INTRODUCTION

1.01 Introduction
1.02 Importance of Agriculture
1.03 Concept of Horticulture and Crops
1.04 Classification of Horticulture Crops
1.01 Importance of Fruit
1.02 Role of Agro-Industries in Indian Economy
1.03 Classification of Industries
1.04 Concept of Fruit processing Industry
1.05 Agricultural Scenario of Sindhudurg District
1.06 Relevance of the Study Area
1.07 Choice of the Study Area
1.08 Hypothesis of the Research
1.13 Database and Research Methodology
1.13.1 Secondary Data
1.13.2 a) Primary Data
   b) Selection of cashew growers
   c) Cashewnut processing
1.13.3 Analysis of Data
1.13.4 Definitions of terms and concepts
   A) Capital Investment
   B) Cost of Processing
   C) Cost of Production
   D) Value Addition
   E) Cost of Marketing
   F) Sales Realization
   G) Benefit Cost Ratio
1.14 Limitations of the Study
1.15 Previous literature
1.16 Résumé
1.01 Introduction:

India is a developing country and agriculture is the backbone of Indian economy. Fruit and vegetable processing are the most important agriculture based activity. Objective of the fruit and vegetable processing is to supply wholesome, safe, nutritious and acceptable food to consumers throughout the year. This may be useful for exporting finished or semi-processed products. The fruit and vegetable processing activities have been set up, or have to be established in developing countries for some of the following reasons:

- Diversification of the economy, in order to reduce present dependence on export of limited commodities.
- Government policy to promote activity.
- To contribute to some extent to achieve balance of payment at national level.
- To stimulate agricultural production by obtaining marketable products.
- To generate both rural and urban employment.
- To reduce loss of perishable commodities like fruit and vegetable.
- To improve employment status in rural sector during the off-season and thereby generating new sources of income for farmers and local artisans.
- To get the advantage of value addition.
1.02 Importance of Agriculture:

Agriculture is the main foundation of rural life. Most of the villagers ranging from 15 to 60 years of the age are occupied in agriculture. In rural life land is called mother earth. The level of development of the civilization and culture of a particular place is measured according to the land productivity. Land provides him opportunity for life by supporting the basic needs of food, fodder, fuel, clothes etc. In rural life, land is worshipped on occasions of marriage, festivals and celebration. In this way, rural life beings with land and ends with land.

Agriculture is the most important, occupation of the people in India. The agricultural sector contributes nearly one-third of the national income provides livelihood to about two-third of the population supplies the bulk of wage goods required by the non-agricultural sector and raw materials for a large section of industries (Dauthy, 1979). In the recent past contribution of agriculture has been reduced. However, it is significant as it provides employment to about 60% of working population especially in the rural sector.

Agriculture is the oldest and most important industry of the world. Leaving out China, there is no country in the world in which so many people depend on agriculture for their livelihood as in India.
The two outstanding features of agricultural production Firstly developing countries are the wide variety of crops and the preponderance of food over non-food crops (Negi, 2000).

In terms of population and geographical area, Maharashtra is the third largest state in India. The share of agriculture and allied activities in net State Domestic Product (SDP) for Maharashtra has declined from around 38% in 1961-62 to 22.9% in 1992-93. The corresponding numbers for all India have been 50.9% and 32.3% respectively (Mungekar, 2003). Thus, the contribution of agriculture to the net SDP has been less in Maharashtra as compared to the national average. It may, however, be noted that Maharashtra’s economy is predominantly agrarian since around 61 percent of the total workers are dependent on agriculture and allied activities for their livelihood in the early 1990s.

The soil, topography and climate in Maharashtra are not very much favourable for some high valued crops and have led to relatively low yields of the important crops in the state as compared to that in India. The state has, however, several advantages for development of horticulture and vegetable crops. Banana, oranges, cashew nut and grapes are the important horticulture crops grown in the state.

