.cashewindia.org

2.2 Area under Cashew in all cashew growing states in India but Kerala has steadily increased during past a few years. Kerala was the leading state in growing cashew. However, the old cashew plantations were replaced with other high value plantation crops like rubber, coffee, pepper, etc. The increase in area under cashew was fast in Maharashtra. From 51 thousand hectares in 1993-94 it increased to 160 thousand hectares in 2005-06 (320 per cent). The growth was 236 per cent in Andhra Pradesh and 200 per cent in Orissa during the same period. Government interventions for plantations in wastelands, watershed areas and subsidy support for private plantations were the major reasons for increased area under cashew plantations in these states.

2.3 Figure 2.1 portrays the share of area under cashew plantations of major cashew growing states in India during 2005-06. In terms of area under cashew, Orissa with 120 thousand hectare (14 per cent) stood fourth in the country after Andhra Pradesh, Maharashtra and Tamil Nadu. Andhra Pradesh was having maximum cashew area (21%) of the country. Share of Kerala reduced from 28 per cent in 1993-94 to only 11 per cent in 2005-06. With 100 thousand hectares, Karnataka has 12 per cent of country's cashew area. Goa, known for its cashew and *fenni* holds 6 per cent of India's cashew area.

**Figure 2.1 : Area under Cashew Plantations in India (2005-06)**



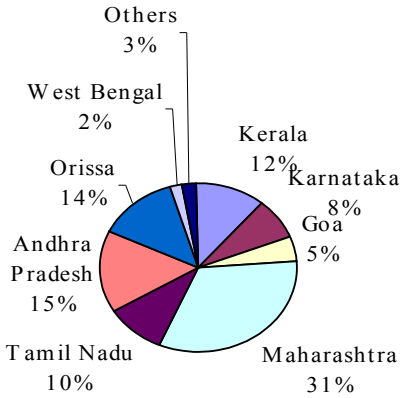

2.4 Production of cashew nuts broadly depends on cashew area, with a little variation according to the yield rate, area under fruit bearing trees, age of plantations and breed of plantations. The Cashew Development Board, the Cashew Export Promotion Council and the Agricultural Universities across the states have been continuously intervening for the development of high yielding varieties of seeds, grafts and planting systems for augmenting the production of quality cashew nuts in our country. Cashew nuts production increased steadily from 348 thousand metric tons in 1993-94 to 573 thousand tons in 2005-06 (Table 2.2) with intermittent variations on a couple of occasions. Rainfall and hailstorms during the flowering stage i.e. between January and March, which is common in Indian coastal belt, affect the production of cashew nuts. As discernible from the pie chart in Figure 2.2, Maharashtra was the largest producer of cashew nuts among Indian states and accounted for 31 per cent of cashew nuts produced in India followed by Andhra with 15 per cent and Orissa with 14 per cent during 2005-06.

**Table 2.2: Production of Cashew nuts in India**

| Year | Production ('000 MT) |
|---|---|
| 1993-94 | 348 |
| 1994-95 | 322 |
| 1995-96 | 418 |
| 1996-97 | 430 |
| 1997-98 | 360 |
| 1998-99 | 460 |
| 1999-00 | 520 |
| 2000-01 | 450 |
| 2001-02 | 470 |
| 2002-03 | 500 |
| 2003-04 | 535 |
| 2004-05 | 544 |
| 2005-06 | 573 |

Source : WWW.cashewindia.org

**Figure 2.2 : Production of Cashewnuts in India (2005-06)**



2.5 Cashew production in India over the years has increased in all the states but Kerala. As can be seen from Table 2.3, Cashew production in Kerala, as a result of fall in area under cashew plantations, reduced drastically from 140 thousand tons in 1993-94 to only 67 thousand tons. Maharashtra, on the contrary, has shown astonishing increase in production, from only 47 thousand tons in 1993-94 to 183 thousand tons (389 per cent) in 2005-06. Increase in area as well as productivity has resulted in this growth in cashew production in Maharashtra. New plantations and plantations of improved varieties with better yield rate, accounted for the increase in cashew nuts production in Maharashtra. In Orissa too cashew nuts production has increased from 43 thousand tons in 1993-94 to 78 thousand tons in 2005-06 (81 per cent).

**Table 2.3: State-wise Cashew Production in India**

('000 Metric Tons)

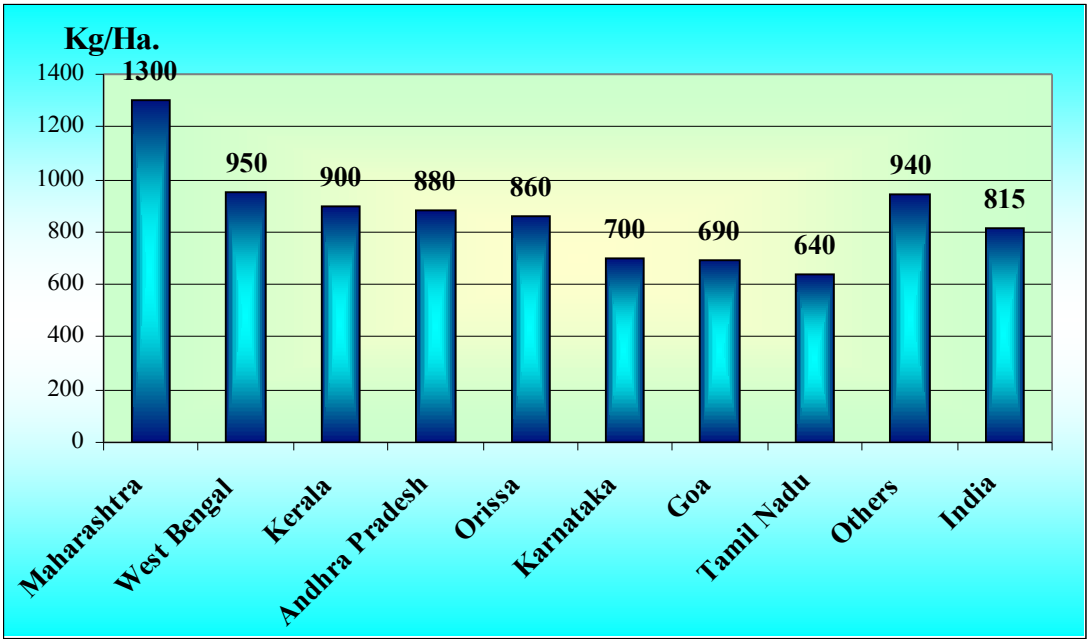
| STATE | Kerala | Karnataka | Goa | Maharashtra | Tamil Nadu | Andhra Pradesh | Orissa | West Bengal | Others | *TOTAL* |
|---|---|---|---|---|---|---|---|---|---|---|
| 1993-94 | 140 | 32 | 16 | 47 | 19 | 47 | 43 | 4 | 0 | 348 |
| 1994-95 | 119 | 26 | 17 | 38 | 22 | 59 | 37 | 3 | 0 | 322 |
| 1995-96 | 140 | 38 | 18 | 69 | 31 | 72 | 43 | 7 | 1 | 418 |
| 1996-97 | 134 | 52 | 20 | 80 | 30 | 60 | 40 | 6 | 8 | 430 |
| 1997-98 | 100 | 35 | 25 | 60 | 30 | 50 | 45 | 6 | 9 | 360 |
| 1998-99 | 130 | 40 | 20 | 85 | 35 | 80 | 50 | 8 | 12 | 460 |
| 1999-00 | 100 | 60 | 30 | 125 | 45 | 100 | 40 | 8 | 12 | 520 |
| 2000-01 | 76 | 42 | 25 | 98 | 59 | 75 | 59 | 6 | 10 | 450 |
| 2001-02 | 87 | 40 | 30 | 103 | 46 | 86 | 59 | 7 | 12 | 470 |
| 2002-03 | 90 | 40 | 30 | 110 | 50 | 90 | 70 | 8 | 12 | 500 |
| 2003-04 | 95 | 46 | 32 | 120 | 51 | 95 | 71 | 9 | 16 | 535 |
| 2004-05 | 64 | 43 | 26 | 174 | 53 | 88 | 74 | 8 | 14 | 544 |
| 2005-06 | 67 | 45 | 27 | 183 | 56 | 92 | 78 | 10 | 15 | 573 |
| G | (-52) | 41 | 69 | 289 | 195 | 96 | 81 | 150 | - | 65 |

G = Percentage of Growth between 1993-94 and 2005-06.

Source : WWW.cashewindia.org

2.6 The yield of Cashew nuts in India was 815 kg. / ha in 2005-06. As can be seen from Figure 2.3, it varied across the states with the maximum in Maharashtra at 1300 kg per hectare followed by West Bengal (950 kg/ha), Kerala (900 kg/ha), Andhra Pradesh (880 kg/ha) and Orissa (860 kg/ha). The average yield in small producers also was high at 960 kg. The yield of cashew nuts depends on the age of plantations, variety of plants, maintenance of plantations, soil conditions and agro-climatic conditions. Further, the yield of plants shows an inverted 'U' trend indicating lower yield rate at early and late stages of the life of the tree. The yield in grafted variety of plants is more in comparison to seedling varieties. The seedling varieties bear fruits up to forty years with peak producing years ranging between 10 and 30 years while the grafted varieties bear fruits up to 30 years with peak producing period ranging between 10 and 25 years.

**Figure 2.3 : Yield of Cashew Nuts in Various States of India (2005-06)**




2.7 Depending mostly on the climatic factors, the yield of cashew nuts also varied over the years. The average yield in India recorded an increase from 694 kg/ha in 1993-94 to 815 kg/ha in 2005-06, reaching the peak of 900kg/ha in 1999-2000. Hailstorms and cyclones during the fruiting stage reduce the yield of cashew nuts. Table 2.4 gives an account of yield of cashew nuts of various states during 1993-94 and 2005-06.

## *Table 2. 4 : State-wise Yield of Cashew Nuts*

(KG per ha.)

| State | Kerala | Karnataka | Goa | Maha-rashtra | Tamil Nadu | Andhra Pradesh | Orissa | West Bengal | Others | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 1993-94 | 925 | 500 | 370 | 1246 | 203 | 723 | 812 | 596 | 299 | 694 |
| 1994-95 | 781 | 400 | 390 | 1100 | 232 | 880 | 679 | 490 | 250 | 631 |
| 1995-96 | 1000 | 550 | 410 | 1440 | 330 | 1000 | 720 | 870 | 560 | 720 |
| 1996-97 | 1140 | 690 | 430 | 1570 | 390 | 830 | 670 | 870 | 870 | 835 |
| 1997-98 | 850 | 460 | 530 | 1500 | 390 | 690 | 750 | 860 | 610 | 740 |
| 1998-99 | 1100 | 500 | 420 | 1500 | 460 | 800 | 750 | 890 | 860 | 800 |
| 1999-00 | 850 | 700 | 610 | 1470 | 540 | 1100 | 670 | 900 | 800 | 900 |
| 2000-01 | 765 | 500 | 500 | 1050 | 750 | 650 | 700 | 900 | 750 | 710 |
| 2001-02 | 870 | 470 | 590 | 880 | 570 | 720 | 570 | 780 | 760 | 710 |
| 2002-03 | 890 | 470 | 660 | 1000 | 570 | 740 | 810 | 890 | 760 | 760 |
| 2003-04 | 890 | 500 | 690 | 1100 | 600 | 750 | 850 | 760 | 790 | 800 |
| 2004-05 | 900 | 680 | 660 | 1200 | 610 | 840 | 810 | 800 | 800 | 810 |
| 2005-06 | 900 | 700 | 690 | 1300 | 640 | 880 | 860 | 950 | 940 | 815 |
| G | (-3) | 40 | 86 | 4 | 215 | 22 | 6 | 59 | 214 | 17 |

G = Percentage Growth between 1993-94 to 2005-06.

Source : WWW.cashewindia.org

**Pricing Trends of Raw Cashew Nuts in different States**

2.8 The price of raw cashew nuts in wholesale market was varying across region and over years. During 1998-99 and 1999-2000, it remained at the peak in almost all the states except Orissa (Table 2.5). Factors like domestic as well as international production of cashew nuts, volume of import of raw nuts, speculation and hoarding by traders, etc. were determining the market price of cashew nuts. Price of cashew nuts in regional market also varied depending on the size and quality of nuts, demand from the processing industries, etc. The average wholesale price of the raw cashew nuts in major cashew producing states during the period from 1993-94 to 2005-06 is given in Table 2.5. Cashew prices in Goa were observed to be higher as compared to other states because of its large size of the nuts as compared to the nuts of other states. The fluctuation in cashew nut price was relatively low in Orissa. On the contrary, there was a steady increase in the price except for a couple of years.

**Table 2.5 : State-wise Wholesale Prices of Raw Cashew nuts**

(Rs. per kg.)

| *Year /* State | Kerala | Karnataka | Andhra Pradesh | Tamil Nadu | Goa | Orissa |
|---|---|---|---|---|---|---|
| 1993-94 | 20.50 | 21.50 | 23.20 | 22.80 | 29.50 | 20.75 |
| 1994-95 | 25.00 | 26.00 | 25.50 | 27.50 | 32.30 | 25.00 |
| 1995-96 | 29.00 | 29.00 | 29.00 | 29.00 | 30.15 | 25.00 |
| 1996-97 | 26.40 | 21.50 | 30.00 | 24.00 | 33.10 | 27.00 |
| 1997-98 | 30.60 | 25.00 | 30.00 | 24.00 | 33.10 | 29.50 |
| 1998-99 | 42.30 | NA | 33.75 | NA | 47.00 | 29.50 |
| 1999-00 | 42.00 | 47.00 | 34.50 | 36.20 | 46.50 | 32.00 |
| 2000-01 | 26.75 | 29.90 | 28.25 | 29.60 | 33.50 | 28.50 |
| 2001-02 | 25.00 | 28.00 | 27.75 | 29.14 | 34.10 | 32.50 |
| 2002-03 | 29.50 | 33.00 | 30.00 | 34.60 | 35.50 | 27.00 |
| 2003-04 | 30.00 | 30.00 | 28.70 | 36.25 | 35.50 | 32.00 |
| 2004-05 | 37.88 | 35.20 | 37.10 | 47.75 | 45.20 | 32.50 |
| 2005-06 | NA | NA | NA | NA | NA | 35.00 |

Source : WWW.cashewindia.org

**Cashew Nuts Plantations in Orissa**

2.9 The cashew tree came to Orissa in the later part of the 16th century. Until the mid-50s of Twentieth century, cashew remained as a minor, neglected crop in the state and was grown by the cultivators, mostly in the poor soils and marginal lands without proper care in the undivided districts of Ganjam, Puri, Balasore and Koraput. Systematic cultivation of cashew as a plantation crop has been reported from the year 1949-50 when some private growers raised cashew.

2.10 The year 1954-55 was a turning point in the history of cashew plantations in Orissa when the State Soil Conservation Organisation started cultivation of cashew as a cover crop in the degraded soils, watersheds and wastelands. Little attempt was made for collection of raw nuts and to maintain cashew as a horticultural crop until the later part of the 1960s. Later on, the state Forest Department and the Orissa Forest Development Corporation became involved in raising cashew plantations for rehabilitation of the degraded forestlands. The establishment of Orissa State Cashew Development Corporation (OSCDC) in 1979 for development of cashew on commercial lines is a major landmark in the history of the crop in the state. Now cashew is grown in almost all the districts of Orissa.

**Extent of Cashew Area in the State**

2.11 There are three sets of growers viz., the State Sector including Department of Soil Conservation (DSC), Department of Forests (FD), Horticulture Department, Revenue Department (RD), etc.; Corporate Sector like Orissa State Cashew Development Corporation (OSCDC) and Orissa Forest Development Corporation (OFDC); and Private cultivators involved in cashew plantations. Development of cashew plantations in Orissa by these sectors over the years is presented in Table 2.6. Development of cashew plantations include fresh plantations, replanting by uprooting old and non-yielding plantations and rejuvenation of degraded plantations. Initially DSC was taking the lead in development of cashew plantations but later on OSCDC took over the plantations from DSC.

**Table 2.6 Development of Cashew Plantation in Orissa by Various Sectors**

(Cumulative Area in ha.)

| ***Year*** | **State Sector** | | | | **Corporate Sector** | | | **Private Sector*** | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| | DSC | FD | RD | Total | OSCDC* | OFDC | Total | | |
| 1950-51 | -- | --- | -- | -- | -- | -- | -- | 1484 | 1484 |
| 1960-61 | 4433 | 8 | -- | 4441 | -- | -- | -- | 3089 | 7530 |
| 1970-71 | 11858 | 117 | -- | 11975 | -- | -- | -- | 3089 | 15064 |
| 1980-81 | 36813 | 11568 | 5023 | 54204 | 25761 | 11378 | 37139 | 59001 | 150343 |
| 2005-06 | 1650 | 11568 | 5023 | 18241 | 30620 | 18705 | 49325 | 74000 | 141566 |

* Area includes replanting and rejuvenation of existing cashew plantations.

**i) Department of Soil Conservation (DSC)**

2.12 The first pioneering effort to grow cashew in the public sector in Orissa as a plantation crop was initiated by the Department of Soil Conservation during 1954-55. First of all, DSC raised cashew in eroded watersheds of two major river valley projects, namely the Hirakud (Sambalpur District) and the Machkund (Koraput District). Subsequently, it expanded plantations of cashew to other eroded areas and wastelands of the State. Protection of the eroded areas of the watersheds, reducing the silt inflow to the reservoirs and prevention of sand casting on agricultural lands along the coastline are some of the main objectives of raising cashew by the Department of Soil Conservation. By the end of 1999-2000, the DSC had planted cashew over an area of 81,787 ha in Orissa (Table 2.6).

**Table 2.6: Cashew plantations by the Soil Conservation Department in Orissa**

(Area in ha.)

| Period | Cashew Area Raised | Transferred to CDC | Distributed under ITDA & ERRP | Area with SCD at the end of the Period |
|---|---|---|---|---|
| 1954-1960 | 3573 | -- | -- | 3473 |
| 1961-1970 | 4872 | -- | -- | 8445 |
| 1971-1980 | 30887 | 252 | -- | 39080 |
| 1981-1990 | 34805 | 17099 | 22982 | 36804 |
| 1991-2000 | 7650 | 9469 | 17650 | -- |
| 2001-2005 | -- | -- | 14335 | 1650 |
| Total | 81787 | 26820 | 54967 | |

2.13 While the total area under cashew plantations increased very fast, the progress over the years was unsteady because of non-availability of funds for plantations under a number of soil conservation schemes. Moreover, raising cashew was one of the ways of protecting the soil. SCD raised cashew under as many as 20 soil conservation schemes / programmes and only two schemes operated for 20 years or more than that. All other schemes made sporadic provision for cashew plantations and had frequent interruptions.

2.14 Matured and new (raised from 1981-82) plantations were distributed under the Integrated Tribal Development Agency (ITDA) and Economic Rehabilitation of Rural Poor (ERRP) Programmes among the people below the poverty line. The beneficiaries were given around two acres each. After establishment of the Orissa State Cashew Development Corporation (OSCDC) in April 1979, the Soil Conservation Department transferred the matured cashew area to the OSCDC for commercial operation. Currently, the DSC is having around 1650 ha of cashew plantations under its control. With a view to promote environmental and soil conservation measures, the SCD takes up plantation of cashew in the wastelands of farmers and after three years' maintenance hands over the plantations to the farmers.

**ii) Forest Department**

2.15 The Orissa Forest Department raised cashew plantation from 1956-57, basically as an anti-cyclone and forest conservation and rehabilitation measure. Cashew has been raised under various Five-Year Plan Plantation Schemes such as creation of coastal shelter-belt in Cuttack, Puri, Ganjam and Balasore districts, Drought Prone Area Programme (DPAP) in Kalahandi and Phulbani districts and rehabilitation in the tornado affected areas of Keonjhar district. In the initial Plan periods, cashew plantation by Forest Department was rather slow. The Department geared up its efforts during the Fourth Five-Year Plan (Table 2.7). The tempo, however, did not continue during the subsequent plan periods. Explicit plantation of Cashew in Forest areas was stopped from the Seventh Five-Year plan beginning from 1985-86 as it was decided to continue cashew plantation operations mixed with other important forest species such as Teak, Bamboo, Casuarine and Eucalyptus, etc.

**Table 2.7: Cashew Plantations by the Forest Department of Orissa**

(Area in ha )

| Sl. No. | Period | Area under Cashew | Cumulative Cashew area |
|---|---|---|---|
| 1 | Second Plan (1956-61) | 8 | 8 |
| 2 | Third Plan (1961-66) | 65 | 73 |
| 3 | Three Annual Plans (1966-69) | 44 | 117 |
| 4 | Fourth Plan (1969-74) | 4928 | 5045 |
| 5 | Fifth Plan (1974-78) | 697 | 5742 |
| 6 | Two Annual Plans (1978-80) | 2042 | 7784 |
| 7 | Sixth Plan (1980-85) | 3784 | 11568 |

**iii) Revenue Department**

2.16 The Collectorate, Dhenkanal, which is a part of the Revenue Department of the Government of Orissa, raised cashew in 1981-82 under a plantation scheme, which intended to give employment to the people belonging to the weaker sections of the society and to expand cashew area in the State. It raised cashew over 5823 ha. of Government land and 12857 ha. of private land in 16 blocks of the district during the year. Plantations in Government lands could be done only in 96 per cent of the targeted area. But in case of private lands, achievement exceeded the target by 974 ha. The 'Massive Cashew Plantation Scheme' (MCPS) was discontinued thereafter.

