

RESEARCH PAPER

Financial feasibility of investment in sapota orchards in Thane district of Maharashtra

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ABSTRACT

The financial feasibility analysis of capital investment in sapota orchard in Thane district of Maharashtra revealed profitability of enterprise. The per hectare capital investment for establishing sapota orchard for period of first five years was Rs. 93609. The annual per hectare cost of production (Cost C) for sapota worked out to Rs. 120138. The analysis of investment in sapota orchard showed that, the investment made in sapota plantation is economically viable with Benefit cost ratio (BCR) greater than unity (1.87), Net present value (NPV) was positive (Rs. 495835) and Internal rate of return (IRR) was higher than prevailing rate of interest (12 %). The pay back period also desirable considering the total economic life of sapota orchard (50 years).

KEY WORDS : Cost, Return, Financial feasibility, NPV, BCR, PBP, IRR

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In Indian agriculture Horticulture has occupied a prominent place and fruit crops play an important role in the prosperity of country. The production of fruits contributes to health, happiness and prosperity of people. The fruit crops have established their credibility by improving the economic condition of farmers and entrepreneurs, enhancing exports as well as providing nutritional security to people. Maharashtra is one of the leading sapota growing states in India. In Konkan region of Maharashtra, more than 90 per cent area under sapota is concentrated in Thane district.

Sapota is important cash crop in north Konkan region thriving well under agro climatic condition of the region. The

western part of Thane district is most suitable for sapota cultivation. The sapota plantation is concentrated near the sea coast, with well drained black soils which are ideal for sapota. The sapota is the one of the cash crop grown by the cultivators in this region. The area and production under sapota in Thane is increasing day by day.

Though, there is substantial area under sapota, very little recent information is available on cost of establishment of orchard, cost returns, also profitability and its economic feasibility etc. Therefore, a study on the financial feasibility of investment in sapota in Thane district, was undertaken.

METHODOLOGY

The sapota cultivation is concentrated in Thane district of Konkan region, hence, Thane district was purposively selected for study. Dahanu and Palghar tahsils from the Thane district have maximum area under sapota cultivation. Therefore both tahsil were selected purposively. The cultivation of sapota is concentrated near and away from the sea shore, in both the tahsils. Therefore the villages in Dahanu and Palghar tahsils are divided in to two categories *i.e.* near the sea shore

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(Group I) and away from sea shore (Group II), and from each group a separate list of villages were prepared and from each group six villages were selected randomly. From each selected village 10 sapota grower were selected randomly. Thus final sample consisted of 120 sapota growers. The detailed information and data for present investigation pertained to the Agricultural year 2012-13.

Financial feasibility analysis :

The economic evaluation of investment in sapota orchard was carried out by developing year wise cash outflows and cash inflows for the sapota orchard for the life period of 50 years. The financial feasibility of investment in sapota orchard for both categories is judged with the help of following financial feasibility tests.

Net present value (NPV) :

It is the discounted value of net cash flow of the sapota orchard during its life time. Generally higher NPV would be the preference. In calculating NPV the present value benefit was considered at 12 per cent discount rate. The NPV is computed as :

$$NPV = \sum_{t=0}^n \frac{R_t - C_t}{(1+r)^t}$$

where,

R_t = Returns in period ‘t’

C_t = Cost in period ‘t’

r = Discount rate

t = Project life.

For viability of investment NPV should be positive at prevailing rate of interest.

Pay back period (PBP) :

It indicates the time period required to recover the initial investment made in a project. Shorter the pay back period, better it will be, and then the investment in a project considered feasible. Symbolically :

$$\sum_{t=0}^t C_t = \sum_{t=0}^t R_t$$

where,

R_t = Return in period ‘t’

C_t = Cost in period ‘t’.

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 :

$$BCR = \frac{\sum_{t=0}^n R_t(1+r)^{-t}}{\sum_{t=0}^n C_t(1+r)^{-t}}$$

If BCR is greater than one, the investment is considered feasible.

Internal rate of return (IRR) :

The internal rate of return is that rate of discount at which NPV is zero. The internal rate of return is arrived at, through interpolation technique by using different discount rates so as to see that net present value is equated to zero. It is calculated by using following formula :

$$IRR = Rt(1+r)^{-n} - Ct(1+r)^{-n} = 0$$

If IRR is greater than prevailing rate of interest then investment is feasible.

