Article: RT1116

Biotica Research Today
Vol 4:10
2022
714
716

How to cite this article?
Karthikeyani and Parameswari , 2022. Pesticides Impact on Wildlife. Biotica Research Today 4(10):714-716.

Pesticides Impact on Wildlife

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Open Access

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Keywords
Acute Poisoning, Chronic Poisoning, Pesticide poisoning, Wildlife

Abstract

In modern agriculture, to increase the yield and to reduce the pest disease incidence on plants uses of pesticide have been increased. Now-a-days the pesticides are used in households for different purpose without knowledge of its impact on environment especially in wildlife. As a result of Bioaccumulation and Biomagnification of pesticide residue, it causes various acute and chronic symptoms in wild animals especially in birds. So it is essential to have knowledge about the harmful effects of pesticide. In this paper routes of pesticide residue in wildlife as well as some effects of pesticide residue have discussed.

Introduction

The word "wildlife" must encompass all species of flora and fauna in every ecosystem. There is wildlife in every habitat. Different types of animals can be found in deserts, plains, meadows, ocean, forests, and other places, even in the most developed urban areas. Each species occupies a particular niche that takes into account its preferences for food, shelter, space, nutrition and breeding sites. A species habitat is the area where it can fulfill all of its needs for survival.

Pesticide on Wildlife

Pesticides are used to control insects and pests that attack and injure crops. For ages, many insecticides have been employed to protect crops. Pesticides help the crops, but they can have a harmful effect on the ecosystem. The degradation of biodiversity could result from the overuse of pesticides (Tudi *et al*., 2021). The existence of many species, including birds and aquatic life, is threatened by hazardous chemicals. Pesticides are a risk for the stability of the world and the sustainability of the environment.

Insecticides, herbicides, and chemicals that kill insects, moulds, weeds are the examples of pesticides. It helps in managing parks, housing developments, sports fields, golf courses, pavements, and roadside areas; they are extensively employed on farms, in horticulture, residential gardens, and household items.

To assess the potential effects of a particular pesticide on a particular species, it is essential to have an idea about biological and ecological interactions of any given plant or animal, as well as the function that species performs in the ecosystem.

Pesticides may affect wildlife directly or indirectly through drift, secondary poisoning, leaching into nearby bodies of water, or groundwater contamination. Animals may become poisoned by pesticides after acute or chronic exposure. Some

Article History
Received on: 09th October 2022
Revised on: 23rd October 2022
Accepted on: 24th October 2022

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animals might be directly sprayed while others might eat vegetation or animals that have been exposed to pesticides.

Pesticide Residue on Wildlife

The pesticide's residue spreads through way of soil, water, food, or air; it may have a negative, neutral, or positive effect on any species of wildlife or its habitat in an ecosystem. The analysis of presence of pesticide residues in animals is necessary, because it provides evidence of the threat that pesticides may pose to wildlife. Quantitative assertions are problematic, yet they are also employed to assess the level of environmental contamination in wildlife.

Acute Poisoning of Pesticides

Short-term exposures of harmful chemicals can cause loss of life of many species in wildlife or it may cause serious diseases to it (Damalas and Eleftherohorinos, 2011). Many aquatic species of Marine, Pond, River ecosystem are affected by exposure to harmful pesticide by surface runoff or spray drifted into ponds, streams, or rivers are one example of acute wildlife poisoning (Achema and Alhassan, 2022). One more example is bird population declines with feeding of harmful pesticide-treated grains, seeds.

Chronic Poisoning of Pesticides

Chronic poisoning may develop from prolonged exposure of wildlife to pesticide concentrations that are not immediately fatal. The most well-known instance of a long-term impact on wildlife is the organochlorine insecticide DDT's influence on reproduction in some birds (Parameswari *et al*., 2020).

Mortality in birds occurs by prolonged exposure to DDT (Figure 1) and other organochlorine pesticides like chlordane, dieldrin and endrin, has been linked (Parameswari *et al*., 2020).

Figure 1: Feeding of pray contains pesticide residue

Secondary Poisoning of Pesticide in Wildlife

When an animal eats a prey species that has pesticide residues, secondary poisoning may occur. The buildup and transport of persistent chemicals in wildlife food chains and birds of prey cause illness after eating an animal that is dead or dying from acute pesticide exposure, which cause Biomagnification and Bioaccumulation of pesticides in wildlife (Figure 2).

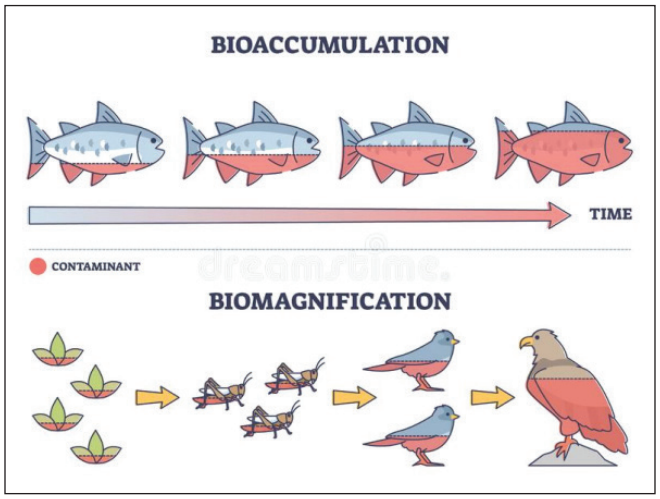

Figure 2: Difference between Bioaccumulation and Biomagnification

Indirect Effects of Pesticide Poisoning

Indirect effects of pesticides on animals may occur when a part of their habitat or food source is altered. Insecticides may drastically reduce the insect populations that are consumed by bird or fish species; herbicides may reduce the food, crop cover, and nesting sites of different species populations; and insecticides may have a negative impact on the beneficial insect pollinators that helps plants for pollination.

Effect of Pesticide on Some Species of Wildlife

Wild Plants

It is difficult to clearly link the decrease or extinction of wild plants to herbicide usage due to inadequate monitoring, but still it affects the non-target host plants.

Butterflies

Nearly 15 butterfly species showed reduction in population between 1985 and 2020, and these declines were correlated with regions where

pesticide usage was very high compare to other regions.

Earthworms

Herbicides and pesticides affect them through interfering with enzymatic processes, boosting mortality, lowering fertility and growth, and altering their feeding habitat.

Conclusion

The study on effects of pesticides on wild life was not discussed properly, so further studies needed in this field to have a wide knowledge about pesticides impact on wildlife. To reduce the impact of pesticide we can prefer some alternatives for pesticide like microbial control or bio control agents for controlling pest and diseases in plants.

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