The 8th five year plan of Maharashtra gives lot of emphasis on agro-processing. The establishment of processing units will help to support prices of agricultural commodities. It also creates further employment opportunities in grading, transporting and processing. Broadly speaking in konkan region,
items requiring processing have been identified as kokam, late season mango, cashew nut and cashew apple (Mungekar, 2003).

1.03 Concept of Horticulture and Crops:

Horticulture is tremendous industry composed of numerous commercial enterprises. Lot of raw material can be produced from horticultural crops. It contributes to health happiness and prosperity of the mankind. Horticulture is the applied science. It is defined as an expensive art and science of study of garden plants.

This term applied first in 17th Century. The word ‘Hortus’ means ‘Garden’ and ‘Culture’ means ‘Cultivation’.

The cultivation of flowers, fruit, or vegetables in small plots using intensive methods of farming. The most intensive form of horticulture is probably the cultivation of crops (Smith, 1979).

Horticulture is part of agriculture, which is concern with the garden crops. Thus the horticulture means cultivation of garden crops. India and Maharashtra, with its wide variability of location, climate, soil and other agro-climatic conditions has good potential for growing a wide range of horticulture crops, such as fruits, vegetables and plantation crops. The district has commercial and horticultural crops as listed below:
### Table 1.1

**Major crops in Sindhudurg District.**

<table>
<thead>
<tr>
<th>Subsistant crops</th>
<th>Commercial Crops (Food Crops)</th>
<th>Plantation Crops (Horticultural Crops)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Paddy</td>
<td>1. Groundnut and other oil seeds</td>
<td>1. Mango</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Kokum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Arecanut</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Jackfruit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Oil palm</td>
</tr>
</tbody>
</table>


In the mid eighties Government identified horticulture crops as a means of diversification for making agriculture more profitable through efficient land use, optimum use of natural resources. The past efforts have been rewarding in terms of increased production and productivity and availability of horticulture produce. India has thus emerged as the largest producer of coconut, arecanut, cashew nut, ginger, turmeric, black pepper and the second largest producer of fruits and vegetables. The Fig 1.1 shows location of the study area and the table 1.2 depicts area under horticultural crops compared with target in last 15 years.
LOCATION OF SINDHUDURG DISTRICT IN MAHARASHTRA

Figure No.1.1
### Table no. 1.2
Year Wise Area under Horticulture Crops in Sindhudurg District:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Cultivation Year</th>
<th>Area under cultivated (Hect)</th>
<th>Number of beneficiaries under the government scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1990-91</td>
<td>3308.06</td>
<td>4142</td>
</tr>
<tr>
<td>2</td>
<td>1991-92</td>
<td>6272.75</td>
<td>7412</td>
</tr>
<tr>
<td>3</td>
<td>1992-93</td>
<td>6322.55</td>
<td>7504</td>
</tr>
<tr>
<td>4</td>
<td>1993-94</td>
<td>6376.07</td>
<td>7680</td>
</tr>
<tr>
<td>5</td>
<td>1994-95</td>
<td>4566.64</td>
<td>5854</td>
</tr>
<tr>
<td>6</td>
<td>1995-96</td>
<td>4909.66</td>
<td>6159</td>
</tr>
<tr>
<td>7</td>
<td>1996-97</td>
<td>5681.59</td>
<td>7541</td>
</tr>
<tr>
<td>8</td>
<td>1997-98</td>
<td>4752.18</td>
<td>5733</td>
</tr>
<tr>
<td>9</td>
<td>1998-99</td>
<td>4946.64</td>
<td>6447</td>
</tr>
<tr>
<td>10</td>
<td>1999-00</td>
<td>4627.69</td>
<td>6385</td>
</tr>
<tr>
<td>11</td>
<td>2000-01</td>
<td>4955.19</td>
<td>6624</td>
</tr>
<tr>
<td>12</td>
<td>2001-02</td>
<td>2860.57</td>
<td>7748</td>
</tr>
<tr>
<td>13</td>
<td>2002-03</td>
<td>959.69</td>
<td>1539</td>
</tr>
<tr>
<td>14</td>
<td>2003-04</td>
<td>1342.24</td>
<td>2446</td>
</tr>
<tr>
<td>15</td>
<td>2004-05</td>
<td>1147.21</td>
<td>2217</td>
</tr>
<tr>
<td>16</td>
<td>2005-06</td>
<td>1345.60</td>
<td>2298</td>
</tr>
<tr>
<td>17</td>
<td>Total</td>
<td>64366.33</td>
<td>87729</td>
</tr>
</tbody>
</table>

Source: Agricultural Department Sindhudurg District.

