# DETAILED PROJECT REPORT ON

## Hi-Tech Cultivation of LIME & PAPITA

**SUBMITTED BY**

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xxxxxxxxxxxxxx

**Project Location:**
xxxxxxxxxxxxxxx

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# A. ABOUT THE PROJECT

## A. LIME

### INTRODUCTION

Citrus is an important fruit crop. Lemon is one of the important category of citrus. It is mainly known for its pulp and juice throughout the world. Different citrus fruits are used throughout the world as food or juice. In central India, Nagpur santra is grown on a large scale. Mandarin Production states are Assam, Dibrugarh and Brahmaputra valley. In India Citrus cultivation is done on an area of about 923 thousand hectare with annual production of 8608 thousand metric tons. In Punjab citrus is grown on 39.20 hectares of land.

### CLIMATE

| Temperature | Rainfall | Sowing Temperature | Harvesting Temperature |
|---|---|---|---|
| 20°C - 25°C | 75 cm-200 cm | 20°C - 25°C | 25°C - 30°C |

### SOIL :

Lemons can be grown in all types of soils. Light soils having good drainage are suitable for its cultivation. PH range of soil should be 5.5-7.5. They can also grow in slightly alkaline and acidic soils. Light loam well drained soils are best for lemon cultivation.

### POPULAR VARIETIES WITH THEIR YIELD

**Punjab Baramasi:** Shoots dropping are usually ground touching. Lemon has yellow fruits, round shaped with tapering base. Seedless fruits and are juicy in nature. The average fruit yield is 84 kg per tree.

**Eureka:** Semi-vigorous tree. Lemon-yellow skin color, juice is strongly acidic having excellent flavor. Fruit ripens in the month of August.

**Punjab Galgal:** Vigorous trees with light green foliage color. Medium size, oval shaped fruit. Juice is very acidic with 8-10 seeds per fruit. Fruits mature in the months of November-December. The average fruit yield is 80-100 kg per tree.

**PAU Baramasi:** The right time of fruit maturing is first week of July. It contains very less amount of seeds. It gives an average yield of 84kg per tree.

**PAU Baramasi-1**: The right time of fruit maturing is last week of November month. The fruit is seedless. It gives an average yield of 80kg per tree.

### Other States Varieties

**Rasraj:** Developed by IIHR. Yellow colored fruits content 70% juice and 12 seeds. Its acidity is 6% and TSS content is about 8 brix. It is resistant to bacterial blight and canker disease.

**Lisbon lemon**: It is resistant to frost and high wind velocity. Fruit are of medium size, having lemon yellow color with smooth surface.

**Lucknow seedless:** Fruits are of medium size with yellow color.

**Pant Lemon:** Dwarf variety having medium size juicy fruits. It is resistant to scab, canker and gummosis

Assam Lemon, Italian Lemon, Eureka lemon, Malta lemon.

**LAND PREPARATION:**

Land should be ploughed, cross ploughed and leveled properly. Planting is done on terraces against slopes in hilly areas. High density planting is also possible in such areas.

**SOWING:**

**Time of sowing**
The best season for planting is July-August.

**Intercropping:** Intercropping with cowpeas, vegetables, french beans can be done in initial two to three years.

**Spacing**
Spacing between plants should be kept between 4.5×4.5. Pits of size 60×60×60cm should be dug for planting seedlings. 10Kg of Farmyard Manure and 500g of single superphosphate should be applied to pits while planting.

**Sowing Depth**
Pits of size 60×60×60cm should be dug for planting seedlings.

**Method of sowing**
Propagation
Plants are propagated by budding or air layering.

**SEED :**

**Seed Rate**
Minimum plant density of 208/acre should be maintained.

**PRUNING AND TRAINING:**

For proper growth of trunk of plant, Shoots in 50-60cm near ground level should be removed. Centre of plant should remain open. Water suckers should be removed at early stages of growth.

