DETAILED PROJECT REPORT ON

Hi-Tech Cultivation of GUAVA & ANJIR

SUBMITTED BY:

SUBMITTED BY

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Project Location:
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C O N T E N T S

A. ABOUT THE PROJECT

A. GUAVA

Introduction:

The Guava, Psidiumguajawa is one of the important fruit crops grown in India. It is originated in tropical America, from Mexico to Peru and today is commercially grown in South Asia, Hawaiin Islands Sri Lanka, Cuba, Myanmar and India. In India, the guava is grown in Uttar Pradesh, Bihar, Madhya Pradesh and Maharashtra.

The guava is a very hardy tree and it is grown with a less inputs. It is rich source of vitamin C, pectin and minerals. The fruits are also used to make products like jam, jelly, cheese, juice, nectar, etc. The tree lives longer and bears profusely under wide climatic and soil conditions, easily and with less expenses.

Climate and Soil:

The guava is grown widely in tropical and sub-tropical regions and succeeds under a wide variety of climatic conditions. It favours distinct winters and tolerates high rainfall and drought conditions. Fruit setting and fruit development are poor if the temperatures are high and humidity is low.

The guava is grown on heavy clay soils to very right sandy soils as well as on those, which are commonly considered suitable for fruit production. The trees are hardy and can stand the high E.C. and pH. However, well drained condition is necessary for survival and production.

Varieties

The important cultivars (varieties) are as under: -
Sardar (Lucknow-4a)
Allahabad Safeda
BanarasiSurkha
Apple colour
Red fleshed
Chittidar
Seedless
Out of these first two are grown on large scale.

Propagation

The guava is propagated by seeds, grafts, airlayers and ground layers. The method, ground layering is easy, economical and followed on large scale. Use of 3000 to 5000

ppm or a mixture of IBA and IAA has been found very effective in early and profuse rooting.

Planting and Season:
The guava can be planted at any time of the year. However, June planting followed by January planting is more successful and very well adopted.

A spacing of 7x7 or 6x6 sq.m.is recommended and the pits of 0.75x0.75x0.75 or 1x1x1 m are dug at the selected spacing and filled with organic manures, superphosphates and neem cakes well grown layers, uniform in rooting and short growth are used for planting.

Interculturing:
During initial period of 2/3 years from planting, interspace is kept weed free by regular weeding. Short duration crops, preferably vegetables are taken.

Care of young orchard
Gap filling should be done within a month.
Supporting and training to young trees is necessary to get uniform stand of all the plants.
Necessary provision for wind breaks is useful. Plants like susbenia, Mulberry, etc. is done at the planting of main crop.

Special Horticultural Treatments
Training and pruning : The guava plants are trained to a single stem. No branching is allowed upto the height of 1 m on main trunk. Pruning to young plants is necessary to have uniform and well balanced growth and shape. Judicious pruning is also recommended prior to flowering of selected bahar. Pruning increase the productivity and makes the various operations like spraying, harvesting easy.

Bahar treatment: This consists of withholding of water prior to flowering of bahar. Normally there are three bahars i.e. Mrigbahar, Hast bahar and Ambabahar, out of which only one is selected depending on climate and market. Root pruning and shoot pruning are also followed as a supporting treatments at bahar treatment.

Bending of branches: This practice is only followed in certain erect growing types to improve flowering.

Irrigation

Flood irrigation, the trees are regularly irrigated during the fruiting season – from flowering to harvest of the crop. Excess of water adversely affects the quality of the fruits besides it favours excessive vegetative growth and invites fungal diseases. Drip irrigation and fertilization are the latest techniques, which economise the use of water and fertilisers. However, during the vegetative growth period moisture is necessary and the system should be on as per requirements.

Application of manures and fertilisers

The amount of fertilisers and manures depend on soil, variety, yield potential and age of the tree. The guava responses well to organise and biofertilisers and balanced NPK. Many times deficiencies of Mg, Z &Mn are seen which can be rectified by spraying with cheleted micronutrients or micronutrients mixtures. The fertilizers schedule is modified by adopting periodical soil and tissue analysis data. Well grown trees require 360g nitrogen, 180g phosphorus and potash/tree/year, in addition to 60 to 100kg of organic matter. Excess of chemical N should be avoided to get a good quality.

