



P-ISSN: 2349-8528  
 E-ISSN: 2321-4902  
 IJCS 2017; 5(5): 617-620  
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 Received: 17-07-2017  
 Accepted: 18-08-2017

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## Partial budgeting of ICM, IPM and Non-IPM Chilli farms in Telangana region

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### Abstract

The study was on "Partial budgeting of ICM, IPM and Non-IPM Chilli farms in Telangana region". Which was conducted in two villages Gudepally and Damarcharla from two districts Warangal and Kamam districts respectively, the major chilli producing areas in Telangana and in these areas ITC is giving assistance to practice IPM technology. For the study, 30 ICM, 30 IPM and 30 Non-IPM farmers were randomly selected from two districts. By change in practices followed in ICM and IPM fields, partial budgeting technique is used to determine added costs, added returns, reduced cost and reduced returns to ascertain the net gain. The net change in the profit obtained by the ICM farmers in Gudepally village was observed to be Rs. 132729.5 per hectare due to adoption of ICM practices in their farms as against the practices adopted by the Non-IPM farmers. The same in case of ICM farmers of Damaracherla village was found to be Rs. 61029.17 per hectare. The net change in profit gained by IPM farmers in Gudepally village was Rs. 132926.1 per hectare due to adoption of IPM practices compared to Non-IPM farmers. The same in case of IPM farmers of Damaracherla village was found to be Rs. 59411.99 per hectare compared to Non-IPM farmers. The higher net profits from the ICM and IPM farms may be due to realization of higher yields, more benefits from ITC like getting higher prices besides a premium and disposal of produce on the field itself, which helps in reduction of transportation and marketing costs from total cost of cultivation. Prevalence of natural calamities that resulted in lower yields and adverse effect on quality of produce could be attributed for significant difference in the net change in profit realized by the farmers in two villages. Hence, it can be inferred that adoption of ICM practices in chilli cultivation was economically viable.

**Keywords:** IPM, Non-IPM, partial budgeting, Chilli crop

### Introduction

India is the largest producer, consumer and exporter of chilli, which contributes to about 40 per cent of total world production. India is one of the leading producers in the world for many major crops like paddy, wheat, pulses, sugarcane, spices, and plantation crops. Chilli is considered as one of the commercial spice crop, named as wonder spice. It is the most widely used universal spice. Chillies are the dried ripe fruits of species of genus *Capsicum*. Among the spices consumed per head in India, dried chillies contribute a major share. Chilli is said to be a native of South Central America and it was domesticated in Mexico from ancient times. The introduction of chillies into India is attributed to the Portuguese. Chillies are cultivated mainly in tropical and subtropical countries, particularly Africa, India, Japan, Mexico, Turkey, USA, etc.

Almost all the states of India produce the chilli crop. Among the states, Andhra Pradesh (44%) leads in chilli growing, followed by Karnataka (12%), West Bengal (8%), Madhya Pradesh (7%), Maharashtra (4%) and Tamil Nadu (2%). Indian Chilli can be grown during the entire year at one or the other part of the country. However, the major arrival season extends from February to April.

Integrated Pest Management (IPM) is a holistic approach to pest control, not an alternative pest control method. IPM aims to suppress pest populations below the economic injury level (EIL). It employs a variety of methods, and minimizes the potential for adverse effects on health and the environment. IPM responds to pest problems with mechanical, physical and biological controls, and resorts to chemical controls lastly.

Integrated Crop Management (ICM) is a pragmatic approach to the production of crops, unlike Integrated Pest Management (IPM) which focuses on crop protection, ICM includes more aspects. This can include such things as IPM, soil, social and environmental management. Over recent decades the focus on crop production has moved from yields to quality and safety,

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then more recently sustainability. This results in new challenges for farmers and growers each season.

Indian Tobacco Company (ITC) shares a century long relationship with the farming community reaching directly to the farm gate, linking the farming community to the global business circuits and international best practices. ITC's foray into the spices business, through its Agri Business Division – International Limited (ABD-ILTD), is an endeavour to provide quality differentiation across the value chain from the farmer to the customer. Spices Crop Development Programme of ITC Limited has transformed from a meagre Integrated Pest Management (IPM) approach to sustainable crop production practices, which is called Integrated Crop Management (ICM). As a proof-of-concept, this new approach of ICM in chillies production has been tested in Andhra Pradesh. The objective of the study to examine the impact of intervention through IPM technology i.e., by change in practices followed in IPM fields, partial budgeting technique is used to determine added costs, added returns, reduced cost and reduced returns to ascertain the net gain.

