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Research Article

ENVIRONMENT EFFECTS OF PESTICIDES IN DIFFERENT COMPARTMENTS OF AGRICULTURE

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ABSTRACT

An agricultural industry perspective, pesticides are an important component of economic and effective pest control and their continued use is essential. With the benefits of increased knowledge and experience, it is apparent that these products must no longer be used as they were in the past. All farm chemicals must be utilized strategically in the farming system and only be applied with care by competent operators. We all benefit from farm chemicals and therefore we all have a responsibility to ensure that these benefits are maximized, while any adverse effects are minimized.

INTRODUCTION

It was evidently proved during the study that pesticides pose a serious effect on environment, crops, soil, water, rodents and pests, etc. but the most hazardous and ill effect of pesticides was observed on human beings which, lead to various health problem such as skin disease, cancers, lung disease, infertility, birth defects etc.

Objective

1. To study the socio-economic status of selected respondents.
2. To identify environment effects of pesticides in different components of agriculture.
3. To identify the pesticides used in the field (how many time) (what quantity) (recommended dose used or not).

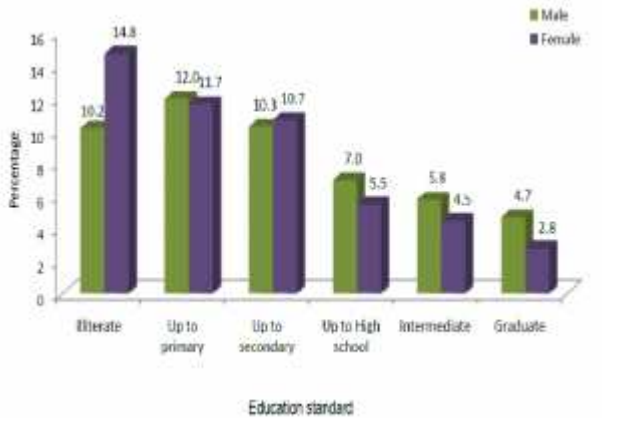
METHODOLOGY

The study was conducted in Kanpur district. Four blocks were selected out of ten block in Kanpur district. 30 villages were randomly selected from four selected block in Kanpur district. 600 sample size were selected (300 M + 300 F). Dependent and Independent variables were used such as age, education, cast, Knowledge, environmental effect, crop spray, symptom etc. The statistical tools were used such as paired 't' test, chi-square etc.

RESULT

Table 1 Distribution of respondents according to education

Education	Male	Female	Total
Illiterate	61 (10.2)	89 (14.8)	150 (25.0)
Up to Primary	72 (12.0)	70 (11.7)	142 (23.7)
Up to secondary	62 (10.30	64 (10.7)	126 (21.0)
Up to High School	42 (7.0)	33 (5.5)	75 (12.5
Intermediate	35 (5.8)	27 (4.5)	62 (10.3)
Graduate	28 (4.7)	17 (2.8)	45 (7.5)
Total	300 (50.0)	300 (50.0)	600 (100.0)
χ^2	10.088		P > 0.05



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It was positive and significantly related with the knowledge of respondent about side effects of pesticides. It means that the farmers with higher education are subjected to acquire knowledge about side effects or pesticides. It depicts that the education is an important and essential factor for an innovative, progressive and knowledgeable farmers. In he present study education in the form of schooling was taken into account to ascertain the level of education of farmers. This may be due to the fact that educated farmers are sensitive to the hazards caused by improper, excessive and careless use of pesticides. They follow the instructions related to the different operations while using pesticides. They also properly read and follow the literature given with pesticides. This may be helpful to gain in knowledge to side effects of pesticides on health as well as plant.

Table 2 Knowledge of pesticides in soil contamination

Pesticide in soil contamination insecticide	Male		Female		χ^2
	Yes	No	Yes	No	
DDT	254 (42.3)	46 (7.7)	221 (36.8)	79 (13.2)	11.005**
Aldrin	193 (32.2)	107 (17.8)	90 (15.0)	210 (35.0)	70.954**
Phosphours	221 (36.8)	79 (13.2)	212 (35.3)	88 (14.7)	0.672
Phosphorus	221 (36.8)	79 (13.2)	212 (35.3)	88 (14.7)	0.672
Urea	145 (24.2)	155 (25.8)	108 (18.0)	192 (32.0)	9.356**
Nitrogen bound	192 (32.0)	108 (18.0)	165 (27.5)	135 (22.5)	5.042*
Herbicide					
Carbetamide	215 (35.8)	85 (14.2)	206 (34.3)	94 (15.7)	0.645
Dichlorprop 24-D	205 (34.2)	95 (15.8)	225 (37.5)	75 (12.5)	3.283
Bacteria					
Bacilluthurin	110 (18.3)	190 (31.7)	139 (23.2)	161 (26.8)	5.774
Genesis	95 (15.8)	205 (34.2)	86 (14.30	214 (35.7)	0.641