**iv) Orissa Forest Development Corporation (OFDC)**

2.17 The OFDC was established in September 1962 with the prime objective of undertaking scientific exploitation and marketing of forest produce and resources. As an afforestation measure, OFDC took up cashew plantation in the forest areas mixed with other crops as well as explicitly cashew in certain pockets. There were irregularities in plantations due to funds constraints and expiry of tenure of *ad hoc* cashew plantation programmes. Cashew Plantation by OFDC was completely stopped from 1992-93 onwards due to funds constraints. The maintenance of existing gardens was also hampered and very irregular due to want of funds. Cashew plantation programmes were implemented in Berhampur and Bhubaneshwar Divisions and both the division have about 18,705 ha of cashew plantations. In the year 2005-06 OFDC received Rs. one crore under the National Horticulture Mission for rejuvenation of the cashew plantations. Development of cashew plantations raised by OFDC is given in Annexure 2.2. For harvesting the nuts, the OFDC leases out the cashew gardens every year through open tender. Since 2004-05, however leases were given for three years. The lease is only for harvesting the nuts with out any maintenance and rejuvenation of the gardens. With out proper maintenance and care, the yield in such plantations is relatively low.

**v) Orissa State Cashew Development Corporation Ltd. (OSCDC)**

2.18 The Orissa State Cashew Development Corporation limited (OSCDC) is the major cashew grower in the State's corporate sector. It was established in April 1979 mainly to implement the corporate component of the Multi State Cashew Project (MSCP), which

operated in four States including Orissa to extend necessary promotional thrust to the cashew sector in India. While the project was time-bound, the corporation was created as a permanent institution with the following main objectives:

- To develop land and raise cashew plantations.
- To maintain, manage and develop existing cashew plantations by adopting recommended package practices.
- To organise business of cashew and its products.
- To render technical assistance to the cashew growers.
- To popularise the importance and usefulness of cashew and conduct research on it.

2.19 The corporation has two categories of cashew plantations viz. new self-grown plantations and plantations transferred from DSC. Non-availability of land was a major obstacle for bringing more area under cashew plantations. However, rehabilitation and rejuvenation of old plantations are being undertaken in old and unproductive plantations. The OSCDC owned around 26820 ha of cashew plantations. The OSCDC does not have cashew plantations in Sambalpur, Phulbani, Sundargarh and Bolangir districts. Harvest of nuts is undertaken through lease of the plantations for harvest of nuts only. The lease is given through open tender basis for each patch of plantation.

2.20 Cashew development in Orissa has been a project-programme-scheme based activity. Huge amount of financial and human resources have been deployed in cashew through as many as 55 programmes operated by the Department of Soil Conservation, Forest Department, Orissa State Cashew Development Corporation, Orissa Forest Development Corporation and Horticulture Department. The State and Union Governments have assisted and sponsored the programmes through development plans and programmes.

# CHAPTER - III

# OBJECTIVES AND METHODOLOGY

Cashew occupies a prominent place in the agriculture, especially, in the Coastal and Southern districts of Orissa. The sector provides substantial income on a sustainable basis to the farmers from the less fertile and waste lands. It also provides employment opportunities to the farm labourers in the slack season through cashew harvesting and processing. The significance of cashew in supplementing the rural poor in their employment and income has however remained in dark and this study attempts to throw some light on this. This Chapter outlines the objectives of the study, design of sample and the methodology adopted for the study. The rationale behind the selection of the district, block and the sample as a whole along with the collection of data are briefly analysed here.

**Objectives of the Study**

3.2 The broad objective of the study is to make an in depth analysis of the nature of production conditions of the cashew nut, rigidities and inefficiencies connected with it, processing, marketing and price behaviour and other related aspects. The specific objectives of the study are as follows :

( i ) to make spatial and temporal analysis of area, production, yield and price of cashew.
( ii ) to analyse the economics, constraints / issues in production at farm level in terms of input availability, extension, etc.
( iii ) to get an insight into the availability of infrastructure for post harvest management and practices followed including grading/processing/packing, value addition, etc.
( iv ) to analyse the extent and method of processing, economics of processing units, bottlenecks faced, etc.
( v ) to throw light on the marketing channels, their efficiency, price spread, etc.
( vi ) to comment on the credit aspects covering mode of financing activities, access to institutional credit, its adequacy, constraints and potential for extending institutional credit to each segment of the supply chain.
( vii ) to look into the scope and constraints for export of kernels.
( viii ) to explore the scope for organic farming, biotechnology, etc.

**Selection of District**

3.3 The district-wise area under cashew nut in Orissa over a period of years has been indicated in Annexure – 3.1. Four districts i.e. Koraput, Ganjam, Nawrangpur and Khurda occupy around 59 per cent of the total area under cashew nut plantation in the state (Table 3.1.) while among other districts Denkanal and Gajpati together have another 10 per cent areas. Sonepur and Bargarh districts do not have cashew plantations. Map 3.1 portrays density of cashew areas in different districts of the State. Interestingly, cashew area in Koraput district has declined from 18.39 thousand hectare in 1997-98 to 14.19 thousand hectares in 2003-04. The situation is just like that of in the state of Kerala. The old plantations were replaced with high value plantation crops like coffee, pepper and other spices. Some areas were also diverted to plantation of bamboo and eucalyptus which are used as a raw materials for the paper mills in Koraput District (Ballarpur Industries) and the neighbouring Raygada District (J K Paper Mill).

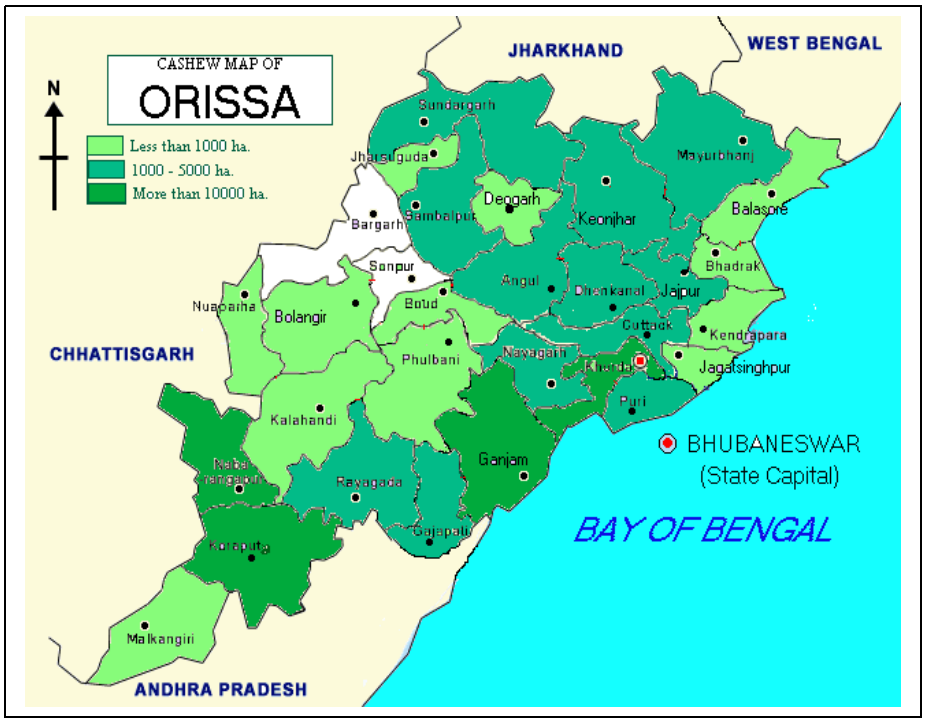
**Table 3.1 : District-wise area under Cashew Nuts in major districts**

(Area in `000 ha.)

| Districts | 1997-98 | | 2002-03 | | 2004-05 | |
|---|---|---|---|---|---|---|
| | Area | % | Area | % | Area | % |
| Koraput | 18.39 | 22 | 14.19 | 16 | 14.29 | 16 |
| Ganjam | 11.25 | 14 | 13.69 | 15 | 13.69 | 15 |
| Nawarangpur | 9.05 | 11 | 13.13 | 15 | 13.13 | 15 |
| Khurda | 10.68 | 13 | 11.10 | 12 | 11.27 | 13 |
| Others | 32.92 | 40 | 36.88 | 41 | 37.01 | 41 |
| Total | 82.29 | 100 | 88.99 | 100 | 89.39 | 100 |

NB. Differences in percentage figures to total is due to decimal adjustments.

**Map 3.1 : Cashew Map of Orissa**




3.4 Koraput district has the maximum area under cashew nut plantation in the State of Orissa. Due to the strategic location of the district adjacent to Andhra Pradesh, the major cashew growing and trading state in India, the marketing of cashew is more organized and vibrant in Koraput district. The district is also a major player in cashew processing industry in Orissa. Cashew nuts produced in other districts and states and imported from other countries also come to Koraput district for processing. Keeping in mind the dominance of Koraput district in the cashew nuts scenario of the state, it was chosen for an in depth study of cashew nuts.

**Collection of Data**

3.5 Both Primary and secondary information have been used for drawing inferences in the light of objectives of the study. A sample survey was conducted during October and November 2006 to collect information on economic parameters of cashew plantations,

processing and marketing in Koraput district. Cashew orchards belonging to the government sector, corporate bodies and private growers, traders engaged in marketing raw cashew nuts, processing units engaged in producing cashew kernel were extensively visited and the owners were contacted to know about the concerned aspects. Pre-designed questionnaires were used to collect the required data.

**Sample Design**

3.6 The primary data relating to plantation, trading, processing and marketing of cashew nuts were collected from farmers, traders, leaseholders, processing units, wholesalers, etc. spread over eight out of the fourteen blocks in Koraput district. The blocks covered included Boipariguda, Dasmantpur, Borigumma, Jeypore, Koraput, Kotpad, Lamtaput and Nandpur. The sample design is indicated in Table 3.2.

**Table 3.2 : Sample Design**

| Sample | Number |
|---|---|
| Farmers owning Cashew Plantation | 35 |
| Traders collecting Raw Cashew Nuts from Individual Farmers | 5 |
| Leaseholders of Cashew Plantation under Cashew Development Corporation | 5 |
| Cashew Processing Units | 5 |
| Cashew Nut Shell Liquid Unit | 1 |
| Labourers working in Cashew Processing Units | 25 |
| Cashew Traders including Wholesalers, Retailers and Exporters / Importers | 5 |

3.7 Apart from that, the secondary data was collected from the various agencies connected with cashew sector in the state i.e.

i. Cashew Development Corporation Limited
ii. Soil Conservation Department
iii. Forest Department
iv. District Industries Centre
v. State Bank of India
vi. Utkal Gramya Bank
vii. District Horticulturist

**Methodology for the Economic Aspects**

3.8 Economics of cashew plantations of Orissa was examined with secondary data collected from published documents and unpublished materials recorded in official reports and files of concerned government departments and corporate bodies. The data collected from the secondary source were supplemented with primary information obtained from field surveys. Materials relating to the nature of plantations, volume of output, cost of maintenance, income and employment generated in each of the 35 sample plantations were collected with the help of a questionnaire-cum-schedule. Information on 5 cashew processing units collected through a separate questionnaire-cum-schedule. The working of one Cashew Nut Shell Liquid Oil extracting unit was also recorded. Interactions were held with a host of operators in the cashew supply chain including the traders, wholesalers and leaseholders so

as to get an idea about the intricacies involved at each level. The response of all of them were recorded in the specific questionnaire devised for the same. The data meticulously collected from the primary and secondary sources were collated, processed and tabulated with reference to the different elements of the work. Simple statistical techniques such as mean, percentage distribution, growth indices and graphic presentations were used.

**Limitations**

3.9 Non-availability of certain data acted as a drag. Information on the following could not be collected from any source :

- Fruit bearing cashew area
- Tax and non-tax revenue earned by the State Government from cashew
- Contribution of cashew to the State Domestic Product of Orissa during the last two decades
- Soil and water conservation potential of the cashew plant
- Inter-regional trade in cashew

3.10 The inferences were drawn on the basis of primary data collected from a limited sample. Utmost care has been taken to collect the correct or nearest to correct data through the pre-designed schedule and crosschecking while interrogating with the respondents. However, bias in revealing certain information may affect the data collection and inferences on such data.

3.11 These limitations notwithstanding, the study team has done its best to arrive at conclusions by ensuring correct interpretation of information available. Though, no attempt has been made to go into the minute details of the aspects covered under the study, all the relevant information and possible data have been brought together to examine the various aspects related to cashew sector in the state.

# CHAPTER-IV

## *CASHEW PLANTATION PRACTICES IN ORISSA*

Cashew Plantations in Orissa is mostly done under the Government Departments or Corporations like the Department of Soil Conservation (DSC), Department of Horticulture, Cashew Development Corporation (CDC) and the Orissa Forest Development Corporation. The Horticulture Department has recently introduced in to cashew plantations under National Horticulture Mission (NHM). Cashew plantation in Orissa is still limited to the marginal lands and commercial cultivation of the crop has not yet taken off in the State. Over 95 per cent of the plantations in the state are of seedling origin of unknown varieties. Cashew Plantations in Koraput district is of no difference.

**Agricultural practices - propagation and culture**
**Sowing**

4.2 Cashew plantation is done with planting seeds directly on the field or transplanting the seedling or grafted plants. Under direct planting method, the seeds on the field, only dry and clean cashew seeds, which are free from insect or fungal attack, are put in soil at the place where the trees need to be grown. Usually large sized and mature cashew nuts are selected for seed and stored in a dry place till it is sown. Sowing of seeds is generally done during the months of June and July with onset of monsoon. In climates with irregular rainfall and short rainy seasons, seeds are soaked in water before planting, sown relatively deep and the site is covered with mulching material in order to minimize the risk of drying out the germinated seedlings. Farmers generally do a water test (floating test) to the Seeds prior to planting. They choose only those seeds that sink in water. The seeds that sink are more mature and density of the nut is relatively high and treated as of good quality. These seeds give high success rate and tend to germinate quickly. Seeds are planted at a depth of between 5 and 10 cm depending on the soil conditions. Germination usually takes place in 15-20 days. The advantage of sowing method is, unlike the transplanting method, damage to the delicate root system of the plant is avoided. However, under this method the rate of germination is low. Farmers seldom take care after sowing, watering the plants, protecting the field from stamping by animals, etc. as the fields are far away from residential area and since the plantations are done in marginal lands. Moreover, unknown seed varieties are used as seed materials as the seeds are chosen by the farmers themselves and from locally available crops. This variety usually has longer gestation period and yield lower than other varieties. In Koraput district, farmers also transplant the naturally grown seedlings from the nuts falling on the soil in the cashew plantations. Though the gestation period of such plants is long and yield is less, farmers transplant these seedlings since these are available free of cost.

**Seedlings in a nursery**

4.3 Cashew Seedlings are also raised in nurseries. Nurseries generally use good and known seed varieties for development of seedlings. Seeds are preserved in good condition and treated well before sowing. Seedlings are raised in small polythene packets under controlled temperature and humid conditions. Nurseries are maintained by skilled and expert workers and hence the success rate is usually very high. Seedlings are transplanted within a week of their emerging in order to ensure successful transplantation. This method of course requires utmost care while transplanting from the nurseries to the field. The Cashew Development Corporation and Department of Horticulture raise seedlings in *ad-hoc* nurseries

raised by them near the plantation sites and plant them under various Cashew Development Programmes. Private nurseries also raise seedlings and supply to these Departments. However, there is no large nursery existing in private sector in Koraput District.

4.4 Before transplanting the seedlings, pits measuring from 30 cm x 30 cm x 30 cm to 60 cm x 60 cm x 60 cm are dug and left to weather for a month or two. They are then filled with soil which has been mixed with rotting manure about two weeks. Seedlings are planted before monsoon. Watering the plants at regular intervals in case of failure of monsoon or short rainy season is essential. Seedlings are also planted using plastic bags as containers. The seedlings are lifted into planting holes in the plastic bags, which are then carefully slit with a sharp knife and removed.

4.5 The major problem under seedling method in Koraput district is the absence of nurseries in the district for which the seedlings are procured from outside the district and at times from other states also. The time for transportation of seedlings is often quite long. Often the Govt. Departments procure the seedlings and distribute them to farmers under various programmes. It takes long time from nurseries to reach at the farm. Loading and unloading by unskilled labourers also take a toll. These factors cause high mortality of cashew seedlings.

**Grafting**

4.6 Grafting is an advanced technique of preparing planting material in ago-horticulture sector. Various grafting techniques are applied to produce planting materials of cashew nuts. Plantation of grafting variety cashew has been introduced in Orissa since past one decade or so. However, it was not well accepted despite its high productivity, because of high mortality rate, more cost and non-availability of planting materials. Under NHM, of course, cashew nut grafts are supplied to farmers at a 75% subsidized rate. Grafts are purchased from the registered nurseries within and outside Orissa. Cashew plantation has enough potential in the state and supply of grafted materials from all corners to the state is yet to match the requirement.

**Land preparation**

4.7 Since cashew plants are mostly grown in marginal lands and sloppy regions, much of land preparation work was not done for cashew plantation in Koraput district, except for deweeding the land. Cashew seedlings are very sensitive to competition from weeds. But weeds at places, especially on sloping land and soft soils, protect the soil from erosion by water and wind. In sandy soils where wind blows strong, clearing the land clean may result in severe wind erosion. In these areas, the lands are cleared in strips, which are perpendicular to wind direction. Once the cashew trees are developed to a stage to withstand the wind, the weeds are cleared. Plantations under NHM and Soil Conservation Departments are maintained for initial three years before being handed over or distributed to the farmers, who thereafter seldom do any kind of maintenance or treatment to the plantations.

***Spacing***

4.8 To promote maximum development and reduce competition for available moisture, cashew seedlings are planted at a distance of about 7 metres (200 plants per hectare) in the district under all govt. sponsored programmes. This is considered to be a productive spacing

for mature trees. However, cashew plants under private plantations are planted more closely, up to 400 plants per hectare. Farmers think that more plats may yield more nuts. But they do not understand that if maintenance of plants is not taken care through cutting, pruning, deweeding, etc. then dense plantations may not yield to its optimum. The farmers are unaware of the planting norms and the need for scientific practices of cashew plantation and maintenance. However, cashew plantation by farmers under private land in Koraput District is very less.

**Fertilizer use in Cashew**

4.9 Cashew is grown in Orissa as a casual crop and as a result, its fertilizer requirements are often overlooked. The trees are long standing and are mostly grown in marginal lands, wastelands and soils of poor quality. As each season passes, the soils become more depleted and productivity gradually declines. Yield in such plantations is much lower than the potential that could be gained if fertilizers were applied. Regular application of the major plant nutrients (nitrogen, potassium and phosphorus) is beneficial for healthy trees and increased cashew yields. In addition, application of magnesium to cashew is beneficial. Two separate mixtures of fertilizer, based on the combination of nitrogen (N), phosphorus (P) and potassium (K), have been recommended according to the growth stage of the plant. The mixture recommended for cashew plants from field planting up to 5 years of age contains N:P:K in the ratio of 4:3:2. The adult plant mixture recommended for cashew plants from 5 years onwards contains N:P:K in the ratio of 4:3:4.

4.10 Application of fertilizers to cashew plantation is almost nil not only in Koraput district but also in the entire Orissa. A majority of cashew plants under private ownership are distributed by the Soil Conservation Department to landless farmers. These farmers only enjoy the fruits and seldom take any care of the plantations. The Cashew Development Corporation also does not apply any fertilizer, irrigation and plant protection measures once the plantation becomes three – four years old. Application of fertilizer to cashew plants is considered as a subsidy component under NHM. But subsidies are given for three years; thereafter the farmers do not apply any fertilizer. Plantations by individual farmers also do not get any fertilizer. Farmers have a misconception that cashew nut plants can withstand any adversity and does not require any fertilizer. Whatever yield they get from the trees is a net return. But farmers do not realize that application of fertilizer, manure, irrigation, etc. can give them a far better yield and return.

***Harvesting***

4.11 Harvesting of cashew is highly labour intensive. It generally involves collecting the nuts once they are dropped to the ground after maturing and plucking mature fruits. Workers scour the area under the plantations and fringes for fallen fruits and nuts. Nuts are easily traced in the surface free from weeds. In some places, the whole area under the tree is swept free of dry leaves. The nuts are generally collected in baskets or sacks. Cashew nuts are generally left to fall to the ground before being collected, as this is an indication that the kernel is mature. If fruits are picked from the trees, the cashew apple may be ripe, but the kernel often remains immature. Farmers usually prefer collecting ripe fruits fallen from trees. This is the easy harvesting process. Climbing the trees or using long hooks to pluck fruits from top of trees are avoided. The persons collecting nuts go early in the morning to collect fallen fruits and finish the job in a couple of hours or so. Also the nuts are mature and fetch good price. But the risk in this method is the harvest prolongs for weeks together and the

plantations need watch and ward otherwise chances of illicit plucking are always there. The leaseholders on the other hand employ labour to harvest the nuts by plucking method where the labourers pluck all the fruits in the tree in the same day. The immature nuts are plucked in this process. The nuts are detached from the fruit.