### Methodology

For present study two villages Gudepally and Damarcharla from two districts Warangal and Kammam districts respectively, the major chilli producing areas in Telangana and in these areas ITC is giving assistance to practice ICM and IPM technologies. For the study, 30 ICM, 30 IPM and 30 Non-IPM farmers were randomly selected from two districts. Total sample size for the study was 90.

The data required was obtained from both primary and secondary sources. The primary data obtained through survey method from sample farmersto develop the parameters and to assess the impact of ICM and also opinions on adoption of ICM. The sample farmers were interviewed personally using a pre-tested and structured schedule specifically designed for the purpose of study.

The necessary secondary data to reach the above objectives was gathered from Village Revenue Office / Mandal Revenue Office, Regional Agricultural Research Station Warangaland the office of ITC.

To examine the impact of intervention through ICM technology i.e., by change in practices followed in ICM and IPM fields, partial budgeting technique is used to determine added costs, added returns, reduced cost and reduced returns to ascertain the net gain. This helps to know the impact of ICM and IPM technology.

Net change in profit due to adoption of ICM = (Added returns + reduced cost) - (Added costs + reduced returns)

### Results and discussion

#### Net change in profit due to adoption of ICM and IPM practices in chilli cultivation.

The partial budgeting technique was employed to work out the net change in profit realized by ICM farmers over the Non-IPM farmers. To examine the impact of intervention through ICM technology i.e., the net change in profit due to adoption of ICM, the required data on added costs, added returns, reduced costs and reduced returns are presented in Table 1 and 2 separately for Gudepally and Damaracherla village respectively.

The net change in the profit obtained by the ICM farmers in Gudepally village was observed to be ₹ 132729.5 per hectare due to adoption of ICM practices in their farms as against the practices adopted by the Non-IPM farmers. The same in case of ICM farmers of Damaracherla village was found to be ₹ 61029.17 per hectare.

This net change in profit due to adoption of ICM technology was mainly because of realization of higher yields, and maximum price from ITC besides a premium attached to the price. Hence, it can be inferred that adoption of ICM practices in chilli cultivation was economically viable. The results of Table 1 and 2 indicate that the net change in profit realized by ICM farmers in Gudepally village was almost double than the farmers in Damaracherla village, mainly because of lower yields realized by the farmers in Damaracherla village due to natural calamities and selling of their part of produce to ITC and rest to other organizations. The natural calamities occurred in Damaracherla village had affected the first and last pickings of chilli crop badly so that part of produce did not meet the quality standards, hence ITC did not purchase the same.

**Table 1:** Partial budgeting of ICM and Non-IPM chilli farms in Gudepally village.

S. No	ICM	₹/ ha	S. No	Non-IPM	₹/ ha
1	Added costs		1	Reduced costs	
	A. Human labour	94109.01		A. Human labour	91267.04
	B. Bullock labour	6392.69		B. Bullock labour	4964.15
	C. Tractor power	6358.08		C. Tractor power	5050.53
	D. Seed	9945.83		D. Seed	9476.50
	E. FYM and fertilizers	33706.50		E. FYM and fertilizers	33895.35
	F. Plant protection chemicals	44693.83		F. Plant protection chemicals	39208.63
	G. Miscellaneous expenses	1081.08		G. Miscellaneous expenses	609.07
	Total added cost	196287		Total reduced cost	184471.27
2	Added returns		2	Reduced returns	
	A. Returns from sale of the produce	444750		A. Returns from sale of the produce	318600
	B. Premium	18395.24		B. Premium	Nil
	Total added returns	463145.24		Total reduced returns	318600

Net change in profit due to adoption of ICM = (Added returns + reduced cost) - (Added costs + reduced returns) = Rs. 132729.5

**Table 2:** Partial budgeting techniques for ICM and Non-IPM chilli farms in Damaracherla village

S. No	ICM	₹/ ha	S. No	Non-IPM	₹/ ha
1	Added cost		1	Reduced cost	
	A. Human labour	87165.33		A. Human labour	80829.00
	B. Bullock labour	3355.80		B. Bullock labour	2659.65
	C. Tractor power	7166.67		C. Tractor power	6583.33