**FERTILIZER:**

**Fertilizer requirement**

| Age of crop (Year) | Well decomposed cow dung (kg/tree) | Urea (gm/tree) |
|---|---|---|
| First to three year | 5-20 | 100-300 |
| Seven to Nine | 25-50 | 400-500 |
| Four to Six | 60-90 | 600-800 |
| Ten and above | 100 | 800-1600 |

**Nutrient requirement**

| Age of crop (Year) | Well decomposed cow dung (kg/tree) | Nitrogen (gm/tree) |
|---|---|---|
| First to three year | 5-20 | 50-150 |
| Seven to Nine | 25-50 | 200-250 |
| Four to Six | 60-90 | 300-400 |
| Ten and above | 100 | 400-800 |

When age of crop is 1-3year, apply well decomposed cow dung@5-20kg per Tree and Urea@100-300gm per Tree. For 4-6year old crop, apply well decomposed cowdung@25-50kg and Urea@100-300gm per Tree. For 7-9year old crop, apply Urea@600-800gm per tree and well decomposed cow dung@60-90kg per Tree. When crop is 10year old or above, apply cowdung@100kg or Urea@800-1600gm per tree.

Apply whole amount of cow dung during December month whereas apply Urea in two parts; apply first of Urea in February, and second dose in April-May month. At time of applying first dose of Urea, apply whole dose of SSP fertilizer.

If fruit drop is observed, to control excessive fruit drop, take spray of 2,4-D@10gm in 500Ltr of water. Take first spray in March end, then in April end. Repeat the spray in August and September end. If cotton is planted in nearby field of citrus, avoid spraying of 2,4-D, instead take spray of GA3.

**WEED CONTROL :**

Weed can be controlled by hand-hoeing and also controlled by chemically, use glyphosate@1.6litre per 150 litre of water. Use glyphosate only on weeds not on crop plants.

**IRRIGATION :**

Lemon requires irrigation at regular intervals. Lifesaving irrigation should be given in winters and summers. Irrigation is necessary for Flowering, Fruiting and proper plant growth. Over irrigation may also leads to diseases like Root rot and collar rot. High frequency irrigation is beneficial. Salty water is injurious for crop plants. Partial drying out of soil in spring may not affect plants.

**PLANT PROTECTION :**

**Citrus Psylla:** These are juice sucking pests. Damage is mainly caused by nymphs. It injects a plant toxin liquid which burns foliage and skin of fruit. Leaves curl and fall off prematurely. It can be controlled by pruning of diseased plants, burning them. Spraying of Monocrotophos-0.025% or carbaryl- 0.1% can also be helpful.

**Leaf miner:** Larvae inside the upper or lower surface of young and newly emerged leaves are curled and look distorted. Young trees show a reduction in growth due to leaf miner. Best management for leaf miner is to leave it alone and let the natural enemies to feed upon them and parasitize their larvae. It can also be controlled by spraying Phosphomidon @1ml or Monocrotophos @1.5ml per 3-4 times fortnightly. Pheromone traps are also available for detecting leaf miner moths.

**Scale Insects:** Citrus scale insects are small insects that suck sap from the citrus trees and fruits. Honeydew is produced which is feasted upon by ants. They do not have much mouth parts. Male citrus scale has a short life span. There are mainly two types of scale on citrus plants armored scale and soft scales. Armored scale insects insert their mouth parts in the plant and never move again, eating and reproducing in the same spot. Soft scale bugs on citrus form a protective coating, which in turns cover citrus leaves and prevents photosynthesis. Once dead, soft scale will fall from tree instead of remaining stuck. They can be controlled with the introduction of indigenous parasitic wasps. Neem oil is also effective against them. Spraying of Parathion (0.03%) emulsion, dimethoate 150ml or malathion @0.1% are effective against scale control.

**Aphids & Mealy Bugs:** They are small sap sucking pests. Bugs are present on the underside of leaves. Synthetic pyritheriods or pest oil can be used to control aphids and bugs.

**Citrus Canker:** Plants have lesions on stems, leaves and fruits with brown, water-soaked margins. Citrus canker bacteria can enter through plant's stomata into the leaves. Younger leaves are highly susceptible. Lesions oozes bacterial cells which can be dispersed by blowing wind to healthy plants in area.

Contaminated equipment tends to spread disease to healthy plants. Bacteria can stay viable in old lesions for several months. It can be detected by appearance of lesions. It can be controlled by cutting of effected branches, twigs. Spraying of Bordeaux mixture

@1%. Aqueous solution of 550ppm, Streptomycin Sulphate is also helpful in controlling citrus canker.