4.12 Cashew is harvested in Koraput during April and May. During early April one can harvest around 20 kg per day as maturity of fruits was less at this time. Collection of nuts increases slowly as peak maturity attains towards the end of April and early May and then declines rapidly. One can harvest around 50 kg a day during the peak harvest season. Daily harvest also depends on density of cashew trees, intensity of fruit bearing, distance of plants from residence of the nut collectors, etc. Collecting nuts is a labour intensive and time consuming activity. Generally, women and children take up this job.

4.13 Cashew apples are used for processing into products such as jam or juices. But in Koraput district little effort has been made for value addition to cashew apples. Usually the apples are discarded at the time of collecting the nuts. Further, since the nuts are collected after the fruits fall on maturity, at that time the apples are not in usable condition. On falling to the ground, apples get damaged. Once damaged, the apples may ferment and deteriorate quite rapidly. The riper the apple, the sweeter the taste. The cashew apple can be kept only for 24 hours after it has been picked. Transporting large quantities of apples is difficult for this reason. When stacked in layers, apples may burst and lose their juice because of the weight on top of them.

**Drying of the raw material**

4.14 The farmers or harvesters usually do not dry the nuts, rather try to sell it at the earliest after collecting them from the field. The traders, who hoard the nuts for speculative purpose so as to get higher price later and the processors who store them for processing in near future, definitely dry the nuts before storing. Cashew nuts are dried in the sun to reduce the moisture content. Nuts dried to reduce the moisture content to eight per cent or below can be stored for 12 months, provided they are packed in sealed polythene bags and stored under dry and proper storage conditions. Drying the nuts immediately after harvesting is essential in preserving their quality, but this process is often neglected.

4.15 Sun drying of cashew nuts is done on specially prepared drying floors or mats made of bamboo or palm leaves. The cashew-nut layer on the drying floor should not be thicker than 10 cm, thus allowing for about 60 kg of nuts per square metre. Drying may take between one and three days depending upon local climatic conditions. As soon as the nuts are dry, they are stored and protected from rain, moisture.

**Storage**

4.16 Technical requirements for storage are dependent on weather conditions. As cashew nuts are usually produced in climates with a long dry season, simple buildings with concrete floors and walls and roofs of corrugated metal, should provide adequate storage. Certain pre-requisites like waterproof and dry floor, firm and secure roof, well ventilated room must be satisfied to ensure safe storage. The processing units in Koraput district were having large stores where they can keep around 8 – 10 thousand bags. The cashew industries of course construct stores according to their processing capacity. Generally, the store can easily hold a

stock for around three moths' requirement of raw nuts. The processing units also maintain separate storing place for the kernels.

**Infestation of harvested nuts**

4.17 Raw cashew nuts, stored in sacks, sometimes in the open awaiting shipment and without protection from rain, are subject to infestation through the stem-end and this may go undetected until damage has progressed to the point of heavy loss. Thus the traders and processors are vigilant about it and frequently inspect the store. If needed, they put the nuts under sun for a day or two.

***Cashew Plantation in Koraput District***

4.18 Cashew plantation in Koraput district was mostly undertaken by the public sector. The cashew nuts are planted by the Forest Department, Orissa Forest Development Corporation, Soil Conservation Department, Horticulture Department, etc. under various programmes. The plantations are mostly done in traditional way. There is high mortality of trees and rejuvenation often does not take place. Further, the Forest Department and Orissa Forest Development Corporation have planted cashew trees mixed with other trees. The exact area under cashew in Koraput district is thus very difficult to estimate. However, as per Orissa Agriculture Statistics 2004-05, Koraput District had 14.24 thousand hectare under cashew nuts, which accounts for 16 per cent of the area under cashew in the state. In the district, cashew occupies 54 per cent of the area under fruit crops.

4.19 Individual plantation of cashew on a commercial scale is yet to catch the fancy of the farmers in Koraput district. Few farmers have developed cashew plantations on their own. The Department of Soil Conservation however has taken up cashew plantations in the privately owned marginal lands and wastelands and maintain them for three years free of cost to the farmers under various govt. sponsored schemes. There was no additional cost involved in the process. The farmers were not spending anything for their maintenance. The whole of the income through harvest of such plantations thus is considered as the additional income. Of late, people have realised the potential of cashew and started planting improved varieties of cashew nuts.

4.20 During the course of the field visit, interactions were held with 35 cashew farmers, of whom, only 5 had undertaken the plantation of improved varieties of grafts of cashew nuts. The remaining 30 farmers had traditional seedling varieties of cashew on their land. A comparison between the traditional and improved method of cashew is presented in the Table 4.1.

Table 4.1 : Comparison between the Traditional and Improved Varieties of **Cashew Plantation**

| Sl. No. | Particulars | Traditional varieties | Improved Varieties |
|---|---|---|---|
| 1 | Planting Material | Seeds of unknown origin.<br>Long gestation period.<br>Unknown nut quality. | Grafts of known origin.<br>Short gestation period.<br>Plants of better quality. |
| 2 | Spacing | No specific spacing method.<br>400-600 plants per ha. | 7 m x 7 m.<br>200 plants per ha.. |
| 3 | Manures and | No manures and fertilizers | Recommended doses of |

| | | | |
|---|---|---|---|
| | Fertilisers | applied to the soil.<br>Dried leaves become manure with natural decomposition. | manures and fertilizers applied in the initial years of planting. |
| 4 | Pests and Disease Management | No major pest and diseases found in the area and hence farmers do not spray any pesticides and insecticides. | No major pest and diseases found in the area and hence farmers do not spray any pesticides and insecticides |
| 5 | Gestation Period | 6 – 7 years | 4 – 5 years. Fruiting starts in the second or third year. But yield is discarded. |
| 6 | Infrastructure | No cost involved in infrastructure like fencing, irrigation facilities, water distribution system, farm equipment, etc. | Young cashew plants are protected by fencing with locally available thorny plants.<br>No cost involved on infrastructure like irrigation facilities, water distribution system, farm equipment, etc. |
| 7 | Yield | The cashew nuts start bearing after 6-7 years and thereafter the yield gradually increases and reaches a peak at about 16-17 years.<br>The productive life of the tree is 30-40 years.<br>The yield potential is 3-4 kg. of nuts / tree.<br>Small sized nuts. | Cashew nuts start bearing on within 3-4 years and the yield reaches a peak at about 10-12 years.<br>Productive life of the tree is about 25-30 years.<br>Yield potential is about 8-10 kg. of nuts / tree.<br>Large sized nuts. |
| 8 | Farm gate Price | Rs. 28-35 per kg. of nuts | Rs.35-45 per kg. of nuts |

4.21 The traditional method and unknown varieties were practiced by the Departments on a large scale due to the following advantages associated with it:

- Local availability of seeds / planting materials
- Less expensive planting material
- Less chance of pilferage
- Less planting / maintenance cost

4.22 The traditional method, however, has the following drawbacks as well:

- High mortality rate of plantation
- Long gestation period
- Low economic yield
- Small size of nuts and hence low price of nuts

**Cost of cultivation per ha. under Traditional Method**

4.23 The cost of cultivation of the cashew nuts per ha. under traditional method was collected from the sample farmers. The planting details per ha. involved the following :

- No specific spacing norms
- Approximately 200 plants
- Nondescript variety
- Mortality Rate : 25 per cent
- Economic life of plants : 35 years
- Labour Cost @ Rs. 55/- per day
- Farm gate price of nuts Rs.30 per kg

The details of the cost of cultivation estimated on the basis of data collected from sample farmers in Koraput district are indicated in the Table 4.2.

***Table 4. 2: Cost of Cultivation Cashew in one ha. under Traditional Method***

(Amount in Rs.)

| **Sl. No.** | **Item of Work** | **1st Yr.** | **2nd Yr.** | **3rd Yr.** | **4th Yr.** | **5th Yr.** | **6-14th Yr.** | **14 – 35th Yr.** |
|---|---|---|---|---|---|---|---|---|
| 1 | Cashew seedlings @ Rs.5 per seedling | 1000 | 200 | - | - | - | - | - |
| 2 | Land development / Cleaning of Site | 660 | - | - | - | - | - | - |
| 4 | Digging of Pits and transplantation | 495 | 110 | - | - | - | - | - |
| 5 | Two times weeding & Soil work | 440 | 440 | 550 | | | | |
| 6 | Cost of Fencing | 1000 | 200 | - | - | - | - | - |
| 7 | Watch & Ward Services @ Rs.100 pm | 800 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 |
| 8 | Irrigation, manure and Maintenance | 500 | 200 | 200 | - | - | - | - |
| 9 | Harvest | - | - | - | - | - | 440 | 550 |
| | **Total** | **4895** | **2350** | **1950** | **1200** | **1200** | **1640** | **1750** |

***Income from Cashew Plantation – Traditional method***

4.24 As revealed by the sample cashew planters, approximately 200 plants are planted in one ha. of land. The mortality rate being around 25 per cent nearly 150 plants survive per ha for fruit bearing. The fruit bearing starts from the 6th year onwards. Though in case of some plants, the fruit bearing starts from the 5th year onwards, the farmers do not harvest them as the yield is very low i.e. around 0.5 kg per plant. From the 6th year onwards the yield goes on increasing and reaches a peak at 3 kg. per tree from 14th year onwards (Table 4.3). The total production increases to around 450 kg per hectare from the 14th year onwards and it continues up to the 30th year. The size of the nut being very small fetches around Rs.30 per kg at farm gate. The plants give a net income of Rs.11,750 per ha. from the 14th year onwards.

4.25 Under traditional practices cashew was planted on the wasteland and marginal lands where no agricultural practices were carried out. There was thus no pre developmental income and hence the whole of net income was considered as incremental income for calculation of the IRR (Table 4.3). At the end of the 30 economic life, i.e. 30 years

considered in the IRR exercise in Table 4.3, the salvage value of the trees are not taken in to account because cashew trees do not have timber value and the sale proceeds of the trees may be equal to the labour put to cut the transport the trees. The IRR from the plantation of the cashew nuts of unknown origin in a traditional manner comes out to be 23 per cent as indicated in Table 4.3.

***Table 4.3 : Yield and Income from the Cashew Plantation under Traditional Method***

| **Year / Yield** | **1 – 5*** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14 – 35 #** |
|---|---|---|---|---|---|---|---|---|---|---|
| Per Tree (kg) | 0 | 0.5 | 0.75 | 1.0 | 1.25 | 1.50 | 1.75 | 2.0 | 2.5 | 3.0 |
| Per Ha. (kg) | 0 | 75 | 112.5 | 150 | 187.5 | 225 | 262.5 | 300 | 375 | 450 |
| Gross Income (Rs.) | 0 | 2250 | 3375 | 4500 | 5625 | 6700 | 7875 | 9000 | 11250 | 13500 |
| Cost Per Ha. (Rs.) | 11595 | 1640 | 1640 | 1640 | 1640 | 1640 | 1750 | 1750 | 1750 | 1750 |
| Net Income Per Ha. (Rs.) | - 11595 | 610 | 1735 | 2860 | 3985 | 5110 | 6125 | 7250 | 9500 | 11750 |
| **IRR** | **23 %** | | | | | | | | | |

***** Total for first five years.

# Particulars pertain to every year between 14th and 35th year. The particulars shall remain same on attainment of saturated yield level in the 14th year.

**Improved Methods of Cultivation**

4.26 Under the improved methods of cashew plantation, the hybrid-grafted varieties of cashew are planted with the spacing norm of 7 m x 7 m.. The grafted materials are usually purchased from the Horticulture Department or other authorized dealers outside the District. The cost of cashew graft is around Rs.15. The farmers as per the guidance of the Horticulture Department prepare the land by cleaning weeds, leveling the land, digging pits in March – April. Planting is done in the month of June-July with the onset of monsoon.

**Cost of Plantation of Grafted Cashew Plantation**

4.27 Since grafts are usually not available in Koraput District, the Cashew Development Corporation or Horticulture Department procure cashew grafts from approved nurseries and supply the same to interested farmers. Grafting needs highly skilled workers and it is a costly affair to produce grafts. Unless there is assured market, the nurseries do not produce cashew grafts. A few small nurseries in Koraput district produce cashew grafts to a limited extent to meet the local demand. Grafts, though not well accepted in the district still have a potential because of its higher and better quality yield. The Horticulture Department plants cashew grafts of known varieties only under National Horticulture Mission. The details of the approximate cost of plantation of the grafted varieties of cashew have been estimated on the basis of the data collected from the sample farmers and Horticulture Department. The same is presented in Table 4.4.

- Spacing : 7 m x 7 m
- No. of Plants per ha. : 200
- Specified varieties
- Mortality Rate : 10 % in the first year and replaced in the second year
- Trees giving economic return 90% (180 trees)
- Economic Life : 25 years

- Farmgate price of nuts Rs.35 per kg

**Table 4.4 : Cost of Plantation of Grafted variety of Cashew**

(Amount in Rs.)

| Sl. No. | Particulars | Yr-1 | Yr-2 | Yr-3 | Yr-4 | Yr-5 | Yr-6-25 |
|---|---|---|---|---|---|---|---|
| 1 | Land Development | 990 | 0 | 0 | 0 | 0 | 0 |
| 2 | Planting Materials @ Rs.15/- per plant | 3000 | 300 | 0 | 0 | 0 | 0 |
| 3 | Digging of pits | 1100 | 220 | 0 | 0 | 0 | 0 |
| 4 | Labour charges for planting | 990 | 220 | 0 | 0 | 0 | 0 |
| 5 | Manures @ Rs.150/- per tonne | 450 | 450 | 300 | 300 | 300 | 300 |
| 6 | Fertilisers | 250 | 325 | 450 | 650 | 650 | 650 |
| 7 | Irrigation / Watering | 1000 | 500 | 0 | 0 | 0 | 0 |
| 8 | Watch & Ward | 1000 | 1200 | 1200 | 1200 | 1200 | 1200 |
| 9 | Plant Protection | 150 | 250 | 450 | 450 | 450 | 450 |
| 10 | Labour charges for application of Fertilisers and Manures | 550 | 485 | 685 | 875 | 875 | 875 |
| 11 | Harvesting | 0 | 0 | 0 | 200 | 600 | 1000 |
| 12 | Fencing | 3000 | 0 | 0 | 500 | 0 | 0 |
| | **Total** | **12480** | **3950** | **3085** | **4175** | **4075** | **4475** |

**Income from Graft Variety Cashew Plantations**

4.28 The grafted varieties of cashew nuts are planted by maintaining line and spacing, following proper agronomic package and practices, etc. Due care is also taken in applying manure, fertilizers, deweeding and plant protection measures at regular intervals. For this reason about 90-100 per cent trees provide economic return. Fruiting starts in the third year itself but the farmers generally pinch or remove the flowers for facilitating the plats for vegetative growth. Economic yield usually starts from the fourth year and slowly reaches the peak or saturated level on the 10$^{th}$ year. Yield and income from the grafted variety of cashew nuts are indicated in Table 4.5.

**Table 4. 5 : Yield and Income from Improved Variety of Cashew nuts Plantation**

| Year → Yield | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 – 25* |
|---|---|---|---|---|---|---|---|---|---|---|
| Per Tree (kg) | 0 | 0 | 0 | 1 | 1.5 | 2 | 3 | 4 | 5 | 6 |
| Per Ha. (kg) | 0 | 0 | 0 | 180 | 270 | 360 | 540 | 720 | 900 | 1080 |
| Gross Income (Rs.) | 0 | 0 | 0 | 6300 | 9450 | 12600 | 18900 | 25200 | 31500 | 37800 |
| Cost Per Ha. (Rs.) | 12480 | 3950 | 3085 | 4175 | 4075 | 4475 | 4475 | 4475 | 4475 | 4475 |
| Net Income Per Ha. (Rs.) | -12480 | -3950 | -3085 | 2125 | 5375 | 8125 | 14425 | 20725 | 27025 | 33325 |
| **IRR** | **38 %** | | | | | | | | | |

* Particulars pertain to every year between 10$^{th}$ and 25$^{th}$ year. The particulars shall remain same on attainment of saturated yield level in the 10$^{th}$ year.

4.29 As can be seen from the Table 4.5, the improved variety of cashew nuts plantation can yield a net income of Rs.33,325/- during the peak period between 10th to 25th years of planting. The yield starts from the fourth year onwards but it is around one kg. per tree. Gradually, the yield picks up and reaches the plateau at around 6 kg. per tree during the 10th year and maintains that level up to 25th year. The grafted cashew variety fetches an average price of Rs.35 per kg. as against Rs.30 per kg. for the traditional variety of cashew because the nuts are larger in size than the nuts from traditional varieties. The IRR for the cashew plantation was estimated at 38 per cent.

4.30 The harvesting period of cashew nuts in Koraput district starts from April and continues till end of May. The important to harvest the matured nuts so as to produce good quality kernel. Under the private plantations, the owners collect the nuts mostly with the help of family members before the final harvest. The final harvest takes a day or two and one to two labour are hired for this purpose. The harvest from the forest plantation is given on lease and the leaseholders employ labour to collect cashew nuts. Mostly, the women and children collect cashew nuts from forest areas.

4.31 The next stage is the marketing of harvested cashew nuts for which two types of marketing systems are followed.

**i. Auction system**

4.32 The Cashew Development Corporation, Orissa Forest Development Corporation and the Forest Department follow auction system for collection of cashew nuts from their plantations. The contracts are given to the leaseholders through the auction. The notification of lease is done in the month of November / December and auction process is complete before 31st March. The highest bidder is invited to collect the cashew nuts from the areas. The contract includes only collection of cashew nuts, not other activities like pruning, deweeding, etc. The lease is given for one season only. However, since 2005-06, the OFDC has resorted to a leasing plan for three years. The leaseholder is allowed to enter the cashew area inside forest jurisdiction and collect cashew nuts up to end of June. The lease is effective only when the lessee pays 20 per cent of the auction amount as the security deposit and 40 per cent of the auction amount as the caution deposit.

4.33 The leaseholders are generally financially sound people and hailed from well off businessmen group or civil contractors or so. In Koraput district, owner of one cashew processing unit also had leased in some cashew plantations of Cashew Development Corporation while other lease holders interacted during the study were petty contractors. A group of four unemployed youths also leased in some cashew areas under the Corporation for harvest. In fact, there was demand for auction for the areas with high density of cashew plants and with better yield. On the other hand, areas where trees are sparsely populated and cashew yield was low, Corporation seldom got a leaseholder. In such cases, leaseholder of previous year was awarded to harvest such plantations. Auction process however remained sensitive in certain areas, especially in the Gajpati, Ganjam and Khurdha districts.

**ii. Individual collection**

4.34 Cashew nuts grown on the private orchards are harvested by the individual growers and nuts are sold to the processors or to the traders. The traders in turn sell the nuts to the processors. The farmers mostly sell the produce to the traders who often pay the lowest

possible rates on the plea of small size of nuts, immature nuts, etc. The small traders go to each village and contact the farmers for buying their cashew nut produce. In some cases, the leaseholders of the forest plantations force the small individual cashew planters to sell their produce to them. The usual argument is that since they hold the lease for the govt. land, the farmers have to sell their produce to them. The ignorant farmers in many cases succumb to the pressure. There is a difference of Rs.2-3 per kg. between the price purchased by the processing units and the price offered by the traders to the farmers in the harvest season. Once harvest is over, the cashew nut market is entirely controlled by the large traders who hoard and speculate huge stocks of raw nuts. The traders / leaseholders hoard the produce to jack up the price up to Rs. 36-42 per kg at some point of time.

4.35 As per the estimates on the basis of data collected from sample cashew farmers, traders and processing units, nearly 90 per cent of raw cashew nuts in Koraput district was captured by the forest leaseholders and traders. Only 10 per cent of the produce in the district was sold directly by the growers to the processing units. The traders apply various techniques to buy the produce from the growers at lowest possible price. They hoard the nuts and in the process the price increases by Rs.8 to Rs.10 per kg. Under these circumstances, both the cashew farmers as well as the processing units suffer losses whereas the traders and middlemen earn handsome.

4.36 Cashew plantation involves extensive socio-economic dimensions. The plantations raised by the Soil Conservation Department are distributed among poor households around two acres each. Such plantations could earn them a net income of around Rs.10,000 in a year. This has enough potential to push them up above the BPL category. Similarly, the harvesting of cashew nuts also generates enough employment and income for the landless and agricultural labourers. More important is harvesting of cashew nuts is usually done during the months of April and May, which are the lean agricultural season. During this period the agricultural labourers usually sit idle; cashew harvest provide them employment and income. Further, the processing of cashew nuts also provides employment opportunities to the workers, who hail from poor families, for about ten months in a year. Moreover, the labourers in the processing units work in a better condition unlike farm work. The year round employment opportunities and income from this sector are adequate enough to help the poor workers to remain well above the poverty line.