Maharashtra state has several advantages in terms of marketing of products both domestically and internationally, for development of horticulture. Horticulture can also provide large year-round employment as compared to various other seasonal crops. Regarding horticulture development in the state, the Kolhe Committee on agro-marketing and agro-processing (1991) says that there are lot of constraints in the development of horticulture in the state, but
mainly low productivity and improper varieties have proved a major bottleneck (Mungekar, 2003).

The development of horticulture is the only way for solving the economic condition of the vast peasantry of India and the growing unemployment among both educated and uneducated masses of this vast region since crop husbandry has proved uneconomical in most of the areas (Negi, Economic and Commercial Geography of India).

1.04 Classification of Horticulture Crops:

The intensively cultivated horticultural plants directly used by people for food, for medicinal purposes and for esthetic gratification. Horticulture crops have been classified into various groups depending on their growth habits, cultivation requirement, climate requirement and use as listed below:

**Classification of Horticulture crops:**

![Classification of Horticulture crops diagram]

They are classified into the three broad divisions viz. fruits, vegetables and flowers. The classification of horticulture crops based on use of plants is as follows (Figure no. 1.2).
A. Temperate (Deciduous) Fruits:

B. Tropical and Subtropical (Evergreen) Fruits:

1.05 Importance of Fruit:

Fruits and vegetables, which are among the perishable commodities, are important ingredients in the human dietaries. Due to their high nutritive value, they make significant nutritional contribution to human well-being. They are the cheaper and better source of the protective foods. If they can be supplied in
fresh or preserved form throughout the year for human consumption. The national picture will improved greatly.

Vegetables and fruits are essential for a balanced diet and maintenance of good health. They are rich sources of protective elements like minerals, salts, vitamins and other chemical substances which protect the human body against a number of diseases. They are also important for neutralizing the acids produced during digestion of meat, cheese and other fatty foods. They provide valuable roughages promoting digestion (Vyas, 1994).

Fruit tree farming being highly intensive and skillful enterprise, generate employment even for trained persons. It reduces soil erosion, silting of tanks and air pollution. Importance of fruits in human diet is well known that the man cannot live on cereals alone. Fruit and vegetables are essential for balance diet and good health. Nutritionists advocate at least 60 gm of fruits and 360 gm vegetable per capita per day in addition to cereals, pulses, egg etc.

Fruit and vegetables are good sources of vitamins and minerals without which human body cannot maintain proper health and develop resistance to disease. They also contain pectin, cellulose which stimulate intestinal activities and energy giving substances like oils, fats and proteins. Most of the fruits have medicinal properties (Sabale, 1993).

1.06 Role of agro-industries in Indian economy:

Agriculture development is the keystone of industrial and economic development. We may appreciate the importance of crops for human food and
livestock feed, but rarely do we properly connect them with industry. As pointed out in the beginning that agriculture is the source of world economy (Negi, Agricultural Geography-second edition).

Agro industries make optimum use of agricultural resources. These industries can add a substantial amount of value to primary produce. The development of food and agricultural industries has beneficial to agriculture through backward linkage effect. The excess population of India has potential to get jobs in agro based industries. The industries which are directly or indirectly linked with the agriculture called as agro industries. Agro industries creates and develops most of fields. Base of agro (Figure no. 1.3) industries is as follows:

**Base of Agro Industries**

![Diagram of Base of Agro Industries]

Figure no.1.3
Even after so much of industrial progress, country depends on agricultural sector for employment generation. For another 100 years, our major employment is going to come from agricultural sector. Development of agro based industries to generate employment is a must to keep our economy on sound footings. Market surveys in European and other markets have revealed that there is good scope for export of grapes, mango, cashew to gulf and European markets.

