

**ECONOMICS OF INTEGRATED PEST MANAGEMENT (IPM) IN CHILLI IN GUNTUR DISTRICT OF ANDHRA PRADESH**

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**ABSTRACT** : Survey was conducted in six villages in three mandals viz., Tadikonda, Medikonduru and Pedanandipadu in Guntur district. All the 150 participating chilli farmers in Crop Life India (CLI) sponsored Integrated Pest Management project were taken as sample for the study. Results indicated that variable and fixed costs accounts 76.10 and 23.90 to costs of the cultivation in chilli Labour and plant protection cost accounts 32 and 17 per cent to total costs among all the variable costs, Labour costs contributing to nearly 40 per cent to total costs. In addition to the costs it has bearing on the environment, product quality and personal health. Hence, any attempt to propagate on safe use measures and adoption of IPM measures will result in considerably reduction in the environmental pollution, health hazards and improves the marketability of the produce. The cost-benefit ratio of the project farmers is calculated as 0.66 on total costs and 0.88 on variable costs compared to 0.41 on total costs and 0.54 on variable costs in non IPM farmers, which is considered to be good but still have scope for improving the profitability by increasing the adoption levels. Significant differences were not found among the 6 villages in various aspects of variable and fixed costs among the six sample villages.

**Key words:** Chilli, Integrated pest management, Guntur district

## **INTRODUCTION**

Chilli (*Capsicum annum L.*) is an important spice crop as well as vegetable crop grown all over India. It is an essential ingredient of Indian curry, which is characterised by tempting colour and titillating pungency.

in India, chilli is cultivated in an area of 7.67 lakh hectares and the production is estimated at 12.34 lakh tones. Guntur district in Andhra Pradesh alone contributes to over 35 percent in area under chilli crop in India. Chilli accounts for 40 percent of the total spices exported from India and 23 percent in terms of value.

In 2007-08 exports of chillies reached a record level of 2.09 lakh tonnes valued at Rs 1097.50 crores, accounting for a share of 47 percent in volume and 25 percent in value of the total export of spices and spices products from India. Against the last year's performance of 1.48 lakh tonnes valued at Rs 807.75 crores, the increase is 41 percent in terms of volume and 36 percent in term of value.

During 2007-08, India remained as the major chilli supplier in the international market. The stringent quality measures implemented by the Board, viz; mandatory sampling and analysis for presence of Aflatoxin and adulterants like Sudan in export consignments of chilli, has made Indian chilli more acceptable in the international markets.

The fall in production of chillies by other producing countries like China, Pakistan etc has also helped India to achieve this record performance. Malaysia is the largest buyer of Indian chilli followed by other traditional buyers like Bangladesh, Sri Lanka and USA.

Although, the crop has got great export potential besides huge domestic requirement, a number of limiting factors have been attributed for low productivity .Chilli is widely grown in states Among them occurrence of viral diseases as well as ravages caused by insect pests are significant ones (Gundannavar et al 2007). The pest spectrum in chilli is complex with more than 293 insects and mite species debilitating the crop in the field as well as in storage (Anon, 1987). During the last two decades insecticidal control of chilli pests in general and especially in irrigated crop characterised by high pesticide usage, has posed problems of residues in the fruits (Joia et al., 2001). Besides pest resurgence, insecticide resistance and destruction of natural enemies (Mallikarjuna Rao and Ahmed, 1986), both domestic consumption export of chilli necessitates production of quality chillies devoid by contamination of pesticides, industrial chemicals and aflotoxins. Keeping this in mind, an Integrated Pest Management (IPM) is the practical solution with possible low level of pesticide usage

### **Why Guntur district?**

Andhra Pradesh consumes about 22.5 per cent of the total pesticides produced and marketed in India. Guntur district is topped in the state regarding consumption of pesticides with a worth of Rs 450 and 500 crores during cropping season 2001-02 and 2002-03 respectively. Of this major consumption goes to two major commercial crops i.e., cotton and chillies (Crop Life India, 2005). The pesticide consumption is in down trend in cotton with the introduction of Bt cotton but not the case of chilli. Many instances the dry chilli exports from Guntur market were rejected because of pesticide residue problem. Hence, the need of the project in Guntur district is felt.

An Integrated Pest Management (IPM) implemented the chilli IPM & safe use project in Guntur district during the cropping season 2006-07 in six villages of Guntur district viz., Mandapadu, Visadala, Bandarupalli, GG Palem, Ravipadu, Gogulamudi. The project was started with a view to create awareness among the chilli growing farmers on IPM & safe use of pesticides. The project was supported by Crop Life Asia.

## RESEARCH METHODOLOGY

### A. Sampling area

All the six villages in Guntur district where the project activities carried were purposively selected

S. No	Name of the village	Mandal
1	Mandapadu	Medikonduru
2	Visadala	Medikonduru
3	Bandarupalli	Tadikonda
4	GG Palem	Pedanandipadu
5	Ravipadu	Pedanandipadu
6	Gogulamudi	Pedanandipadu

### B. Selection of the Respondents

All the Twenty five participants of IPM project were selected from each village adding totally to one hundred and fifty farmers from six villages.