# CHAPTER - V

# PROCESSING OF CASHEW NUTS

Cashew kernel is the main product of cashew nut processing. Cashew kernels, commonly known as cashew nuts, are one of the scrumptious dry fruits of the world. Cashew nut is unusual in comparison to other tree nuts as the nut remains outside the fruit. After separation from the fruit, the nut is processed to extract commercially important kernel. Cashew kernel ranks first among the export-oriented horticultural commodities in India. Though cashew nuts processing industries first started in Mangalore in Karnataka during the first half of 20th century, it extended to other coastal states later on due to availability of cashew, cheap and skilled labour, market linkage and above all due to the initiatives of a few entrepreneurs. Cashew processing reached Orissa mainly through the entrepreneurs in this sector in the neighbouring State of Andhra Pradesh. The growth of the cashew industries in Orissa centered around Koraput, Ganjam and Gajapati districts, which are bordering to Andhra Pradesh.

5.2 Cashew Processing in India as well as Orissa, continues with its traditional manual operations. Processing is of course a separate economic activity than the plantation of cashew nuts. In fact, processing is an industrial activity mainly taken up by the entrepreneurs who procure the nuts from the growers through traders and process it. Cashew processing involves Cleaning, Soaking, Roasting, Shelling, Separation, Drying, Peeling, Grading, Packing and Marketing. Though mechanization is introduced in Cashew Processing, complete mechanized or automatic processing is yet to be established. Availability of skilled and cheap labour in India and better quality of Kernel under manual processing with minimum cost, limits the scope for extensive mechanization in the cashew processing. Therefore, a majority of the processing work is done through manual labbour. Factories in general have mechanization in roasting / boiling and packing. Predominance of manual labour continues in the processes like shelling, peeling and grading. Different stages of cashew processing are described as below:

**Procuring**

5.3 After harvesting from the plant, cashew nuts are separated from the apple and sold to the traders or processors who bring them to the processing factories. Usually, around ninety per cent of raw nuts are purchased from traders and the rest ten per cent are bought from the farmers. During the initial harvest months i.e. March / April, price of nuts remain slightly low i.e. between Rs.28 and 35 and after that, it slightly shoots up. This is so because initially the nuts contain more moisture and weigh more and gradually it dries up. Again, cashew harvest lasts for a couple of months and usually the price remains low during harvest when it is available with the farmers. Once the harvest is over and the traders take control of the stock they start regulating the price and it slowly shoots up. The price of nuts however remains volatile and fetch the price that prevails on that day. There is no price difference according to size of nuts. This is because grading of raw nuts is not done and all sizes of cashew nuts are mixed and sold by the growers. Since the local nuts are available only for a couple of months after the harvest, the processing units try to procure most of their requirement during this period. Procuring a stock for the entire year involves a huge amount of investment also it

requires ample storage space. In view of this, the processors maintain stocks adequate for at least three months of processing. Apart from that, the traders also procure raw nuts and supply the same to the processors throughout the year.

**Cleaning**

5.4 Raw cashew nuts soon after reaching the processing units are cleaned from foreign particles like sand, stones, dried leaves and cashew apples. For cleaning the raw nuts, it is generally sieved by hand using 3-4 inch mesh sieve. Male labour are usually employed for this work. Then the nuts are sun dried for a day or two till the moisture level comes to almost nil and stacked in a low moisture storing place.

**Soaking**

5.5 Raw cashew nuts are generally soaked in water to avoid scorching while roasting / boiling. Soaking is done by placing raw nuts in 40-45 gallon drum or vat filled with water. After 10 minutes, water is drained via the plug at the bottom of the drum. The nuts are then left for 4-5 hours to get the moisture absorbed from the water particles on the surface of the Shell. The process, based on requirements is repeated until raw nuts have moisture content at the recommended level of below 10 per cent. This item of work is also carried out by male labour.

**Roasting**

5.6 Cashew kernels are extracted from the nuts by removing the shell of the nut. This is done either by roasting or boiling the nuts and breaking the shell to extract the kernel from inside the nut. Under roasting method the nuts are burnt which makes the shell brittle so that it can be broken to extract the Kernel. Open Pan Roasting, Drum Roasting and Hot Oil Bath Roasting are the 3 popular methods of roasting. Most of the medium and large factories prefer Hot Oil Bath Roasting with better equipments for quality Kernel and optimum extraction of Cashew Nut Shell Liquid (CNSL). Only male labour is deployed for roasting. The procedure in case of each of these three methods of roasting is explained in the following paragraphs. There are opinions that kernels extracted under roasting method are tastier than the kernels extracted under boiling method. Further, storage or shelf life of kernels extracted under roasting method is longer than the kernels extracted under boiling method. but the risk involved in roasting method is chances of breaking the kernels while extracting is very high thus it requires more skillful hands for removing the kernel from the roasted nuts. Again, roasting of kernels emit obnoxious smoke and thus invite objections from the residential areas in the vicinity. Of late, the Pollution Control Board has stopped permits for establishing cashew processing units under roasting method. The existing units also slowly switch over to boiling method where such smoke is emission is not there.

**Open Pan Roasting**

5.7 Mild Steel Pans of 60 cm in diameter are generally used in small units. This is kept on ordinary earthen fireplace. Small quantity of raw nuts are kept, heated and constantly stirred till Cashew Nuts Shell Liquid (CNSL) starts to exude and then ignites. The process produces long flames and thick black smoke. After couple of minutes, the pan is dowsed and the charred, swollen and brittle nuts are ready for shelling on moisture evaporation.

**Drum Roasting**

5.8 In this method raw cashew nuts are fed to a rotating drum kept over fire. A light horizontal slope in the mounting of the drum ensures the downward movement of the roasted nuts through the drum. The drum will have numerous pierced small wholes through which fire touches the raw nuts and the smoke generated is led out through a hood and chimney. In improved versions, the heat from the burning CNSL is also harnessed to roast the nut, thereby reducing fuel cost. Generally, such roasters also contain helical screw, which moves the burning nuts at a controlled rate.

**Hot Oil Method**

5.9 Oil bearing raw nuts, when immersed in hot CNSL, will let loose its oil, thus, adding to the oil in the container. In this process, conditioning of the raw nuts for roasting becomes sensitive. The equipments required in this method are simple such as an iron tank consisting heated CNSL to a temperature of $180^{o} – 190^{o}C$ by a furnace and a wire basket to immerse the raw nuts in the tanks. The depth of the basket should be sufficient so that the rim remains well above the oil during the roasting. Immersion time can range from one and half a minute to four minutes based on requirements. In such methods about 50 per cent of the CNSL is extracted. By overheating to $200^{o}C$, polymerization of the CNSL can take place and therefore temperature is controlled through careful and continuous firing to meet the required level. The tank is cleaned before use.

**Shelling**

**(a) Manual Shelling**

5.10 Shelling of cashew nuts is a skilled manual job. In India, this job is mainly done by women labourers. Manual skilled labour is mainly employed in roast method of cashew processing. In the manual shelling process, roasted nut shells are placed on a flat and hard stone or piece of wood and skillfully cracked with a wooden mallet. A skilled sheller can crack on an average 10 nuts per minute, or 600 nuts per hour and 4,800 nuts during 8 working hours, approximately 8 - 10 kg. per day. Expert shellers can increase the quantity up to 12 kg in a day. Further, breakage of kernels by a skilled labour is very less; around 10 per cent as compared to 25-30 per cent by the unskilled labourers. As CNSL from the roasted cashew nuts has burning effect on skin, hand gloves are generally recommended and currently insisted for their use. Earlier, women belonging to lower caste were taking up this job. Presently with improved working conditions and better wages, women belonging to lower income strata take up the job irrespective of caste.

**(b) Mechanical Shelling**

5.11 A pair of knives each shaped in the contour of half a nut is used to cut the oil roasted / boiled raw nuts. A worker standing on his feet operates the knife through a paddle and a chain. Average shelling can be at 12 KG kernel per day for a worker. A rotatory paddle projects the shells against the solid cashing and the impact cut over the shell without breaking the kernel. Under this method, all sizes of nuts can be processed with suitable grading, say 3 or 4 groups based on their size. Outcome of whole-kernel under this process is around 75 per cent. Mechanical shelling is widely used in boiling method of cashew processing, whereas

majority of the shelling operations under roasting methods still continue under manual processing with the participation of female labour.

**Separation**

5.12 After shelling, kernels are separated from the broken ones. Often blowers and shakers are used to separate the lighter shell pieces from kernels. Small pieces of kernel sticking to the shell are separated manually.

**Pre-grading**

5.13 Pre-grading is done before or after drying the kernels. This reduces the work involved at the stage of final grading. Pre-grading also can be done mechanically when large quantity is available. At pre-grading whole ones are separated from the broken ones and often, whole kernels are also graded based on their size to meet the recommended International Trade Standards.

**Drying**

5.14 To separate the testa, the brown cover on the kernel, the shell is dried in scientific manner in a hot chamber. This also helps in reducing the moisture to the recommended level of 3 per cent and to protect them from the attack of fungus and pest. During monsoon and humid days drying takes a long time. Therefore, the roasting and shelling process have to be scheduled to adjust with the long time required for drying. Artificial drying in a hot chamber is done by all large processors. Only a few small processors opt for sun drying, which has high risk for contaminated with sand, dust particles, etc. Also hot sun may not be available all the days especially during the four monsoon months, which are the peak season for cashew processing. Drying through hot chambers generally takes 6–8 hours; temperature is regulated at $70^0$C. The cashew shells after shelling the nuts are used as fuel for heating the hot chamber. A uniform temperature is required to avoid under drying or scorching the nuts. Generally, tray dryers, drying rooms and moving trawlers are used in this activity. At the drying stage, utmost hygiene is ensured to avoid insect infestation. After drying, peeling is attempted quickly when the kernels are still at the bristle stage. Both male and female labour participate in the above process.

**Peeling**

5.15 When kernels are at the brittle stage, testa attached to the kernel will be loosely connected and it is easy to peel off from the nut. Manual peeling is done by gentle rubbing the kernel with fingers or a small knife or a bamboo split. However, those parts sticking to the kernel are detached carefully by skilled labour. A skilled labour can peel on an average 12-15 kg. kernels per day. Only female labourers carry out this job. Mechanised peeling includes air blasting, suction, a freezing operation and a system of rubber rollers. Compared to manual peeling, mechanized peeling has low efficiency due to the difficulty in removing the sticking testa and incidence of breakage can be as high as 30 per cent.

**Grading**

5.16 Grading ensures quality control of the kernels. Most of the grading is carried out by skilled female labour. A few mechanical grading aids are also available. However, their use

has limitations. Power driven rotary sieves and outwardly rotating rubber rollers aligned at driving angle are often used for grading. For Export purpose, grading is done strictly to meet the recommended international quality standards. The main grades of cashew kernel are as follow :

- White Wholes, which are subdivided into counts
  - .1 WW 180 - King of cashew, large in size and very expensive
  - .2 WW 200 / 210 - Popularly known as jumbo nuts
  - .3 WW 220 / 240 - Attractive grade and reasonably priced
  - .4 WW 300 / 320 - Most popular and largely available
  - .5 WW 400 / 520 - Small and Cheap
  - .6 WW 500 / 520 - Smallest and Cheapest white whole kernel

ii. Butts - Wholes with small pieces chipped off
iii. White Splits - Kernel Halves
iv. LWP Size - Large white pieces of size lower than 60 mm
v. SWP - Small white pieces of size lower than 40 mm
vi. Scorched Grade - Showing discolourtion due to over roasting

**Rehumidification**

5.17 Through rehumidification, moisture content of kernels is raised to 5 per cent. The kernels can be made less fragile, thus, minimising chances of breakage through handling and transportation. In humid climate, kernels absorb enough moisture during peeling and grading and rehumidification can be avoided after careful assessment.

**Packing**

5.18 As per International standards, cashew kernels need to be packed into airtight tins of 8 kg each. Standard tins are supplied by manufacturers. Large cashew processors have their own tin factories. As it involves sizeable investment, small cashew processor purchase tins from suppliers. After filling and weighing, the air from the tin is removed and instead an inert gas, often Carbon Dioxide ($CO_2$), is filled in. Carbon Dioxide prevents survival of any leaving organism in the tin. As $CO_2$ is soluble in Cashew Oil, it takes form of a solution after sealing the tin. This causes a decrease in inside pressure and tin is drawn inwardly from both top and bottom and kernels are held tight inside the tin preventing movement and breakage. Carbon Dioxide, being a heavy gas causes upward displacement of air and will remain in the tin after the filling process.

5.19 The air in the tin is pushed out by feeding in $CO_2$ through a small whole at the bottom of the tin. When all the air is replaced through a small whole at the top of the tin, wholes are sealed first at the bottom and then at the top. This ensures proper filling in of the inert gas and replacement of air from the tin. A large machine can fill 6 tins at a time, creating vacuum in each and then filling with inert gas. Packing is mostly done by male workers.

**Infestation**

5.20 A good processor takes utmost care to avoid incidence of infestation so at to keep up the faith and reputation of the Company by meeting international stipulated standards. At all the above stages, direct involvement of both the skilled and unskilled labour and the

supervisor are required to maintain quality and to minimize production losses. Both male and female labourers are employed in supervision and administration.

**Economics of Cashew Processing**

5.21 At the time of the field study, there were 29 cashew processing units in Koraput district, of which 26 were in operation. The remaining three units were closed down due to personal problems of the owners. The detailed list of the cashew processing units in Koraput district is indicated in the Annexure 5.1**.** For studying the economics of the cashew processing units, data on cost and benefits were collected from 5 randomly selected cashew units concentrated around Jaipur (3) and Borigumma (2). Based on the processing capacity, ability to procure raw materials and employment of labour, management efficiency in selling the processed outputs cashew processing units can be broadly classified into three categories i.e. Small, Medium and Large Units. Large units generally employ more than 800 labourers, Medium units employ 400 - 800 labourers; and Small units employ less than 400 labourers. Capacity of a cashew factory is also assessed in terms of the number of bags of raw cashew being processed in a day. A bag of raw cashew weighs 80 kg. In full capacity, a large factory can process around 100 bags a day. However, for the sample units it ranged from 13 to 83 bags in a day. In normal working days, a factory worked for an average 8 hours per day. The sample units were working on an average 287 days in a year. However, two sample units had reported working days of 300 per annum. The operation period generally depends on availability of labour, stock of raw cashew for processing and of course the demand for the produce. Since cashew kernels have a limited shelf life of about three months, the processing units were generally processing only after confirmation of an order for a particular quantity of kernel.

5.22 For studying the economics of production, data on both cost and return components involved in cashew processing were collected from the sample processing units and analysed. The costs incurred and returns realised by the sample units during the last 3-year period, 2003-04, 2004-05 and 2005-06 were collected from factory's Books of Accounts and also through interacting with responsible persons involved in various stages of the cashew processing. Both costs and returns were brought to reference year's price i.e. 2005-06, with suitable price indices. Details of the same are given in the following paragraphs.

**Cost Components**

5.23 Cashew processing is a cost intensive industrial activity. The investment cost of sample cashew processing units involved the use of various types of plants and machineries, which were purchased mainly from Andhra Pradesh and Karnataka. A few entrepreneurs locally manufactured some of the equipments like boiling tank, hot chamber, etc. with the help of local technicians. The cost of such equipments was much lower than the branded ones. Further, small size machineries are not easily available in the market. Hence, the entrepreneurs manufacture them according to the scale of the processing unit. However, the locally manufactured machineries are often observed to be not as efficient as the branded ones. The average investment cost of the sample cashew processing units at the reference year price is presented in the Table 5.1.

**Table 5.1 : Investment Cost of Sample Cashew Processing Units**

(Rs. in Lakh)

| Sl. No. | Particualrs | Amount |
|---|---|---|
| **1** | **Land** (one acre) | **3.32 (6.1)** |
| **2** | **Building & Factory** | |
| a | Packing House | 2.50 |
| b | Grading House | 2.94 |
| c | Peeling House | 2.39 |
| d | Cooling House | 2.33 |
| e | Office including Security | 2.97 |
| f | Cashew nuts Store (for 250 mt) | 4.40 |
| g | Packing Material Store | 1.91 |
| h | Product Store | 1.92 |
| i | Borewell | 0.56 |
| j | CC Roofing with Iron Angulars | 0.88 |
| **k** | **Total Building and Factory** | **22.80 (41.5)** |
| **3** | **Machinery and Equipment** | |
| a | LPG Boiler | 2.65 |
| b | Water Softner | 2.25 |
| c | Stem Piping from Boiler to Cooker | 1.05 |
| d | Cashew cooking vessels | 1.35 |
| e | Cashew cutting Machines | 1.60 |
| f | Cashew cutting Tables | 2.85 |
| g | Boiler Section Machine including Heat Exchanger with Chimney and insulation, HP motor, Blower, Trolleys, Aluminium Perforated Sheets, etc. | 11.60 |
| h | Humidification Section | 2.68 |
| i | Packing Section | 2.77 |
| **j** | **Total Machinery and Equipment** | **28.80 (52.4)** |
| **4** | **Total Investment Cost** | **54.92 (100)** |

Note : The average processing capacity of the units = 818 tons per annum
Figures in brackets represent percentage to Total Investment Cost.

5.24 The investment cost of the processing units comprised of three major cost components, i.e. land, building & factory, plants & machineries. The value of the land was estimated on the basis of its prevailing market price. The factory and building of the processing units consisted of separate stores for raw cashew nuts, cashew kernel, packing material, etc. Two of the sample units had constructed separate floors for different activities. The shelling and peeling were done on one floor and peeled nuts were graded and packed in different floor. Some other units had constructed halls with separate area and elevations for different activities. In all the sample units the processing was done in a very hygienic manner so as to maintain the quality aspect. The average investment on factory and building for the sample units amounted to Rs.22.80 lakh. However there was variation among the sample units. The highest investment on the same was Rs.32.00 lakh whereas the lowest investment was Rs.20.00 lakh.

5.25 The machinery in the sample processing units included LPG boiler as the units were following the steam boiling method of processing. Several other machineries like water softner, stem piping from boiler to cooker, etc. were also used by the units. The cashew

cutting machines were usually a spring cutter with a pedal mounted on tables. All the sample units had their own packing section where the cashew kernel was packed in tinned packs of 10 kg. each. The average cost of machinery and equipment for the sample units amounted to Rs.28.80 lakh. The actual cost of the units, however, varied in the range of Rs.18 lakh to Rs.45 lakh for the sample units. The average investment cost of the sample units was Rs.54.92 lakh. The cost varied between Rs.41.60 lakh and Rs.82.00 lakh.

**Operating Cost**

5.26 The major items of operating cost in case of the sample cashew processing units included the cost of raw materials, transportation of the same to the processing units, salaries of the administrative / maintenance staff, labour charges, expenses on packing materials, electricity charges, sales tax, depreciation, etc. The miscellaneous cost included various types of hidden cost associated with the processing units and other incidental expenditure. The operation cost of the sample cashew units is indicated in the Table 5.2.

**Table 5.2 : Cost of Operation of Sample Cashew Processing Units**

(Rs. lakh)

| Sl. No. | Particulars | Average Cost | Range | |
|---|---|---|---|---|
| | | | Minimum | Maximum |
| 1 | Raw Cashew Nuts | 286.30 (74.1) | 105.00 | 700.60 |
| 2 | Transportation | 8.18 (2.1) | 3.00 | 20.00 |
| 3 | Salary of Administration / Maintenance Staff | 2.52 (0.6) | 0.90 | 4.50 |
| 4 | Labour Charges | 59.97 (15.5) | 22.02 | 140.60 |
| 5 | Electricity | 1.74 (0.6) | 0.62 | 3.98 |
| 6 | Packing | 1.96 (0.5) | 0.72 | 4.80 |
| 7 | Maintenance of Machinery | 1.44 (0.4) | 0.95 | 2.25 |
| 8 | Maintenance of Plant | 1.14 (0.3) | 1.00 | 2.25 |
| 9 | Sales Tax @ 4 per cent | 16.66 (4.3) | 6.11 | 40.76 |
| 10 | Miscellaneous | 6.24 (1.6) | 2.29 | 15.25 |
| **11** | **Total Operation Cost** | **386.15 (100)** | **142.61** | **934.39** |

Note : The average processing capacity of the sample units was 8.18 tons per annum.
Figures in brackets represent percentage to Total Investment Cost.

5.27 The operation cost for the sample cashew processing units was calculated on the basis of their processing capacity. The annual processing of the units varied between 300 MT to 2000 MT. The average annual processing of the sample processing units was about 818 MT. The units run abut eight to ten months in a year depending on the availability of raw nuts, labour and market for kernels. The average working period of the sample units was estimated to be 287 days per annum. Again, depending on the availability of labour and raw nuts the units process a particular volume in a day. The average processing of nuts by the sample units was calculated at 35 bags of 80 kg per day. The average daily quantity of processing ranged between 13 bags to 83 bags for the sample units.

**i. Raw Cashew Nuts**

5.28 The processing units were procuring the raw cashew nuts from various sources at a rate ranging between Rs.30 and Rs. 45 per kg. Three of the sample cashew processing units

were holding the import licenses and were importing raw cashew nuts from African countries like Guatemala, Zambia, Ivory Coast, etc. The imports were being made through the agents in Vishakhapatnam in Andhra Pradesh. The other two processing units were procuring cashew nuts from neighbouring states of Andhra Pradesh and Chattisgarh, apart from procuring the same from the local areas. The big units had better bargaining power and enjoyed the economies of scale. They were getting the raw cashew nuts at Rs.33 per kg. The average price of raw cashew nuts for the sample units was Rs.35 per kg. The price of the locally produced cashew nuts was often influenced by the price and availability of imported ones. As a large portion of the raw cashew nuts collected are marketed in bulk quantity by established traders having hoarding capacity, they also take advantages of the prevailing market situation.

