Practical - 21

CALCULATING THE COST OF PRODUCTION OF IMPORTANT LOCAL FRUITS CROPS

Exercise

Calculating the cost of production of important local fruits crops

Objectives

- To calculate the cost of production in fruit crop

Delivery schedule: 02 period

Student expectations / learning objectives

- To know the important operation in establishing the fruit orchards
- To know the cost of operation in fruit crops
- To learn how to calculate the cost of cultivation of fruit crops.

Handouts / material / equipment's & tools required: Paper sheet and pen to note down the different operation involved in cultivation of fruit crops.To note down the various cost involved in each operation being carried out.

Pre-learning required: Pre-requisite knowledge of some basic operation that are followed involved in cultivation of fruits crops

Introduction

The cost of cultivation of fruits is an important aspect in which one should know, how much a fruit grower is spending on production and after production, whether the grower is really able to get profit. It further gives an idea to maximize the output where, the unwanted expenditure is cut or minimized in order to get maximum return from unit area. It would be better to know the different operations that are being carried out in cultivation of fruit crops for calculating the cost of production.

For teachers…

- Ask students to calculate cost of cultivation of fruit crops grown in locality.
- Make students to understand the differences between fixed

To calculate the cost of productions of fruit crops, here is a list of items that are involved in cultivation are given below.

1. **Labour cost:** It can be computed based on the actual wages paid by the farmers in particular locality for men and women. In addition to labour hired, there are some work that are carried by the family members. In this case the wages will be calculated also as per the rate paid to the labourers.

2. **Ploughing charges:** For initial preparation of the field, the land should be ploughed thoroughly for this purpose one may use a tractor or power tiller or by bullocks drawn plough in cases where land holdings are small.

3. **Material costs:** The planting material used (seeds / seedlings / grafts) was valued at the current market

rate. Remaining material costs includes the expenditure on farmyard manures, fertilizers and plant protection chemicals.

4. **Other expenses:** includes packing materials (gunny bags / jutes / ropes) used while purchasing seedlings.

5. **Cost of cultivation:** It includes all the costs incurred annually for the maintenance and production of the fruit crops. The maintenance cost can be divided into variable cost and fixed cost. The variable cost includes the cost of farmyard manure, fertilizer, plant protection chemicals, irrigation charges, charges for electricity and labour cost for various operations. Fixed cost, is the cost which incurred one time like purchase of land or planting material, bore well charges etc.

6. **Gross income:** It is the value of total quantity of fruits produced per unit area at the current market prices, where the products are sold.

Before we go into different methods of analyzing the cost of fruit production, we should get familiar with the term discounting. This term is used in order to calculate the discounted cost in case the projects or farming benefit will be realized after a few years, until then the money incurred will bear some losses, in such cases it will bear the interest for the amount that was invested, so in order to calculate the actual benefit this loss also should be taken into account so that the actual profit can be calculated. Thus, we need to place current & future costs & benefits on an equal basis for comparison,This is done by "discounting," that is by reducing future rupee to present value by applying a discount (or a negative interest) rate. The difference between the total discounted benefits and total discounted costs. Now the cost of cultivation can be calculated using following three methods.

1. Net Present Value (NPV)
2. Internal Rate of Return (IRR)
3. Benefit/Cost Ratio (BCR)

What isBenefit/Cost Ratio (BCR)?

BCR is the ratio between the Present value benefits (PVB) and Present value costs (PVC) and expressed as $B/C = (PV_B / PV_C)$. B/C ratio which is greater than 1 indicates acceptability and for multiple (competing) projects, the project(s) with the highest B/C ratios (greater than 1) should receive highest priority.

Example: Cost of cultivation of mango crop

	Variable cost	Details charges	Rates 1st Year (Rs)	Rates second year onwards (Rs)
A	Material cost			
I)	Farm yard manure	15t / ha@1000/t	15,000	15,000
ii)	Seeds / Planting materials	6x6m, 10000m^2/36m, 275 plants / ha@50rs / plant	13,750	
iii)	Plant protection chemicals	Fungicide, insecticides	6,000	6,000
iv)	Chemical fertilizers	Recommended dose of NPK 0.5:0.5:0.75 kg/tree (after five years), Urea, DAP, MOP	16,000	16,000

v)	Electricity charges / fuel charges		10,000	1,000
	Total-A		60,750	47,000
B	Labour cost			
I)	Land preparation	6 Labours @ 250 Rs	15,00	-
ii)	Lay out of orchard	4 Labours @ 250 Rs	1,000	-
iii)	Digging of Pit		3,000	-
iv)	Planting	4 Labours @ 250 Rs	1,000	-
v)	FYM & Fertilizers application	4 Labours @ 250 Rs	1,000	1,000
vi)	Irrigation	1 Labours @ 250 Rs/irrigation Total about 20 irrigation	4,000	4,000
vii)	Training and pruning	2 Labours @ 250 Rs	500	500
viii)	Weeding & Inter cultivation	12 weeding manually or by tractor	10,000	10,000
ix)	Harvest		5,000*	5,000*
	Total-B		27,000	20,500
x)	Total (A+B) Interest on working capital @ 5.5%		87,750 7,500	57,500 6,000
2.	Fixed cost			
	Fencing	Barbed wire fencing	50,000	-
	Well/Bore well	Pump + bore well and electric connection	100,000	-
	Rental value of land		60,000	60,000
	Interest on fixed capital @ 9.5% Total		20,000 2,10,000	(20,000**+500=20,500) 60,000 **Interest of fixed charge
	Total cost (Fixed)		2,30,000	85,500
	Total cost (1+2)		3,25,250	1,54,000

* Charges will be applicable after 3rd year

Economics of cultivation of mango

S.No.	Year	Yield (kg)	Inter crop Income (Rs)	Gross Returns (Rs)	Cost of Cultivations #	Net return (Rs.)***
1.	First year	-	75,000	75,000	3,25,250	-2,50,250
2.	Second year	-	75,000	75,000	1,54,000	-79,000
	Third Year	1,500	75,000	1,20,000	1,54,000	-34,000

4.	Fourth Year	2,500	75,000	1,50.000	1,54,000	-4,000
5.	Fifth Year	15,000	50,000	5,00.000	1,54,000	+3,46,000
	Sixth Year	15,000	50,000	5,00,000	1,54,000	+3,46,000
					Profit	+3,46,000

The gross return and cost of cultivation may vary with area of production, existing labour cost, market cost of the produce and the materials costs. The above calculations are sample of cost of cultivation. Therefore, in fruit crops the profit will be after sixth year onward depending upon the crop. For mango it will take minimum six year, in case of guava it starts bearing from third years, so the maximum profit will come from fourth year onwards.

Students Activities

- Visit to nearby orchards and try to note down different operations being carried out in fruit crops.
- You can also note down the charges for different activity and materials
- Try to work out the cost of cultivations of other fruit crops of the locality

Study Material

- Banerjee, B. N. (2010).Cost and return analysis in Fruit cultivation. *In:* T. K. Chattopadhayay. A Textbook on Pomology Fundamentals Vol.I. Kalyani Publishers New Delhi, p. 243-252.