Many of the chemicals used in pesticides are persistent soil contaminants, whose impact may endure for decades and adversely affect soil conservation. The use of pesticides decreases the general biodiversity in the soil. Not using the chemicals results in higher soil quality,[39] with the additional effect that more organic matter in the soil allows for higher water retention. Depending on the chemical nature of the pesticide, such processes control directly the transportation from soil to water, and in turn to air and our food. Breaking down organic substances, degradation, involves interactions among microorganisms in the soil. Sorption affects bioaccumulation of pesticides which are dependent on organic matter in the soil. Weak organic acids have been shown to be weakly sorbet by soil, because of pH and mostly acidic structure. Sorbed chemicals have been shown to be less accessible to microorganisms.

Table 3 Knowledge of pesticides in soil contamination

Pesticide in water contamination	Male		Female		χ^2
	Yes	No	Yes	No	
Phosphorus	205 (34.2)	95 (15.8)	200 (33.3)	100 (16.7)	0.190
Nitrogen	172 (28.7)	128 (21.3)	114 (19.0)	186 (31.0)	22.476**
Metals	115 (19.2)	185 (30.8)	132 (22.0)	168 (28.0)	1.989
Malathion	220 (36.7	80 (13.3)	290 (48.3)	10 (1.7)	64.052**
Pathogens	100 (16.7)	200 (33.3)	192 (32.0)	108 (18.0)	56.467**
Sediment	114 (19.0)	186 (31.0)	126 (21.0)	174 (29.0)	1.000
Salt selenium	95 (15.8)	205 (34.2)	136 (22.7)	164 (27.3)	11.833**
Organic compounds	128 (21.3)	172 (28.7)	225 (37.5)	75 (12.5)	64.747**
Heavy metals	130 (21.7)	170 (28,.3)	155 (25.8)	145 (24.2)	4.177*
Acids	200 (33.3)	100 (16.7)	171 (28.5)	129 (21.5)	5.939*
Oil	196 (32.7)	104 (17.3)	180 (30.0)	120 (20.0)	1.824
Dairy farming	175 (29.2)	125 (20.8)	120 (20.0)	180 (30.0)	20.172**
Liquid waste disposal	162 (27.0)	138 (23.0)	130 (21.7)	170 (28.3)	6.832*

Several studies have found no evidence of sickness or infection as a result of exposure. However, some products with Bt have caused eye and skin irritation. In one study, rats breathed in very high doses of concentrated Bt. Some had runny noses, crusty eyes, and goose bumps. Others were less active or lost weight.

Most sources of water contamination in the industrialized world come from chemical pollution, either from the dumping of chemicals onto the ground or down drains, or through accidental spills. Oil spills, for instance, may occur from wells or ships and can contaminate water for miles from the spill site. Industrial plants may also dump wastes into water, although this is less common due to tighter government regulations regarding disposing of hazardous materials.

Table 4 Knowledge of environmental effect of pesticide in crop spraying contamination

Pesticide in crop spraying contamination Pesticides	Male		Female		χ^2
	Yes	No	Yes	No	
Metal sodium	238 (39.7)	62 (10.3)	108 (18.0)	192 (32.0)	115.379**
Nitrogen fixation	185 (30.8)	115 (29.2)	124 (20.7)	176 (29.3)	24.829**
Methyl parathion	148 (24.7)	152 (25.3)	234 (39.0)	66 (11.0)	53.288**
Pentachlorophenol	180 (30.0)	120 (20.0)	255 (42.5)	45 (7.5)	47.022**
Insecticides					
DDT	285 (47.5)	15 (2.5)	164 (27.3)	136 (22.7)	129.568**
Chlorpyrifos	164 (27.3)	136 (22.7)	176 (29.3)	124 (20.7)	0.977
Clothianidin	175 (29.2)	125 (20.8)	212 (35.3)	88 (14.7)	9.965**
Herbicides					
24-D	189 (31.5)	111 (18.5)	210 (35.0)	90 (15.0)	3.299
Glyphosate	112 (18.7)	188 (31.3)	145 (24.2)	155 (25.8)	7.412**
Propanol	130 (21.7)	170 (28.3)	260 (43.3)	40 (6.7)	123.809**
Fungicides					
Copper compounds	145 (24.2)	155 (25.8)	230 (38.3)	70 (11.7)	51.378**
Chlorothalonil	160 (26.7)	140 (23.3)	113 (18.8)	187 (31.2)	14.847**
Ziram	106 (17.7)	194 (32.3)	130 (21.7)	170 (28.3)	4.023*