**ii. Transportation**

5.29 Raw cashew nuts are voluminous and heavy. They are also collected from hinterlands generally far away from the processing units. Often the processing units collect nuts from outside the district and even from neighbouring states. The processing units on their own initiatives try to collect quality raw nuts and at low price. Often the units arrange for transportation of the raw nuts procured by them. Traders, since have an edge over the processing units in bargain, often transfer the transportation charges to the processing units. Some times the transportation charges of kernels are also borne by the units. All the processing units have their own trucks, which they use for transportation at nearby places. On the basis of the primary data collected from the sample processing units and traders it was assessed that the transportation charges would be One Rupee per kg. of nuts, on an average. This was considered for estimating the Financial Rate of Return (FRR) of the sample processing units.

**iii. Salaries**

5.30 The processing units had employed several people for managing various processes, supervision, machine operation, caretaker, etc. The sample units employed 8 persons on an average for handling these activities. There was however variations among the units, as one unit had employed only 3 persons where as another had employed 15 persons. The salaries of these persons varied in the range of Rs.2,000 to Rs.3,500 per month, with the average salary per employee being Rs.2,625.

**iv. Labour Charges**

5.31 The labour charges constituted another major item of the expenditure of the sample processing units. The average number of labour employed by the sample units was 389 per day. The actual employment varied between 143 and 913 in one day. The wage earned by the workers ranged between Rs.50 to Rs.70 in a day. Wages are normally paid according to the quantity of processing by a particular labour. Skilled works can process up to 12 – 14 kg in a day. Further, wage rate ranges between Rs.5 and Rs.6 for one kg for different activities like shelling, peeling, etc. The labourers engaged in peeling were getting a little higher wage (Re.1.00 per kg more) than the labour engaged in shelling. This was due to the fact that peeling requires better skill, as any breakage of nuts would reduce its grade and finally its price. The number of skilled workers in the sample units was relatively less. One develops the skill in cashew processing after continuously working for three four years. Some of the units are new, two or three years since establishment. Again, the young girls who work in cashew factories move to other places after marriage. It was observed during the field visits

to the sample units that only about twenty per cent workers were adequately skilled. The average wage per day for the daily workers was calculated at Rs.55 approximately.

**v. Electricity Charges**

5.32 The electricity charges of the sample units amounted to Rs.1.74 lakh per annum. The actual electricity charges varied between Rs.0.62 lakh to Rs.3.98 lakh. Since the units mostly use the cashew shells as fuel for boiling and heating, electricity is not at all used for most of the processing work. It is mainly used for lights, fans, running the motor attached to the tube wells, etc. The automated hot chambers in large units however were using electric heaters.

**vi. Packing**

5.33 The cashew kernels were packed in tins of 10 kg. each. Three of the units had their own packing units whereas two of them were procuring tins from outside. The average packing cost of one tin of cashew kernel was calculated at Rs.10. The average packing cost was Rs.1.96 lakh. The actual cost varied in the range of Rs. 0.72 lakh to Rs. 4.80 lakh for the sample units.

**vi. Sales Tax**

5.34 The sample cashew processors were paying sales tax at the rate of 4 per cent of the cashew kernel sold. The average tax amount paid by the sample units was Rs.16.67 lakh, whereas the lowest amount paid was Rs.6.11 lakh and highest amount paid was Rs.40.76 lakh.

**vii. Miscellaneous Expenditure**

5.35 The miscellaneous expenditure incurred by the sample units included various hidden costs associated with the processing activity and the incidental expenditure at various stages of operations like insurance, cess, charities, etc. The average miscellaneous expenditure was Rs.6.24 lakh and the actual expenditure varied between Rs.2.29 lakh to Rs.15.25 lakh.

**ix. Maintenance of Building and Machinery**

5.36 The maintenance of building and machinery was calculated at 5 per cent of their cost. The average annual maintenance expenditure on building was Rs.1.14 lakh and machinery was Rs.1.44 lakh respectively.

5.37 The total operation cost of the sample units was Rs.386.15 lakh. The operation cost of the smallest unit was Rs.142.61 lakh whereas the same for the largest unit was Rs.934.39 lakh. The cost of raw materials constituted around 74 per cent of the overall cost of production. The labour charges accounted for 16 per cent of the cost of operation. The other major item of cost was the sales tax, which was imposed at the rate of 4 per cent of the sales proceeds.

**Returns**

5.38 The proceeds from the cashew kernels constitute the major component in benefit / income stream. Kernels were sold within Indian Market. Though one processing unit had an

export license, it had not started exporting the cashew nuts directly. The cashew nut shells are the other item which are sold by the processing units. The shells were used by the Cashew Nut Shell Oil producing units. One such unit was operating in the district.

5.39 Though the testa or the bran, shell residue and often the shell ashes can be sold, the units generally were not taking up value addition of these items as a part of their regular income. Sometimes, periodical sales are done with the purpose of cleaning the factory premises. In such cases, workers themselves purchase these products at nominal price. As sale receipts are small, sometimes it is used for the welfare of the workers and other staff within the factory.

**Sales Proceeds**

5.40 The processing of cashew nuts yields around 30 per cent of the kernel, out of which 80 per cent is yielded as dried kernel. The average price of the kernels vary from Rs.27,000 per quintal to Rs.16,000 per quintal. The average annual capacity utilization of the sample cashew processing units was 818 mt. of raw cashew nuts. The average annual production of dried cashew kernels in the sample units was (8180 qu x 0.30 x 0.80 ) 1963.20 qu. The details of the quantity of each category of kernel along with its price and the total sales proceeds is indicated in Table 5. 3.

**Table 5.3 : Average Sales Proceeds of Sample Cashew Processing Units**

| Sl. No. | Variety | Proportion (%) | Quantity Produced (qu.) | Rate per (Rs./qu.) | Sales Proceeds (Rs. Lakh) |
|---|---|---|---|---|---|
| 1 | WW 180 | 5 | 98.16 | 27000 | 26.50 |
| 2 | WW 200 / 210 | 20 | 392.64 | 24000 | 94.23 |
| 3 | WW 220 / 240 | 14 | 274.85 | 23000 | 63.21 |
| 4 | WW 300 / 320 | 15 | 294.48 | 22000 | 64.79 |
| 5 | White Splits | 20 | 353.38 | 20000 | 70.69 |
| 6 | Butts | 14 | 314.11 | 19000 | 59.68 |
| 7 | LWP | 12 | 235.58 | 16000 | 37.69 |
| | **Total** | **100** | **1963.20** | **21230** | **416.79** |

5.41 The percentage of yield of cashew kernel as indicated in the Table 5.3 reveals that around 20 per cent of the cashew kernel were WW 200 / 210 and white splits fetching a price of Rs.24,000 and Rs.20,000 per quintal respectively. The WW 180 was only 5 per cent of the total kernel and was sold at Rs.27,000 per quintal. WW180 otherwise known as the *Jumbo Nuts* yield less mainly because the small size of nuts. Again, a majority of the large kernels break during various stages of processing. Among the other varieties, WW 300 / 320 was of 15 per cent sold at a price of Rs.22,000 per quintal. The grades like WW 220 / 240 and Butts were 14 per cent of the total kernel produced and were sold at Rs. 23000 and Rs.19,000 per quintal respectively. The Large White Splits were 12 per cent of the kernel produced and were sold at Rs.16,000 per quintal.

**Sales proceeds from the cashew kernel**

5.42 Among the various grades of cashew kernel, the highest sales proceeds was obtained from the WW 200 / 210 (Rs.94.23 lakh), followed by White Splits (Rs.70.68 lakh), WW 300 / 320 (Rs.64.79 lakh), WW 220 / 240 (Rs.63.21 lakh), Butts (Rs.59.68 lakh), Splits (Rs.

37.69 lakh) and WW 180 (Rs.26.50 lakh). The average sales proceeds from the cashew kernel for the sample units was Rs.416.79 lakh per annum. However, there was variation among the firms depending on their quantum of cashew nuts processed, with the lowest being Rs.168.57 lakh and highest being Rs.954.95 lakh.

**Sales Proceeds from Cashew Nut Shell**

5.43 Another byproduct of the cashew nuts processing is the cashew nut shell. The processing units were using 20 per cent of the shells as fuel for boiling and drying purpose. The rest 80 per cent were sold at the rate of @ Rs. 2 per kg. to CNSL units. The average sales proceeds from the sell of cashew nut shells by the sample processing units was Rs.9.16 lakh per annum. The minimum was Rs.3.36 lakh and maximum was Rs.22.40 lakh.

**Incremental Income and Net Return**

5.44 The processing units expressed the opinion that in their initial years of establishment, the capacity utilization was 60 per cent in the first year, 70 per cent in the second year and 80 per cent from the third year onwards. Uncertainty, low risk bearing capacity, huge capital investment, inadequate skilled labourers and new entrants into the cashew processing sector were the reasons for which the units were not able to achieve capacity utilization. In fact, the processing activity depends on the orders for kernel from traders and the availability of labour. All the factories had provided wage plus facilities to the workers like free conveyance, bonus or incentives to the labourers, during festive occasions like Makar Sankranti, rest shed, fan, music, first aid, over night stay arrangements in case of necessity, etc.

5.45 The calculation of Financial Rate of Return (FRR) of a cashew processing unit is based on the average costs and returns of the sample processing units in Koraput district. It is assumed that the unit operated at 60 per cent of the installed capacity in the first year, at 70 per cent in the second year and 80 per cent from 3rd year onwards. The estimations of returns of the processing units in the previous paragraphs represent at saturated level of processing i.e. 80 per cent of capacity utilization. The economic life of the unit has been taken as ten years. The FRR has been estimated to be 147 per cent (Table 5.4). The average net profit for the sample processing units was negative during the first year of operation due to the huge amount of investment made in the fixed costs and also the units operating at 60 per cent of their capacity. From the second year onwards, the net profit was positive. It was Rs.34.82 lakh in the second year and Rs.39.79 lakh from 3rd to 9th year. In the tenth year, due to the addition of the salvage value of the factory and building, the net profit increased to Rs.47.79 lakh. Cashew processing units bring in all the costs in two years and start reaping net profit, which indicates the strong economic viability of the sector.

**Table 5.4 : Incremental Income and Rate of Return of the Sample Processing Units**

(Rs. Lakh)

| Sl. No. | Particulars | 1st Yr. | 2nd Yr. | 3rd – 9th Yr. | 10th Yr. |
|---|---|---|---|---|---|
| 1 | Capital Cost | 54.92 | 0 | 0 | 0 |
| 2 | Operation Cost | 289.62 | 337.89 | 386.16 | 386.16 |
| 3 | Total Cost (Row 1+2) | 344.54 | 337.89 | 386.16 | 386.16 |
| 4 | Sales Proceeds from Cashew kernel | 312.59 | 364.69 | 416.79 | 416.79 |
| 5 | Sales proceeds from Cashew nut | 6.87 | 8.02 | 9.16 | 9.16 |

| | | | | | |
|---|---|---|---|---|---|
| | shell | | | | |
| 6 | Salvage Value of Land & Building | 0 | 0 | 0 | 8.00 |
| 7 | Total Sales Proceeds (Row 4+5+6) | 319.46 | 372.71 | 425.95 | 433.95 |
| 8 | Net Returns (Row 7-4) | - 25.08 | 34.82 | 39.79 | 47.79 |
| **9** | **FRR** | **> 147 %** | | | |

**Break Even Analysis**

5.46 For a micro analysis, we can estimate that the processing units are earning average net income of Rs.389 from processing of one bag (80 kg) of cashew nuts (Rs.39.79 lakh for 818 tons of raw cashew. This is however inclusive of interests paid to the investment costs and working capital. Alternatively, the total expenditure for processing and the income from the proceeds of one bag (80 kg.) cashew profitability of the cashew processing activity is attempted in the Table 5.6.

**Table 5.6 : Cost Structure of Processing One Bag (80 Kg) of Raw Cashew Nuts**

(In Rs.)

| Sl. No. | Cost Components | Amount | % of Cost |
|---|---|---|---|
| 1 | Raw Cashew Nuts | 2800 | 74 |
| 2 | Transportation | 80 | 2 |
| 3 | Salaries | 25 | < 1 |
| 4 | Labour Charges | 587 | 16 |
| 5 | Packing Materials | 19 | < 1 |
| 6 | Electricity Charges | 17 | < 1 |
| 7 | Misc. Expenditure | 61 | 2 |
| 8 | Maintenance | 25 | < 1 |
| 9 | Sales Tax | 163 | 4 |
| 10 | **Total Operating cost** | **3777** | **100** |
| 11 | Depreciation of Building and Machinery | 25 | |
| 12 | Interest on Working capital | 25 | |
| 13 | Interest on term loan | 27 | |
| 14 | **Total Processing Cost** | **3854** | |
| 15 | Sales Proceeds of Cashew Kernel | 4076 | |
| 16 | Sales Proceeds from Cashew Shell | 90 | |
| 17 | **Total Sales Proceeds** | **4166** | |
| 18 | **Net Value Addition** | **312** | |

5.47 From Table 5.6, it may be observed that the operating cost for processing one bag (80 kg.) of raw cashew amounts to Rs.3,777 for the sample units. The cost of depreciation at the rate of 5 per cent of plant and machinery was also taken into consideration. Further, the interest on term loan @ of 12.5 per cent and working capital @ 20 per cent was added to the overall processing cost. The sample units were borrowing capital from various informal sources by paying an interest rate of 18 to 24 per cent. Sometimes, the processors were borrowing for one to two weeks so as to meet the immediate processing needs. The rate of interest at such times was much higher than 20 per cent. The average cost for processing one bag of cashew nut estimated to be Rs.3,854.

5.48 As against this, the sales receipts realized by the sell of cashew kernel from raw cashew nuts of 80 kg. amounts to Rs.4,076. The shells of cashew nuts earn Rs.90. Hence, the total receipts from processing of 80 kg. of raw cashew nuts amounts to Rs.4,166. The value addition per bag of raw cashew nuts thus amounts to Rs.312, which is 8 per cent of the operating cost. The input-output ratio comes to 1 : 1.08.

5.49 On the basis of the estimated net profit from cashew processing at Rs.312 per bag the Break Even volume for the sample cashew processing units was calculated by using the following formula :

Break Even Volume = Total Fixed Cost / Net Profit per bag of 80 kg. each

= 54,92,000 / 312 = 17,603 bags of 80 kg. each

No. of Working days required to achieve the Break Even Volume of output =

Break Even Voulme / No. of bags processed per day

= 17603 / 35 = 503 days

Thus, the sample cashew processing units could break even by processing on an average 17,603 bags of raw cashew nuts in 503 days. Since the units operate on an average for 287 days in a year, the unit can break even in the second year.

5.50 The cashew processing units have introduced better professionalism into their management. These units extended benefits to their employees and provided employment opportunities for almost ten months in a year. There is better work environment as the workers are provided with shade and sheds for taking up the job, unlike in agricultural operations. The units have provided fans and music systems inside the factory so that the workers would not feel fatigued. Free conveyance to commute to and fro to the factories is also arranged by the processing units as the tribal ladies hesitate to come to the factories on their own. Payments of wages are made weekly, the day before the weekly haat in the locality. The prevailing wage rate for the agricultural labour in the area was Rs.35 to Rs.50 per day. But the women employed in cashew processing factories were earning Rs.50 to Rs.70 per day on an average. This coupled with the better working atmosphere encourages the ladies to work in these units. Agricultural work lasts for 30 to 40 day in the district. Those who have agricultural land and want to work for agriculture during the prime farming season, take leave from the cashew units and attend to the agriculture work.

**Employment Generation**

5.51 The sample cashew processing units employed labour in shelling, peeling and grading at an approximate ratio of 3:2:1. In order to estimate the employment generation in cashew processing sector the labour required for the above activities for processing one bag of raw cashew has been worked out in Table 5.5.

**Table 5. 5 : Employment Generation in Cashew Processing**

(No. per processing of one bag of nuts)

| Sl. No. | Activity | Male | Female | Total |
|---|---|---|---|---|
| 1 | Boiling | 2 | | 2 |
| 2 | Shelling | | 4 | 4 |
| 3 | Peeling | | 3 | 3 |
| 4 | Grading | | 1 | 1 |
| 5 | Adm. & Others | 1 | - | 1 |
| | **Total** | **2** | **9** | **11** |

5.52 It may be observed from Table 5.5 that on an average 11 labourers are required for processing one bag of raw cashew nut to the marketable stage. Among them, 9 are females and remaining 2 are males. Various support services are required for optimizing local production and for perfecting the processing along with improved market skill for raw cashew procurement from International Market.

***Interface with the Labourers working in Cashew Processing Units***

*During the course of the field visit, interaction were held with 25 labourers (5 male and 20 female) working in the sample cashew processing units. The male labourers were engaged in roasting and drying activities, whereas the female labourers were engaged in shelling, peeling and grading activities. The female labourers mostly tribals, preferred to work in the cashew processing factories mainly on account of the following reasons :*

- *The work in the factories involved lesser physical labour in comparison to agricultural and other types of labour like construction work.*
- *The wage given by the cashew nuts factories was much higher than the wage paid for agricultural labour. The payment in case of former was Rs.50 to Rs.70 per day in comparison to Rs.35 to Rs.50 per day in case of the latter.*
- *The units provide free conveyance to the labourers to commute from the villages to factories and back home at the end of the day. In case of other jobs, they have to either walk a long distance or pay for the travel.*
- *Cashew processing provides them employment almost through out the year whereas in other sectors employment is temporary and for a few days.*
- *The labourers also enjoyed to work in the processing units as there was a relaxed atmosphere with music system playing in the background.*
- *The young girls and ladies sometimes showed interest to work in the factories as their mother / sister / some family member was also working there.*

**Cashew Nut Shell Liquid Oil Extraction**

5.53 Cashew Nut Shell Liquid (CNSL) is a value added product to the by-product of cashew nut processing. The cashew nuts in Koraput district are processed under the boiling method, which keeps the oil content of the shell intact unlike the roasting method where the oil content gets depleted. The CNSL extraction is a completely different process from cashew nut processing and hence the unit is entirely a different processing unit. Koraput district was

having one CNSL unit, which was in operation and another was under construction. During the course of the field visit, the study team visited the CNSL unit 'Janaki Krishna Industries' in Jeypore. One of the proprietors (an M.Tech. from IIT, Mumbai) had designed the structure and engineered the unit.

5.54 The unit was crushing about 16 tonnes of cashew shells every day, which was producing about 3.10 tons of shell oil. The extraction of oil was about 19.4 per cent of the cashew shells. In an ideal condition, the oil extraction can go up to 29 per cent. The oil is mainly supplied to the traders in Kolkata at a price of Rs.15 per litre. Cashew shell cake is another by product of the CNSL unit and was sold as a fuel. This was sold at Rs.60 per quintal. The whole unit unlike the cashew-processing unit was run by electricity. The monthly electricity charge was around Rs.30,000.

5.55 CNSL processing was done more mechanically because of its irritant effect and the extraction as well as processing involves high temperature, boiling, drying, filtering, etc. Therefore, involvement of labour unlike the cashew-processing unit was very less. Only 13 people were working in the unit. The details of labour employed and payments made to them is indicted in the Table 5.7.

**Table 5.7 : Labour Deployment in Cashew Nut Shell Liquid Unit**

| Sl. No. | Type of Labour | Number | Payment per Labour (Rs.) |
|---|---|---|---|
| 1 | Skilled Labour | 3 | 4500 per month |
| 2 | Unskilled Labour of which | 10 | |
| a | Male | 6 | 75 per day |
| b | Female | 4 | 60 per day |

5.56 Full utilization of capacity of the unit was not realized because CNSL processing is new in the region and the scarcity of raw materials also affects the functioning of the unit. Cashew processing units in Koraput district produced cashew shell of about 12500 tons in a year and saleable shell with them was around 9000 MT. The CNSL unit can process upto 15000 tons of cashew nut shell in a year. However, since the unit was in the first year of operation it was processing around 4800 tons of cashew shell. The unit was crushing about 16 tons of shells in a day. It was operating for about 300 days in a year. The unit was operating for one shift of 8 hours a day and trying to scale up the processing capacity slowly. It is estimated that the unit can process 6000 tonnes of shell in the second year and 8000 tonns of shell third year as it is in growing stage. This may be its saturation level since one more CNSL unit is coming up in the district.

**Economics of the CNSL unit**

5.57 The assessment of cost and returns of the unit reveals that the investment cost for the establishment of the unit was approximately Rs.95 lakh. This included land, building, machinery and two trucks for transportation of raw materials and finished produce. The operating cost per annum amounted to Rs.109 lakh. The major items of the operating costs were the cost of raw materials, electricity, packing material, labour payment, maintenance, etc. The details of the cost of the CNSL unit are indicated in Table 5.8.