Plant protection

The important pests are – Fruitfly, scale insect, Bark eating caterpillars, Mealy bug and important diseases are – Fruit canker, Anthracnose, leaf spot, wilt, fruit and rot. Proper training, optimum pruning, favourable selection of bahar, clean cultivation, adopting preventative measures and timely sprays are followed to protect the crop from diseases and pests. Integrated pest management is always better than only chemical control.
Harvesting and yields

The vegetatively grown plants start bearing at 3rd year and continue to give economic yields yearly for 30 years. The well grown and well cared trees gives annual yield from 10 to 15kg. The fruits should be harvested at full maturity but in semiripe conditions.

Post harvest management, storage and marketing

The fruits are highly perishable and should be marketed within two days of harvest. Over ripe fruits will not stand a long distance market. Some hormones like Mh, GA have been reported to increase self life of fruits. The fruits can be stored for four weeks in cold storage maintaining the temperatures 8 to 100C and relative humidity 80-90%.

B. FIG (ANJIR) :

INTRODUCTION

Fig is very delicious fruit like tread and popularly known as ``anjeer`` in india, fig is mostly confined to part of guj-rat maharashtra, UP, tamilnadu and karnataka, fig can grow to more than 2.4m tall in only three month and start bearing fruits, there are 21 popular varieties fig that are being cultivated in the world, in India `poona` is the most popular variety, most of the fig fruit grown in dau-latabad the poona fig, in recent days a variety called `dinkar` improvement over 'daulatabad' variety the yield and fruit quality is gaining commercial important.

The fruit and leaves are used to make medicine. Fig FRUIT is used as a laxative to relieve constipation. Fig LEAF is used for diabetes, high cholesterol, and skin conditions such as eczema, psoriasis, and vitiligo. Figs are also used as a quick and healthy way to gain weight after suffering from an illness.

Cultivation:

Fig favours areas having arid or semi-arid environment, high summer temperature, plenty of sunshine and moderate winter. The plant has better threshold limit for higher temperature than for the lower. Although plants can survive temperature as high as 45°C, the fruit quality deteriorates beyond 39°C. Mature trees can withstand temperature up to 4°C, but young ones need protection. Climate has an important bearing on size, shape and colour of skin and pulp. A relatively cool climate stimulates production of larger and elongated fruits.

Land preparation and Planting of Fig Fruit Farming

The land is thoroughly ploughed and leveled before planting the rooted cuttings. Pits of dimensions 60 cm^3 are dug at least one month before planting. The spacing between the plants should be 8 x 8 m normally, but a minimum spacing of 6 x 6 m (arid regions) is maintained. Cultivars of fig grown in India are planted at 5-7 m for good yield. These pits are initially prepared by filling them with a mixture of compost and garden soil. The pits are also treated with endosulfan @ 100 g per pit, to keep them safe from termites.

The depth of planting should be 2 to 4 inches for the plants to have a high survival rate. The rooted cuttings should be handled with care to avoid root damage. Dig holes deeper and wider than the normal requirement and place the plants in an upright way. The soil around the roots is crumbled to pack the roots such that they come in proper contact with moist soil. Under cold weather conditions, it is advisable to delay transplanting until the winter is over. 'Heading back or cutting the rooted cuttings at the time of planting helps reduce water loss from the plants and develops lateral branches.

Manure Fertilization for Fig Trees

Fertilization of the trees majorly depends on the soil type, nutrient content, pH levels, and crop requirements. Fig trees grow well in alkaline soil; therefore lime is supplied to the soil to increase the pH if it is below 6. The fertilizers and manure composition required during various stages of plant growth are different and after the fifth year of planting, it stabilizes. The composition is mentioned below and is in terms of kg/tree/year):

• Year 1 - FYM (25), neem cake (0.50), N (0.06), P (0.04) and K (0.04).

• Year 2 - FYM (25), neem cake (0.50), N (0.120), P (0.08) and K (0.08).

• Year 3 - FYM (25), neem cake (1.0), N (0.180), P (0.120) and K (0.120).

• Year 4 - FYM (30), neem cake (1.50), N (0.24), P (0.16) and K (0.16).

• Year 5 and beyond - FYM (35), neem cake (2.00), N (0.30), P (0.20) and K (0.20).

