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Original Article

Decision Making in Agricultural Operations Thru Financial Management Concepts

V. Ranganathan

Author's Affiliation: Retired Scientist, Block-12, Flat H-1, Jains green acres, 91 Darga Road Pallavaram Chennai 600043 Tamil Nadu, India.

Abstract

The financial management principles on cost reduction and cost control measures lend a hand in times of crisis to take decisions on managing agricultural operations and inputs with least damages on cost of production per unit end product and profitability considering not only of pressing concerns of the day but also of to-morrow. How financial management concepts helped in taking correct decisions in times of financial crunch are deliberated here.

Keywords

Nutrient; Crisis Management; Financial Management Concepts.

Introduction

Cost reduction measuresare long term ones decided by the management with a committee of experts to renew the tasks and suggest measures for the overall improvement of the operating system. Cost control aims at enforcing the tasks sensibly to maximize the sustainable profitability of present and future. In plantation management, cost control is not reduction in employment or inputs as they damage productivity thereby increasing the COP per unit produced.In the past, decisions on immediate cost control measures such as cutting expenses on employment and inputs, which a traditional accountant, used to advocate without taking into account the long term impact on COP and profitability, had created setbacks in them. It is very important in plantation crops where budget management depends not only on fluctuations in climate but also on cost of inputs for agricultural production, and marketing trends. The expenditure on water, nutrients and harvesting are the three major variable charges and any slash in them will not only affect immediate productivity but also carries it to future. It also takes time to restore the productivity to original level and putting it backon the growth track for the longterm planning and development.

In perennial crops, the productivity is built over several years of sound nutrient management policies and crop husbandrypractices. Cessation or reduction in the rates of nutrient application brings about immediate reduction in crop. Several years are to be sacrificed to reverse the trends and involve lot of efforts for restoration on resumption of rates of application. Reduction in crop results in increase in COP of marketable end product, there by denting the profit margin.

Impact of Reduction/Cuts in Inputs

A review of long term manurial experiments in Tea from 1930 to 1974 was made by Ranganathan (1974) to assess and quantify the effect of withholding fertilizers. The results are summarized in Table 1.

The crop reduction in the first year is up to 10% and is not visible as it is within yield variations due to climate vagaries (±10%).

From second year, the reduction is recognizable and it increases in the third year and stabilizes afterwards at almost the same level that of

Corresponding Author: V. Ranganathan, Retired Scientist Block-12,Flat H-1, Jains green acres, 91 Darga Road Pallavaram Chennai 600043 Tamil Nadu, India.
E-mail: vedantarangan@yahoo.com

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Table 1: Estimated reduction in tea crop on withholding NPK fertilizers

Input	Complete Withholding			25% reduction in rates			
	1st year	2nd year	3rd year	1st year	2nd year	3rd year	4th year
N	25 to 30	40 to 50	50 to 55	5 to 10	10 to20	10 to 20	10 t0 20
P	—	—	10 to 20	—	—	—	5 to 10
K	10 to 20	10 to 20	15 to 25	5 to 10	5 to 10	5 to 10	10 to 20
NPK*	35	46	60	10	15	15	23

*minimum reduction expected based on per cent yield concepts *Reproduced from Ranganathan 1974, The Planters' Chronicle July 1974.*

Table 2: Splitting the cost of production to various heads (% of COP)

Fixed charges	%	Variable charges (pro-rata on productivity	%
General charges (up keep of bulding & approch roads)	40.8	Manuring	6.6
Cultivation expenses (other than not related to productivity)	9.8	Harvesting	22
Total	50.5	Post-harvesting manufacturing, packing and transport to stores	18.4
2'- It includes costs on, plant protection measures, weeding, pruning and maintenance of field roads, drains, fencing etc.		Dutes and taxes	2.5
		Total	49.5

Table 3: Effect of surge in Cost of Manuring on COP and productivity

S. N.	Basic parameters -relative % in COP							
	Variable charge		Fixed charges	Cost of Production	base yield	Unit COP	#Unit sale price	Profit / loss per kg
	Manuring x	others VC	FC	COP	y	z		
1	6.60	42.90	50.50	100.00	100.00	1.00	1.08	8
2	8.58	42.90	50.50	101.98	100.00	1.02	1.08	6
3	8.58	33.03	50.00	91.61	77.00	1.20	1.08	-12
4	8.58	44.01	50.00	102.59	102.59	1.00	1.08	8

#Unit sale price – applying long term average profit per kg Situation:
1-distribution as per budget estimate:
2- 30% increase in costs of manuring, no cut in fertilizers:
3- 30% cut in fertilizers with associated 27% drop in productivity:
4- 30% increase in costs without any cut in the rates of application highlighting the increase in yield required to keep the unit unchanged

reduction made (25% cut in fertilizers results in 23% reduction in crop).

