

## Problems Faced by Vegetable Growers in Using Pesticides

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### ABSTRACT

*Pesticides are chemical compounds or mixtures of substances with diverse chemical nature and biological activity. They are specially designed and manufactured for their use to prevent, destroy, repel, attract, sterilize, stupefy and mitigate any undesired life declared to be the pest. It is difficult to imagine of modern pest control and agricultural programme without some forms of chemical compounds. However, pesticides have some adverse effects on our environment. Pesticides definitely are poisonous and their arbitrary use and abuse may result in ecological dissimilarity, resulting in pest resurgence, aggravation of minor pests, pesticides resistance, environmental pollution, carrying serious health hazards to man and animals. So, special emphasis was given in this study to assess the problems faced by the vegetable growers in application of pesticides on vegetable crops during and after application of pesticides. The study was conducted in North 24 Parganas district of West Bengal. For the selection of area and respondents, multi-stage random sampling technique and universe method were adopted. The study revealed that the main problems faced by the vegetable growers during application of pesticides were itching, weakness, headache, eye irritation, breathing problem, vomiting and drowsiness whereas the main problems after application of pesticides were weakness, headache, feelings of burning of skin, bad odour, vomiting and drowsiness. Therefore, the vegetable growers must follow the precautions on pesticides use properly whereas the extension agencies and all other line departments in the way of their agricultural development programme should consider the findings carefully and give more emphasis on carrying out various awareness programmes on pesticides use for enhancing farmers knowledge level as well as welcoming sustainable agriculture.*

**Keywords :** Problems, Vegetable growers, Pesticides, Health hazards, Precautions, Sustainable agriculture

### INTRODUCTION

Environmental pollution is an undesirable change in the physical, chemical or biological characteristics of our land, air or water that may harmfully affect human life or that of desirable species. All these pollution claims a lot from the lives in water and even from those living on land (Singh et al. 2011). Indian pesticide market is the 12<sup>th</sup> largest in the world and stands first in Asian continent. India produces 90,000 metric tonnes of pesticides in a year with over 400 million acres under cultivation and over 60 percent of the country's population depends on agriculture as well as the country's economy mainly depends on the agriculture. India's 30 percent potential crop yield is damaged by the attack of insect-pests, diseases, weeds and rodents. The pesticides play a crucial role in protecting crops from damage both before and after harvest which helps to increase crop yields (Kundu and Wale, 2013). In order to feed the burgeoning population more food has to be produced and this has to be done without

degradation of the resource base.

Sustainable agriculture is a form of agriculture aimed at meeting the needs of the present generation without endangering the resource base of the future generations. The sustainable agriculture should benefit rather than harm the natural environment and must at least maintain basic natural resources such as healthy soil, clean water, clean air and it should support viable rural communities (Sunder; 2006). Human has inseparable association with plants which are playing a most crucial role in maintaining the eco-system and environment balance besides checking environment pollution and purifying air. But susceptibility to various pests and diseases became important constraints for successful growing of these crops resulting in many cases complete damage to the crops. The pests viz., insects, pathogens and nematodes have been causing enormous losses to the crops amounting to 20-30% in the country (Gupta et al. 2010).

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. Among the various crops, in vegetables, the number of plant protection chemicals is used with maximum amount due to intensive application for the purpose of protecting them from attack of several insect-pests and diseases. Hence, the special emphasis was given in this study to identify the problems faced by the vegetable growers in application of pesticides on vegetable crops during and after application of pesticides.

## METHODOLOGY

The study was conducted 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, North 24 Parganas district was selected among the 18 agricultural districts of the State purposely based on its' higher area coverage in vegetable cultivation. Out of 21 blocks of North 24 Parganas district, one block (i.e Habra) was randomly selected at the second stage of sampling. In the selected block (Habra) a relatively homogenous field cultivated with vegetable crops was chosen on the basis of the opinion of the agricultural input retailers. The farmers who were growing vegetables 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. The data were collected by personal interview method by using local language (Bengali) for getting their exact response and simple percentage method was used for analysis of data statistically to reach at meaningful results and conclusion.

## RESULTS AND DISCUSSION

### Level of education

**Table 1 : Distribution of respondents according to their level of education** n=400

Sr. No.	Level of Education	No.	Per cent
1	Illiterate	08	02
2	Primary level	288	72
3	Secondary level	52	13
4	Higher secondary level	32	08
5	Graduate and above level	20	05

The study showed that the maximum number of respondents (72%) obtained primary level of education. Among all the respondents two per cent were illiterate. It indicated that almost all the respondents (98%) had the education which revealed the districts overall literacy percentage of the farmers. Only 8 per cent of respondents

had upto higher secondary level of education, 13 percent of respondents had secondary level of education whereas, 5 per cent of respondents had graduate and above level of education which indicates a positive sign of agriculture because they are the good adopter of agricultural technologies.