Irrigation needs of Fig Orchard

This tree is considered to be fairly resistant to drought conditions and is rarely irrigated in most cultivated areas. If the tree is cultivated in a region with light soil and arid conditions, then it has to be irrigated frequently, mostly during the first two years of planting and also during the dry period. During the summer (May-June) water is supplied to the plants every 4-5 days, but during winter i.e. February-April irrigation is given at an interval of 10-15 days. No irrigation should be given during the monsoon and winter seasons. The trees should not be irrigated heavily during the fruit ripening period.

Irrigation through the drip system should provide at least 15-20 liters of water a day to each plant.

Harvesting:

You should harvest figs when they are fully ripe. The figs should be fully colored and slightly soft to the touch. When picking figs, wear gloves or long sleeves because the sap from the fig tree can irritate your skin. Figs are very perishable. Store figs in the refrigerator; they will keep for 2 to 3 days. For long-term storage, you can freeze figs whole for later use. Another storage meth-od is to dry the figs. You can also can your own figs.

Marketing:

Figs are a beloved, popular fruit in India. They grow well in several states including Karnataka, Tamil Nadu, Maharashtra, Gujarat and Uttar Pradesh. Though there are approximately 800 va-rieties of figs in the world, the fig variety “Poona” is the most popular in India.

II. ECONOMICS OF THE PROJECT

A. PROJECT PROFILE (Financial)

Sr. No.	PARAMETERS	VALUE
1	Product	Guava & Anjir
2	Area in Hector	2.67
3	Cost of the project	13,33,334
4	Bank loan	10,00,000
5	Own Contribution	3,33,333
6	Financial Indicators	
	BC R	1.11 :1
	N P W 15% (Rs.)	3,52,025
	I R R %	29.04
	Average DSCR	4.3
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	70,000	2.67	1,86,963
ii)	Fencing	Mtr	200	350	70,000
iii)	Farm Road	Mtr	200	350	70,000
			SUB TOTAL – 1		**3,26,963**
2.	**Irrigation**				
i)	Cost of Open/ Tube Well	No	80000	1	80,000
ii)	Cost of Pipeline 110mm/4kg	Mtr	1300	150	1,95,000
			SUB TOTAL – 2		**80,000**
3.	**Drip Irrigation etc. :-**				
i)	Drip Irrigation	Hector	60,000	2.67	1,60,254
			SUB TOTAL – 3		**1,60,254**
4.	**Cost of Cultivation**				
a.	Cost of Planting Material (Mix Croping)				
i.	Guava (Spacing 3.0 m. * 3.0 m.)	No of Saplings	70	200	14,000
ii.	Anjir(Spacing 4.0 m* 4.0 m)	No of Saplings	100	500	50,000
b.	Initial cost of inputs				
i)	Fertilizer and Manure	Hector	50,000	2.67	1,33,545
ii)	Insecticide and Pesticide	Hector	50,000	2.67	1,33,545
iii)	Labour Charges	Hector	50,000	2.67	1,33,545
iv)	Packaging, Transportation etc	Hector	20,000	2.67	53,418
v)	Overhead (Electricity, Water etc.)	Hector	15,000	2.67	40,064
			SUB TOTAL – 4		**5,58,117**
5.	**Infrastructure**				
i)	Cost of Storage Room (20'x10')	Sq. ft.	300	250	75,000
			SUB TOTAL – 5		**75,000**
6.	**Mechanization**				
i)	Cost of Sprayer & other farm equipments	Ls			1,33,000
			SUB TOTAL – 6		**1,33,000**
	TOTAL				**13,33,334**

D. MEANS OF FINANCE

Sr. No.	Particular	Unit	Quantity	Amount in Rs.
1	Bank/FI Term loan	%	75	10,00,000
2	Promoter's Share	%	25	3,33,333
			TOTAL	**13,33,334**