**Table 5.8 : Investment and Operating Costs of CNSL Unit**

| Sl. No. | Particulars | Amount (in Rs. Lakh) |
|---|---|---|
| **1.** | **Investment Cost** | **95.00** |
| a | Land | 5.00 |
| b | Building | 25.00 |
| c | Machinery | 55.00 |
| d | Vehicles | 10.00 |
| **2.** | **Operating Cost** | **109.00** |
| a | Raw Materials | 96.00 |
| b | Electricity | 3.60 |
| c | Packing Materials | 2.00 |
| d | Wages of Labour | 2.10 |
| e | Salary of Permanent Staff | 1.80 |
| f | Maintenance & Others | 3.50 |
| **3.** | **Total Cost** | **204.00** |

5.58 The cost of raw material i.e. raw cashew shells constituted around 88 per cent of the operating cost, followed by electricity and maintenance at 3 per cent each, wages (2 per cent), and packing materials (2 per cent).

5.59 The gross receipts per annum from the unit was estimated to be Rs.141.41 lakh per annum which comprised of Rs.139.68 lakh (98.78%) from sale of oil and Rs.1.80 lakh from the sale of shell cake. The income over operating costs in the first year was Rs.32.41 lakh per annum. In the subsequent years, the processing capacity of the unit is presumed to increase and consequently income over operating costs to Rs.62.09 lakh in the second year and to 118.64 lakh third year onwards. The economic life of the unit is presumed to be ten years and after that the unit can fetch salvage value of 10 per cent of the fixed costs. The financial Rate of Return (FRR) of the unit was estimated to be 137 per cent, which makes the activity a viable one. The details of the economics of the unit are presented in Table 5.9.

**Table 5.9 : Incremental Income and Rate of Return of the CNSL Unit**

(Amount in Rs. lakh)

| Particulars / Year | | 1 yr | 2 yr | 3 –9 yr | 10 yr |
|---|---|---|---|---|---|
| ***COST FLOWS*** | | | | | |
| **Fixed Cost** | | 95.00 | 0.00 | 0.00 | 0.00 |
| Operating Costs | | | | | |
| Shells - Volume | Tons | 4800 | 6000 | 8000 | 8000 |
| Shells - Cost | Rs.2000/ ton | 96.00 | 120.00 | 160.00 | 160.00 |
| Electricity | Per annum | 3.60 | 4.50 | 6.00 | 6.00 |
| Packing Materials | | 2.00 | 3.00 | 4.00 | 4.00 |
| Wages | | 2.10 | 3.00 | 4.00 | 4.00 |
| Salary of Permanent Staff | | 1.80 | 2.50 | 3.00 | 3.00 |
| Maintenance & Others | | 3.50 | 5.00 | 7.00 | 7.00 |
| Total Operating Costs | | 109.00 | 138.00 | 184.00 | 184.00 |
| **Total Cost** | | **204.00** | **138.00** | **184.00** | **184.00** |
| ***INCOME FLOWS*** | | | | | |
| Production of CNSL | % | 19.4 | 22 | 25 | 25 |
| Production of CNSL | Tons | 931 | 1320 | 2000 | 2000 |
| Income from sale of CNSL | Rs.15000/ ton | 139.68 | 198.00 | 300.00 | 300.00 |
| Production of saleable Shell Cake | % | 60 | 58 | 55 | 55 |
| Production of saleable Shell Cake | tons | 2880 | 3480 | 4400 | 4400 |
| Sale proceeds from Shell cake | Rs.600/ton | 1.73 | 2.09 | 2.64 | 2.64 |
| Total Sales Proceeds | | 141.41 | 200.09 | 302.64 | 302.64 |
| Salvage Value of Fixed Costs | 10% | 0 | 0 | 0 | 9.50 |
| Gross Receipts | | 141.41 | 200.09 | 302.64 | 312.14 |
| Net Income | | - 62.59 | 62.09 | 118.64 | 128.14 |
| **FRR** | **%** | **137** | | | |

5.60 Thus the CNSL extraction has good scope in Koraput district and one more CNSL unit was being established in the district at the time of the field visit. There is also scope for processing of other by products of cashew such as cashew apple. However, any entrepreneur in the district has not yet started processing the same in a commercial scale.

**Risks in Cashew Processing**

5.61 The cashew processing activity involved a number of risks at various stages of operation and the processing units took steps to mitigate most of them.

- One such risk was related to the procurement of the raw cashew nuts. The stock of raw cashew nuts had to be sufficient to run the units on a regular basis. The sample units made all out efforts to keep adequate stock. The raw cashew nuts were purchased at the time of harvest from the local market, procured from nearby districts and states and were also imported.
- Second risk related to the day to day processing volume. The cashew processing involved a number of sub processes which required prior planning. The raw cashew

nuts have to be soaked in water over night, so that the processing can be done next day. The supervisor / manager / owner of the unit had to ensure the availability of the labour for the next day so as to make arrangement for soaking the requisite amount of raw cashew nuts. Once the soaking is done, the supervisor / manager / owner had to ensure the engagement of requisite number of labour to carry out the processing work next morning. Any discrepancy / gap in these two process would result in huge loss for the unit.

- Third risk is associated with the cutting, shelling and peeling of cashew kernel. Any lapse in any of these activities on the part of labourer would result in low grade kernel and hence, fetch lesser price. To mitigate these risks, the experienced labourers, mostly female, are engaged in these activities. The wage paid to them are relatively higher than that paid to other labourers.
- Fourth risk pertains to the storing of the cashew kernel. Any contact with moisture would spoil the quality and pronounce heavy loss for the unit. The kernels are generally stored in clean and dry place with sufficient protection and packed with utmost care in tins to preserve their quality.

# CHAPTER – VI

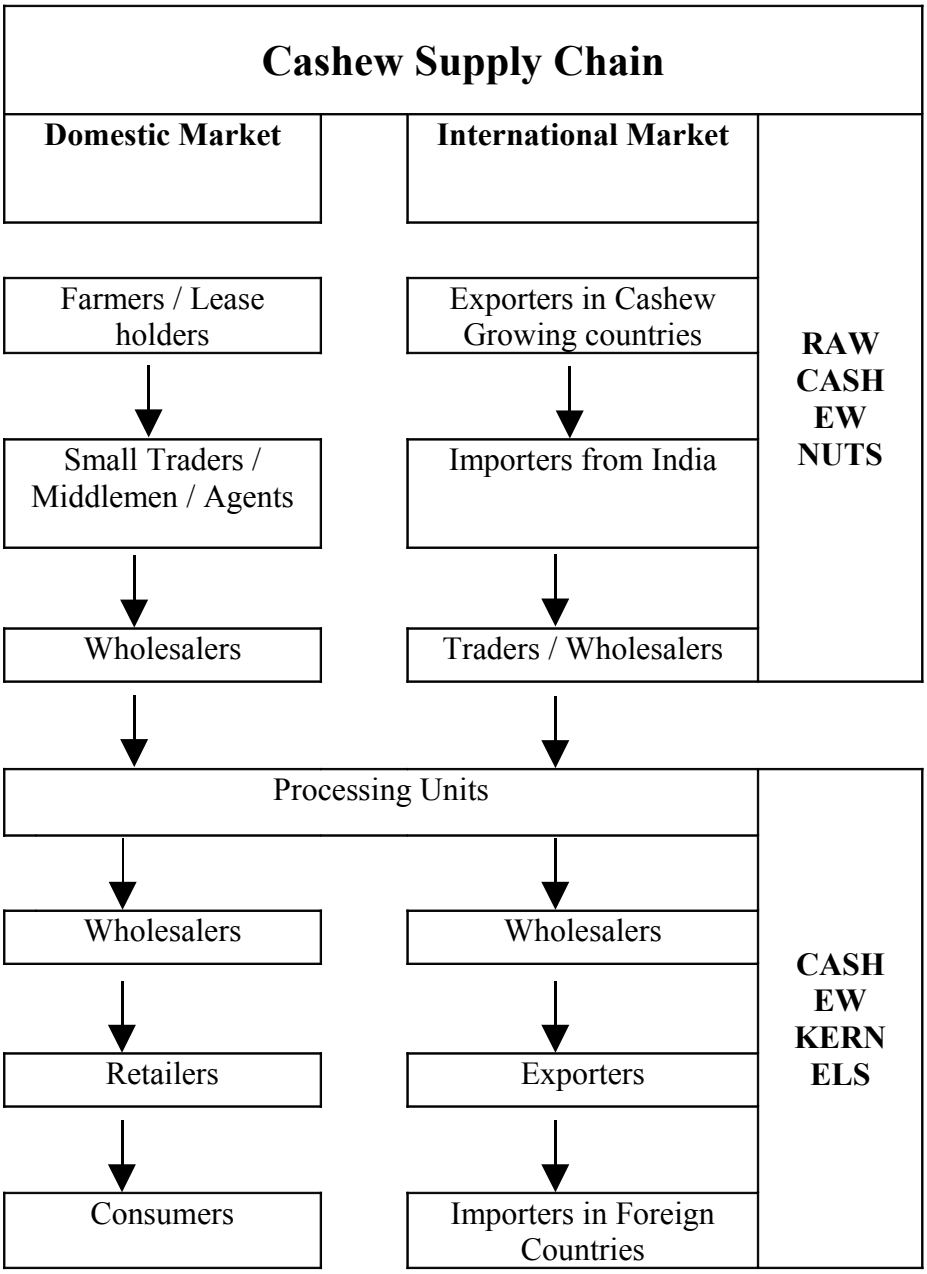
# MARKETING ASPECTS OF CASHEW

Cashew nuts production takes place mainly in the Central and South American Zone, Asia and Oceanic Zone and African Zones. At present, there are 28 countries involved in the production of cashew nuts. India is the largest producer of cashew accounting for around one third of global cashew nut production. India is also the major player in the international trade of cashew. The international trade on cashew involves trading of both raw cashew nuts as well as cashew kernels and other processed produce like CNSL. In the global trade on cashew, only 24 per cent consists of cashew kernel while 76 per cent consists of raw cashew nuts.

6.2 The American Zone consisting of USA and Canada is the major consumer, importing over 50 per cent of the total cashew traded in the world. The consumption of cashew kernels in East European region has recorded a decline of late. On the other hand, there has been a steady increase in it in the West European countries. This gives an indication that European markets still remain to be tapped by the cashew producing and exporting countries. A similar trend is also seen in South East Asia, Far East and other Asiatic and Oceanic Zone where there has been a 40 per cent increase in imports, giving rise to the hope that cashew exporting countries can further expand their markets in such areas.

6.3 The Indian cashew sector caters to both the domestic as well as the international market. The cashew supply chain of cashew nuts in the country is presented in the Flow Chart given in Figure 6.1.

**Figure 6.1 : Supply Chain of Cashew nuts in India**




6.4 Cashew markets for both raw cashew as well as kernels is more or less controlled by leaseholders / wholesalers who center around the supply chain in a coordinated and organized fashion. The cashew growers seldom have any control over the market because of absolute absence of coordination and integration among themselves. On the other hand, the processors have a Cashew Processors' Association at the national and local level in different cashew processing zones in concerned states. The local Chapter, consisting of cashew processors in the undivided Koraput Districts meets every month and discusses the issues, problems and constraints regarding procurement of raw cashew and marketing kernels and related issues. The Association at national level also meets at least once in a year and arranges for national and international conferences to highlight various aspects of cashew. The situation varies from state to state. In some states like Kerala and Tamil Nadu, the Association is more organized and active in comparison to Orissa.

**Domestic market**

**Raw Cashew Nuts**

6.5 The cashew cultivators in Orissa, having smallholdings under cashew crop, do not enjoy much bargaining power in the raw cashew nut market. They are at the mercy of the small traders and agents, who act on behalf of the large traders and sometimes processing units also. In the absence of organized marketing channels in Koraput district, the farmers are compelled to sell the produce to the traders who often offer lower prices for the nuts on the ground of nuts being immature and soiled. The farm gate price offered by the traders is usually Rs.2 to Rs.3 less than those offered by the processing units directly. Some farmers residing within a distance of 10 – 15 km. sometimes come to the processing units and sell directly.

6.6 In some cases the leaseholders of the forest land force the small farmers to sell their produce to them. They hoard large quantity of cashew nuts and bargain with the processing units. In some cases, the processing units purchase the raw cashew nuts from the farmers at much cheaper rate through their agents. Because of lack of regulated market system for cashew nuts trading, a handful of traders monopolise the cashew supply and price in the district.

6.7 As per the data collected during the field study, only 10 per cent of the cashew nuts processed, reaches the processing units directly from the farmers whereas nearly 90 per cent reach through traders in different channels. The price generally shoots up from about Rs.30 in month of April to Rs.45 and above in the month of May / June. Thereafter, it fluctuates between Rs. 35-38 per kg. This rate is largely determined by the large wholesalers who hoard cashew in huge stocks. The traders gain a margin of Rs.10 to Rs.15 per kg.

6.8 The cashew industries in the district have processing capacity upto 30 thousand MT whereas the production of cashew nuts in the district is around one thousand MT. As per a rough estimate based on the field level information, processing of one bag (80 kg) of cashew fetches the entrepreneurs an average net return of Rs. 312 /-Thus the processing units try to maximize the processing. Marketing of kernel is not a problem since the kernel traders from all over the country are putting orders for Koraput cashew. Another major advantage of the cashew processing units in Koraput district is that all of them were processing cashew by using the steam boiling method. The roasting method, which was widely practiced in the neighbouring Andhra Pradesh, has been gradually abandoned and banned because of the environmental pollution. Therefore, the cashew nuts grown in neighbouring districts of Andhra Pradesh are also processed in Koraput district.

6.9 The processing units in Koraput district procure raw cashew nuts both from the local areas, neighbouring districts and also from neighbouring states like Chattisgarh, Andhra Pradesh and other states like Maharashtra, Kerala and Pondichery. Nearly 10 processing units in the district have import license and were importing raw cashew nuts. However none of them were importing cashew nuts directly. The imports were coming through the agents stationed at Vishakhapatnam, Mangalore, and Kochi ports.

6.10 There are wide price differences between local and imported varieties of nuts. The local variety was offered a price in the range of Rs.25 to Rs. 45 per kg. The size, quality of

the local variety was considered to be the best by the processing units as they were larger and whiter. Next in the line comes the 'out of state variety', which was offered a price in the range of Rs. 32 to Rs. 40 per kg. The imported variety of cashew nuts was offered the lowest price in the range of Rs. 22 to Rs. 30 per kg. as it was considered to be the least preferable, being small in size and producing scorched small sized kernel.

6.11 Though the policy framework for import of raw cashew does not give monopoly rights to any particular agency or farm, there are several traders who coordinate or import the cashew nuts directly. The processing units from Koraput had liaison with these traders. The method of ascertaining the consignment was to sample test 30 per cent of the raw cashew nuts for processing. If the outcome is below the requisite level, the price of nuts is reduced proportionately.

6.12 The processing units usually keep the stock up to maximum period of three months. The processing units admitted that keeping huge amount of stock blocks their capital. After increase in opportunity for importing cashew nuts, the units have brought about a balance between keeping huge stock and imports. Moreover, maximum stocking is done during the harvesting season of March and May and used when the harvesting period is over. The imports are resorted to during the later period when the local stock gets depleted.

**Cashew Kernel**

6.13 The cashew kernel is packed in tins of 10 kg. and sold to traders of Nasik, Nagpur, Pune, Delhi, Raipur, Vishakhapatnam, etc. The traders sometimes contact the units or the units themselves contact the wholesalers, retailers who purchase the kernel. Even though one processing unit has the export license, it was not directly exporting the cashew kernel. The units preferred to sell them to the traders who were selling it either in the Indian market or in the international market. The cashew kernel was being transported through Chattisgarh and Madhya Pradesh. The units had given their own brand name to the kernel. But no common brand name like **Palasa Cashew** as developed in Palasa, Andhra Pradesh, has evolved so far.

6.14 Usually, after getting the order from the traders, the processors start processing the cashew nuts and once or twice in a month the traders lift the produce from the factories. The traders in turn supply the same to other parts of the country or export it to different countries.

**INTERNATIONAL TRADE IN CASHEW**

6.15 India, with cheap labour, has established a good number of processing industries, but domestic production has been insufficient to meet the requirements of the country's processing capacity through hundreds of small and medium-scale processing outlets. A majority of the units, at the all-India level were operating seasonally for a period of six to seven months in a year, which was not economically viable. Keeping the labour force intact was a big problem for the cashew processing units. In the absence of continuity of processing activity; a majority of them were migrating to other urban sectors. Therefore, import of cashew was resorted to in order to run the units at least ten months in a year. International trade in raw cashew nuts has traditionally involved shipments from East Africa to India. The imports of raw cashew from East Africa generally took place from December to May, which complemented the national harvest. This enabled Indian processors to operate over a prolonged period without having to maintain large stock of raw nuts. Import of raw cashew nuts declined in the early 1980s when East African production reached low levels and Indian

importers had problems with access to foreign exchange. Since then, import levels have increased due to greater supply, particularly from South East Asian countries i.e. Vietnam and Indonesia and African country like Tanzania. Cashew from Tanzania used to command premium prices over other suppliers, but recent years have seen a growing uncertainty about the quality of Tanzanian shipments, resulting in the loss of premium grade.

**Import of Cashew Raw Nuts**

6.16 Import of raw cashew nuts has increased from 191 thousand MT in 1993-94 to 569 thousand MT (296%) in 2005-06. The annual growth rate in the volume of cashew import was positive, except for a few years during the past one decade. There has been considerable increase in the imports especially after 2001-02. India had imported almost equal quantity of raw cashew matching her domestic production during the last couple of years. During 2004-05, as against the domestic production of 544 thousand MT, the import was 579 thousand MT, while during 2005-06, India imported 565 thousand MT as against the domestic production of 573 thousand MT. A fluctuating trend in average import price was observed which ranged between Rs.25,230 in 1993-94 and Rs.46,779 in 1999-2000 per tonne of cashew. The value of import obviously recorded an increase from Rs.483 crore in 1993-94 to Rs.2163 crore in 2005-06. Table 6.1 indicates import of raw cashew during the period from 2001-02 to 2005-06 along with the price per MT.

**Table 6.1 : Import of Raw Cashew nuts into India during 1993-94 and 2005-06**

| Year | Quantity | Growth Over Previous Year | Value | Growth Over Previous Year | Average Price | Domestic Production | Import as % of Domestic Production |
|---|---|---|---|---|---|---|---|
| | (000'MT) | % | (Rs. Crore) | % | (Rs./MT) | (000'MT) | % |
| 1993-94 | 191 | 41.74 | 483 | 28.27 | 25230 | 348 | 55 |
| 1994-95 | 228 | 19.23 | 691 | 43.14 | 30290 | 322 | 71 |
| 1995-96 | 223 | -2.32 | 760 | 10.01 | 34112 | 418 | 53 |
| 1996-97 | 213 | -4.47 | 688 | -9.54 | 32302 | 430 | 50 |
| 1997-98 | 247 | 16.12 | 770 | 11.93 | 31135 | 360 | 69 |
| 1998-99 | 241 | -2.44 | 958 | 24.48 | 39726 | 460 | 52 |
| 1999-00 | 254 | 5.15 | 1186 | 23.82 | 46779 | 520 | 49 |
| 2000-01 | 249 | -1.68 | 961 | -19.00 | 38539 | 450 | 55 |
| 2001-02 | 356 | 42.61 | 950 | -1.11 | 26719 | 470 | 76 |
| 2002-03 | 401 | 12.78 | 1236 | 30.10 | 30849 | 500 | 80 |
| 2003- | 452 | 12.72 | 1403 | 13.51 | 31012 | 535 | 84 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 04 | | | | | | | |
| 2004-05 | 579 | 28.10 | 2191 | 56.17 | 37848 | 544 | 106 |
| 2005-06 | 565 | -2.42 | 2163 | -1.28 | 38255 | 573 | 99 |

Source : www.cashewindia.org

6.17 A comparison between the domestic production and import of raw cashew nuts indicates that the dependence of the Indian cashew industry on the imported cashew nuts has increased since the 2000-01. As per the estimates of the Cashew Export Promotion Council of India, the processing capacity of cashew industries in India during 2005-06 amounted to 12 lakh MT, whereas the raw cashew nuts available both through domestic production and imports was 11.40 lakh MT, indicating a gap of 0.60 lakh MT of raw cashew nuts.

6.18 Raw cashew nuts have been imported to India from more than 20 countries. The important among them were Ivory Coast, Guinei Bisseu, Mozambique, Tanzania, Indonesia and Benin. During 2001-02 and 2003-04 these six countries, taken together, supplied 86 per cent of the Indian Import of raw cashew. A major portion of cashew nuts imports come from African countries as can be seen from the Table 6.2 and a few Asian countries like Singapore, Philippines, etc. also supply cashew nuts to India. High cost involved in processing cashew is the major reason for African countries to export raw cashew nuts. More over, consumption of cashew kernel in these countries is also low. On the other hand, India has a long tradition and good reputation as a high quality processor of cashew. It also enjoys the comparative cost advantage in processing the cashew nuts. A number of countries, therefore, prefer to export their raw nuts to India for processing rather than to process themselves and produce lower quality kernels.