The availability of these export markets would help to increase area under these fruits. Fruits farming provides raw materials for various agro based industries. Development of cashew and mango plantations on hill slopes in Konkan where even ragi or nachani can not be grown, have brought additional revenge to the growers (Sabale, 1993).

1.07 Classification of industries:

Agriculture sector helps industry by various ways, it supplies raw material to industry, it provides food to people engaged in industry. It increases purchasing power of the farm community. The industrial development helps modernization of agriculture. Agro industries make optimum use of agricultural resources. Indian population has potential to get jobs in agro based industries.

Fruit Processing Industries have products like Juice, Jam, Jelly, Pickle, Sarbat, Squash, Cashew burfi, Cashew fenny, Cashew Modak etc.
1.08 Concept of fruit processing industry :

A large variety of fruits grown in India. India accounts for about 10% of the production of fruits in the world. Cashew nut assumes an important place in the Indian economy. India produces 45% of the global production of cashew. Besides, India is the largest producer, consumer and exporter of cashew in the world. The production of cashew nut has increased from 0.36 million tonnes in 1997-98 to 0.47 million tonnes in 2001-2002. (K.Sagar, 2004).

1.09 Choice of the Study Area :

Sustainable and equitable economic its growth depends largely on the development of agriculture, and allied sector. Government of India (GOI) in eleventh five year plan beginning from 2007-08 has set the targets of 4% growth for agriculture and 9% for the economy. The Planning Commission has directed to the State Government to initiate steps for preparing comprehensive District Agriculture plans during 2007-08.

National Bank for Agricultural and Rural Development (NABARD) has prepared credit plan, reflecting the current priorities set by GOI in the areas of agriculture and rural development. Agriculture extension programme and support services have been useful for the farmers to increase their income.

Much of the poverty in India is found in rural areas. One of the methods to eradicate poverty may be development of the agriculture. The study area with hot and humid summers, pleasant winters, abundant rainfall, lateritic and coastal alluvial soils provides favourable condition for plantation and
horticulture. In the district 55.30% of the total area under cultivation of fruit crops is covered by cashew and 26.06% under mango. The following Figure no. 1.4 shows that the study region of the cashewnut processing industry in the district.
THE STUDY AREA SINDHUDURG DISTRICT

Fig. no. 1.4
Mango, Cashew and coconut are the major horticulture crops and district economy has a major share of income from processing and marketing of horticulture produce, which is also main source of income for about every household. Initiatives being launched under National Horticulture Mission, and by few corporate towards contract farming, certification process for organic cashew will help in sustaining enhanced credit flow to the sector.

NABARD is implementing Cashew Cluster Development Programme in the district In co-operation with Government and BAIF Pune. The programme envisages promotion of micro enterprises in cashew processing to be run by cultivators, which will provide gainfull employment to the womenfolk nearer to their place of residence. The cashew kernels processed by units holders are sold under brand name ‘Gopuri’ value added products from cashew like cashew modak, cashew burfi, cashew apple syrup are sold in the markets at Sindhudurg, Mumbai and pune.

Training in cashew processing is being provided on regular basis at Gopuri Ashran at Kankavli and M/S Hedgewar Seva Prakalpa (HSP). There is a lack of awareness and enterprise among cashew farmers about agriculture management practicals to be followed by improving yield existing plantation. Thus the favourable geographical condition and Government policies are suitable to this cashew nut processing industry in the district (PLP,2008-09).
1.10 Agricultural Scenario Of Sindhudurg District:

Dr. Babasaheb Sawant Konkan Krishi Vidyapeeth,(BSKK) Dapoli has been doing research and extension work in agriculture, animal husbandry and dairy and fisheries for about last three decades. The State department of agriculture and other line departments have been rendering necessary cooperation in these endeavours. It would be appropriate to examine technological adoption scenario in this background. Majority of the farmers have already adopted a part of the improved package. Hence, it may not be appropriate to conduct demonstrations of training programs on the full package of technology. There is need to identify gaps in adoption, so that it could be used as basis for technical planning of demonstrations/training programmes.