### C. Data collection tools and procedures

A questionnaire was developed for the purpose was used for the survey. The questionnaire was translated into Telugu and was used for collecting responses from the project farmers. The data were collected from the respondents through personal interview with the help of interview schedule. Necessary precautions were taken to ensure that the questions in the schedule were unambiguous, clear, concise, complete, and comprehensive. The respondents were contacted in person mostly at the common place in the village. The assistance of the local CLI project was availed to establish rapport with the respondents.

### D. Statistical Analysis

The data collected for the study was tabulated, processed and analysed using simple statistical tools like frequency and percentage.

### E. Confirmation of results with the respondents:

In order to have more realistic opinion, a selected group of 20 respondents representing six villages along with the coordinators of the project were called to RARS, Lam and were presented with the results analysed and concurrence was obtained from the respondents.

## RESULTS AND DISCUSSION

It could be inferred from the following Table 1 that the variable costs constitutes about 76 per cent of the cultivation costs in chilli. Within that, labour and material costs accounts 51 and 49 percent to total variable costs, respectively. Plant protection and fertilizers accounts to 35 percent to total variable costs in IPM chilli, where as in Nom IPM 39 percent to variable costs. In addition to the costs it has bearing on the environment, produce quality and personal health.

The IPM farmers incurred 7.98 percent less expenditure and realised 34.25 percent more net returns than Non IPM farmers. Hence, any attempt to propagate on safe use measures and adoption of IPM measures will result in considerably reduction in the environmental pollution, health hazards and improves the marketability of the produce. The cost-benefit ratio of the project farmers is calculated as 0.66 on total costs and 0.88 on variable costs compared to 0.41 on total costs and 0.54 on variable costs in non IPM farmers, which is considered to be good but still have scope for improving the profitability by increasing the adoption levels.

Table 1: Economics of Integrated Pest Management (IPM) and Non IPM in chillies  
In Guntur district in Andhra Pradesh

S. No	Heading	IPM Farmers		Non IPM Farmers	
		Rs.	% to TC	Rs.	% to TC
1	Human Labour	39397.50	32.14	41586.00	31.62
2	Bullock labour	3947.50	3.22	4097.00	3.12
3	Machine labour	3995.00	3.26	4152.00	3.16
4	Farm yard manure	3160.00	2.58	2825.00	2.15
5	Seed	7682.50	6.27	7856.00	5.97
6	Fertilizer	11722.50	9.56	13985.00	10.63
7	Pesticides	21107.50	17.22	25562.00	19.44
8	Interest on working expenses	2275.00	1.86	1620.98	1.23
9	Total Variable Cost	<b>93282.50</b>	<b>76.10</b>	<b>101583</b>	<b>77.24</b>
10	Fixed Costs (Rs.Acre <sup>-1</sup> )	26755.00	21.83	28590.00	21.74
11	Depreciation(Rs.Acre-1)	375.00	0.31	375.00	0.29
12	Interest on Fixed cost	723	1.77	2170.00	1.65
13	Total Fixed Cost	27853.00	23.90	29937.00	<b>22.76</b>
14	Total cost of cultivation	<b>121135.00</b>	<b>100.00</b>	<b>131520.00</b>	100.00
15	Grain Yield (q)	51.50		48.75	
16	Price (Rs./q)	3975.00		3825.00	
17	Gross returns	204712.50		186469	
18	Net returns	83576.50		54949	
19	Output/ Input ratio on TC*	0.68		0.41	
20	Output/ Input ratio on VC**	0.89		0.54	

\*Total Cost

\*\*Variable Cost

## REFERENCES

- Anonymous 1987 Progress Report 1987 for Asian vegetable Research and Development centre, Taiwan, pp 77-99
- Crop Life India 2005 A report on safe use of pesticides project of Crop Life India in Guntur district of Andhra Pradesh, India. September 2005 by Crop Life India, Mumbai
- Gundannavar KP, Giraddi RS, Kulkarni and Awaknavar JS 2007 Development of integrated pest management modules for chilli pests. Karnataka Journal of Agricultural Sciences, 20 (4): 757-760
- Joia BS, Jaswinder Kaur and Udean AS 2001 Persistence of ethion residues on/in chilli. Paper presented in the National Symposium on Integrated Pest Management (IPM) in horticultural crops, Bangalore, 17-19 October 2001.
- Mallikarjuna Rao D and Ahmed 1986 Effect of synthetic pyrethroids and other insecticides on the resurgence of chilli yellow mite, *Polyphagotarsonemus latus* Banks. Resurgence of sucking pests. Proceedings of the national symposium, TNAU, Coimbatore, pp 73-77