**Gummosis:** Exudation of gum from bark of tree is the characteristic symptom of gummosis disease. Affected plant leaves turns to pale yellow in color. Hardness masses of gum are common on stem and leaf surfaces. In severe cases, bark may be destroyed by rotting and tree may dies. Plant dies before the fruit matures. This disease is also called foot rot. This disease can be managed through proper selection of site with proper drainage, use of resistant varieties etc. Plant injuries should be avoided. Drench the soil with 0.2% metalaxyl MZ-72 + 0.5% trichodermaviride, which helps to control this disease. Bordeaux mixture should be applied to plant upto 50-75 cm height from ground level at least once in a year.

**Powdery mildew**: White cottony powdery growth is noticed on all aerial plant parts. Leaves tend to become pale yellow and crinkle. Distorted margins are also seen. Upper surface of leaves are more affected. Young fruits drop off prematurely. Yield is reduced significantly. To control powdery mildew, affected plant parts should be removed and destroyed completely. Carbendazim, three times at 20-22 days of interval helps to control this disease.

**Black Spot:** Black spot is a fungal disease. Circular, dark spots on fruits are seen. Copper spray in early spring should be sprayed on foliage helps to cure plants from black spots. It should be repeated in 6 weeks again.

**Lemon Scab:** It affects some of the mandarin varieties and lemon fruits. Raised grey corky scabs on tree branches, fruits and leaves are seen causing distortions of the fruit. Fruits fall of at very early stages of growth. It is caused due to fungus. Copper spray mixed with white oil should be sprayed on the foliage to prevent lemon scab. 2 Table spoons of white oil to two liter of water should be added into 5 litre or copper spray mixture.

**Collar Rot:** Collar rot is also caused due to fungus. This disease mainly affects the bark on tree trunk. Bark begins to rot and forms a band just above ground surface, this band decay gradually and covers the whole trunk. It is very severe in some cases that even the trees may die. This is caused due to incorrect mulching, injury due to weeding, mowing etc. Tree may lose its vigor. To protect trees from collar rot, cut and scrape away the soft, infected bark to clean the trunk of tree. Mixture of copper spray or Bordeaux mixture should be painted on the affected part of the tree. Remove all the weak, diseased and congested tree branches to ensure proper air circulation.

**Zinc Deficiency**: It is very common in citrus trees. It is notified as yellow areas between main lateral veins and midrib of the leaves. Twigs may die back, dense shoots having stunted bushy appearance is commonly seen. Fruits tend to become pale, elongated and small in size. Proper fertilizer application should be given to the citrus tree to prevent zinc deficiency. Zinc sulphate should be provided by dissolving 2 table spoons

in 10 litres of water. This should be sprayed thoroughly on all the tree branches and foliage. It can also be cured by providing cow or sheep manure.

**Iron deficiency:** Color of new leaves changes to yellowish green. Iron chelates should be provided to the plants. Cow or Sheep manure is also helpful to cure plants from iron deficiency. This deficiency mostly occurs in case of alkaline soils.

**HARVESTING :**

On attaining proper size, shape along with attractive color having TSS to Acid ratio of 12:1, kinnow fruits is ready for harvest. Depending upon variety fruits are generally ready for harvesting in Mid- January to Mid- February. Do harvesting at proper time as too early or too late harvesting will give poor quality.

**POST-HARVEST :**

After harvesting, wash fruits with clean water then dip fruits in Chlorinated water@2.5ml per Liter water and then partially dried them. To improve appearance along with to maintain good quality, do Citrashine wax coating along with foam. Then these fruits are dried under shade and then packing is done. Fruits are packed in boxes

**B. PAPITA :**

**INTRODUCTION**

Papaya (*Carica papaya*) is a tropical fruit having commercial importance because of its high nutritive and medicinal value.Fruit is a rich source of vitamin A and C. It has a high nutritive and medicinal value. Papain prepared from dried latex of its immature fruits is used in meat tenderizing, manufacture of chewing gum, cosmetics, for degumming natural silk and to give shrink resistance to wool. It is also used in pharmaceutical industries, textile and garment cleaning paper and adhesive manufacture, sewage disposal etc.