Vegetables cultivation needs proper scientific management, following crop rotation, sowing the seeds in proper time, dose and method of application of fertilizers and pesticides, methods of application of irrigation water etc. So, it is easy to say that educated persons in this field will be more suitable in dealing these activities in a better way.

### Own cultivable land and vegetable cultivable land

**Table 2 : Distribution of respondents according own cultivable land and vegetable cultivable land**

n=400

Own cultivable land (Bigha)	No.	Per cent	Vegetable cultivable land	No.	Per cent
Upto 1	40	10	Upto 10 Kathas	28	7
1.1-2	120	30	11-20 kathas	100	25
2.1-3	80	20	1.1 to 2 bighas	120	30
3.1-4	52	13	2.1 to 4 bighas	108	27
4.1-5	44	11	4.1 to 8 bighas	32	8
Above 5	64	16	Above 8 bighas	12	3
(20 katha=1 bigha, 3 bigha=1 acre and 2.5 acre=1 ha)					

#### (a) Own cultivable land

The study revealed that most of farmers (vegetable growers) in study area were marginal and small farmers according to classification of farmers on the basis of land possession (marginal farmers: upto1 acre, small farmers: 1-2 acres, semi-medium farmers: 2-4 acres: medium farmer: 4-10 acres and big farmers: above 10 acres). In the present study 10 percent respondents had upto 1 bigha (3 bighas = 1 acre) of land and 30 percent respondents had 1.1-2 bighas of land. One fifth percent of respondents (20%) had 2.1-3 bighas of land, 13 percent of respondents had 3.1-4 bighas of land and 11 percent of respondents had 4.1-5 bighas of land whereas only 16 percent of respondents had more than 5 bighas of land. The above findings strongly support the statement that "The population density of West Bengal is highest in India".

#### (b) Vegetable cultivable land

Vegetable cultivable land indicates the land which is mainly used for growing vegetable crops i.e cauliflower, ladies finger, bitter gourd, pointed gourd, brinjal and others in the present study. The study expressed that at the most 30 percent of respondents had 1.1- 2 bighas of vegetable

cultivable land whereas few of them (3%) had more than 8 bighas of vegetable cultivable land. Only 7 percent of respondents had upto 10 kathas (20 kathas=1 bigha) of that land, 25 percent had 11-20 kathas of land, 27 percent had 2.1-4 bighas of land and remaining 8 percent of respondents had 4.1-8 bighas of vegetable cultivable land. It is also seen that few of vegetable growers used their land for cultivation of paddy in rainy season, but the cultivation of vegetables was the main occupation.

**Experience in vegetable cultivation and pesticides application**

**Table 3 : Experience of respondents in vegetable cultivation and application of pesticides**  
n=400

Number of years engaged in vegetable cultivation	No.	Per cent	Number of years engaged in application of pesticides	No.	Per cent
Upto 5	12	03	Upto 5	36	09
6-10	184	46	6-10	60	15
11-15	84	21	11-15	112	28
16-20	72	18	16-20	84	21
21-25	32	08	21-25	44	11
26-30	16	04	26-30	64	16
Above 30	00	00	Above 30	00	00

**(a) Experience in vegetable cultivation**

The Table 3 indicates that nearly half of respondents (46%) had 6-10 years of experience in vegetable cultivation. Only three percent of respondents (3%) had upto 5 years of experience, over one-fifth percent of respondents (21%) had 11-15 years of experience, 18 percent of respondents had 16-20 years of experience, 8 percent of respondents had 21-25 years of experience and remaining 4 percent of respondents had 26-30 years of experience in vegetable cultivation. No respondent had experience above 30 years in vegetable cultivation commercially.

**(b) Experience in application of pesticides**

It is clear from the Table-3 that at the most 28 percent of respondents had 11-15 years of experience in using pesticides whereas 9 percent of respondents had upto 5 years of experience, 15 percent of respondents had 6-10 years of experience, 21 percent of respondents had 16-20 years of experience, 11 percent of respondents had 21-25 years of experience and remaining 16 percent of respondents had 26-30 years of experience. There were no respondent above 30 years of experience regarding pesticides use.

