

*Survey Article*

## **SURVEY ON PLANT PROTECTION PRACTICES IN BLACKGRAM**

**(*Vigna mungo* .L)**

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**Abstract:** Survey on pesticide use pattern was conducted to find out personal protective wear used for the handling of chemicals, prevalent storage practices adopted by the user and to know the awareness levels of farmers on pesticides and pesticidal pollution effects in blackgram. The survey was carried at farmer's field in 3 different villages of Nizambad district. The most common health problems observed during spraying includes skin irritation (40%), breathlessness (20%), eye irritation (16.66%), cough (13.33%) and head ache (10%). About 26.66% of the farmers used pesticide mixtures rather than applying single pesticide at a time, so as basically to save time, labour, money and to combat two or more pests with a single spray. Most of the farmers followed common waiting period of 7 days (63.33%) followed by 4 days (26.66%) and 2 days (10%). About 16.66% of the farmers were aware of the pesticide residues in vegetables and just 6.66% of the farmers knew that pesticide residues in food enter into body and accumulate, 86.66% of the farmers responded that they did not hear about any kind of bad effects due to pesticide residues, 13.33% reported physical impairments. 20% of the farmers were aware of pesticide classification based on toxicity and 66.66% were not aware about food exports rejections in international trade due to pesticide residues. Majority of the farmers were unaware of pesticide residues, their bad effects, pre harvest intervals and this might be attributed to illiteracy of the farmers and insufficient extension activities.

**Keywords:** Black gram, Survey, Insect pests, Pesticides, Pesticide residues.

### **INTRODUCTION**

Blackgram [*Vigna mungo* L. (Hepper)] is an important pulse crop of India. It belongs to the family leguminaceae; sub family Papilionaceae. Black gram is grown in all the seasons under wide range agro –climatic conditions in different areas of Telangana. The blackgram crop is prone to the attack by a complex of pests like sucking, defoliators and pod borers at different stages of the crop. Lal and Sachan (1987) reported that 60 insect species are known to attack blackgram crop at different stages of crop growth in India. Chemicals (pesticides) are widely used to combat the insect pest problem in pulses. At different periods of crop growth, the

crop is treated with different group of insecticides, giving rise to more chance of environmental pollution.

## **MATERIAL AND METHODS**

A survey in open fields of blackgram is aimed to find out of personal protective wear used for the handling of chemicals, prevalent storage practices adopted by the user, to detect dangerous practices and the extent to which safety norms are being followed by the users during the application/treatments and finally their knowledge concerning the risks of pesticides.

Survey on pesticide use pattern was conducted at farmer's fields in 3 different villages of Nizamabad district (Table-1) to generate information on the existing plant protection practices and elicit farmer's views on plant protection approaches. To evaluate the awareness levels of farmers on pesticides and pesticidal pollution effects in blackgram, the farmers were interviewed personally using a questionnaire.

## **RESULTS AND DISCUSSION**

About 93.33% of the farmers reported the occurrence of insect pests aphids, followed by jassids (86.66%), pod borer (*Maruca vitrata*) (66.66%), whitefly (46.66%), tobacco caterpillar (*Spodoptera litura*) (40%) (Table-2). Major pesticides used by the blackgram farmers were Chlorpyrifos 20% EC (76.66%), followed by acephate 75% SP (66.66%), Imidacloprid 17.8% SL (50.00%), spinosad 48% SC (46.66%), acetamaprid 20% SP (40%), monocrotophos 36% SL (36.66%) and Chlorantraniliprole 18.5% SC (16.66%) (Table-3).

About 26.66% of the farmers used pesticide mixtures rather than applying single pesticide at a time, so as to save time, labour, money and to combat two or more pests with a single spray and 73.33% of the farmers did not use any pesticide mixtures which indicated their knowledge in using pesticides. About 40% of the farmers applied pesticides at 10-15 days (Table-5) interval followed by week (36.66%), 15-20 days interval (16.66%) and 4 days interval (6.66%). It is observed that most of the farmers applied pesticides at 10-15 days interval which shows that farmers are following proper time for the application of pesticides and allowing the pesticides to act upon pests and are also not spraying the pesticides until the pest population build up is noticed again.

