Factors affecting Plant Protection status of IPM-Trained Dry Paddy Farmers of Bhandara District (Maharashtra State)

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ABSTRACT

Education, land holding, social participation, socio economic status, economic motivation, scientific orientation and mass media utilization were positively correlated with plant protection status. All the independent variables namely, Age, Education, Land holdings. Social participation, Socio economic status, cropping intensity, economic motivation, scientific orientation and mass media utilization could able to explain 62.21% (R^2 = 0.6221) of variation in the dependent variables of plant protection status.

The three independent variables namely economic motivation (b=0.386588), scientific orientation (b=0.241423) and land holding (b=0.385218) were major contributing factors in influencing or affecting plant protection status of the IPM trained farmers i.e. upto 60.80% (R^2 = 0.6080) in step down regression. However in path anlaysis the highest direct effect was recorded by scientific orientation followed by land holding, socio economic status and economic motivation, whereas highest indirect effect was recorded by education followed by economic motivation, socio economic status and social participation.

Key words : Factors, IPM, Plant protection status, Trained.

Indian agricultural crops depend on nature have been proned to damages due to insect pests and diseases. In India during 1925-31 the Bengal Famine, in 1941-42 failure of paddy crop on account of leaf spot diseases of paddy. The Indian famine enquiry commission in 1945 concluded effective action must be taken to deal with diseases, pests, worms, and weeds. Crop protection is an important factor in increasing production.

Keeping in view the global concern about harmful impact the Government of India recognized the benefits of "Integrated Pest Management (IPM)" formulated Programme during 1985 and adopted IPM as a cardinal principle to maintain plant protection strategy in the overall crop production programme. This research study was taken up to identify the "Factors affecting plant protection status of IPM Trained dry paddy farmers of Bhandara District (M.S.)", with following objectives:

1. To identify the factors affecting plant protection status of IPM - Trained dry paddy farmers.

2. Multiple regression anlaysis of selected independent and dependent variable. (Plant Protection Status).

3. Path coefficient analysis of direct and indirect effect of independent variables on plant protection status.

MATERIAL AND METHODS

The study was conducted in Bhandara District purposively because of acerage under paddy cultivation among districts of Maharashtra State. The IPM trained farmers were selected from 7 Talukas namely Gondia, Mohadi, Pauni, Bhandara, Sakoli, Tiroda and Tumsar and from 10 villages. From each village, 15 respondents were selected randomly compriseing total sample of 150 respondents. The data were collected with the help of Interview Schedule and analysed by arithmetic mean, standard deviation, frequency, percentage, correlation coefficient, multiple regression and path analysis.

RESULTS AND DISCUSSION

I. Factors affecting plant protection status of IPM -Trained dry paddy farmers.

Table.1 shows that factor affecting the plant protection status determined through relationship observed between personal, socio-economic, situational, psychological and communication character stics of respondents and their plant protection status, multiple regression analysis and path analysis.

Table 1. Relationship between the plant protection status of the respondents with independent variables.

		n = 150
Variable No.	Independent Variables	Plant Protection Status "r" Values
A	PERSONAL CHARACTERISTICS	
1.	Age	-0.0625 NS
2.	Education	0.5645 **
B	SOCIO ECONOMIC CHARACTERISTICS	
3.	Land Holding	0.5864 **
4.	Social Participation	0.4885 **
5.	Socio-Economics Status	0.6331 **
C	SITUATIONAL CHARACTERISTICS	
6.	Cropping Intensity	-0.0566 NS
D	PSYCHOLOGICAL CHARACTERISTICS	
7.	Economic Motivation	0.6194 **
8.	Scientific Orientation	0.6271 **
E	COMMUNICATION CHARACTERISTICS	
9.	Media Utilization	0.3355 **

** Significant at 0.01 level of probability.   NS = Non Significant

Table 2. Multiple regression analysis of selected independent variables and Plant Protection Status.

Variable No.	Independent Variables	Regression coefficient b-value	Standard error of b	't' value
X1	Age	0.178486 NS	0.184831	0.966
X2	Education	-0.983363 NS	2.047733	-0.969
X3	Land Holding	2.594133**	0.800767	3.240
X4	Social Participation	-0.379088 NS	1.642046	-0.231
X5	Socio-Economics Status	1.277466*	0.635830	2.009
X6	Cropping Intensity	-0.061005 NS	0.048813	-1.250
X7	Economic Motivation	1.944740*	0.783887	2.481
X8	Scientific Orientation	4.031252**	0.729127	5.529
X9	Media Utilization	0.353802 NS	0.321599	1.100

$R^2 = 0.6221**$ F = 25.61

** Significant at 0.01 level of probability.   * Significant at 0.05 level of probability.
 NS = Non Significant

Table 3. Plant Protection Status and remained variables in step down regression analysis.