**Table 6.2 Country-wise Import of Raw Cashew nuts into India** (2001-02 to 2003-04)

(Qnty in MT and value in Rs. Crore)

| SN | Country | 2001-02 | | 2002-03 | | 2003-04 | | Average of 3 years | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Qnty. | Value | Qnty. | Value | Qnty. | Value | Qnty. | Value | Value (%) |
| 1 | Ivory Coast | 68875 | 166 | 84006 | 237 | 83448 | 226 | 78776 | 210 | 15 |
| 2 | Tanzania | 82539 | 231 | 82431 | 264 | 80730 | 280 | 81900 | 258 | 18 |
| 3 | Guinea Bissau | 70685 | 194 | 65751 | 241 | 73229 | 249 | 69888 | 228 | 16 |
| 4 | Benin | 32239 | 78 | 36905 | 107 | 45168 | 137 | 38104 | 107 | 7 |
| 5 | Indonesia | 42920 | 136 | 45334 | 155 | 44198 | 155 | 44101 | 149 | 11 |
| 6 | Mozambique | 25655 | 67 | 38767 | 101 | 34682 | 102 | 33035 | 270 | 19 |
| 7 | Ghana | 3745 | 8 | 6039 | 17 | 33070 | 96 | 14285 | 40 | 3 |
| 8 | Nigeria | 9511 | 20 | 17619 | 40 | 22725 | 55 | 16618 | 38 | 2 |
| 9 | Kenya | 9481 | 27 | 4288 | 12 | 8389 | 26 | 7386 | 22 | 2 |
| 1 | Senegal | 5448 | 13 | 7759 | 26 | 7881 | 26 | 7029 | 22 | 2 |
| 1 | Gambia | 2012 | 4 | 6361 | 21 | 5867 | 18 | 4747 | 14 | 1 |
| 1 | Burkina Faso | 0 | 0 | 0 | 0 | 4167 | 11 | 4167 | 11 | 1 |
| 1 | Togo | 0 | 0 | 0 | 0 | 3568 | 9 | 3568 | 9 | 1 |
| 1 | Gunea | 0 | 0 | 382 | 1 | 2434 | 4 | 1433 | 3 | 0 |
| 1 | Madagascar | 0 | 0 | 2328 | 5 | 1433 | 4 | 1881 | 5 | 1 |
| 1 | Philippines | 0 | 0 | 279 | 1 | 689 | 2 | 484 | 2 | 0 |
| 1 | El Salvador | 249 | 1 | 341 | 1 | 320 | 1 | 330 | 1 | 0 |
| 1 | Singapore | 200 | 1 | 159 | 1 | 238 | 1 | 199 | 1 | 0 |
| 1 | Others | 1997 | 4 | 1910 | 6 | 164 | 1 | 1037 | 4 | 1 |
| | **Total :** | **355556** | **950** | **400659** | **1236** | **452400** | **1403** | **408968** | **1394** | **100** |

Source : www.cashewindia.org

6.19 Cashew nut import into India is also controlled by large traders and importers based in South India, particularly in Kerala and Tamil Nadu. The Cashew sector in these states is relatively old and organized. Major Ports through which cashew imported from East African and Asian countries are located in these states. Almost the entire import of cashew nuts to India comes through the ports like Tuticorin and Cochin in Kerala. The volume of import through Cochin is slowly increasing over the years, as can be seen from Table 6.3 whereas the same was declining in case of Tuticorin port since 1994-95 until 2001-02. A small portion of raw cashew nuts reaches through Madras (Chennai) Port.

**Table 6.3 Import of Raw Cashew nuts Through Different Ports in India**

(1991-1992 to 2001-2002)

(Quantity in M.T. ; Value : in Rs in Crore)

| Year | Cochin | | Tuticorin | | Madras | | Others | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value |
| 1991-92 | 2 | 42 | 101 | 2525 | 4 | 99 | - | - | 106 | 2667 |
| 1992-93 | 11 | 390 | 124 | 3373 | | - | - | - | 135 | 376 |
| 1993-94 | 21 | 526 | 167 | 4198 | 3 | 102 | - | - | 191 | 4827 |
| 1994-95 | 6 | 153 | 221 | 6720 | 1 | 36 | - | - | 228 | 6913 |
| 1995-96 | 6 | 19 | 207 | 713 | - | - | 10 | 28 | 223 | 760 |
| 1996-97 | 60 | 185 | 151 | 496 | - | - | 2 | 6 | 213 | 688 |
| 1997-98 | 79 | 261 | 167 | 506 | - | - | 1 | 3 | 247 | 770 |
| 1998-99 | 110 | 449 | 126 | 486 | - | 1 | 5 | 22 | 241 | 958 |
| 1999-00 | 156 | 737 | 97 | 452 | - | - | 2 | 10 | 255 | 1198 |
| 2000-01 | 153 | 553 | 94 | 399 | - | - | 3 | 10 | 249 | 961 |
| 2001-02 | 192 | 502 | 164 | 447 | N.A. | NA. | 0 | - | 356 | 950 |

Source : www.cashewindia.org

**The Cashew Kernel**

6.20 India has long been the world's largest supplier of cashew kernels with its volume of production and processing of cashew, prices and quality of kernels, setting the standards for the industry, etc. In Europe, India has been the preferred supplier, with long standing trading relationships based on confidence in product quality and fast & regular deliveries. India has more than 150 cashew kernel shippers, many of whom have offices in Europe and the United States.

6.21 Most cashew kernels exported form India are plain kernels packed in four gallon prime cans, flushed with carbon dioxide, and having a net weight of 11.34 kg (25 lb). These cans are encased in cardboard cartons.

6.22 The United States is the largest importer of cashew kernels, accounting for over half of world imports. Other importers include the Netherlands (ten percent), Germany (seven percent), Japan (five percent) and the United Kingdom (five percent). The former Soviet Union was previously a major importer of cashew kernels, but with recent economic changes, trade to this part of the world has diminished. Other emerging markets include the Middle East, South East Asia and Australia. Since India is the largest producer and exporter of cashew kernel, these countries also import most of India's cashew kernel. As can be seen from Table 6.4, India exports cashew kernels to USA, Europe, Africa and East Asian Countries. An analysis of three years average between 2003-04 and 2005-06 reveals that about 45 per cent of India's exports of cashew kernel goes to USA alone.

**Table 6.4 : Country-wise Export of Cashew Kernels during 2003-04 and 2005-06**

(Quantity in MT, Value in Rs. Crore)

| Countries | 2003-2004 | | 2004-2005 | | 2005-2006 | | Average of three Years | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Qnty | Value | Qnty | Value | Qnty | Value | Qnty | % | Value | % |
| U.S.A | 48504 | 882 | 61546 | 1288 | 43149 | 958 | 51066 | 44.84 | 1043 | 44.51 |
| Netherlands | 12237 | 215 | 15693 | 346 | 18736 | 409 | 15555 | 13.66 | 323 | 13.79 |
| U.A.E | 6239 | 102 | 6690 | 148 | 8274 | 184 | 7068 | 6.21 | 145 | 6.19 |
| U.K | 5392 | 96 | 7108 | 158 | 6238 | 141 | 6246 | 5.48 | 132 | 5.62 |
| Japan | 5522 | 102 | 5047 | 111 | 4685 | 110 | 5085 | 4.46 | 108 | 4.60 |
| France | 2444 | 44 | 3329 | 66 | 3470 | 76 | 3081 | 2.71 | 62 | 2.64 |
| Saudi Arabia | 2011 | 33 | 2998 | 62 | 2827 | 60 | 2612 | 2.29 | 51 | 2.19 |
| Spain | 2198 | 41 | 2870 | 65 | 2648 | 61 | 2572 | 2.26 | 56 | 2.38 |
| Belgium | 1769 | 34 | 2497 | 53 | 2378 | 54 | 2215 | 1.94 | 47 | 2.01 |
| Germany | 1574 | 26 | 1966 | 42 | 1991 | 42 | 1844 | 1.62 | 37 | 1.58 |
| Russia | 1413 | 22 | 2331 | 43 | 1990 | 39 | 1911 | 1.68 | 35 | 1.48 |
| Greece | 830 | 16 | 1511 | 34 | 1859 | 43 | 1400 | 1.23 | 31 | 1.31 |
| Canada | 1354 | 23 | 1540 | 31 | 1558 | 33 | 1484 | 1.30 | 29 | 1.24 |
| Italy | 986 | 18 | 1119 | 24 | 1236 | 25 | 1114 | 0.98 | 22 | 0.95 |
| Australia | 275 | 4 | 873 | 18 | 1114 | 25 | 754 | 0.66 | 16 | 0.68 |
| Norway | 890 | 16 | 1318 | 29 | 873 | 20 | 1027 | 0.90 | 22 | 0.92 |
| Kuwait | 847 | 15 | 574 | 13 | 863 | 20 | 761 | 0.67 | 16 | 0.68 |
| Hong Kong | 477 | 10 | 719 | 18 | 788 | 17 | 661 | 0.58 | 15 | 0.64 |
| Israel | 508 | 10 | 964 | 23 | 752 | 17 | 741 | 0.65 | 17 | 0.72 |
| Singapore | 513 | 9 | 510 | 12 | 694 | 14 | 572 | 0.50 | 11 | 0.49 |
| Lebanon | 561 | 11 | 655 | 15 | 470 | 10 | 562 | 0.49 | 12 | 0.51 |
| Bahrain | 439 | 7 | 362 | 7 | 393 | 8 | 398 | 0.35 | 7 | 0.31 |
| Korea Rep. | 311 | 6 | 213 | 5 | 255 | 6 | 260 | 0.23 | 6 | 0.24 |
| New Zealand | 332 | 6 | 201 | 4 | 204 | 5 | 246 | 0.22 | 5 | 0.21 |
| Malaysia | 40 | 1 | 62 | 1 | 191 | 4 | 98 | 0.09 | 2 | 0.09 |
| Others | 3162 | 57 | 3973 | 91 | 6505 | 134 | 4547 | 3.99 | 94 | 4.01 |
| **Total** | **100828** | **1804** | **126667** | **2709** | **114143** | **2515** | **113879** | **100.00** | **2343** | **100.00** |

Source : www.cashewindia.org

6.23 Quality of Cashew kernel is of utmost importance in the international market. India worked hard to ensure high quality of the processed kernels. India's cashew industry was the first to use quality control for improvement of performance. Quality control is administered via the Cashew Export Promotion Council (CEPC).

6.24 Members of the Cashew Export Promotion Council of India, the manufacturers and exporters of cashew kernels, are the major sources for cashew export from India. There are regular shipping facilities from India to all ports of the world. Major shipments from India take place through Cochin port. Other ports through which kernel shipments take place are Tuticorin, Mangalore, Madras and Bombay. Regular services of container ships are available from Indian ports on India-USA, India-UK / European Continent, India-Australia, India-Japan, India-Middle East and India-Singapore routes.

**Grades**

6.25 In order to safeguard and guarantee the quality of kernels, producers and exporters have introduced quality standards, which must be met by cashew exporters. The ISO 6477 standard was introduced in 1988 in order to unite the Brazilian and Indian classifications and to give one single classification scheme for quality control. Standard specifications for Indian cashew kernels for export have been laid down by the Government of India under the Export (Quality Control and Inspection) Act 1963.

6.26 Cashew kernels are selected on the basis of the number per unit weight, generally per one pound of weight. They are also classified either as wholes, chips, splits, butts or baby bits, in accordance with the integrity of the kernel. White or ivory kernels are preferred over brown ones. There is a maximum permitted moisture level, 5 per cent (both for raw cashews and cashew kernels) and the product must be free from insects, mould, rancidity and extraneous materials.

6.27 World prices of cashew kernels vary according to the size, class and composition of the product. The highest price is paid for best quality kernels of the WW 180, which is popularly known as 'King of Cashew' and WW 210 grades, which are known as 'Jumbo Nuts'. They are the largest and heaviest of all the types of kernel. WW 320 (320 kernels per pound weight) is the category in highest demand and is the reference point for pricing. International prices for cashew kernels are influenced by the behaviour of market operators. There is no fixed market price and the market is highly speculative.

6.28 Cashew Kernels are graded into white / scorched wholes, pieces, splits, butts, etc. depending on the shape, size & colour of the kernel. The Govt. of India Act prescribes 33 different grades of cashew kernels. Only 26 grades are commercially available and exported, the detailed particulars of which are given in Annexure 6.1 and Annexure 6.2. The Broad categories are :

i. White Wholes, which are usually whole nuts and whitish in colour without any scorch. These are mostly demanded in the international market and categorized according to the number of nuts per a unit weight of one pound.

| | |
|---|---|
| W - 180 | They are larger in size and very expensive. Known as the ' King of Cashew ' |
| W- 210 | Popularly known as 'Jumbo' nuts |
| W - 240 | It is an attractive grade which is reasonably priced |
| W - 320 | This is the most popular variety among cashew kernels and highest in terms of availability, worldwide. |
| W - 450 | These are the smallest and cheapest white whole kernels and hence the favorite among low priced whole grades |

ii. Scorched wholes are another grade of cashew kernels, which have a slight brown colour due to longer roasting. They have all the other characteristics of white kernels and have the same nutritional qualities. These are seldom produced in Koraput district since cashew is processed under boiling method in the district.

iii. Butts, splits and pieces are priced low and are ideal for cooking, preparation of sweets and savoury snacks.

**Quality Control and Pre-shipment Inspection**

6.29 Exports of cashew kernels from India are normally subject to voluntary quality control and pre-shipment inspection. Inspection of cashews is being conducted consignment-wise. It is ensured that the product is processed and packed as per the standards prescribed, by drawing samples from the finished product. Export of roasted and salted cashew kernels are also normally subjected to voluntary quality control.

**Packing and Standard Weight**

6.30 Cashew kernels in bulk are packed in four-gallon prime tins with a net weight of 11.34 Kg (or 25 lbs) in each tin. The filled tins are then vacuumized and filled with carbon-dioxide gas and sealed. Two such tins of the same grade are packed in a carton for export. The net weight of each carton is thus 22.68 Kg. (50 lbs.). Some manufacturers also pack in tins of 10 kg. net to suit the requirements of buyers in certain markets. Recently, some exporters have started using flexible packs instead of tins as many buyers opt for new generation flexible packs.

***Shipping Specifications***

6.31 The overall dimensions of a carton are about 49 cm Length**,** 24 cm Breadth**,** 350 mm Height and 0. 041 Cu. M / Carton Overall volume. Cashew shipments from India are mainly done in 20 ft. containers, which carry about 650-700 cartons. Requests for less than a container load are also accepted by exporters in India. Freight is charged per Cubic Metre on volume basis. Freight for full container load is fixed and the same is cheaper than the freight for part container load (LCL).

**Cashew Nut Shell Liquid**

6.32 The Cashew Nut Shell Liquid (CNSL) is the other major item exported from India under Cashew Sector. Export of these items during the period 2001-02 and 2005-06 are given in Table 6.5.

**Table 6.5 : Export of Cashew Nut Shell Liquid from India**

| **Sl. No.** | **Year** | **Quantity** (MT) | **Value** (Rs. Crore) |
|---|---|---|---|
| 1 | 2001-02 | 4178 | 5.93 |
| 2 | 2002-03 | 7215 | 9.26 |
| 3 | 2003-04 | 6926 | 7.03 |
| 4 | 2004-05 | 7474 | 7.91 |
| 5 | 2005-06 | 6405 | 7.09 |
| | **Average of 5 years** | **6440** | **7.44** |

The per annum average export of CNSL was 6440 MT during the five years from 2001-02 to 2005-06 and the average value of the same was Rs.7.44 crore. The country-wise export of CSNL is indicated in Table 6.6.

**Table 6.6 : Country-wise Export of CSNL from India during 2001-02 to 2005-06**

| Sl. No. | *Country* | Quantity (MT) | Value (Rs. Crore) | % Share |
|---|---|---|---|---|
| 1 | United States | 5551.0 | 5.86 | 85 |
| 2 | Korean Republic | 653.6 | 1.19 | 10 |
| 3 | Japan | 112.8 | 0.21 | 2 |
| 4 | Zimbabwe | 12.8 | 0.02 | < 1 |
| 5 | Indonesia | 100.2 | 0.14 | 2 |
| 6 | China | 6.4 | 0.01 | < 1 |
| 7 | Mexico | 3.2 | 0.01 | < 1 |
| | **Total** | **6440** | **7.44** | **100** |

6.33 The export of Indian Cashew Kernel and CNSL have exhibited increasing trends in the Export Market. A large number of countries demanded these products and relatively rich countries had a major share in their import. Developing countries which are on higher growth path emerged as new buyers and this trend gives increasing scope for cashew processing. Efficient production of raw nuts and cashew processing will enable the country to increase its trade both within the country and abroad. With suitable support system for increasing crop productivity, processing skill and market access, ample opportunities can be explored. This will enable the basic producers to get better prices and processing labourers better wages and benefits. Suitable policy, financial and support facility are required for these achievements.

6.34 As regards to Orissa, as per the estimates, the state has the potential to export Rs. 300 crore of cashew in the next five years i.e. 2008-2013. Orissa, which produces around 60,000 tonnes of raw cashew nuts in a year has the potential to produce more than double this amount. Three districts of Orissa i.e. Ganjam, Puri and Koraput have the potential to become major cashew hubs in the coming years. Ganjam processes about 24,000 tonnes cashew nuts per annum whereas Koraput processes around 30,000 tonnes. Jeypore with around 29 cashew industries within a distance of 4 square km. is an ideal choice for the development of the cashew Cluster. The factors such as good quality of local cashew nuts, availability of fertile land and low labour cost provide Orissa a competitive edge over other cashew producing state. However, the biggest drawback in the realization of this potential is the fact that the major land holdings are with the tribal people. The govt. has gifted those land to the tribal people with the condition that they can not sell them. Since no major production is being taken up in these lands, a major opportunity to increase production of raw cashew nuts is lost.

# CHAPTER – VII

# BANKING ASPECTS OF CASHEW SECTOR

Credit plays a crucial role in the whole process of development of agriculture. However, the dimension of credit changes along with the stages of development. Initially, agriculture credit was used to meet the needs of the subsistence agriculture, consisting mainly of essential foodgrains production. In recent years however, agriculture became commercialized, supported with marketing, trading, processing, value addition, etc. As a result, the credit requirement in agriculture sector has shoot up.

7.2 The cashew sector needs both the short term as well as long term credit. The individual cashew planters need term loans for cashew plantation and inter crops. Similarly, the processing units require short-term credit for operating the unit and long-term credit for establishment / modernization / renovation / expansion, etc. of the unit.

***Cashew Plantation***

7.3 Cashew no doubt is a highly profitable plantation crop. It covers 24 per cent of the area under various fruit crops in the State and largest area under any fruit crop only after mangoes in the state. However, institutional credit unlike other fruit crops has all the way remained far from cashew plantation. There was no institutional credit flow for cashew plantation as such. Most of the cashew plantations in Koraput district in particular and Orissa in general are developed under Govt. initiatives. Individual farmers have taken up plantation of cashew in small patches as per their convenience in the marginal lands only. Rarely any systematic plantation was done in this sector. Cashew plantation usually taken up by the individual farmers was involved with low input cost. The individual cashew plantation in a big way is yet to take place in the state. Among the individual plantations, the traditional variety is still preferred in the tribal belts of Orissa. However, in the coastal belt, the cashew planters have started planting the improved variety. With the growing extension there is a increasing need for credit support for commercial plantation of cashew.

**Potential for credit for Cashew Plantation**

7.4 The financing of cashew orchards is a bankable business opportunity for the banks due to the following reasons :

- The cashew plantation both under the traditional and the grafted varieties are economically viable with a Financial Rate of Return (FRR) of 23 and 38 per cent respectively as estimated in Chapter IV in this report.

- Huge potential for cashew plantation exists in Koraput and neighbouring districts. Farmers are gradually realizing the potential and profitability of the cashew. Some of them have admitted that the cashew nuts are in true sense of term the ‘Golden Crop’.

- Better return from the improved varieties and better maintenance of plantations encourage the farmers to cultivate cashew crop in a more commercial fashion rather than as a

neglected plantation crop. In view of this, there is want of Cashew orchards in Koraput district.

- Successful operation of the cashew processing units in the district has made people conscious about the economic potential of the crop. The farmers do not face any problem in marketing the produce. The increasing trend for cashew plantation in the state offers the banks the scope to enter into the fray.

- Cashew plantation has been included in the Action Plan of the National Horticulture Mission in the state of Orissa and in Koraput district also. One intervention to be taken up in Koraput district is the establishment of nurseries both in private and public sectors. This opens up additional opportunities for the bankers.

**Cashew Processing**

7.5 The processing of cashew nuts, on the other hand, premeditates bank finance. The banking aspects were studied with respect to the sample cashew processing units. The average bank loan availed by the sample units was Rs.35.2 lakh, out of which, Rs.12.8 lakh was taken as working capital under cash credit limit and Rs.22.4 lakh availed as term loan. The working capital was required for meeting the recurring expenses such as procurement of raw materials, payment of wages, salary, repair of machinery, payment of electricity, etc. Apart from the bank loan, the units had used substantial amount of their own funds and borrowed from informal sources at 18 to 24 per cent rate of interest, especially, for meeting the short-term working capital needs. Cashew processing was mainly based on credit. Hence, the processors preferred to use their own funds in the business than to rely on overdraft facility extended to them by the banks.

**Potential for credit for Processing**

7.6 The processing of cashew nuts entails greater opportunities for the bankers as can be inferred from the following points:

- The operating cost of the cashew processing units was quite high because of huge procurement of raw materials. The seasonal availability of the nuts made it necessary for the units to procure the raw cashew nuts in large quantity. Though, the easy import has lessened the burden for the processing units, still there is requirement for bank credit. All the sample processing units were of the opinion that the bankers should increase the working capital limit given to the processing units.

