A Project report on

"To study the impact of Pesticides use in agriculture on environment and health."

Submitted for

Student Study Project

(Jignasa 2021-2022)

Commissionerate of Collegiate Education,

Hyderabad, Telangana

By

B.Sc Life Sciences II and I Year Students

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CERTIFICATE

This is to certify that the work **"To study the impact of Pesticides use in agriculture on environment and health."** is submitted as a part of Jignasa-student study project. This work is based on study from various sources by students of BSC BZC II Year under my guidance and supervision.

(D. Neeli Vasavi)

Supervisor

DECLARATION

We hereby declare, that the Project report entitled, **"To study the impact of Pesticides use in agriculture on environment and health."** written and submitted to Commissionerate of Collegiate Education Hyderabad, Telangana.

This is our original work & conclusions drawn are based on data collected by us.

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Date: 22-12-2021

Place: Korutla

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We thankful to our Chemistry Department and friends for bearing us and providing us all moral help during the entire period of our work.

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CONTENTS

"To study the impact of Pesticides use in agriculture on environment and health."

1. Introduction:

Human started growing plants almost 10000 BC in the fields for food and he moved from living in trees to open land. However, the demand for food increased, to meet the demand for more food, the farmer started using fertilizers and protecting the crops from pathogens. Plant pathogens are called as pests. Plant diseases caused by pests became a big problem, pests entry in to the crops field is to be restricted, otherwise wipe off the entire crop. Human have utilised pesticides to protect their crops. The 1st known pesticide was Elemental sulphur Dust.

A pesticide is a any substance or a mixture of substances intended for preventing, Destroying, Repelling or mitigating any pest. A pesticide may be a chemical substance, Biological agent antimicrobial disinfectant or device used against any pest. Pests include insects, Plant pathogen insects, Molluscs, Birds, Mammals, Fish nematodes and microbes
Ex:-DDT, BHC, Zinc Phosphide, Mercuric Chloride, Dinitro Phenol etc...

2. LITERATURE REVIEW:

Since before 20BC, humans have utilized pesticides to protect their crops. The first known pesticide was elemental sulphur dusting used in ancient summer about 4500 years ago in ancient Mesopotamia. By the 15th century, toxic chemicals such as arsenic, mercury and led being applied sulphate was extracted from tobacco leaves for use an insecticide. The 19th century saw the introduction of two more natural pesticides, pyrethrum, which is derived from chrysanthemums, rotenone which is derived from the roots of tropical vegetables.

In 1940s manufactures began to produce large amounts of synthetic pesticides and their use become wide spread. Some sources consider the 1940s and 1950s to have been the start of the "Pesticide era" Pesticide use has increased 50 field since 1950 and 2.3 million tonnes of pesticides are now used each year.

In 1960s it was discovered that DDT was preventing many fish eating birds from reproducing, which was a serious threat to biodiversity. The agricultural use of DDT is now leaned under the stock hold convention, but it is still used in some developing nations.

3. Significance:

As pesticides are hazardous and toxic to human health, any pesticide residue remaining in fruits and vegetables can pose danger to humans and cause certain disease. It is important to identify and quantify the pesticides which can injected by fruits and vegetables after pesticide spray

Pesticides are very hazardous and lethal for organisms as well as for humans. Pesticides also toxic to plants and many food crops, including fruits and vegetables contains pesticide residues after being washed or peeled.

A number of pesticides are highly toxic and even in very small quantities these pesticides can result in the death of humans and animals. Long term health problems such as respiratory,

memory disorder s, dermatological conditions, cancer etc have been known to be associated with pesticide exposure. The major source of pesticide exposure in children and infants is through diet.

The most common path way for pesticide to enter the body is orally, through mouth and the digestive system. Oral exposure may occur as a result of negligence, eating without proper hygiene after using pesticides.

4. Methodology:

i. Aim:

To Study the presence of insecticides or pesticides (Nitrogen Containing) in various fruits and vegetables.

ii. Material Required:

Mortar and pestle, beakers, funnel, glass rod, filter paper, china dish, water bath, tripod stand, fusion-tubes, knife, test-tube.

Samples of fruits, vegetables, alcohol, sodium metal, ferric chloride solution, ferrous sulphate crystals, distilled water and dilute sulphuric acid.

(We have purchased vegetables like radish, carrot, spinach, brinjal, potato, tomato, cauliflower, etc from the local market of Jagitial district head quarter)

iii. Procedure:

1. Take different kinds of fruit and vegetables and cut them into small piece separately.

2. Transfer the cut piece of various fruits and vegetables in mortar separately and crush them.
3. Take different beaker of each kind of fruits and vegetables and place the crushed fruit and vegetable in these beakers, and add 10ml of alcohol to each or these. Stir well and filter collect the filtrate in separate china dishes.

4. Evaporate the alcohol by heating china dishes one by one over water bath and let the residue dry in an oven.

5. Heat a small piece of dry sodium in a fusion tubes, till it melts. Then add one of the above residues from china dish to the fusion tube and heat till red hot. Drop the hot fusion tube in china dish containing about 110ml of distilled water. Break the tube and boil the contents of the china dish for about 5 minute to cool and filter solution. Collect the filtrate.

6. To the filtrate add 1ml freshly prepared ferrous sulphate solution and warm the contents. Then, add 2-3 drops of ferric chloride solution and acidity with the dil. Hydrochloric acid if a blue or green precipitate or colouration is obtained, it indicated the presence of nitrogen containing insecticide.

7. Repeat the test of nitrogen for residue obtained from other fruits and vegetable and record observation.

iv. Observation:

Sl. No	Name of the fruit or vegetables	Test for presence of nitrogen	Presence of insecticide/pesticide	Source
1	Tomato	+ve	Yes	Market
2	Grapes	+ve	Yes	Market
3	Carrot	-ve	No	Home
4	Potato	+ve	Yes	Market
5	Apple	+ve	Yes	Market
6	Radish	-ve	No	Home
7	Brinjal	+ve	Yes	Market
8	Spinach	+ve	Yes	Market
9	Orange	+ve	Yes	Market
10	Banana	+ve	Yes	Market
11	Cauliflower	+ve	Yes	Market
12	Pomegranate	+ve	Yes	Market
13	Beans	+ve	Yes	Market
14	Coriander	-ve	No	Home
15	Pea	+ve	Yes	Market
16	Bitter Guard	-ve	No	Home

5. Result and Analysis:

The vegetable tomatos, potato, brinjal, spinach, are found to contain nitrogenous pesticides or insecticides where as carrot and radish gave negative result. Among the fruits grapes, apple, orange, banana, which we have examined were found to contain the above said pesticide in them.

From the experiment conducted in our laboratory it can be seen that a large concentration of pesticides is injected and absorbed into the fruits or fruits and vegetables may be exposed to pesticide spray.

6. Conclusion:

Most of the vegetables and fruits which we have examined in the laboratory were found to contain nitrogen bearing pesticides or insecticides.

As nitrogen containing pesticides present in fruits and vegetables cause health problems such as respiratory, memory disorders, cancer, depression neurological deficiency, miscarriages and birth defects in human being.

Pesticide exposure in children results in brain cancer, leukaemia and birth defects. hence we are going to bring awareness to the farmers of nearby villages of Jagtial district about minimization of pesticides usage as they are very much harmful for health.

From the experimental data, we came to know that most of the fruits and vegetables contain pesticide residues. Hence we are going to advice to students to use the fruits after washing with plenty of water and vegetables after soaking in salt water for few minutes.

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