ANALYSIS AND DISCUSSION

The findings of the present study as well as relevant discussion have been presented under following heads :

Input use for establishment orchard :

In study area all the operations in sapota cultivation, viz., cleaning and leveling, digging and filling of pits, planting, irrigation, intercultural operations, application of manures, fertilizers and plant protection chemicals, and mulching. The sapota growers have to invest considerable amount in the form of inputs for establishment of the sapota orchard up to its bearing stage. During this period the growers do not get any returns in the form of fruits. Therefore, the investment

Table 1 : Per hectare input use for establishment of sapota orchard							
Sr. No.	Particulars	1 st year	2 nd year	3 rd year	4 th year	5 th year	Total quantity
1.	Labour (days)						
	Male	83.76	33.7	20.99	20.03	13.99	172.47
	Female	64.1	21.48	13.73	11.46	15.21	125.98
	Total	147.86	55.18	34.72	31.49	29.2	298.45
2.	Grafts (No.)	100	10	—	—	—	110
3.	Manures (ton)	3.80	3.95	5.11	5.46	5.85	24.17
4.	Fertilizers (kg.)	124.98	180.12	230.08	290.17	348.84	1174.19
5.	Plant Protection (lt.)	0.89	0.95	1.16	1.89	2.12	7.01

made by the farmers for establishing sapota orchard during the period from planting to the first bearing (up to 5 years) is regarded as establishment cost. The information regarding year wise per hectare labour utilization and input utilization for establishment of sapota orchard is given in Table 1.

It was observed that the per hectare total human labour required for establishing sapota orchards was 298.45 human days. It is observed from the table that, per hectare physical input utilization for the establishment of sapota orchard worked out to be 110 sapota grafts, 24.17 ton of manure, 1174.19 kg. fertilizer and 7.01 lt. of plant protection chemicals. The year wise physical input utilization analysis has showed positive relationship with

the age of orchard during establishment stage, except the quantity of human labour and planting material.

This was because in the first year the operations like preparation of land, digging of pits, and planting required maximum labour. The planting material used in second year was only for gap filling in the orchard established.

Cost of establishment :

For establishment of the sapota orchard, the sapota grower has to incur huge expenditure for purchasing of various inputs. The per hectare year wise cost incurred on various items for establishment of sapota orchard was worked out

Sr. No.	Particulars	1 st year	2 nd year	3 rd year	4 th year	5 th year	Total (Rs.)
1.	Labour						
	Male	8376.00	3875.5	2518.8	2503.75	1958.6	19232.65
	Female	5448.5	2040.6	1373.00	1260.6	1901.25	12023.95
	Labour cost total (a)	13824.5	5916.1	3891.8	3764.35	3859.85	31256.6 (33.39)
2.	Grafts (Rs.)	4000.00	400.00	–	–	–	4400.00 (4.70)
3.	Manures (Rs.)	2280.00	2370.00	3321.5	3549.00	4095.00	15615.5 (16.68)
4.	Fertilizers (Rs.)	999.84	1504.002	1927.18	2611.53	3139.56	10182.11 (10.87)
5.	Plant protection (Rs.)	163.54	174.57	213.15	347.29	389.56	1288.11 (1.38)
6.	Irrigation charges (Rs.)	1796.03	2000.12	2000	2248.17	2776.98	10821.3 (11.57)
7.	Fencing (Rs.)	14139.59	–	1200	–	2000	17339.59 (18.52)
8.	Mulching (Rs.)	889.60	620.12	510.09	398.33	288.20	2706.34 (2.89)
	Material cost total (b)	24268.60	7068.81	9171.92	9145.32	1268.9	62352.95 (66.61)
	Total	38093.1 (40.69)	12984.91 (13.87)	13063.72 (13.96)	12918.67 (13.80)	16549.15 (17.68)	93609.55 (100.00)

(Figures in the parentheses indicate percentages to total)

Sr. No.	Particulars	Group I	Group II	Overall
	Production (q.)	116.74	90.43	104.74
1.	Gross returns (Rs.)	201260	155901	180572
2.	Cost (Rs.)			
	Cost A	55922	50314	53164
	Cost B	116616	105364	111222
	Cost C	125336	114452	120138
3.	Profit at (Rs.)			
	Cost A	145338	105587	127408
	Cost B	84644	50537	69350
	Cost C	75924	41449	60434
4.	Benefit cost ratio	3.59	3.09	3.39
		1.72	1.47	1.62
		1.60	1.36	1.50

Sr. No.	Parameters	Group I	Group II	Overall
1.	Payback period (years)	7	8	7
2.	Net present value (Rs.)	518305	439256	495835
3.	Benefit cost ratio	1.91	1.77	1.87
4.	Internal rate of return (%)	39.66	38.28	39.23

and given in Table 2.