Mango and cashew are the major rainfed fruit crops grown in the district. The main problem faced by the mango growers in the districts are alternate bearing, spongy tissue and heavy infestation by hoppers. In the case of cashew crop, cultivation of local varieties, heavy infestation of Tea Mosquito is the main problems. There are also marketing problems for mango and cashew which are main fruit crops in the district. There is need to have post processing units /industry in the district.

In this context extension education programmes in the distinct may focus on the use of Cultar and its economics in mango production, cultivation of high yielding and bold seeded varieties of cashew, integrated Pest management in mango and cashew, formation of cooperative societies/associations for
marketing of mango and cashew fruits as well as establishment of fruit processing industries in the district.

Some other important issues which need to be tackled on priority basis for the economic upliftment of the farmers are, utilisation of irrigation potential created, conservation of soil and water, diversification of cropping pattern, promotion of mixed cropping system, dairy, poultry, social forestry and medicinal and aromatic plantation and problems of small fishermen, etc.

1.11 Relevance of the Study Area:

Agriculture system of Konkan mainly based on pro commercial products like mango, cashew etc. In the south Konkan cash significant production. The introduction of new processing technology of cashew nut is responsible for change in the cash flow and change in case of farmers economy. It is necessary to understand the cashew processing as a system and to analyze the system for knowing the quantity and recipients of the benefits. These kinds of study can be useful to develop policy instrument in such a way that the benefits of cashew nut processing should reach to the farmers nearing there by maximum cost should be paid for local soil, water, and human resources in the region. It is in the sense study has academic as well as social relevance.

1.12 Hypothesis of the Research:

The study mainly focuses on cost structure of cashewnut production in the district. This exercise may be useful to understand to what extent farmers would be benefited due to processing activity. The study mainly aims at
understanding the effect of “Value addition” by way of cashewnut processing activity. Therefore the hypothesis of the study may be outlined as below.

“The cashewnut processing industry in the Sindhudurg district is useful to improve the income of the farmers and thereby the standard of living.”

1.13 Database and Research Methodology :

The study has been carried out to completed by acquiring data through primary as well as secondary data source. Required information collected from the concerned area.

1.13.1 Secondary Data :

Secondary data collected from related books, government agencies, research articles, University library, reports of fruit processing industries is as follow:

i. District Statistical Abstract

ii. District Census Handbook

iii. Agricultural Bulletin

iv. Fruit Processing Reports

v. Map of Sindhudurg District from authentic source like SOI.

The data will be collected from the above mentioned source to understand:

i. The distribution of cashewnut

ii. The growth of cashewnut production from 1991-2006

iii. To identify tahsils of high production of cashewnut
1.13.2 a) Primary Data:

Using questionnaire method the data regarding following parameters, Cost Structure of cashewnut cultivation, processing, transportation, marketing. For understanding problems and prospects of the cashewnut production, processing, marketing knowledgeable persons will be interviewed. For the data collection survey method, structured interview and observation method was adopted.

b) Selection of cashew growers

From each tahsil, a sample of 20 cashew growers was selected randomly, after preparing a list of cashew growers in the village from the revenue records. Thus, the final samples have been consisted of 8 tahsil and 160 cashew growers from study area.

In addition to this, from each tahsils 10 cashew growers, one each for 1st to 5th year plantation have been selected to collect information on investment in establishment of new cashew orchard. Thus, in all 80 additional cashew growers have been selected for financial feasibility analysis.

c) Cashewnut Processing

1. Background information: List of cashew processing units was obtained from D.I.C. of Sindhudurg districts. According to this information, there have been 50 units in Sindhudurg district and only four units have been in Ratnagiri district. To obtain adequate sample size, Sindhudurg district was
selected purposively. At the time of data collection, it was observed that some of the units have been not in existence as they have been closed. To overcome this problem, personal discussion was made with office bearer of the Konkan Cashew Processors and Exporters Association at Vengurle. According to them, 18 units have been in operation. All these units have been selected and contacted personally. The information related to various aspects have been recorded in a well designed schedule. The information so collected pertained to the year 2008-2009.