About 40% of the farmers were aware of recommended pesticides (Table-4) against different pests, and only 20% of the farmers were aware of pesticide classification based on toxicity. It may be due to illiteracy and literate's negligence that had led the farmers for the application of pesticide at improper dosage which indicates that very few farmers look at the colour code

triangle on the pesticide container and similar result was reported by Chetna *et al.* (2012) who revealed that there were gender differences regarding reading and understanding of pesticides labels, awareness of the labels and protective covers. Such reports depend on place, crop, purpose of product, use of the product, size of the pack etc. and it gives clear message to all those concerned to educate the farmers about the toxicity codes of pesticides and care to be taken while using the same at both farm and home level.

It was found that 40% (Table-4) of the farmers followed safe methods while storing or mixing or spraying of pesticides and these results are in agreement with the findings of Khan *et al.* (2006) who reported that sixteen percent (16%) of vegetable and fruit growers were using protective clothing during spraying and Rashid *et al.* (2008) reported that 29% of the growers covered their face and body, 17% covered their body and 17% covered their face at the time of spraying. It is clear that farmers are taking care to avoid the pesticide contamination into their body parts.

In the present study, the most common health problems observed during spraying includes skin irritation (40%), breathlessness (20%), eye irritation (16.66%), cough (13.33%) and head ache (10%) (Table-5). These findings are in agreement with the findings of Ngowi *et al.* (2007) who reported that 68% of the farmers felt sick after routine application of pesticides and the pesticide-related health symptoms included skin problems and neurological system disturbances (dizziness, headache). Ranga Rao *et al.* (2009) reported that 50% of the Indian farmers had health problems associated with the application of plant protection chemicals.

It is noticed that 73.33% (Table-5) of the farmers preferred to contact the pesticide dealers followed by agricultural officers (13.33%) and scientists (13.33%) for pesticide recommendations which is in line with work done by Khan *et al.* (2006) who reported that 85% usage of pesticides was on the recommendations of pesticide dealers.

Among the farmers, 73.33% of the farmers said that the quantity of pesticides used at their farm is adequate and about 83.33% (Table-4) of the farmers had a perception that pesticides are helpful in getting good returns. About 60% of the farmers said that high pesticide dose gives higher yields and 40% of farmers reported that high pesticide dose will not give higher yield and pesticides are used only to control the pest and majority of the farmers thought that pesticides are helpful in getting good returns. About 60% of the farmers followed crop rotation (Table-5) as an alternative for pesticide use, 26.66% of the farmers followed natural control as an alternative to pesticides and only 13.33% of the farmers followed IPM (Integrated Pest Management) as an alternative for pesticide use and only few felt that

integrated pest management practices and natural control measures are alternative to pesticides. This might be due to unavailability of natural pest control/management components, slow knock down of pests in alternative pest control methods.

Majority of the farmers (66.66%) were not aware about food exports rejections in international trade due to pesticide residues. About 16.66% of the farmers were aware that pesticide residues are found in vegetables and just 6.66% (Table-4) of the farmers knew that pesticide residues in food enter into body and accumulate, 86.66% of the farmers responded that they did not hear about any kind of bad effects due to pesticide residues, 13.33% reported physical impairments, about 33.33% of the farmers were aware that for each pesticide, pre-harvest interval is recommended. Most of the farmers followed common waiting period of 7 days (63.33%) (Table-5) followed by 4 days (26.66%) and 2 days (10%). Majority of the farmers were unaware of pesticide residues, their bad effects, pre harvest intervals and this might be attributed to illiteracy of the farmers and insufficient extension activities.

About 26.66% of the farmers used empty pesticide containers for house or farm purposes. Majority of the farmer's (80%) (Table-5) have simply thrown empty containers in trash and 20% of the farmers buried the empty containers in soil. Proper disposal of empty pesticide containers without using them for house or farm purpose is essential in order to avoid health hazards due to pesticides. Few farmers were using pesticide containers for house or farm purposes as they were unaware of bad effects of pesticides. Disposal of these empty pesticide containers was not carried out in a satisfactory way as majority of the farmers have simply thrown containers in trash.

