ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 7, Issue, 08, pp.19406-19408, August, 2015

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

BRINJAL GROWERS' PESTICIDES USE PATTERN IN CONTROLLING INSECT-PESTS IN HOOGHLY DISTRICT OF WEST BENGAL

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ARTICLE INFO

Article History:
Received 05th May, 2015
Received in revised form
27th June, 2015
Accepted 20th July, 2015
Published online 31st August, 2015

Key words:

Brinjal growers, Insect-pests,
Pesticides use pattern, Judicious application.

ABSTRACT

The study was conducted in Hooghly district of West Bengal. The study reveals that the most harmful insect-pest of brinjal was shoot and fruit borer. Brinjal growers were using various brands of various pesticides for controlling insect-pests with several doses. Infestation of insect-pests was mainly on mature stage of the crop. The brinjal growers used 20-30 litres and 100-180 litres of water per bigha for spraying at seedling stage and mature stage respectively. Brinjal growers' interval of spraying of chemicals was mainly 4-7 days.

Citation: Hiralal Jana, 2015. "Brinjal growers' pesticides use pattern in controlling insect-pests in Hooghly district of West Bengal", *International Journal of Current Research*, 7, (8), 19406-19408.

INTRODUCTION

Indiscriminate use of chemicals in agriculture during post green revolution period and their adverse effect on soil health and environment has created an alarming situation. Use of high yielding varieties and hybrids of cereals on the otherhand have put a great pressure on soil and water resources. A situation has resulted which urgently demands an environmentally safe, sustainable and simultaneously, economically viable production system. This indeed is essential for optimizing production and at the same time to minimize threat to environment (Mubarak and Zargar, 2013). The lower yields are attributed to infestation of the crops by insect-pests and diseases and non-adoption of plant protection measures by farmers (Bhalekar *et al*., 2013). Among the all measures to raise the productivity level, plant protection is in central position. Plant protection is a basic exercise in any crop for control of insect-pests, diseases, weeds etc. to avoid economic losses. Reports indicate these losses ranging from 20-30 % by each of the insect-pests, diseases and weeds, but on a holistic basis about 30% average cumulative loss by them appears a fair estimate. This implies that suitable control measures must be followed to keep these losses to the minimum (Muthuraman and Kumar, 2013). Farmers' use behaviour of pesticides in vegetables is so dynamic which requires regular research. Considering the importance of the study, the objective, to portray the pesticides use pattern in brinjal in controlling insect-pests was undertaken.

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MATERIALS AND METHODS

The study was undertaken in the State of West Bengal. For the selection of area and respondents of the present study, multi-stage random sampling technique and universe method were adopted. At the first stage of sampling, Hooghly district was selected among the 18 agricultural districts of State purposively based on its' comparatively higher area coverage in brinjal cultivation. Out of 16 blocks of Hooghly district, one block (i.e Singur) was randomly selected at the second stage of sampling. In the selected block (Singur) a relatively homogenous field cultivated with brinjal crops was chosen on the basis of the opinion of the agricultural input retailers. The farmers who were growing brinjal in that field were selected as respondents of the study through total enumeration. Thus total 400 farmers ultimately considered as respondents of the present study.

RESULTS AND DISCUSSION

The Table 1 indicates the various insect-pests of brinjal were: - Brinjal shoot and fruit borer (*Leucinodes orbonalis*), White fly, Red fly, Mite (*Tetranychus neocaledonicas*) and Aphid (*Aphis gossypii and Myzus persicae*). All the respondents in the study area (100%) reported about brinjal shoot and fruit borer whereas at the lowest 21 per cent of them were embarrassed by the attack of Aphid. Other important harmful insect-pests, reported were:- White fly (25%), Red fly (23%) and Mite (32%)

Table 1. Various insect-pests of brinjal and their attacking stages (N=400)