Last step	Variables remained	Partial B	SE of b	't' value
8	X3 Land holding	0.385218**	0.576616	6.643
	X8 Scientific Orientation	0.214142**	0.672195	5.811
	X7 Economic Motivation	0.386488**	0.690141	3.026

$R2 = 0.6080**$ F = 56.23

Table 4. Path coefficient analysis of independent variables with Plant Protection Statjus.

Variable No.	Independent Variables	Direct effect	Total indirect effect	Largest indirect effect channalized through
1	Age	0.0551	-0.1177	0.0229 X2
2	Education	-0.0782	0.6431	0.2386 X8
3	Land Holding	0.2580	0.3284	0.1558 X5
4	Social Participation	0.0165	0.4721	0.1613 X8
5	Socio-Economics Status	0.2116	0.4215	0.1888 X3
6	Cropping Intensity	-0.0660	0.0096	0.0127 X8
7	Economic Motivation	0.2096	0.4098	0.2276 X8
8	Scientific Orientation	0.3683	0.2588	0.1295 X7
9	Media Utilization	0.0646	0.2709	0.0986 X3

It reveals that the relationship between profile of IPM trained dry paddy farmers namely education (0.5645), landholding (0.5864), social participation (0.4885), socio-economic status (0.6331), economi motivation (0.6194), scientific orientation (0.6271) and media utilization (0.3355) were positiviely significant with plant protection status, whereas no significant relationship between characterstics of IPM trained dry paddy farmers namely Age and Cropping intenstiy with their plant protection status was found.

IPM practices are common for all farmers to protect their crop and the chemicals to be used only on need based. The old as well as young farmers were more or less alike as far as the plant protection is concerned. As such this variable is independent of plant protection status. This may be the reason for non signifcant relationship between age and plant protection status.

The farmers with more cropping intenstiy might have been involved in other annual food crops such as jawar, vegetable and pulses. The same plant protection equipment / implements might have been used for all crops. Farmers might have more cropped area than his total holding, but it was not sufficient enough showing a trend that explain his plant protection status. Probably higher education, favourable attitude and high desire towards plant protection technology would sufficiently explain the plant protection status of farmers rather than higher cropping intensity. It may be due to this reason that cropping intensity was found not correlated to plant protection status.

The finding were inconformity with findings of Pandey (1988), Biswas (1990), Doijad (1991).

II. Multiple regression analysis of independent and dependent variable (Plant Protection Status)

Table 2 indicate that all the nine independent variables were able to explain 62.21% of variation (R^2 = 0.6221) on the dependent variable of plant protection status. However land-holding (2.594133) socio-economic status (1.277466), economic motivation (1.94474) and scientific orientation (4.031252) were significant. Whereas age, education, social participation, cropping intensity and media utilization were not related with plant protection status.

It could be inferred from Table 3 that three independent variables namely economic motivation (b=0.386488) scientific orientation (b=0.214142) and land holding (b=0.385218) were major contributing factors in influencing or affecting the plant protection status of the IPM trained farmers i.e. upto 60.80% (R^2 = 0.6080). All these three variables may be termed as good predictors in influencing or affecting plant protection status.

III. Path coefficient analysis of direct and indirect effect of independent variables on plant protection status.

Table 4 reveals that direct effect and indirect effect of each independent variable on dependant variables. The highest direct effect was recoreded by Scientific orientation (36.83%), follwed by land holding (25.80%), socio-economi status (21.16%), and economic motivation (20.96%). Whereas highest indirect effect was recorded by education (23.86%), Economic motivation (22.76%), Socio economic status (18.88%) and social participation (16.13%).

Though social participation is not causing largest indirect effect through any independent variables, it is causing more total indirect effect. Education and Socio-economi status are causing largest indirect effect through any independent variables and also causing more indirect effect. Where as scientific orientation, land holding, economic motivation were causing largest indirect effect through any independent variables. They are causing more total indirect effect. These three variables were found to had both highest direct and indirect effect on dependent variables.

Thus variables i.e., Scientific orientation, Land-holding, economic motivation, socio-economic status and education were important critical factors influencing plant protection status.

The findings were in conformity with findings of Pathak and Majumder (1978), Pathak (1989), Doijad (1991) and Yavalkur *et al* (1991).

The overall analysis of above studies shows that dominant influence of variables such as Scientific orientation and economic motivation on plant protection status of IPM trained dry paddy farmers. Therefore, developmental agencies, extension staff, extension agencies need to improve the scientifc orientation and economic motivation of farmers by using the success stories and results of demonstration through different media to accelerate the adoption of IPM plant protection practices.

The findings were in confirmity with findings of Pathak and Majumder (1978), Pathak (1989), Doijad (1991) and Yavalkur et al (1991).

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