**PRODUCTION TECHNOLOGY**

**1.1Agro-climatic requirements**

Papaya being a tropical fruit grows well in the mild sub-tropical regions of the country upto 1,000 m. above sea level. Night temperature below $12^0$-$14^0$ C for several hours during winter season affects its growth and production severely. It is very much sensitive to frost, strong winds and water stagnation.Deep, well drained sandy loam soil is ideal for cultivation of papaya.

**1.2 Varieties Cultivated**

Varieties commonly cultivated in India are Honey Dew,Ranchi selection,Washington, Coorg Honey Dew,Ranchi selection,Pusa Delicious, PusaNanha etc.

**1.3 Growing and Potential Belts**

Papaya is a tropical fruit grows well in various states of India. In India Andhra Pradesh is a major producing state it is followed by Gujratfollowed by Karnataka,West Bengal, Chhattisgarh, Madhya Pradesh, Assam, Kerala, Tamil Nadu and Maharashtra.

**1.4Land Preparation**

A well-drained upland is selected for cultivation. In open and high lying areas plants are exposed to strong winds or storm. Therefore, for proper establishment of papaya plantation, suitable wind break should be planted at the orchard boundary.

## 1.5 Planting

**Planting Material**

Papaya is commercially propagated by seed and tissue culture plants. The seed rate is 250-300 g./ha. The seedlings can be raised in nursery beds 3m. long, 1m. wide and 10 cm. high as well as in pots or polythene bags. The seeds after being treated with 0.1% Monosan (phenyl mercuric acetate), ceresan etc. are sown 1 cm. deep in rows 10 cm. apart and covered with fine compost or leaf mould. Light irrigation is provided during the morning hours. The nursery beds are covered with polythene sheets or dry paddy straw to protect the seedlings. About 15-20 cm. tall seedlings are chosen for planting in about two months.

**Planting season**

Papaya is planted during spring (February-March), monsoon (June-July) and autumn (October-November).

**Spacing**

A spacing of 1.8 x 1.8 m. is normally followed. However higher density cultivation with spacing of 1.5 x 1.5 m./ha enhances the returns to the farmer and is recommended.

**High Density Planting** : A closer spacing of 1.2 x 1.2 m. for cv. PushaNanha is adopted for high density planting, accommodating 6,400 plants/ha.

**Planting Method**

The seedlings are planted in pits of 60x60x60 cm. size. In the summer months the pits are dug about a fortnight before planting. The pits are filled with top soil along with 20 kg. of farmyard manure., 1 kg. neem cake and 1 kg. bone meal. Tall and vigorous varieties are planted at greater spacing while medium and dwarf ones at closer spacing.

**1.6Nutrition**

Papaya plant needs heavy doses of manures and fertilizers. Apart from the basal dose of manures (@ 10 kg./plant) applied in the pits, 200-250 g. each of N, $P_2O_5$ and $K_2O$ are recommended for getting high yield. Application of 200 g. N is optimum for fruit yield but papain yield increases with increase in N upto 300 g.

**Micronutrients**

Micro-nutrients viz. $ZnSO_4$ (0.5%) and $H_2BO_3$ (0.1%) are sprayed in order to increase growth and yield characters.

**1.7Irrigation**

The irrigation schedule is fixed on the basis of soil type and weather conditions of the region. Protective irrigation is provided in the first year of planting. During the second year, irrigation is provided at fortnightly interval in winter and at an interval of 10 days in summer. Basin system of irrigation is mostly followed. In areas having low rainfall, sprinkler or drip system can be adopted.

**1.8Intercultural Operations**

Deep hoeing is recommended during the first year to check weed growth. Weeding should be done on regular basis especially around the plants. Application of Fluchloralin or Alachlorin or Butachlorine (2.0 g./ha.) as pre-emergence herbicide two months after transplanting can effectively control the weeds for a period of four months. Earthing up is done before or after the onset of monsoon to avoid water-logging and also to help the plants to stand erect.

**1.9 Inter-cropping**

Intercropping leguminous crops after non-leguminous ones, shallow rooted crops after deep rooted ones are beneficial. No intercrops are taken after the onset of flowering stage.

