

Knowledge Level of Village Level Extension Workers on Biocontrol Agents and Biopesticides in Barpeta District of Assam

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Abstract: In the post green revolution era, application of chemical pesticides in agriculture increased tremendously resulting in problems like pest resurgence, resistance and environmental pollution. Hence, in order to reduce the application of chemical pesticides, importance of Bio-control agents and Bio-pesticides rises significantly. Village Level Extension Workers (VLEWs) are the grass-root level extension functionaries working with the farmers. Therefore, it was imperative to measure the knowledge level of the VLEWs on Bio-pesticides and Bio-control agent in order to prioritize their training requirements on the subject. Accordingly, a study was conducted in Barpeta district of Assam with 80 numbers of VLEWs to measure the level of knowledge on Bio-pesticide and Bio-control agent. Four different aspects viz. Biological control, Botanical pesticide, Commercial formulations and Parasitoids were selected to measure the knowledge level of the VLEWs. A total of 20 questions were formulated under the above mentioned four aspects. A knowledge test was designed with a two point scale i.e. 1 for correct and 0 (zero) for incorrect answer. Frequency distribution of level of knowledge of VLEWs on Bio-pesticide and Bio-control agent showed that majority (81.25%) of the respondents' possessed correct knowledge on the "Active chemical component of neem based pesticide". On the other hand, only 6.25 % respondents' possessed correct knowledge on three aspects viz. microbial pesticides used against soft bodies' insects, most active part of the neem tree as insecticide and commercial formulation of neem based bio-pesticide. Distribution of VLEWs on level of Knowledge revealed that majority (60.50%) of the respondents had moderate level of knowledge, followed by 18.75 % with high level of knowledge on Bio-pesticide and Bio-control agents.

Keywords: Level of Knowledge, Bio-pesticide and Bio-control Agent

I. INTRODUCTION

In the post green revolution era agriculture was mainly based upon a package of various agricultural inputs, viz., use of high yielding variety of different crops, water, pesticide and chemical fertilizer. Indiscriminate and excessive use of pesticide produce health hazard in animals and human beings. These toxic agrochemicals are also responsible for insecticidal resistance, resurgence, residue in food chain, environmental pollution and loss of biodiversity including destruction of soil micro and macro flora and fauna. Research works in search of alternative of chemical pesticides leads to the development of varieties of biocontrol agents and biopesticides [2]. To combat the damage by insect pests and manage the plant diseases in sustainable way, in modern agricultural practices, use of biological insecticide has become a necessity. For creating the awareness of these biocontrol agents and biopesticides among farming community, there is an urgent need to educate the grass root level extension workers i.e. Village Level Extension Workers (VLEWs) of the State Department of Agriculture. Agricultural extension in India is largely deployed by government, mainly through government institutions and to some extent through Non Government Organizations. Krishi Vigyan Kendras have to serve as repository of scientific knowledge that is useful to the entire district of its jurisdiction. One of the mandate of KVK is to organize training to update the extension personnel with emerging advances in agricultural research on regular basis, who in turn can use this knowledge to assist the farmers to improve production and productivity of agricultural crops in sustainable manner. The present study was conducted to measure the level of knowledge of the VLEWs of Barpeta district on biopesticide and biocontrol agents.

II. MATERIALS AND METHODS

The Barpeta district of Assam was purposively selected to conduct the study as the district is under jurisdiction of KVK, Barpeta. All the agricultural sub-division of the district viz., Barpeta, Alo Patti Mazor Char and Pathsala were purposively selected. The number of VLEWs of the agricultural subdivision Barpeta, Alo Patti Mazor Char and Pathsala were 82, 16 and 46, respectively. Following a match sampling technique [3, 4], 80 numbers of respondents were selected from the district. Thus the numbers of respondents selected from Barpeta, Alo Patti Mazor Char and Pathsala for this study were 32, 16 and 32, respectively.

