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To study the level of knowledge and adoption of integrated pest management on lathyrus in rice based cropping system in Chhattisgarh plains

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Abstract
Some of the IPM Strategies that are used are Cultural practices (Summer ploughing, selection of healthy seeds, timely planting, raising of healthy nursery, removal of weed from field, balanced use of fertilizers as per recommendations are the important cultural practices that are followed for pest management in paddy); Mechanical practices (Mechanical practices comprise of removal and destruction of pest infested plant parts. The result on knowledge and adoption of insect pest management practices of latyrus of the study show that majority of respondents (68.75%) had knowledge about line showing for reducing fungus diseases and weeding for controlling the population of insect thrips in lathyrus crop. Whereas 21.87 Percent respondents were knowing the benefits of chemical alternation in improving the effectiveness of pesticides and more than half of the respondents (56.25%) had knowledge about deep summer ploughing to kill the harmful microbes in the soil, 40.62 Percent respondents had knowledge about crop rotation for improving the soil fertility. As for as adoption of insect pest management practices in lathyrus crop is concern, 56.25 Percent respondents adopted deep summer ploughing as cultural practice, 37.5 Percent respondents had adopted use of light trap as mechanical practices and 18.75 Percent respondents had adopted the use of resistant varieties (RL-41, RPL-26) for preventing the powdery mildew disease in lathyrus crop.

Keywords: Lathyrus, insect-pest, knowledge, adoption

1. Introduction
Some of the IPM Strategies that are used are Cultural practices (Summer ploughing, selection of healthy seeds, timely planting, raising of healthy nursery, removal of weed from field, balanced use of fertilizers as per recommendations are the important cultural practices that are followed for pest management in paddy); Mechanical practices (Mechanical practices comprise of removal and destruction of pest infested plant parts, clipping of rice seedling tips and collection of egg masses and larvae of pest and their placement in bamboo cages for conservation of biocontrol agents); Biological control practices (Biocontrol agents like coccinellids, spiders, damsel flies, dragonflies should be conserved); Behavioural control (Pheromone traps are installed at the rate of 20 traps/ha to trap yellow stem borer at 10 days after transplanting); Chemical control measures (Chemical control measures are used under IPM in all the major crops including rice, as a last resort). IPM in rice has been developing in many countries since the early 1960's. However, much of the development was based on the older concepts of IPM. During the 1980s and 1990s important ecological information on insect populations became available, making possible a stronger ecological approach to pest management and greater integration of management practices that went beyond scouting and economic threshold levels of decision making.

2. Methodology
The study was conducted during the year 2017-19 in two irrigated districts namely Janjgir - Champa and Dhamtari and two rainfed districts namely Korba and Mahasamund in Chhattisgarh Plains. Form the each of the selected districts two representative blocks namely Kurud and Dhamtari from Dhamtari district and Janjgir and Champa form Janjgir- Champa district were selected purposively. Similarly, two blocks Pali and Katghora from Korba district and Mahasamund and Bagbhra from Mahasamund district were selected. From each selected block two representative villages were selected randomly.

Therefore 8 irrigated and 8 rainfed villages were considered for the study. Total 16 villages were selected. From each selected village 20 representative farmers were selected randomly. In this way a total of 160 (20X8) farmers from irrigated and 160 (20X8) farmers from rainfed area were selected. Thus total 320 farmers were considered as respondents for the present study. The data were collected by a personal interview with the help of a pre-tested structured interview schedule.

3. Results and Discussion

Identification of management practices followed by the respondents in both rice based cropping system of Chhattisgarh plain

Lathyrus

Lathyrus popularly known as grass pea (*Lathyrus sativus* L.) is a crop of immense economic significance. It is often broadcast-seeded into standing rice crop one or two weeks before the rice harvest, this allows grass pea to effectively exploit the residual moisture left after the rice harvest. It is grown for mainly grown for fodder purpose to feed the animals. The respondents of Chhattisgarh plain, selected district namely Mahasamund and Korba were selected for investigation as these districts are non-irrigated (rainfed area).

Distribution of the respondents of rainfed area according to the knowledge on IPM in Lathyrus

The Table 1 elucidated that 56.25 percent respondents have knowledge about that the Lathyrus seeds are shown about two weeks after deep plough to kill the harmful microbes, 43.75percent interviewed respondents knew that Phosphorus and molybdenum influence the productivity of Lathyrus, 50.00percent of the respondents had the knowledge and given the name of the two diseases of Lathyrus i.e. (powdery mildew and downy mildew) which could be controlled by removing infected part from the plant, 68.75percent of the respondents had expresses their view that Line sowing is the best ways to reduce the fungus diseases in Lathyrus crop, 25.00 percent sampled respondents given the name of two agro-chemicals used to spray to control pod borer (grains legumes) *i.e.* (Pyrethoroids karate 2.5 WDG), 21.87 percent of the respondents had the knowledge that pesticides effectiveness could increase by agro chemicals alternation, 59.37 percent respondents had known.