Insect-pests	No. of respondents reported	Respondents reported (%)	Attacking stage
Brinjal shoot and fruit borer	400	100	Early to mature stage
White fly	100	25	All the stages
Red fly	92	23	Mature stage
Mite	128	32	Mature stage
Aphid	84	21	Flowering to onwards

Table 2. Insecticides used for controlling insect- pests and their doses (N=400)

Name of insect-pests	Insecticides	No. of respondents adopted	Respondents adopted (%)	Doses (ml/litre of water)
Brinjal shoot and fruit borer	Confidor	76	19	0.3-0.5
	Ostaad	40	10	2.0-4.0
	Kritaf	100	25	2.0-4.0
	Metacid	80	20	1.5-3.0
	Sevin	40	10	1.5-2.3 gm
	Ekalux	44	11	1.0-3.0
	Lannate	20	5	1.5-3.0
White fly	Radar	60	15	1.0-3.0
	Flash	112	28	2.0-4.0
	Kritaf	96	24	2.0-4.0
	Matacid	92	23	1.5-3.0
	Rogor	40	10	2.0-4.0
Red fly	Metasystox	48	12	2.0-4.0
	Thiodon	140	35	1.0-3.0
	Ripcord	168	42	1.0-3.0
	Suquin	44	11	1.0-3.0
Mite	Colonel-S	248	62	1.5-3.0
	Thiodon	72	18	1.0-3.0
	Mit-505	48	12	1.0-2.5
	Ripcord	32	8	1.0-3.0
Aphid	Rogor	96	24	2.0-4.0
	Metasystox	232	58	2.0-4.0
	Monocil	40	10	1.0-3.0
	Nuvan	32	8	1.5-3.0

Insect-pests of brinjal

1. Brinjal shoot and fruit borer: - To control the insect-pest (Table 2), at the most 25 per cent of respondents used Kritaf whereas at the lowest, 5 percent of respondents applied Lannate. Other pesticides used by the respondents were:- Confidor (19%), Ostaad (10%), Metacid (20%), Sevin (10%) and Ekalux (11%).

2. White fly:- To control the insect-pest, at the most 28 percent of respondents applied Flash whereas at the lowest, 10 percent of respondents sprayed Rogor. Other pesticides used by the respondents were:-Radar (15%), Kritaf (24%) and Metacid (23%).

3. Red fly:- To control the red fly insect-pest, at the most 42 per cent of respondents applied Ripcord and at the lowest 11 percent of respondents sprayed Suquin. Other pesticides used by the respondents were:- Metasystox (12%) and Thiodon (35%).

4. Mite:- To control this insect-pest, majority of the respondents (62%) applied Colonel-S whereas at the lowest 8 per cent of respondents used Ripcord. Other pesticides used by the respondents were:-Thiodon (18%) and Met -505 (12%).

5. Aphid:- To control the aphids, more than half of respondents (58%) applied Metasystox and at the lowest, 8 percent of respondents sprayed Nuvan. Other pesticides used by the respondents were:-Rogor (24%) and Monocil (10%).

Doses of various pesticides:- It is clear from the Table 2 that in case of insect-pest control, respondents sprayed maximum 2.0-4.0 ml/litre of water and at the lowest 0.3-0.5 ml/litre of water.

Insect-pests and their attacking stages of crop: -From the Table 1, it is explicit that infestation of insect-pests was mainly on mature stage of the crop.

Amount of water required per bigha of land: - In seedling stage respondents used 20-30 litres of water per bigha to control insect-pests whereas at mature stage they sprayed 100-180 litres of water per bigha.

Interval of spraying of chemicals: - The Table 3 clearly indicates that half of respondents (50%) applied pesticides 4-7 days' interval whereas only 8 percent of respondents sprayed various chemicals more than 15 days interval.

Conclusion

The study concluded that extension agencies need to follow a systematic, well-planned and coordinated approach for improving the knowledge and adoption status of the brinjal growers on various aspects of insect-pests control which will have ultimate effect on production as well as agricultural development.

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