USE OF PESTICIDES IN AGRICULTURE AND THEIR EFFECT ON FRUITS AND VEGETABLES

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Abstract: *In recent years, people have been exposed to several types of substances with broad spectrum due to the rapidly evolving technology. One of these chemical substance groups are pesticides. Pesticides have been an essential part of agriculture to protect crops and livestock from pest infestations and yield reduction for many decades. Despite their usefulness, pesticides could pose potential risks to food safety, the environment, and all living things. Concern about the environmental impact of repeated pesticide use has prompted research into the environmental fate of these agents, which can emigrate from treated fields to air, other land, and water bodies. The importance of agricultural pesticides for developing countries is undeniable. However, the issue of human health and environmental risks has emerged as a key problem for these countries in accordance to a number of studies. In the last five decades, pesticide usages increased the quantity and improved the quality of food. However, with the increasing amounts of their usage, concern about their adverse effects on nontarget organisms, including human beings, has also grown. The purpose of this publication is to explain the nature of pesticides and their history, classification, risks, and effects on health and the environment.*

Key Words: *organic pollution, health concern, environment, pesticides, environmental pollutant*

1. INTRODUCTION:

In the last three decades, there has been an increasing global worry over the public health impacts attributed to environmental pollution. It was the industrial revolution that gave birth to environmental pollution as we realize it today. Populations of developing countries are particularly vulnerable to toxic pollution resulting from industrial processes. The term pesticide covers a wide range of compounds including insecticides, fungicides, herbicides, rodenticides, molluscicides, nematicides, plant growth regulators and others. The introduction of synthetic insecticides - organophosphate (OP) insecticides in the 1960s, carbamates in 1970s and pyrethroids in 1980s and the introduction of herbicides and fungicides in 1970s - 1980s contributed greatly in pest control and agricultural output. Ideally a pesticide must be lethal to the targetted pests, but not to non-target species, including man. Unfortunately, this is not, so the controversy of use and abuse of pesticides has surfaced. The rampant use of these chemicals, under the adage, “if little is good, a lot more will be better” has played havoc with human and other life forms.The use of pesticides is a standard practice in the agricultural production of food products. Pesticides protect yields by limiting losses due to, competition with other weeds and from attack by insects or plant diseases etc. These chemicals have played a central role in the improved yields and the quality of the products that we seen over the last fifty years.

2. REVIEW OF LITERATURE:

The production of pesticides started in India in 1952 with the establishment of a plant for the production of BHC near Calcutta, and India is now the second largest manufacturer of pesticides in Asia after China and ranks twelfth globally

Farmers of the olden days relied on the use of organic farming techniques and methods in cultivating their crops. Natural methods such as crop rotation, companion planting and the use of compost were all employed to ensure a bountiful and safe harvest. As commercial farming slowly gained popularity over organic farming, the natural methods were replaced with the ones using chemicals for fertilizers, pesticides and weed killers. The promise of higher yield in a shorter period of time is the selling point of these chemicals. Pesticides are used for a number of decades. People have been fighting with pests for centuries. Chemical experiments during the late 19 th and early 20 th centuries allowed human beings to develop modern pesticides. Producing new mixtures with a right proportion made it possible to control unwanted organisms. Paris green was one of the first chemical pesticides produced, marking the beginning of chemical insecticide use in the United States in 1867. The availability of dichlorodiphenyltrichloroethane (DDT), starting in 1945 for civilian/ agricultural usage, opened a new era of pest control, leading to not only its extensive usage but also the development of numerous other synthetic organic insecticides. DDT was especially favored for its broad-spectrum activity against insect pests of agriculture. Unfortunately, its properties of persistence, along with its broad-spectrum biological activity against pests and beneficial insects alike, made it a poor choice for use in agriculture after World War II . Except DDT, aldrin, BHC,

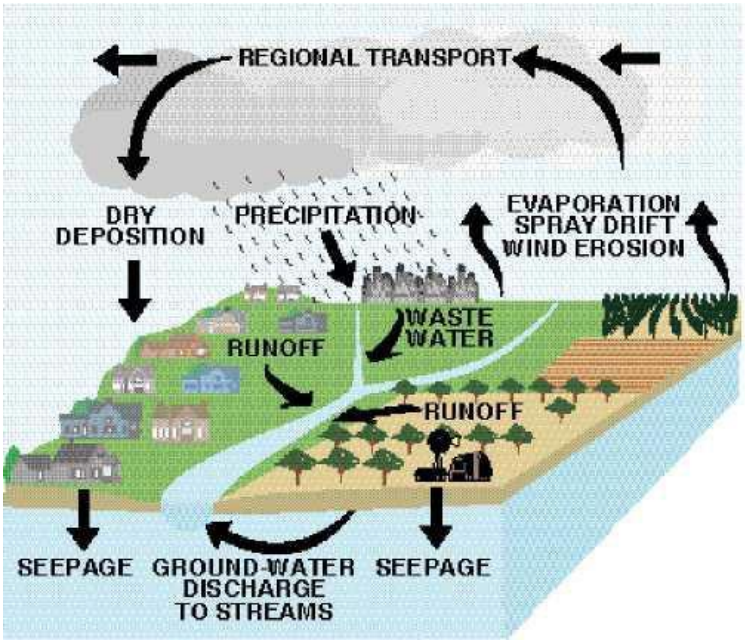
endrin, dieldrin, and 2,4-D began to be used after World War II. These new chemicals were effective, inexpensive, and enormously popular . However, with continuous usage of pesticides, some pests developed resistance to them. As a result, nontarget plants and animals were damaged;