The study was conducted to measure the knowledge level of the VLEWs on four different component of Biocontrol agent and Biopesticide viz., concept of biological control, botanical pesticide, commercial formulations of biopesticides and parasitoids. There were total 20 numbers questions under above mentioned four components. A knowledge test was designed with a two point scale i.e. 1 for correct and 0(zero) for incorrect answer. Thus the maximum possible score was 20. The respondents were interviewed personally to get first hand information and also through direct observation. The responses received were then coded, processed and tabulated. The statistical procedure and tests used for analysis of the data were frequency and percentage, Arithmetic mean (X), Standard deviation (sd) and Coefficient of variation (CV)

III. RESULTS AND DISCUSSION

Practice wise Knowledge level of the respondents regarding Biopesticide and Biocontrol Agent:

An attempt was made to understand the knowledge gaps on various aspects of Biopesticide and Biocontrol Agent by computing the numbers of VLEWs who possessed adequate knowledge on each of the twenty aspects of Biopesticide and Biocontrol Agent. Results of the analysis are presented in Table 1.

Table 1: Distribution of VLEWs on the basis of knowledge on Bio-pesticide and Bio-control Agent (n=80)

Sl. No	Practices	Frequency(f)	Percentage (%)
Concept of Biological control			
1	Concept of Bio-pesticide	15	18.75
2	Name of a fungal biopesticides	15	18.75
3	Biopesticide used against rice hispa	30	37.5
4	Microbial pesticides used against soft bodies insects	5	6.25
5	Biopesticide used against bacterial wilt of Solaneceous plants	35	43.75
Botanical pesticide			
6	Active component of neem based pesticide	65	81.25
7	Active part of the neem tree as insecticide	5	6.25
8	Part of chrysanthemum used to prepare insecticide	40	50
9	The plant from which "Pyrethrum" is developed	20	25
10	General dose of application of neem based pesticides in vegetable crops	30	37.5
Commercial formulations			
11	The main ingredient of Biofor –PF	25	31.25
12	Commercial formulation of <i>Pseudomonas fluorescense</i>	10	12.5
13	Commercial formulation of neem based pesticide	5	6.25
14	The company which produce "Tricho-XP" bio formulation	10	12.5
15	Commercial formulation used against rice hispa	45	56.25
Parasitoids			
16	The name of the insect in which mass rearing of <i>Trichogramma</i> is undertaken	45	56.25
17	Pest of rice controlled by <i>Trichogramma</i>	45	56.25
18	Interval of release of <i>Trichogramma</i> in rice field	15	18.75
19	Dose of <i>Trichogramma japonicum</i> and <i>T. chelonis</i> egg per ha of rice field	50	62.5
20	Vegetables pests that can be controlled by <i>Trichogramma</i>	50	62.5

The results revealed that majority (81.25 %) of respondents had proper knowledge on "active chemical component of neem based pesticide". Regarding the remaining practices they had a moderate level of knowledge. While, only 6.25 % respondents possessed correct knowledge on three aspects viz. "Microbial pesticides used against soft bodies insects", "Most active part of the neem tree as insecticide" and "Commercial formulation of neem based bio-pesticide" (Table 1). The total knowledge score on Bio-control Agents and Bio-pesticides for each respondent was computed by adding up the scores of all correct answers. These knowledge scores were further analyzed and the results are presented in Table 2.

Table 2: Knowledge level of VLEWs on bio-control agents and Bio-pesticides (n=80)

Level of Knowledge	Frequency	Percentage	Mean	Standard Deviation (Sd)	CV
Low (< Mean –Sd)	15	18.75	7	6.41	91.43
Moderate (Between Mean±Sd)	50	62.50			
High (> Mean + Sd)	15	18.75			

The data presented in Table.2 showed that the mean score of the respondents' knowledge regarding Bio-control Agents and Biopesticides is 7 with standard deviation (sd) 6.41. The coefficient of variation (CV) was found to be 91.43. The CV indicates a higher degree of heterogeneity among the respondents regarding knowledge level on Bio-control Agents and Biopesticides. The results further showed that majority (62.50 %) of the respondents belong to moderate level of knowledge category. It is further revealed that equal numbers of respondents (18.75%) possessed low and high level of knowledge.

IV. CONCLUSION

IPM draws heavily on complementarities and interactions of different methods of pest control, which includes chemical, biological, cultural and mechanical. And each of the components has its own specific characteristics and requirements for application. This makes IPM a complex technology. Extension workers should have sound understanding and knowledge of the agricultural technology like the IPM technology for effective dissemination to the farming community. Lack of understanding of any of these would adversely affect its adoption [1]. Target oriented training programme for VLEWs have to be formulated to enhance the level of knowledge on **Biocontrol** Agents and Biopesticides. Extension agencies have to be more active in providing several exposures to the VLEWs regarding use of Biocontrol Agents and Biopesticides.

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