This nitrogen-fixing bacteria is most commonly found near the roots of legumes. Legumes are plants such as soybeans and garden peas. The bacteria and the plants have a relationship that is beneficial for both. You may remember from ecology that when two species live together, it's known as symbiosis. There are several types of this close, long-term interaction between two different species. In the case of nitrogen-fixing bacteria and legumes, both species benefit from the interaction, meaning that it is mutualism. The nitrogen-fixing bacteria benefit because they have a safe place to live amongst the roots of the plants, and the legumes benefit because they basically have an unlimited source of useable nitrogen. The plant does use some energy in order to provide a good home for the bacteria, but this expense is well worth it for the plant because of the nitrogen produced by the bacteria.

Table 5 Effect of pesticides on birds/animals

Birth/Animal Rodenticides	Male		Female		χ^2
	Yes	No	Yes	No	
Bromethalin	221 (36.8)	79 (13.2)	210 (35.0)	90 (15.0)	0.997
Zinc phosphide	280 (46.7)	20 (3.3)	250 (41.7)	50 (8.3)	14.555**
Cholecalciferol	158 (26.3)	142 (23.7)	122 (20.3)	178 (29.7)	8.679**
Worfarin	182 (30.3)	118 (19.7)	142 (23.7)	158 (26.3)	10.735**
Diphacinone	130 (21.7)	170 (28.3)	140 (23.3)	160 (26.7)	0.673
Chlorophacine	148 (24.7)	152 (25.3)	120 (20.0)	180 (30.0)	5.287*

Birds exposed to sub lethal doses of pesticides are also afflicted with chronic symptoms that affect their behaviour, reproduction and nervous system. Weight loss, increased susceptibility to predation, decreased disease resistance, lack of interest in mating and defending territory and abandoning of nestlings have been observed as side effects of pesticides exposure Caribbean island of Martinique due to its massive application on bananas plantations.

Table 6 Disadvantages of using pesticides

Disadvantage	Male		Female		χ^2	P-level
	Yes	No	Yes	No		
Ground water contamination	235 (39.2)	65 (10.8)	240 (40.0)	60 (10.0)	0.253	>0.05
Poisoning hazard and health effect	251 (41.8)	49 (8.2)	202 (33.7)	98 (16.3)	21.634**	<0.01
Environmental pollution	210 (35.0)	90 (15.0)	200 (33.3)	100(16.7)	0.770	>0.05
Residues in food for human and feed livestock	218 (36.3)	82 (13.7)	265 (44.2)	35 (5.8)	23.454**	<0.01
Crop growth low	281 (46.8)	19 (3.2)	285 (47.5)	15 (2.5)	0.499	>0.05

Pesticides have also been shown to disrupt the balance of an ecosystem. In many situations when a pesticide is used, it also kills non-pest organisms. This can drastically alter the natural balance of the ecosystem. By removing non-pest organisms, the environment can be changed to favour the pest. In addition to causing harm to wildlife, pesticides that travel from their original location are known to cause harm to humans. Human exposure to pesticides has caused poisonings, the development of cancer and the deaths of between 20,000 and 40,000 people worldwide each year.

CONCLUSION

The many problems by pesticides like as soil contamination, water contamination and environment effect but most for the effect pesticides on number like. Neurological health effects such as memory loss, loss of coordination, reduced speed of response to stimuli, reduced visual ability, altered or uncontrollable mood and general behaviour, and reduced motor skills. These symptoms are often very subtle and may not be recognized by the medical community as a clinical effect. Other possible health effects include asthma, allergies, and hypersensitivity and pesticide exposure is also linked with cancer, hormone disruption and problems with reproduction and fetal development.

Recommendation

1. Trap plants–Some insects, if given a choice, will opt to feed on one type of plant or another. For example: maggots prefer radishes over corn and tomato worms prefer dill over tomatoes. Therefore, certain plants can be strategically placed so that they lure harmful insects away form plants one wish to protect. These are commonly referred to as “trap plants”. Once the trap plant has become infested, the target insect can be picked off and dropped in soapy water or the entire plant can be pulled up and disposed of.
2. Neem–Ancient Indians highly revered neem oil as a powerful, all-natural plant for warding off pests. In fact, neem juice is the most powerful natural pesticide on the planet, holding over 50 natural insecticides. This extremely bitter free leaf can be made in a spray form, or can be bought from a number of reputable companies.
3. To make your own neem oil spray, simply add ½ an ounce of high quality organic neem oil and ½ teaspoon of a mild organic liquid soap (1 use Dr. Bronners Peppermint) to two quarts of warm water. Stir slowly. Add to a spray bottle and use immediately.

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