**1.10 Removal of male plants**

About 10% of the male plants are kept in the orchards for good pollination where dioecious varieties are cultivated. As soon as the plants flower, the extra male plants are uprooted.

**1.11Plant Protection Measures**

**Insect Pests**

The insect pests mostly observed are fruit flies (*Bactroceracucurbitae*), ak grasshopper (*Poekiloceruspictus*), aphids (*Aphis gossypii*), red spider mite (*Tetranychuscinnabarinus*), stem borer (*Dasysesrugosellus*) and grey weevil (*Myllocerusviridans*). In all cases the infected parts need to be destroyed along with application of prophylactic sprays of Dimethoate (0.3%) or methyl demeton (0.05%).

**Diseases**

The main diseases reported are powdery mildew (*Oidiumcaricae*), anthracnose (*Colletotrichumgloeosporioides*), damping off and stem rot. Application of wettablesulphur (1 g./l.) carbendazim/thiophanate methyl (1 g./l.) and Kavach/Mancozeb (2 g./l.) has been found to be effective in controlling the diseases.

**1.12 Harvesting and Yield**

Fruits are harvested when they are of full size, light green in colour with tinge of yellow at apical end. On ripening, fruits of certain varieties turn yellow while some of them remain green. When the latex ceases to be milky and become watery, the fruits are suitable for harvesting.

The economic life of papaya plant is only 3 to 4 years. The yield varies widely according to variety, soil, climate and management of the orchard. The yield of 75-100 tonnes /ha.is obtained in a season from a papaya orchard depending on spacing and cultural practices.

## II. ECONOMICS OF THE PROJECT

### A. PROJECT PROFILE (Financial)

| Sr. No. | PARAMETERS | VALUE |
|---|---|---|
| 1 | Product | Lime, Papita |
| 2 | Area in Hector | 2.34 |
| 3 | Cost of the project | 6,00,000 |
| 4 | Bank loan | 4,50,000 |
| 5 | Own Contribution | 1,50,000 |
| 6 | Financial Indicators | |
| | BC R | 1.18 :1 |
| | N P W 15% (Rs.) | 1,95,038 |
| | I R R % | 31.21 |
| | Average DSCR | 3.9 |
| 7 | Interest Rate (% per annum) | 10.00 |
| 8 | Repayment Period | 10 years including first Three years as a moratorium perod |

**B. BASIS & PRESUMPTIONS**

1 Payback period 10 years including first three years as a moratorium perod

2 Tax on income ignored.

3 Promoters share includes self-contribution plus loan from friends and relatives.

4 There is no change in Government policies and interest rates in next 8 years.

## C. TOTAL COST OF PROJECT

| SR.NO. | PARTICULAR | UNIT | UNIT RATE IN RS. | QUANTITY | AMOUNT IN RS. |
|---|---|---|---|---|---|
| **1.** | **Land Development** | | | | |
| i) | Land Leveling & pit digging | Hector | 50,000 | 2.34 | 1,17,000 |
| ii) | Fencing | Mtr | 150 | 300 | 45,000 |
| iii) | Farm Road | Mtr | 150 | 300 | 45,000 |
| | | | **SUB TOTAL – 1** | | **2,07,000** |
| **2.** | **Irrigation** | | | | |
| i) | Cost of Open/ Tube Well | No | 60000 | 1 | 60,000 |
| ii) | Cost of Pipeline 110mm/4kg | Mtr | 1000 | 100 | 1,00,000 |
| | | | **SUB TOTAL – 2** | | **60,000** |
| **3.** | **Drip Irrigation etc. :-** | | | | |
| i) | Drip Irrigation | Hector | 40,000 | 2.34 | 93,600 |
| | | | **SUB TOTAL – 3** | | **93,600** |
| **4.** | **Cost of Cultivation** | | | | |
| a. | Cost of Planting Material ( Mix Croping) | | | | |
| i. | Lime ( Spacing 4.5 m. * 4.5 m.) | No of Saplings | 70 | 200 | 14,000 |
| ii. | Papita(Spacing 1.8 m* 1.8 m) | No of Saplings | 30 | 50 | 1,500 |
| b. | Initial cost of inputs | | | | |
| i) | Fertilizer and Manure | Hector | 13,000 | 2.34 | 30,420 |
| ii) | Insecticide and Pesticide | Hector | 13,000 | 2.34 | 30,420 |
| iii) | Labour Charges | Hector | 20,000 | 2.34 | 46,800 |
| iv) | Packaging, Transportation etc | Hector | 5,000 | 2.34 | 11,700 |
| v) | Overhead ( Electricity, Water etc.) | Hector | 3,000 | 2.34 | 7,020 |
| | | | **SUB TOTAL – 4** | | **1,41,860** |
| **5.** | **Infrastructure** | | | | |
| i) | Cost of Storage Room | Sq. ft. | 250 | 200 | 50,000 |
| | | | **SUB TOTAL – 5** | | **50,000** |
| **6.** | **Mechanization** | | | | |
| i) | Cost of Sprayer & other farm equipments | Ls | | | 47,540 |
| | | | **SUB TOTAL – 6** | | **47,540** |
| | **TOTAL** | | | | **6,00,000** |