3. MATERIAL AND METHOD:

Fruits and vegetables are highly nutritious and form as key food commodity in the human consumption. They are highly perishable due to their low shelf life. These food commodities are reported to be contaminated with toxic and health hazardous chemicals.

When a fruit ripens, many biochemical changes occur. The most obvious of these is the color, aroma and firmness of the fruit. Although illegal in many countries, calcium carbide (CaC2) is used to accelerate the ripening process of fruits. Calcium carbide is the chemical used for the production of acetylene gas during gas welding. But nowadays this processis widely used by the Indian farmers or the fruit vendors for ripening of many fruits like mango, banana, papaya, plums, chiku, apples, avocados, melons, peaches, pears, and tomatoes, pineapples, dates, etc. This allows growers to pick fruit sooner and to handle fruits when they are green and less susceptible to bruising or damage. Calcium carbide combines with moisture in the air to release a gas called acetylene, which acts the same way as the natural ethylene fruits produce when ripening. The vegetables that are heavily-laden with pesticides include lettuce, spinach, peppers, celery, potatoes, carrots, cucumbers, green beans, cauliflower, tomatoes, sweet potatoes, eggplant, broccoli,and mushrooms . Among all of these, celery and lettuce contain the most pesticides while broccoli and eggplants contain the least amounts. Reducing the use of pesticide strategies will not help us protect human health, because there are enormous kinds of pesticides in the market to be sold. In this case, people need to go towards ecological farming. This is a critical act in avoiding all risks. Protecting crops via a multilevel approach will help us increase the heterogeneity of the agricultural areas and this will provide a natural habitat for pollinators and natural pest control species. Thus, a functional biodiversity can be created if we can achieve an active vegetation management. A variety of crop types and cultivars increase both the fertility of soils and resistance to pests. Natural control agents, such as beneficial bacteria, viruses, insects, and nematodes, can be used in improving crop protection successfully .

Fig. 1 PESTICIDES IN THE ATMOSPHERE AND WATER



4. DISCUSSION:

Pesticides are chemical substances used on agricultural land but also in private gardens, and in other public areas . The use of pesticides for crop protection is expected to increase based on a growing world population and the need for more food supplies. While pesticides increase agricultural production, bioaccumulation through the food chain can eventually become a risk to mammals because pesticides induce certain negative effects . Some parts of pesticides sprayed on crops will remain in farmland, but some of them will enter the surrounding soil, water, and air . As artificial organic compounds, pesticides can remain in the environment for many years and may be transported over a long distance Pesticide residues in soil and water are significant environment threats and have been classified as carcinogen pollutants in many countries . Hence, the excessive application of these compounds over the past half-century has posed serious risks to human health. pesticide residues detected in grains , milk, vegetables , and fish .Although the benefits of pesticides have been immense, humans and other living organisms are often exposed to them in the environment Several epidemiological studies reported in the last two decades suggest harmful effects of

pesticides on human health, including a possible relationship between pesticide use and cancers, such as non-Hodgkin's lymphoma, leukemia, and various types of solid tumor . Public health concerns regarding the improper use of pesticides and poison have increased in recent years.

5. CONCULSION:

On the above research the following things come out in knowledge Fruits that are attractive on the outside as they may not be good for health. Fruits that have a uniform colour, for example, a bunch of bananas having a uniform colour, are more likely to have been artificially ripened. as well as Wash the fruits thoroughly before consuming. Keep them under running water for a few minutes, so that the chemicals are washed away.not eat fruits sold during their off season, as they are more likely to be artificially ripened.While eating mangoes and papayas, always remove the peel before cutting fruits into pieces.And Select fruits and vegetables without spots or necrosis (lesions) and any abnormality.And the most important thing Purchase fruits and vegetables from known dealers. And always remember Peeling of fruits before consumption and vegetables before cooking will reduce exposure to pesticide. And the last thing is Do not buy and consume cut fruits from open market. Do not wash fruits and vegetables with detergents as they may get absorbed inside. Only wash with fresh water. You can keep the chemical from entering your body by consuming organic vegetables. Organic farming is a form of agriculture that relies on techniques such as crop rotation, green manure, compost, and biological pest control. If you cannot afford its cost, make sure to select the vegetables that are least contaminated with pesticides or better yet, create your very own organic garden to ensure that you and your family can have chemical-free veggies whenever you want. This way, you will no longer worry about safety and health.

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