**Sources of information regarding use of pesticides**

**Table 4 : Sources of information regarding use of pesticides**  
n=400

Sr. No.	Sources	No.	Per cent
1	Retailers	400	100
2	Fellow farmers	288	72
3	Big farmers	204	51
4	Neighbours	168	42
5	Relatives	160	40
6	Others	36	9

All the respondents (100%) reported that (Table-4) they mainly got information in using pesticides from agricultural input retailers at the time of purchasing. Majority of respondents (72%) collected information from fellow farmers and it was a very traditional way of getting information. In the study area, 51 percent of respondents collected it from big farmers (opinion leaders) and over two-fifth of respondents (42%) collected information from neighbours (farming community). Exact two-fifth of respondents' (40%) source of information was relatives whereas 9 percent of respondents collected that information from other information sources these were Agricultural Development Officers (ADOs), Krishi Prayukti Sahayaks (KPSs), experts of agricultural university, company personnel or other agricultural field functionaries cumulatively. After collecting the information from various sources, each respondent evaluated it in their level best and finally applied the appropriate one.

**Problems faced during application of pesticides and after application of pesticides**

**Table 5 : Problems faced by respondents during application of pesticides and after application of pesticides**  
n=400

Sr. No.	Problems during application of pesticides	No.	Per cent
1	Itching (skin irritation)	212	53
2	Weakness	100	25
3	Headache	84	21
4	Eye irritation	68	17
5	Breathing problem	56	14
6	Vomiting	32	8
7	Drowsiness	24	6
8	Weakness	156	39
9	Headache	140	35
10	Feeling of burning of skin	104	26
11	Bad odour	72	18
12	Vomiting	56	14
13	Drowsiness	52	13

The Table 5 shows that the harmful or hazardous

effect of pesticides to the health of the vegetable growers during and after application of pesticides. If pesticides are handled in accordance with the required safety precautions, acute poisoning should be removed upto a considerable level. But it is difficult to guard completely against the occasional and accidental exposure. The respondents of the study area reported that (table-5) they faced many types of problems during application of pesticides. The vegetable growers responded in various problems like- itching (53%), weakness (25%), headache (21%), eye irritation (17%) breathing problem (14%), vomiting (8%), and drowsiness (6%). Few of respondents expressed their view that many of problems arise due to application of pesticides in empty stomach and also reported that they always applied the pesticides after eating.

The Table 5 also indicates that 39 percent respondents had the problem of weakness, 35 percent respondents felt headache, 26 percent of respondents had the problem of feelings of burning of skin, 18 percent of respondents had problem of bad odour, 14 percent of respondents had the problem of vomiting and 13 percent of respondents felt drowsiness after the application of pesticides. The respondents opined that now-a days highly poisonous pesticides causing these problems upto a certain extent.

#### Chemicals created more problems after application of pesticides

**Table 6 : Chemicals those created more problem after application of the pesticides (poisonous chemicals) n=400**

Sr. No.	Name of pesticides	No.	Per cent
1	Cymbush	192	48
2	Furadon	172	43
3	Thiodan	136	34
4	Folidol dust	112	28
5	Thimet	104	26
6	Metacid	60	15
7	Ekalux	56	14
8	Vapona	32	8

From the Table 6 , it is clear that at the most 48 percent of respondents reported that Cymbush was the most poisonous chemical whereas at the lowest 8 percent of respondents replied about poisonous effect of Vapona. Other chemicals in this respect were- Furadon (43%), Thiodan (34%), Folidol dust (28%), Thimet (26%), Metacid (15%) and Ekalux (14%).

#### CONCLUSION

The study reveals that vegetable growers were facing various health problems in pesticides use. The main problems faced by the vegetable growers during application of pesticides were itching, weakness, headache, eye irritation, breathing problem, vomiting and drowsiness whereas the main problems after application of pesticides were weakness, headache, feelings of burning of skin, bad odour, vomiting and drowsiness. Pesticides are poisonous substances; their use and misuse are cause of soil, air and water pollution as well as cause of health hazard of man and animal. To save the environment and to protect the health of man and animal various precautions are needed to follow. For proper use of chemicals especially more emphasis should be given on using recommended dose of chemicals and application should be done on the basis of requirements. Application of chemical pesticides should be the last option, not first (at first farmers should go to other IPM measures). In case of pesticides poisoning call a physician immediately. Awaiting the physician's arrival, apply the first aid.

Above all, Govt. extension agencies, company personnel and NGOs should conduct more awareness programmes for enhancing farmers' knowledge level about various pesticides and their proper use for escaping from the hazardous effects of chemicals and to stay healthy themselves and to sustain a healthy environment which is the base of sustainable agriculture.

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