**D. MEANS OF FINANCE**

| Sr. No. | Particular | Unit | Quantity | Amount in Rs. |
|---|---|---|---|---|
| 1 | Bank/FI Term loan | % | 75 | 4,50,000 |
| 2 | Promoter's Share | % | 25 | 1,50,000 |
| | | | **TOTAL** | **6,00,000** |

**E. PROJECTED PROFITABILITY**

| Sr. No. | Particular | Unit | Unit rate in Rs. | Quantity | I year | II year | III year | IV year | Vyear | VI year | VII year | VIII year | IX year | X year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **I.** | **Income** | | | | | | | | | | | | | |
| **A.** | **Sales of Lime** | | | | | | | | | | | | | |
| a. | Yield of Lime fruits per Tree | Kg | 0 | 0 | - | - | - | 25 | 30 | 40 | 50 | 100 | 130 | 150 |
| b. | Total Yield of 200 Trees | Kg | | | | | | 5,000 | 6,000 | 8,000 | 10,000 | 20,000 | 26,000 | 30,000 |
| c. | Income ( @ Selling Price Rs. 25 per kg.) | Rs. | 0 | 0 | 0 | 0 | 0 | 1,25,000 | 1,50,000 | 2,00,000 | 2,50,000 | 5,00,000 | 6,50,000 | 7,50,000 |
| **B.** | Sales of Papita | Ton | 2,500 | 60 | 0 | 1,50,000 | 1,50,000 | 1,50,000 | 1,50,000 | 1,50,000 | 1,50,000 | 1,50,000 | 1,50,000 | 1,50,000 |
| | | **TOTAL (A)** | | | **0** | **1,50,000** | **1,50,000** | **2,75,000** | **3,00,000** | **3,50,000** | **4,00,000** | **6,50,000** | **8,00,000** | **9,00,000** |
| **II.** | **Expenditure** | | | | | | | | | | | | | |
| **a.** | Cost of Planting Material (Lime & Papita) | No of Saplings | - | - | 15,500 | 15,500 | 15,500 | 15,500 | 15,500 | 15,500 | 15,500 | 15,500 | 15,500 | 15,500 |
| b. | Mannures & Fertilisers | Hector | 13,000 | 2.34 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 |
| c. | Insectisides & Pesticides | Hector | 13,000 | 2.34 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 | 30,420 |
| d. | Manpower (For land preparation, planting, Inter - cultural operation, harvesting | Hector | 20,000 | 2.34 | 46,800 | 46,800 | 46,800 | 46,800 | 46,800 | 46,800 | 46,800 | 46,800 | 46,800 | 46,800 |
| e. | Packaging, Transportation etc. | Hector | 5,000 | 2.34 | 11,700 | 11,700 | 11,700 | 11,700 | 11,700 | 11,700 | 11,700 | 11,700 | 11,700 | 11,700 |
| f. | Overhead ( Electricity, Water etc.) | Hector | 3,000 | 2.34 | 7,020 | 7,020 | 7,020 | 7,020 | 7,020 | 7,020 | 7,020 | 7,020 | 7,020 | 7,020 |
| | | **TOTAL (B)** | | | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** |
| **III.** | **Net Income** | **TOTAL (A-B)** | | | **-1,41,860** | **8,140** | **8,140** | **1,33,140** | **1,58,140** | **2,08,140** | **2,58,140** | **5,08,140** | **6,58,140** | **7,58,140** |