**Table: 1 Details of locations for field survey conducted in Nizamabad district.**

<b>S.NO</b>	<b>Name of the Mandal</b>	<b>Name of the Village</b>	<b>No of Farmers</b>
<b>1</b>	<b>Bheerkur</b>	<b>Thimmapoor</b>	<b>10</b>
<b>2</b>	<b>Kamareddy</b>	<b>Sadashivanagar</b>	<b>10</b>
<b>3</b>	<b>Velpur</b>	<b>Anksapoor</b>	<b>10</b>
			<b>TOTAL:30</b>

**Table 2: Information on occurrence of insect pests on blackgram**

Particulars		Field(n=30)	
S. No	Insect pest	Frequency	Percentage
1	Jassids	26	86.66
2	Whitefly	14	46.66
3	Aphids	28	93.33
4	Pod borer ( <i>Maruca vitrata</i> )	20	66.66
5	Tobacco caterpillar ( <i>Spodoptera litura</i> )	12	40

**Table 3: Types of insecticides used by blackgram cultivators**

Particulars				Field (n=30)	
Sl. NO	Chemical name	Trade name	Price (Rs per lit / kg)	Frequency	Percentage
1	Acephate 75%SP	Starthene	550	20	66.66
2	Acetamaprid 20% SP	Pride	1600	12	40
3	Chlorantraniliprole 18.5% SC	Coragen	15000	5	16.66
4	Chlorpyrifos 20% EC	Dursban	220	23	76.66
5	Imidacloprid 17.8% SL	Confidor	2400	15	50.00
6	Monocrotophos 36% SL	Monophos	466	11	36.66
7	Spinosad 48 % SC	Tracer	13500	14	46.66

**Table 4: General awareness of farmers on pesticides and their use**

Particulars		Field (n=30)			
Sl.No	Particulars/comments	Frequency		Percentage	
		Yes	No	Yes	No
1	Are you aware about recommended pesticides against different pests	12	18	40.00	60.00
2	Are you aware about the pesticide classification based on toxicity	6	24	20.00	80.00
3	Do you follow safe methods while storing / mixing / spraying pesticides	12	18	40.00	60.00
5	Do you use pesticide mixtures	8	22	26.66	73.33
7	Are you aware that pesticide residues are found in vegetables	5	25	16.66	83.33
8	Do you know that pesticide residues in food enter into body and accumulate	2	28	6.66	93.33
9	Are you aware that food exports are rejected due to pesticide residues	10	20	33.33	66.66
10	Do you think the quantity of pesticides used as adequate	22	8	73.33	26.66
11	Do you think that pesticides are helpful in getting good returns	25	5	83.33	16.66
12	Do you think high pesticide dose gives higher yields	18	12	60.00	40.00
13	Use of empty pesticide containers for house / farm purpose	8	22	26.66	73.33

**Table 5: General awareness of farmers on pesticides and their use**

Particulars		Field	
Sl. No	Particulars/comments	Frequency	Percentage
1	<b>Most common health problem observed during spray</b>		
	Skin irritation	12	40.00
	Cough	4	13.33
	Breathlessness	6	20.00
	Eye irritation	5	16.66
	Head ache	3	10.00
2	<b>Whom do you contact, for pesticide recommendations</b>		
	Agricultural officer	4	13.33
	Dealer	22	73.33
	Scientist /Agricultural magazine	4	13.33
3	<b>How frequently you apply the pesticides</b>		
	2 Days	0	0
	4 days	2	6.66
	Week	11	36.66
	10-15 days	12	40.00
	15-20 days	5	16.66
4	<b>Common waiting period you follow after pesticide spray</b>		
	1 Day	0	0
	2 Day	3	10.00

	4 Days	8	26.66
	Week	19	63.33
5	<b>What type of bad effects you heard due to pesticide residues in food</b>		
	Cancer	0	0
	Physical impairments	4	13.33
	Not heard about any bad effects	26	86.66
6	<b>Best alternative for pesticide use</b>		
	Crop rotation	18	60.00
	Natural control	8	26.66
	Integrated pest management	4	13.33
7	<b>What is the disposal method you follow for empty pesticide containers</b>		
	Bury in soil	6	20.00
	Sell	0	0
	Throw into trash	24	80.00

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