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 Guava**													
a.	Yield of Lime fruits per Tree	Kg	0	0	0	0	0	25	30	35	40	50	50	50
b.	Total Yield of 200 Trees	Kg						5,000	6,000	7,000	8,000	10,000	10,000	10,000
c.	Income (@ Selling Price Rs. 50 per kg.)	Rs.	0	0	0	0	0	2,50,000	3,00,000	3,50,000	4,00,000	5,00,000	5,00,000	5,00,000
B.	**Sales of Anjir**													
a.	Yield of Lime fruits per Tree	Kg	0	0	0	0	0	20	25	30	35	40	40	40
b.	Total Yield of 500 Trees	Kg						10,000	12,500	15,000	17,500	20,000	20,000	20,000
c.	Income (@ Selling Price Rs. 60 per kg.)	Rs.	0	0	0	0	0	6,00,000	7,50,000	9,00,000	10,50,000	12,00,000	12,00,000	12,00,000
		TOTAL (A)			**0**	**0**	**0**	**8,50,000**	**10,50,000**	**12,50,000**	**14,50,000**	**17,00,000**	**17,00,000**	**17,00,000**
II.	**Expenditure**													
a.	Cost of Planting Material (Lime & Papita)	No of Saplin	-	-	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000	64,000
b.	Mannures & Fertilisers	Hector	50,000	2.67	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545
c.	Insectisides & Pesticides	Hector	50,000	2.67	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545
d.	Manpower (For land preparation, planting, Inter -cultural operation, harvesting & other farm operations)	Hector	50,000	2.67	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545	1,33,545
e.	Packaging, Transportation etc.	Hector	20,000	2.67	53,418	53,418	53,418	53,418	53,418	53,418	53,418	53,418	53,418	53,418
f.	Overhead (Electricity, Water etc.)	Hector	15,000	2.67	40,064	40,064	40,064	40,064	40,064	40,064	40,064	40,064	40,064	40,064
		TOTAL (B)			**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**
III.	**Net Income**	**TOTAL (A-B)**			**-5,58,117**	**-5,58,117**	**-5,58,117**	**2,91,884**	**4,91,884**	**6,91,884**	**8,91,884**	**11,41,884**	**11,41,884**	**11,41,884**

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		13,33,334									
Recurring cost		5,58,117	43,047	43,047	5,58,117	5,58,117	5,58,117	5,58,117	5,58,117	5,58,117	5,58,117
Total Cost		**18,91,450**	**43,047**	**43,047**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**	**5,58,117**
Benefit		0	0	0	8,50,000	10,50,000	12,50,000	14,50,000	17,00,000	17,00,000	17,00,000
Depreciated value of buildings, fencing etc. @											60,050
Depreciated value of Machinery & equipments @ 15%											67,923
Closing stock value											0
Total Benefit		**0**	**0**	**0**	**8,50,000**	**10,50,000**	**12,50,000**	**14,50,000**	**17,00,000**	**17,00,000**	**18,27,973**
Net Benefit		**-18,91,450**	**-43,047**	**-43,047**	**2,91,884**	**4,91,884**	**6,91,884**	**8,91,884**	**11,41,884**	**11,41,884**	**12,69,856**
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		16,44,739	32,550	28,304	3,19,105	2,77,483	2,41,289	2,09,817	1,82,449	1,58,652	1,37,958
NPV benefits at 15% DF		0	0	0	4,85,990	5,22,036	5,40,409	5,45,109	5,55,733	4,83,246	4,51,847
NPW at 15% DF	**3,52,025**										
BCR at 15% DF	**1.11 :1**										
IRR %	**29.04**										

G. Term Loan Repayment

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

Opening balance of term loan **:** 10,00,000

Year	Loan Outstanding	Net Income	Principal	Interest	Total Repayment	Net Surplus	DSCR
1	10,00,000	-5,58,117	0	1,00,000	1,00,000	0	0
2	10,00,000	-5,58,117	0	1,00,000	1,00,000	0	0
3	10,00,000	-5,58,117	0	1,00,000	1,00,000	0	0
4	10,00,000	2,91,884	1,42,857	1,00,000	2,42,857	49,026	1.2
5	8,57,143	4,91,884	1,42,857	85,714	2,28,571	2,63,312	2.2
6	7,14,286	4,91,884	1,42,857	71,429	2,14,286	2,77,598	2.3
7	5,71,429	8,91,884	1,42,857	57,143	2,00,000	6,91,883	4.5
8	4,28,571	11,41,884	1,42,857	42,857	1,85,714	9,56,169	6.1
9	2,85,714	11,41,884	1,42,857	28,571	1,71,429	9,70,455	6.7
10	1,42,857	11,41,884	1,42,857	14,286	1,57,143	9,84,741	7.3
						Avg. DSCR	**4.3**