- Apart from that, the cashew processing units require heavy investment on plant and machinery. Separate stores have to be constructed for storing the raw cashew nuts, the processed cashew nuts, the packed cashew kernel, etc. Similarly, separate chambers / work areas have to be earmarked for cooling, shelling, peeling, grading activities where quite a large number of labour are to be accommodated. Since all of the units were using steam-boiling technique of processing which require investment on various types of machinery in the boiling section. All these increase the credit requirement of the processing sector.

- At the time of the field study, only two cashew nut processors in the district had obtained the export license. Three processors were interested in availing the export license, which

is provided by the Directorate of Foreign Trade through its State Level Office at Cuttack. In case the units export their products directly, there will be stringent quality specifications. Various quality norms like HACCP (Hazard Analysis and Critical Control Point) will be applicable to the products. The processors have to spend more on proper maintenance of their premises and also adopt some advanced techniques in grading and sorting etc. This requires additional investment on machinery and equipment and opens up new avenues for deployment of credit by banks.

- The cashew processors in Orissa in general and Koraput district in particular have not been able to diversify much into other value added products from cashew except the extraction of Cashew Nut Shell Liquid (CNSL) oil. One CNSL unit had already started operation in Koraput district and another was on the verge of completion at the time of the study. But there is scope for two more CNSL oil extraction unit in the district keeping in mind 26 processing units operating successfully in the district and cashew processing in the district and neighbouring district is in growing stage.

- Another product of cashew tree having high potential for value addition, but which has been neglected till now, is the cashew apple. The beverage like 'Fenni', squash, juice, etc. can be made out of the cashew apple and there is potential for such units in the district. Establishment of such processing industries will require heavy investment on machinery as well as the cold chains and also involve advanced technique of production. However, demand for such kind of drinks has not yet been ascertained at local, national and international level. For this reason no such unit has been established in the district. But along with the current trend of diversification, there are chances of such types of units coming up and the banks have greater scope for extending credit to those units.

- Cashew apple can also be used for preparing candy, pickle, jam, chutney and syrup, etc. The local ladies can be trained in these activities and the banks can finance them through SHG Bank linkage programme. Banks can also arrange for entrepreneurship / skill development training programmes for processing and value addition to cashew apple. The technique for extracting cashew apple juice at low costs has already been developed by Orissa University of Agriculture and Technology (OUAT), Bhubaneshwar. Banks have a major role to develop the entrepreneurship among SHGs.

# CHAPTER - VIII

# CONSTRAINTS AND STRATEGIES FOR THE DEVELOPMENT OF CASHEW SECTOR IN ORISSA

8.1 The cashew sector comprising the cashew cultivation, processing and trading in India provides employment to more than 10 million people. Processing sector creates bulk of the employment opportunities. The plus point is that the cashew sector brings in income and employment opportunities to the people mostly in rural areas and when there is almost nothing to do any agricultural or other operations. Cashew processing units centre around a few patches in Kerala, Tamil Nadu, Andhra Pradesh, Karnataka and Orissa. The processing units procure raw cashew nuts from within the country for which scores of people are involved in its growing and collection in the hinterlands. The domestic production hovers around 5-6 lakh MT of raw cashew nuts. An equal quantity of raw cashew is also imported from over 20 countries especially from African countries. Presently, on an average 11.50 lakh MT of raw cashew nut is processed in India every year, when the industry can process about 12 lakh MT, entailing a shortage of around 0.50 lakh MT. The market has an effective demand for the processed kernels and CNSL. Thus, the industry, in respect of cashew cultivation, processing and trading work at a sub-optimal level in our country.

**Constraints in Cashew Sector**

8.2 The major constraints affecting the Cashew sector can be analysed from three view points i.e. Plantation, Processing and Marketing. The problems and prospects of cashew sector for Orissa in general and Koraput district in particular are described in the following paragraphs.

**1. Plantation**

- The individual cashew plantation is still in nascent stage. A lot of misconception prevails among the farmers about the planting of hybrid varieties of cashew plants. The farmers are gradually beginning to realize the profitability of the cashew nuts plantation. However, they do not use improved varieties of seeds in a big way and hence the yield is much lesser.

- There is no cashew nursery in Koraput district for which grafted varieties are not adequately available in the district. The Cashew Development Corporation and Horticultural Department supply the grafts by procuring from other districts and sometimes from other states like Goa and Maharashtra. Due to the differences in soil and agro climatic conditions and problems emanating from transportation, handling, etc. the mortality of such grafts is quite high. Further, cashew grafts are comparatively costly, around Rs.25 per graft. Thus often cashew plantations resort to the traditional seedling varieties.

- A major part of the plantation in the district is more than 30 years old and their yield is very low.

- Horticulture Department has included Cashew Plantation under National Horticulture Mission. However due to non-availability of grafts, cashew plantations under the Mission is yet to take off in the district.

- Since cashew crop is highly susceptible to bad weather conditions and hailstorms especially during fruiting stage, its production shows a fluctuating trend. Erratic supply due to production variations destabilize the prices in the absence of a price regulation mechanism.

**2. Processing**

- The processing units in Orissa were hesitating to sell their produce within the state as they had to pay high Value Added Tax (VAT) to the tune of 12.5 per cent on the sale of cashew kernels. The VAT in Andhra Pradesh was 4 per cent and in Maharashtra was 2.5 per cent.

- The working capital requirement of the processing units is much higher than the term credit support provided by the banks. In such cases the processors have resort to outside and non institutional sources often at a rate of interest ranging between 60 and 120 per cent per annum.

- Huge amount of money is required for the raw cashew nut inventory. The units have to maintain raw cashew nuts stock adequate for two to three months.

- To compete directly and successfully in the international market, the processing units must maintain standard, branding and marketing strategies of international order. There are complaints from importers of cashew kernels from India regarding poor quality nuts (Appendix 2). This sort of incidents shatters the international market for Indian Cashew.

- Exploitation of by-products require technique which may be difficult to obtain and can be expensive also.

**3. Trading and Marketing**

- Traders and middlemen dominate the market for raw cashew nuts and also the cashew kernels. They mostly regulate cashew prices. In some cases, the traders hoard a large amount of cashew nuts and strike a bargain with the processing units for a higher price. Since procuring raw cashew is the largest component of the operating costs in cashew processing sector, a slight increase in cashew price adversely affects the entire economics of cashew processing.

- The individual farmers are in a disadvantageous position as they were forced to sell the produce at a price determined by the traders / leaseholders. Being small producers, they are only the price takers.

**Strategies for Development of Cashew Sector**

8.3 The cashew sector in Orissa is slowly taking off as more and more areas are brought under the cashew cultivation and scientific methods of cultivation are also being adopted by

the individual as well as govt. plantations. The Govt. of India has launched the National Horticulture Mission (NHM) in April 2005 for a period of seven years to double the horticulture production by 2010-11. The NHM is being implemented in Orissa from 2005-06 onwards and cashew has been identified as one of the potential plantation crops in the state. For implementing the programme in the state, a Special Purpose Vehicle (SPV), namely, Orissa Horticulture Development Society (OHDS) having branches in all the districts has been created. The OHDS has a general body headed by the Minister, Agriculture and an Executive Committee headed by the Chief Secretary. There is a project implementation committee headed by the Agriculture Production Commission (APC) to take day-to-day decisions.

8.4 The Agriculture Promotion and Investment Corporation Limited (APICOL) has been entrusted with promotion of processing units and private sector investment in the plantation and Horticulture sector. The Orissa State Agriculture Marketing Board (OSAM Board) plays a significant role in creating marketing infrastructure under the mission. The Orissa Seed Corporation (OSC) and Orissa State Cashew Development Corporation Limited (OSCDC) play important role in supplying planting material and seeds. The major intervention under the NHM include the following:

**a. Production of Planting Material**

8.5 Four model nurseries (three in Public sector and one in Private sector) are proposed to be established under the NHM. These nurseries would accommodate the nucleus material of varieties of cashew recommended for the state and build up sufficient infrastructure for irrigation and nursery activity to propagate clones of such varieties in the form of soft wood grafts. All India Coordinated Cashew Improvement Project conceived by ICAR since 1972, resulted in evolution of many high yielding varieties conforming to the export specifications of international acceptance, out of which two i.e. BPP 8 and Bhubaneswar have been found suitable for Orissa.

**b. Development of Nurseries**

8.6 At present there are only 10 nurseries in Orissa, of which, 7 are in private sector and the rest are under Horticulture Department, Orissa State Agriculture University and Orissa State Cashew Development Corporation. As the market absorbability continues to be strong, there is a scope for establishment of nurseries in the private sector to cater to the export markets. The financing banks have greater scope in this area.

**c. Area Expansion**

8.7 At present, only 30 per cent of the area of cashew is under clones at the all India level. The percentage of the same is much less in Orissa. Since the shift is taking place in favour of non-traditional tracks, the area expansion under NHM is limited to clones. Therefore, the NHM proposes 5000 ha. for new orchards although potential is there for 25000 ha. fresh area coverage. This cautious approach aims at increasing productivity.

**d. Rejuvenation**

8.8 Declining productivity of cashew falling under senility stage with least economic advantage is a big concern. This potentially senile area amounts to 50000 ha. in the state. The NHM aimed at rejuvenation of 2000 ha. of such plants for rejuvenation during 2005-06.

## e. Post Harvest Infrastructure

8.9 Pack house for cashew consists of collection, drying floors, manual splitting and then making it ready for processing unit. It also caters to the needs of other crops as well. Five such pack houses were proposed to be set up in Orissa during the 2005-06. Four of them will be in general areas and one will be in tribal area. Further, two processing units, one each at Khurda and Koraput will be established to cater to the processing needs of the cashew nuts.

8.10 The details of intervention for cashew nuts in Orissa under NHM are indicated in Table 8.1. Keeping in mind the plan of action initiated by the NHM, a few line of action may help cashew sector grow fast to reach its optimum and augment the area, production and productivity of cashew nuts in Koraput district as well as in Orissa.

**Table 8.1. : Interventions under NHM in Orissa**

(for 2005-06)

| Sl. No. | Component / Activity | Location / District | Rate of assistance / Unit (Rs.) | Total Cost (Rs. in Lakh) |
|---|---|---|---|---|
| 1 | **Production of Planting Material** | | | |
| a | Model Nursery - 4 (4 ha. each) | Cuttack, Puri, Koraput, Rayagada | Public Sector - Rs. 18 lakh each<br>Private Sector – Rs. 9 lakh | 63 |
| i | Public Sector - 3 | | | |
| ii | Private Sector - 1 | | | |
| b | Small Nursery – 4 (1 ha. each) | Khurda, Nayagarh, Gajapati, Malkangiri | Rs. 3 lakh<br>Rs. 1.5 lakh each | 9 |
| i | Public Sector – 2 | | | |
| ii | Private Sector - 2 | | | |
| 2 | Plantation of New Orchards ( 5000 ha.) | Cuttack, Puri, Khurda, Nayagarh, Gajapati, Rayagada, Koraput, Malkangiri | Rs. 11250/- per ha. | 562.50 |
| 3 | Rejuvenation of old Orchards (2000 ha.) | Cuttack, Puri, Khurda, Nayagarh, Gajapati, Rayagada, Koraput, Malkangiri | Rs.15000/- per ha. | 300 |
| | **Post Harvest Infrastructure** | | | |
| 4 | Pack Houses | Cuttack, Khurda, Puri, Nayagarh, Gajapati | Rs. 2.5 lakh each. Subsidy @25% for general area and @33.33% for tribal / hilly areas. | 3.32 |
| i | General – 4 | | | |
| ii | Tribal - 1 | | | |
| 5 | Processing units | Khurda, Koraput | | Project based |
| i | General Area – 1 | | | |

| | | | | |
|---|---|---|---|---|
| i i | Hilly / Tribal Area - 1 | | | assistance to be received |
| | | | **Total** | **937.82** |

**Cashew Plantation**

.1 Koraput district is having around 9 thousand ha. under unutilized and degraded notified forest area and another 19.5 thousand ha. of forest land under agriculture encroachment. Out of the latter, around 30 per cent i.e. 9 thousand ha. can be brought under cashew plantation. The Forest Department may initiate action in this regard by bringing this land under cashew cultivation.

.2 Koraput district has, as per the estimation of ORSAC, around 71.5 thousand ha. of land with or without scrub under private as well as govt. ownership. Out of this, nearly 30 per cent i.e. about 21.5 thousand ha. can be covered with cashew plantations.

.3 The Village Forest Development Committee or Joint Forest Management Groups may be roped in for cashew plantation in the denuded forest areas. This shall not only maintain the canopy but also fetch income to the villagers.

.4 The banks may design farm models and come forward to finance cashew plantations under ICDP with provision of suitable credit facilities to the farmers. Cashew plantation is an economically viable and technically feasible plantation crop.

.5 The farmers may be educated about the potential of cashew sector and be encouraged to adopt advanced farming techniques so that they can earn maximum benefits out of the land.

.6 The NGOs and other voluntary agencies may be promoted to encourage the farmers for cashew plantations.

.7 Cashew can be grown in almost all the corners of the state. Coastal Orissa and districts namely Dhenkanal, Keonjhar, Sundergarh, Gajpati, Koraput, Nawrangpur and Sambalpur are more suitable for commercial cultivation of Cashew.

.8 Koraput is one of the districts identified for the implementation of the National Horticulture Mission programme. The programme covers a wide variety of activities like production of planting material, promotion of IPM and INM etc. This opens up new opportunities for the cashew sector.

.9 To bring new areas under cashew cultivation, the State Government may lease out the available wastelands under public sector for long-term to commercial cashew cultivators. Similarly, for encouraging cultivation in private wasteland, incentives may be extended for cultivation by the Commodity Development Board / Cashew Development Corporation. Moreover, there should be adequate extension services for cashew nut plantations.

.10 An integration of the present employment generation programme with cashew cultivation can also bring in better results. As the cultivation, processing and trading are employment-oriented activities, government may extend suitable incentives to the farmers for cashew plantation as is presently done for promoting other plantations as Tea and Rubber.

.11 Of late, there is a growing shift towards organic food items as a result of greater awareness about both health and environment. This has led to the growth of organic farming and India being the leader in the world cashew trade has the potential for organic cashew farming. Though most of the cashew produced in India as well as Orissa are organic as very less / no fertilizers are used in the plantations, they need to be certified as organic. The certification can be done only by the designated bodies.

.12 No initiative has been taken in cashew plantation under the contract farming arrangement in Koraput district. Since, the cashew plantation till recently was an initiative of the various Govt. Departments, the individual plantation of grafted variety of cashew in a commercial scale has not gained popularity among the farmers. Further, the cashew processors were procuring the raw cashew nuts from other states and were also importing them from abroad for which the contract farming arrangement has not entered into the system. There is scope for contract farming of cashew nuts in the district keeping in mind the preference of the processing units for the local cashew nuts, which is whiter, and larger in comparison to imported varieties. But to make the arrangements operational, a number of initiatives have to be taken including the plantation of grafted varieties, following proper package and practices, etc. Since the cashew plant owners are basically small and marginal farmers having 1 to 2 acres of land under cashew and have no bargaining power, they are paid less price for the produce. In this case, the contract farming arrangement will not only ensure better price but also assure the supply of cashew nuts for the processing units, which will help them in optimizing their capacity utilization.

**Cashew Processing**

- There were about 26 cashew processing units operating in Koraput district with installed capacity of processing 20 thousand MT. Further, the procurement of raw cashew nuts both from within as well as outside the statre indicated the potential for another 6 cashew processing units in the district.

- The banks in this regard have a greater role to play, as the working capital requirement for stocking of raw cashew nuts during the harvesting season is very high. The cashew units also require block capital for renovation and modernization indicating the demand for term loan. Since cashew processing is an economically viable and technically feasible agro-processing industry, the financing banks have relatively low risk for non-recovery of the credit.

- The cashew processing in Koraput district in particular and Orissa in general is confined to production of cashew kernel only. The processing of cashew apple has not been attempted. A variety of products like juice, soft as well as hard drinks, pickle, and toffee can be produced from cashew apple. Some of the techniques regarding this are available with the Research Institutions and private parties. The SHGs working in the area can be trained in these activities so that income and employment generation can take place.

- Koraput district has a very good potential of turning into a cashew-processing cluster. The easy availability of good quality cashew in requisite quantity, presence of enterprising people ready to venture into processing, availability of tribal labour, proper marketing channel, etc. offers better scope for the processing units in the district. The establishment of cluster with all the requisite infrastructure would help in making the processing units stronger to withstand the pressure from the traders. Subsequent introduction of improved processing technique would help in developing a brand for the **Koraput Cashew** in the line with **Palasa Cashew**.

- As the import of raw cashew nuts account for almost 40 per cent of the current processing, there is a need to further augment local production to make processing industries less dependent on cashew import. Heavy dependence on cashew import is likely to offset our processing sector due to the increasing international competition taking place in raw cashew nut processing, especially, by the African countries.

- Cashew processing still continues as a labour-intensive activity in India. The kernel processed through skilled labour has high quality standards and fetch better price in world markets. Availability of skill and cheap labour helps India to dominate in Cashew Trade in world market. The cashew processing has generated substantial mandays of employment in Koraput district as well. Though the exact data of the labour employed in processing units was not available, the employment potential of the activity cannot be diminished. Among the sample processing units it was estimated that on an average 389 people work every day in one cashew nut processing unit.

- The contribution of female labour in cashew processing and raw cashew collection and cashew cultivation are widely acknowledged. About 90 per cent of the labour involved in cashew cultivation and processing is contributed by female labour. In the processing industries cleaning, soaking, shelling, peeling and grading are their domain. The labourers are engaged both in organised and unorganised processing sectors. In organised sector, though they are eligible to get minimum wages and other benefits, they often get only less number of working days; whereas, in unorganised sector the temporary nature of their job deny them labour welfare support systems like ESI, PF, Leave with salary, etc. Female labourers suffer maximum under unorganised sector due to their lack of mobility, family responsibility and limited scope for alternate job opportunity near their domicile.

- Processing factories perfect their management talents to optimize profit through various cost-saving methods. As they have lesser control over raw cashew prices, taxes and levies, different methods are used to minimise processing costs.

- The value-addition through processing activity averaged 8 per cent for the sample processing units. The processing of a bag of raw cashew nut (80 kg.) with an average cost of Rs. 3854 resulted in value addition of Rs.312. Of this, more than 95 per cent was realised through the sale of kernels and the remaining due to the sell of CNSL oil.

- A few sampled factories attempted value addition of cashew kernel and CNSL by refining them. However, most of the factories did not attempt value addition of the main or sub-products.

- A good number of processors depended on larger export houses for getting raw cashew nuts and also to sell their products, cashew kernels and CNSL. As these houses had business relations with bulk buyers and brand name built over a period of time, they could source larger orders and also meet the international quality standards. There was a cartel among a few dominant processing units.

- For a healthy competition among the cashew processing industries, the supply side of the raw cashew nut needs basic strengthening. Presently, irregular availability of raw cashew nut, especially through import make the industry confused and the situation is exploited by a few strong industrial houses who has developed better access to raw cashew procurement both within the country and through import. The present raw cashew collection system in the country provides less remunerative prices to the basic producers. The state-run Cashew Development Corporations can play a major role to ensure better prices for the basic producers. Involvement of large number of intermediaries needs to be avoided. Farmers' direct access to cashew market is warranted for the promotion of cashew sector. A collection system from hinterlands to the terminal market has to be encouraged and bulk quantity should be sold through public auctions after grading / standardization.

**Cashew Trading**

- Price fluctuation and seasonal nature of cashew nuts are major problems for the cashew processing units. The processors usually purchase bulk of their requirement for the year during the harvesting time. This forces them to borrow from the informal sources at higher rate of interest as own funds and bank credit are not adequate for meeting the financial need to procure raw cashew.

- In order to break the exploitation of the processing units by the traders, a marketing body may be appointed by a committee consisting of the District Administration, DRDA, ORMAS / DSM, District Horticulturist, representatives of cashew nuts growers, cashew nuts processing units, etc.

- NGOs / SHGs / Federation of SHGs may be appointed as the marketing body. The marketing body may be appointed for one year during the month of January / February. It would provide a common forum to the cashew growers and processing units to sell and buy their produce. The marketing body may be given a nominal service charge by buyers and sellers. The marketing body will buy the left over from the growers.

- The financing banks may provide short-term credit to the marketing body for this seasonal business. In this way the processing units can directly buy at least 50 per cent of the cashew nuts produced in the district. The farmers can get better price while the processors can buy cashew nuts at a lower price. The margin taken by the exploitative traders can be shared among the farmers, traders and marketing body.

**Concluding Remarks**

Cashew is a potential crop in Orissa. It has immense potential for income and employment generation in rural areas. It can productively use the wastelands and marginal lands. Above all, the crop has soil conservation, ecological and environmental benefits. However, there is not a single patron to the crop in the State. Cashew Development Corporation has its own area and plans for auction and income generation seldom looking forward for the development of the sector. There is little coordination among the Soil Conservation Department, Horticulture Department, Forest Department and Orissa Forest Development Corporation who take up plantation of the golden crop under some or other programmes. It is high time that the crop should be monitored, regulated, promoted and statistics are maintained under direct supervision of a single Department.