2. Nature and source of data

The detailed information required for the study was collected from primary and secondary sources in order to accomplish the various objectives of the study.

The primary data relating to the procurement and processing of cashew nut, marketing of cashew kernels and problems faced by the processors have been collected through pretested schedule from the processors. The processors have been personally interviewed to ensure the data made available by them have been appropriate, comprehensive and reasonably correct.

The secondary data regarding capital investment and organisation structure was obtained from the records of the processing unit. Similarly the data relating to performance of the processing units like current assets and liabilities, owned funds, fixed assets, liquid assets, inventory, total sales, borrowed capital and profits or losses have been obtained from Trading
Account, Profit and Loss Account and Balance Sheet of each processing unit for 5 years.

1.13.3 Analysis of Data:

The data base thus formed will be analysed using statistical and computer techniques.

i. Correlation analysis will be used find out physiographic and socio-economic determinants of cashew nut cultivation and processing.

The selected sample cultivators have been categorized into two heads viz.

i. Cashew growers having local varieties plantation (local)

ii. Cashew growers having high yielding varieties plantation (high yielding)

On the basis of classification of sample cashew growers, comparative economics of cashew production and its disposal was studied. Similarly, estimating the establishment cost of cashew orchard and financial feasibility analysis was carried out separately.

Considering the objectives, the collected data have been analysed by adopting following procedure:

1. Estimation of initial investment (Establishment cost):

Item wise cost incurred in each year for establishment of cashew orchards for first to fifth years was considered and the cumulative cost incurred in the period of five years is considered as cost of establishment or initial investment cost.
2. **Estimation of annual cost of maintenance:**

Once the cashew orchard short bearing the fruits, the growers have to incur an expenditure on the maintenance of orchards every year. The maintenance cost of cashew orchard was worked out by using standard cost concepts used in farm management studies.

3. **Following Standard cost concept was used:**

i) **Cost ‘A’**

The items considered in Cost-A are as under:

i. Value of hired human labour  

ii. Value of manures (owned and purchased)  

iii. Value of fertilizers and bio fertilizers  

iv. Value of plant protection chemicals and grown regulators  

v. Depreciation on implements and machinery  

vi. Land revenue including other cesses  

vii. Interest on working capital

ii) **Cost ‘B’**

\[
\text{Cost } B = \text{Cost } A + \text{Rental value of owned land} + \text{Interest on fixed capital} + \text{Amortized cost of orchard}
\]

iii) **Cost ‘C’**

\[
\text{Cost } C = \text{Cost } B + \text{imputed value of family labours} + \text{Supervision charges}
\]
4. Valuation of the costs

The procedure adopted for valuation of cost of different items is given as under

i) Hired human labour :

Actual amount paid to hired labour for performing different farm operations is considered as cost of hired human labour.

ii) Other inputs :

Purchased inputs such as manures, fertilizers, pesticides, etc. are valuated on the basis of actual market price. However, for farm produces inputs, opportunity cost is considered.

iii) Family human labour :

The cost of family human labour is imputed on the basis of wage rates paid to hired human labour.

iv) Depreciation :

The depreciation on farm assets used in cashew production is worked out by using straight line method

v) Revenue and other cesses :

Actual amount paid to Revenue Department on account of land revenue, Zilla Parishad cess plus other local cesses are taken into consideration as land revenue and other cesses.

vi) Interest on working capital :
It is charged @ 6 per cent on all paid out expenses for a period of one year.

vii) Interest on fixed capital:

It is worked out @ 10 per cent on the present value of farm assets. The estimated interest amount is allocated on the gross cropped area basis.

viii) Rental value of owned land:

The rental value of the owned land is estimated by using following formula

\[
\text{Rental value of owned land} = \left( \frac{\text{Gross Value of produce net of marketing cost}}{6} \right) - \text{Land revenue}
\]

ix) Amortized cost of orchard:

This is worked out by using following formula

\[
A = \frac{C \times r - (1 + r)^t}{T}
\]

Where,

\[
A = \text{Amortized cost (Rs./hect.)}
\]

\[
C = \text{Initial investment (Rs./hect.)}
\]

\[
r = \text{Rate of interest (%)}
\]

\[
t = \text{Economic life of the orchard (years)}
\]

\[
T = (1 + r)^t - 1
\]

Economic life of cashew orchard is considered as 40 years
x) Supervision charges

They are considered @ 10 per cent of Cost A

Analytical techniques employed: In order to fulfill the objectives of the study, the collected data have been analysed by using appropriate techniques.

Tabular analysis:

The data collected have been presented in tabular form to facilitate easy comparisons. The investment pattern, cost of processing, and overall cost and return structure in the processing business have been presented in the form of tabular analysis. The data have been summarized with the help of statistical tools like averages and percentages to obtain meaningful results.

5. Cash flow estimation:

i) Cash Outflow

Cash outflows are calculated by using cost of establishment up to gestation period (upto 5th year) and after 6 year by using operating cost annually.

ii) Cash Inflow

Cash inflows determined by using value of main produce and by-produce after sale.

6. Financial feasibility analysis (Economic evaluation of investment):

The economic evaluation of investment in cashew orchard was carried out by developing yearwise cash outflows and cash inflows for the life period of the orchard (i.e. 40 years) for new plantation (high yielding).
In case of local plantations all the cost incurred for HYV plantation have been considered except cost of grafts and the cost of seedlings have been added.

The financial feasibility of investment in cashew orchard for both the categories viz. local and high yielding is judged with the help of following financial feasibility tests:

i) Pay Back Period (PBP)

ii) Benefit Cost Ratio (BCR)

Following procedure is used for developing these tests

i) Pay Back Period (PBP):

It is number of years the project takes to recover its cost from its return. The payback period is calculated by successively deducting the initial investment from the net returns until the initial investment is fully recorded. The productive life of cashew is assumed to be 40 years and returns starts from 6th year onwards.

ii) Benefit Cost Ratio (BCR) :

It is the ratio of the discounted value of all cash inflows to the discounted value of cost outflows during life of project. It is computed as

\[
BCR = \frac{\sum_{t=0}^{n} Bt(1 + r)^{-t}}{\sum_{t=0}^{n} Ct(1 + r)^{-t}}
\]

If BCR is grater than one, the investment is considered feasible
1.13.4 Definitions of terms used in costing:

A) Capital investment:

   a. **Fixed capital**: The item included under the capital have been the value of land, building, machinery and equipment, infrastructure facilities and other fixtures.

   b. **Working capital**: The working capital includes cost of raw cashewnut, utilities (like power, fuel and water cost), packing material (tin) cost, wages, salaries, unit overheads (like security, lighting, repairs and maintenance cost) and administrative overheads (like stationary expenses, office communications and insurance premium cost).

   c. **Investment on building**: This includes investment on building for processing, storage, office and drying yard.

   d. **Investment on machinery and equipment**: Under this investment made on roaster, hot chamber, cutter, grading table, packing machine, generator and utensils used in processing of cashewnut was included.

   e. **Investment on infrastructure facility**: Here the investment incurred on providing roads, water, fencing and power supply to the cashew processing unit was considered

   f. **Investment on other fixtures**: It includes investment on fan, tube light and furniture in the cashew processing unit.
g. **Interest on working capital**: It is worked out at the rate of 16 per cent. Part of the working capital used on cashewnut procurement was computed while remaining part of the working capital was computed separately to include other operating cost of production.

**B) Cost of processing**: This is computed by adding the costs incurred on utilities, packing material and wages.

**C) Cost of production**: It is calculated by adding cost of raw cashewnut, cost of procurement, cost of carrying inventory, cost of processing, salaries, unit overhead, administrative overhead, interest on working capital, fixed capital, depreciation on building, machinery and equipment.