The expenditure on fertilizer inputs is the second major component after that incurred on harvestingunder "variable charges" related to productivity and its prices are prone to frequent fluctuations upsetting the adoption of budget estimates.The relation between reduction in rates of application of nutrients and crop reduction helps to analyze its impact on COP and profitability. The cost of production (COP) of tea in plantations with mean productivity of 2500 kg per ha could be compartmentalized under different heads as follows (Table 2).

In case of unforeseen surge in fertilizer price, the immediate reaction was to cut down the rates of fertilizer use to fit in with the budget allocation without considering its effect on COP per kg of made tea which impinge on profit margin per kg and volume of profit. The effect of surge in cost of manuring on COP and productivity is shown in Table 3.

A thirty % increase in fertilizer costs raises the cost of production by 2% and unit cost by 2% thereby affecting the volume of Profit.

If a 30% reduction in fertilizers is made to keep its contribution to budgeted level, there is a 27% drop in productivity. The combined effect of productivity and its effect on VC lead to 20% increase in COP per kg leading to negative profit margin per kg tea sold. The volume of profit also will get reduced as the productivity dips.

Table 4: Effect of cessation ad reduction of fertilizer application on COP

Year-from cessation	Reduction in yield %	Distribution of COP						
		Variable charge		Fixed charges %	Total Cost of Production	Yiel d	COP per unit product	Profit per kg made tea
		Manuring X	0thers VC	FC	COP	Y	COP/kg	#
Cessation of fertilizer application								
1st year	25	0	32.18	50.5	82.68	75	1.10	-2
2nd year	35	0	27.89	50.5	78.39	65	1.21	-13
3rd year	45	0	25.74	50.5	76.24	55	1.27	-27
4th year	50	0	21.45	50.5	71.95	50	1.44	-44
30% cut in fertilizers								
1st year	5	4.65	40.76	50.5	95.91	95	1.01	+7
2nd year	6	4.65	40.33	50.5	95.48	94	1.02	+5
3rd year	14	4.65	36.89	50.5	92.04	86	1.07	+1
4th year	28	4.65	30.89	50.5	86.04	72	1.19	-11
After revoking fertilizer cuts								
1st year	24	6.60	32.69	50.5	89.70	76	1.18	-10
2nd year	16	6.60	36.04	50.5	93.10	84	1.11	-3
3rd year	14	6.60	36.89	50.5	93.99	86	1.09	-1
4th year	10	6.60	38.61	50.5	95.71	90	1.06	+2
5th year	00	6.60	42.90	50.5	100.00	100	1.00	+8

Applying long term average of Profit per Kg at ₹ 8 /and relative sale price at 1.08

On the other hand if harvesting is tightened to get 2.59% increase in crop, the unit COP and the profit margin will remain unaltered nullifying the effect of increase in manuring costs to a great extent helping to an increase in volume of receipts.

Drop in yield due to cessation of fertilizers or cut in their rates of application is small in the first year and increases sharply from second year onwards and stabilizes at 4th year to the level they can support (Table 4).

The cessation and reduction of fertilizer applications trigger, a long term, adverse impact on productivity and its restoration to original level. A 30% reduction in fertilizers for 4 years takes 5 years to get restored to its original productivity level.

Summary

The reduction in rates of application of fertilizers, be it to surge in fertilizer prices ,financial crunch or slum in tea prices, should be avoided as they affect the cost of production and profitability for a long term sustainable growth.

The effect of reduction in employment of laborers for harvesting tea leaves has the same effect on productivity, COP and profitability (Ranganathan 2016).

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Mayur Vihar Phase-I

Delhi - 110 091(India)

Phone: 91-11-22754205, 45796900, 22756995, Cell: +91-9821671871

E-mail: author@rfppl.co.in