**F. Financial Analysis**

| Particulars | | I year | II year | III year | IV year | V year | VI year | VII year | VIII year | IX year | X year |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Capital Costs | | 6,00,000 | | | | | | | | | |
| Recurring cost | | 1,41,860 | 43,047 | 43,047 | 1,41,860 | 1,41,860 | 1,41,860 | 1,41,860 | 1,41,860 | 1,41,860 | 1,41,860 |
| **Total Cost** | | **7,41,860** | **43,047** | **43,047** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** | **1,41,860** |
| Benefit | | 0 | 0 | 0 | 2,75,000 | 3,00,000 | 3,50,000 | 4,00,000 | 6,50,000 | 8,00,000 | 9,00,000 |
| Depreciated value of buildings, fencing etc. @ 10% | | | | | | | | | | | 42,616 |
| Depreciated value of Machinery & equipments @ 15% | | | | | | | | | | | 32,690 |
| Closing stock value | | | | | | | | | | | 0 |
| **Total Benefit** | | **0** | **0** | **0** | **2,75,000** | **3,00,000** | **3,50,000** | **4,00,000** | **6,50,000** | **8,00,000** | **9,75,307** |
| **Net Benefit** | | **-7,41,860** | **-43,047** | **-43,047** | **1,33,140** | **1,58,140** | **2,08,140** | **2,58,140** | **5,08,140** | **6,58,140** | **8,33,447** |
| Discounting Factor@ 15% | **15%** | 0.87 | 0.76 | 0.66 | 0.57 | 0.50 | 0.43 | 0.38 | 0.33 | 0.28 | 0.25 |
| NPV cost at 15% DF | | 6,45,096 | 32,550 | 28,304 | 81,109 | 70,529 | 61,330 | 53,330 | 46,374 | 40,325 | 35,066 |
| NPV benefits at 15% DF | | 0 | 0 | 0 | 1,57,232 | 1,49,153 | 1,51,315 | 1,50,375 | 2,12,486 | 2,27,410 | 2,41,081 |
| NPW at 15% DF | **1,95,038** | | | | | | | | | | |
| BCR at 15% DF | **1.18 :1** | | | | | | | | | | |
| IRR % | **31.21** | | | | | | | | | | |

**G. Term Loan Repayment**

Rate of interst - % per annum **:** 10.00

Opening balance of term loan **:** 4,50,000

| Year | Loan Outstanding | Net Income | Principal | Interest | Total Repayment | Net Surplus | DSCR |
|---|---|---|---|---|---|---|---|
| 1 | 4,50,000 | -1,41,860 | 0 | 45,000 | 45,000 | 0 | 0 |
| 2 | 4,50,000 | 8,140 | 0 | 45,000 | 45,000 | 0 | 0 |
| 3 | 4,50,000 | 8,140 | 0 | 45,000 | 45,000 | 0 | 0 |
| 4 | 4,50,000 | 1,33,140 | 64,286 | 45,000 | 1,09,286 | 23,854 | 1.2 |
| 5 | 3,85,714 | 1,58,140 | 64,286 | 38,571 | 1,02,857 | 55,283 | 1.5 |
| 6 | 3,21,429 | 1,58,140 | 64,286 | 32,143 | 96,429 | 61,711 | 1.6 |
| 7 | 2,57,143 | 2,58,140 | 64,286 | 25,714 | 90,000 | 1,68,140 | 2.9 |
| 8 | 1,92,857 | 5,08,140 | 64,286 | 19,286 | 83,571 | 4,24,569 | 6.1 |
| 9 | 1,28,571 | 5,08,140 | 64,286 | 12,857 | 77,143 | 4,30,997 | 6.6 |
| 10 | 64,286 | 5,08,140 | 64,286 | 6,429 | 70,714 | 4,37,426 | 7.2 |
| | | | | | | **Avg. DSCR** | **3.9** |