It is observed from the Table 2 that, Rs. 93609.55 per hectare were incurred on orchard establishment by the sample sapota grower for initial five years which include labour and material cost. In the establishment cost, the total labour cost amounted to 33.39 per cent and remaining 66.61 per cent material cost. The total establishment cost of sapota orchards in the first year was amounted to Rs. 38093.10 and found to have 40.69 per cent total establishment cost and there was substantial reduction in subsequent years.

The labour cost incurred in five years was Rs. 13824.50 it was Rs. 5916.10, Rs. 3891.80, Rs. 3764.35 and Rs. 3859.85 from first to fifth year, respectively. On the other hand the material cost of from first to fifth year accounted to Rs. 24268.60, Rs. 7068.81, Rs. 9171.92, Rs. 9154.32 and Rs. 12689.30, respectively.

Profitability of sapota orchard :

The per hectare cost on maintenance and returns were worked out separately for both the groups of orchards. The profitability at various costs level viz., cost A, cost B, cost C was worked out by deducting respective costs from gross returns in both the groups of orchards. The per hectare group wise profitability is presented in Table 3.

It is seen from Table 3 that, the per hectare gross returns received at overall level of sapota orchard was Rs. 180572 and profit at different cost levels such as cost A, cost B and cost C were Rs.127408, Rs.69350 and Rs. 60434, respectively.

The per hectare gross returns received in group I of sapota orchard were Rs. 201260 whereas net profit received at different cost levels such as cost A, cost B and cost C were Rs. 145338, Rs. 84644 and Rs. 75924, respectively. The per hectare gross returns received in group II of sapota orchard were Rs. 155901 whereas net profit received at different cost levels such as cost A, cost B and cost C were Rs. 105587, Rs. 50537 and Rs. 41449, respectively.

The benefit cost ratio in sapota orchard at overall level was 1.50, whereas in group I and group II, it was 1.60 and 1.36, respectively. The benefit cost ratio was higher in group I sapota orchard than group II of sapota orchard due to substantial higher yield. In all the groups the benefit cost ratio was more than unity which indicated that sapota production is a profitable venture.

Financial feasibility in sapota orchards :

The financial feasibility of sapota orchards was evaluated at 10 per cent discount rate and presented in Table 4.

The financial feasibility analysis at overall level showed that the NPV were positive (495835) similarly it was observed that NPV with respect to group I and group II were also positive (518305 and 439256) indicating viability of sapota orchard.

The respective figure of NPV of group I was higher than group II indicated the sapota orchard in group I was more economically feasible than group II.

The benefit cost ratio analysis at different group was more than unity at 10 per cent discount rate. Further the internal rate of return (IRR) was 39.23 per cent at overall level, and 39.66 per cent and 38.28 per cent at group I and group II level. Which were greater than prevailing rate of interest (12 %) on borrowing, the pay back period of investment in sapota orchard was worked out to 7 years. Similar work related to the present topic was also conducted by Koujalagi (1990) on pomegranate, Patil (1989) on mangoes and Raikar (1990) on cashew.

Conclusion :

The per hectare inputs utilized for establishment of sapota orchard were 298.45 human days, 24.17 tone manures, 1174.19 kg. fertilizers, 7.01 lt. of plant protection chemicals and 110 grafts. The per hectare total cost of establishment of sapota orchards was worked out Rs. 93609.55. The analysis of investment in sapota orchard showed that the investment made in sapota plantation is economically viable with the NPV found to be positive, the B:C ratio of sapota orchard is also greater than unity and IRR was found to be 39.23 per cent which is higher than prevailing interest rate on borrowing and the payback period of sapota orchard was worked out to 7 years.

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