Table 1: Distributions of the respondents according to their knowledge about Integrated Pest Management practices of Lathyrus (n=160)

Sl. No.	Integrated pest management practices	F	%
1	Lathyrus seeds are shown about two weeks after deep plough to kill the harmful microbes	90	56.25
2	Phosphorus and molybdenum influence the productivity of Lathyrus	70	43.75
3	Name the two diseases of Lathyrus (Powdery mildew and downy mildew) which can be controlled by removing infected part from the plant	80	50.00
4	Line sowing is the best ways to reduce the fungus diseases	110	68.75
5	Name to chemicals used to spray to control pod borer (Grains legumes) (Pyrethoroids karate 2.5 WDG)	40	25.00
6	Pesticides effectiveness is increased by chemicals alternation	35	21.87
7	Name the plant extract to control the insect pest of Lathyrus (Pepper and neem)	95	59.37
8	Weed removable can control the population of Thrips	110	68.75
9	Crop rotation increase the soil fertility	65	40.62
10	Name the verities having small percentage of neurotoxin 0.2percent (N-oxalyl-L-diaminopropioni acid) (ODAP) Pusa 24, Pusa 305 Ratan)	68	42.5

F = Frequency

The name of the plant extract (Biological control) to controll the insect pest of lathyrus (Pepper and neem), 68.75 percent sampled respondents were well versed about the fact that weeding could control the population of insect Thrips, 40.62 percent of rain fed respondents were acclimatized to the fact that crop rotation increased the soil fertility, 42.5 percent respondents had acquainted to the name of the varieties having small percentage of neurotoxin 0.2 percent (N-oxalyl-L-diaminopropionic acid, i.e Pusa 24, Pusa 305 Ratan). The results is supported by Pradhan, S.K. (2014) [12].

Table 2: Overall knowledge level of respondents about Lathyrus (n=160)

Sl. No.	Category	F	%
1	Low (up to 18 score)	36	22.5
2	Medium (19 to 48 score)	98	61.3
3	High (49 and above score)	26	16.2
Total		160	100

Mean =33.63 SD=15.64
F = Frequency

The Table 2 showed overall knowledge of insect pest control of Lathyrus crop of the respondents of rain fed area, 61.3 percent respondents had medium level of knowledge regarding insect pest control of Lathyrus followed by 22.5 percent sampled respondents had low level of knowledge, 16.2 percent respondents had high level of knowledge about insect pest control of Lathyrus crop.

Table 3(a) revealed that 56.25 percent respondents of Lathyrus adopted deep ploughing cultural method to control the harmful micro found in soil, 37.50 percent respondents had adopted use of light trap to control the harmful insects in Lathyrus, 18.75 percent respondents use biological control practices to control the diseases like powdery mildew, downy mildew etc. by obtaining resistance variety if Lathyrus, 12.50 percent respondents used chemical like phenthroid insecticide to control the pod borer.

Table 3a: Distribution of the Lathyrus respondents according to their adoption of insect pest management practices

Sl. No.	Name of insect for pest	Management practices	Non irrigated respondents (n=160)	
			F	%
A	**Cultural practices**			
1.	Prevent the harmful micros organisms like *fusarium wilt*	Deep summer plough	90	56.25
B	**Mechanical practices**			
1.	Trap of Aphids (*Aphis craccivora*)	Use of light traps	60	37.5
C	**Biological control**			
1.	Powdery mildew (*Erysiphepolygone*), downy mildew (Peronosporalaythri	Use of resistant varieties for preventing the powdery mildew (RL-41,RPL-26)	30	18.75
D	**Chemical control**			
1.	Control of pod borer	Using phenthroid class of insecticides	20	12.5

Table 3b: Distribution of the Lathyrus respondents according to their overall adoption of insectpest management practices in Irrigated area

Sl. No.	Category	F	%
1	Low	38	23.75
2	Medium	110	68.75
3	High	12	7.50
Total		160	100

Mean X = 16.25 S.D. 3.30

From the Table 3(b) it has been observed that respondents having the facilities of irrigation, 68.75 percent respondents had medium level knowledge followed by 7.50 percent high level and 23.75 percent had low level of knowledge relating to the IPM practices in Gram in Irrigated farmers.

4. Conclusion

The result on knowledge and adoption of insect pest management practices of latyrus of the study show that majority of respondents (68.75%) had knowledge about line showing for reducing fungus diseases and weeding for controlling the population of insect thrips in lathyrus crop. Whereas 21.87 Percent respondents were knowing the benefits of chemical alternation in improving the effectiveness of pesticides and more than half of the respondents (56.25%) had knowledge about deep summer ploughing to kill the harmful microbes in the soil, 40.62 Percent respondents had knowledge about crop rotation for improving the soil fertility. As for as adoption of insect pest management practices in lathyrus crop is concern, 56.25 Percent respondents adopted deep summer ploughing as cultural practice, 37.5 Percent respondents had adopted use of light trap as mechanical practices and 18.75 Percent respondents had adopted the use of resistant varieties (RL-41, RPL-26) for preventing the powdery mildew disease in lathyrus crop.

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