**D) Value addition**: It is calculated by subtracting the purchase value of one quintal of cashewnut from the sale value of two tins of cashew kernel. (Approximately two tins of cashew kernels are recovered from one quintal of cashewnut).

**E) Cost of marketing**: It is calculated by adding sales tax, turnover tax, transport and handling charges, commission etc.

**F) Sales realization**: It is calculated by adding the sale value of main product, that is, kernel and by-products, that is, shell, testa (husk) and rejection.
G) **Benefit cost ratio** : It is calculated by dividing gross returns by total cost. This indicates the actual benefit realized per rupee of investment.

### 1.14 Limitations of the Study:

Cashew nut processing industry in the Sindhudurg district is main economic activity, and in future it will be tremendous growth and development. State Government and Agriculture department gives various facilities and 100% grants to the farmers. Land under cashew cultivation in increasing but in this study there is limitations. The study has been carried out from 1991 to 2006 and Sindhudurg district region.

### 1.15 Previous Literature:

Mr. Tawade M. D. has been studied on “Fruit Farming in Ratnagiri District A Geographical Analysis of Present Status and Future Prospects”. Where as Mr. Nalawade D. B. worked on “Market Structure of Cashew Products in South Konkan of Maharashtra”. The study of problems and prospects of fruit processing industry with special reference to Ratnagiri Sindhudurg resource region (Khamkar S.A., 2002) states that highlighted problems in shortly like i.g.

i. Fruit processing industry requires large amount to be invested

ii. Essential bank security of owners with guarantors, NOC and provisional certificates, education and experience certificates

iii. Gets unmatured and low quality of raw material and variations in material
iv. Raw material depends on climatic condition and region

v. Needs scarcity of labour for the shelling work

vi. Female labours more than 75% and after marriage substantial loss of trained and skilled labour force

vii. Prices of packing material are very high

viii. Fruit processing units paying Octri at the rate of 8% in Mumbai

ix. Seasonal production and seasonal consumption in this industry.

1.16 Résumé:

This chapter includes the reasons for the fruit and vegetable processing activities have been set up, or have to be established in developing countries, importance of agriculture, concept and classification of horticulture crops, It is necessary to adopt appropriate methods and procedure for conducting any research. For this purpose researcher should follow appropriate steps involved in carrying out research to obtain desirable results. The research methodology adopted for the present study is given in this chapter.

This chapter also includes Importance of Fruit, Role of agro-industries in Indian economy, Classification of industries, Concept of fruit processing industry and Agricultural Scenario of Sindhudurg District. The production of cashew nut has increased from 0.36 million tonnes in 1997-98 to 0.47 million tonnes in 2001-2002. Dr. Babasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli has been doing research and extension work in agriculture, animal husbandry and dairy and fisheries for about last three decades. There is need to
identify gaps in adoption, so that it could be used as basis for technical planning of demonstrations/training programmes.

It is necessary to understand the cashew processing as a system and to analyze the system for knowing the quantity and recipients of the benefits. These kinds of study can be useful to develop policy instrument in such a way that the benefits of cashew nut processing should reach to the farmers nearing there by maximum cost should be paid for local soil, water, and human resources in the region. It is in the sense study has academic as well as social relevance.

Training in cashew processing is being provided on regular basis at Gopuri Ashran at Kankavli and M/S Hedgewar Seva Prakalpa (HSP). There is a lack of awareness and enterprise among cashew farmers about agriculture management practicals to be followed by improving yield existing plantation. Thus the favourable geographical condition and Government policies are suitable to this cashew nut processing industry in the district. “The cashewnut processing industry in the Sindhudurg district is useful to improve the income of the farmers and thereby the standard of living.”

Cashew nut processing industry in the Sindhudurg district is main economic activity, and in future it will be tremendous growth and development. State Government and Agriculture department gives various facilities and 100% grants to the farmers.
Land under cashew cultivation in increasing but in this study there is limitations. In next chapter deals with physio-socio-economic setting of the region.