	D. Seed	10261.43		D. Seed	10098.33
	E. FYM and fertilizers	32015.83		E. FYM and fertilizers	33592.18
	F. Plant protection chemicals	36104.83		F. Plant protection chemicals	32474.35
	G. Miscellaneous expenses	1142.79		G. Miscellaneous expenses	982.81
	Total added cost	177212.7		Total reduced cost	167219.65
2	Added returns		2	Reduced returns	
	A. Returns from sale of the produce	395616.67		A. Returns from sale of the produce	342450
	B. Premium	17855.56		B. Premium	Nil
	Total added returns	413472.22		Total reduced returns	342450

Net change in profit due to adoption of ICM = (Added returns + reduced cost) - (Added costs + reduced returns) = ₹ 61029.17

**Table 3:** Partial budgeting of IPM and Non-IPM chilli farms in Gudepally village.

S. No	IPM	₹/ ha	S. No	Non-IPM	₹/ ha
1	Added costs		1	Reduced costs	
	A. Human labour	89412.73		A. Human labour	91267.04
	B. Bullock labour	6356.97		B. Bullock labour	4964.15
	C. Tractor power	5633.33		C. Tractor power	5050.53
	D. Seed	9762.50		D. Seed	9476.50
	E. FYM and fertilizers	32349.83		E. FYM and fertilizers	33895.35
	F. Plant protection chemicals	45399.33		F. Plant protection chemicals	39208.63
	G. Miscellaneous expenses	916.57		G. Miscellaneous expenses	609.07
	Total added cost	189831.3		Total reduced cost	184471.27
2	Added returns		2	Reduced returns	
	A. Returns from sale of the produce	440166.7		A. Returns from sale of the produce	318600
	B. Premium	16719.44		B. Premium	Nil
	Total added returns	456886.11		Total reduced returns	318600

Net change in profit due to adoption of IPM = (Added returns + reduced cost) - (Added costs + reduced returns) = ₹ 132926.1

The key components of partial budgeting technique for IPM sample farmers i.e., added costs, added returns, reduced costs and reduced returns were presented in Table 3 and 4 separately for Gudepally and Damaracherla village respectively. The net change in profit gained by IPM farmers in Gudepally village was ₹ 132926.1 per hectare due to adoption of IPM practices. The same in case of IPM farmers of Damaracherla village was found to be ₹ 59411.99 per hectare.

The higher net profits from the IPM farms may be due to realization of higher yields, more benefits from ITC like getting higher prices besides a premium and disposal of produce on the field itself, which helps in reduction of transportation and marketing costs from total cost of cultivation. Prevalence of natural calamities that resulted in lower yields and adverse effect on quality of produce could be attributed for significant difference in the net change in profit realized by the farmers in two villages.

**Table 4:** Partial budgeting of IPM and Non-IPM chilli farms in Damaracherla village.

S. No	IPM	Rs/ ha	S. No	Non-IPM	Rs/ ha
1	Added costs		1	Reduced costs	
	A. Human labour	81952.14		A. Human labour	80829.00
	B. Bullock labour	3230.85		B. Bullock labour	2659.65
	C. Tractor power	6833.33		C. Tractor power	6583.33
	D. Seed	10451.78		D. Seed	10098.33
	E. FYM and fertilizers	33036.00		E. FYM and fertilizers	33592.18
	F. Plant protection chemicals	36746.00		F. Plant protection chemicals	32474.35
	G. Miscellaneous expenses	1207.56		G. Miscellaneous expenses	982.81
	Total added cost	173457.7		Total reduced cost	167219.65
2	Added returns		2	Reduced returns	
	A. Returns from sale of the produce	390316.7		A. Returns from sale of the produce	342450
	B. Premium	17783.33		B. Premium	Nil
	Total added returns	408100.00		Total reduced returns	342450

Net change in profit due to adoption of IPM = (Added returns + reduced cost) - (Added costs + reduced returns) = ₹ 59411.99.

## Conclusion

The estimated net change in profit due to adoption of ICM and IPM techniques worked out using partial budgeting technique was found to be significantly higher. The net change in the profit obtained by the ICM farmers in Gudepally village was observed to be ₹132729.5 per hectare due to adoption of ICM practices in their farms as against the practices adopted by the Non-IPM farmers. The same in case of ICM farmers of Damaracherla village was found to be ₹ 61029.17 per hectare. The net change in profit gained by IPM farmers in Gudepally village was ₹ 132926.1 per hectare due to adoption of IPM practices. The same in case of IPM

farmers of Damaracherla village was found to be ₹ 59411.99 per hectare.

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