Global Science Research Journals

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International Review of The Agricultural World

Opinion Article | Open Access

ISSN:2705-1447 Vol. 1 (2), pp. 1, August, 2022

Pollution caused by using agrochemicals to soil and microflora

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Received: 04-Jul-2022, Manuscript No. IRAW-22-73165; **Editor assigned:** 06-Jul-2022, Pre QC No. IRAW-22-73165 (PQ); **Reviewed:** 21-Jul-2022, QC No. IRAW-22-73165; **Revised:** 28-Jul-2022, Manuscript No. IRAW-22-73165 (R); **Published:** 04-Aug-2022, DOI: 10.15651/2705-1447.22.1.006.

DESCRIPTION

Agrochemicals (fertilizers and various pesticides) are rigorously used in agriculture to bridge the gap between food production and consumption. Agrochemicals are chemical agents that are used on farmlands to improve nutrient levels in fields or crops. They boost crop growth by eliminating pests. They are the generic term for chemicals like fertilizers, pesticides, and insecticides. Initially, these chemicals were used to boost crop production. However, their overuse has now had an impact on the environment. Agrochemicals leach into the surrounding land and water bodies, where they enter the food chain and cause bioaccumulation.

Soil health management is critical for ensuring sustainable agricultural production and biodiversity conservation. Soil microflora is an important component of agricultural ecosystems that not only plays a role in basic soil processes but also actively contributes to soil fertility and crop productivity. Fertilizers and pesticides have long persistence in soil, so they are bound to affect soil microflora, disrupting soil health. Soil amendment with fertilizers and pesticides has a significant impact on a variety of soil functions and properties, including rhizodeposition, nutrient content of bulk and rhizospheric soil, soil organic carbon, pH, moisture, soil enzyme activity, and many others. All of these factors, together with the direct effects of fertilizers and pesticides such as toxicity and altered substrate availability profiles of the soil, cause an indirect shift in the population dynamics of soil microflora. Weather conditions during agrochemical application also have an impact on agrochemical spread. As a result, the amount of inhalable agrochemicals in the environment varies with the season. To maximize agricultural output, there is an urgent need for careful use of natural resources and the use of hazardous compounds in agriculture that are thought to pose potential challenges to our natural agro-ecosystem.

Agricultural pollution refers to agricultural waste products that contribute to pollution, degradation and harm to humans and their economic interests, as well as the environment and surrounding ecosystems. Agrochemicals may pollute food and drinking water, putting human health at risk. Agrochemical exposure has negative health effects such as nervous system damage and cancer. Persistent agricultural chemicals were also biologically magnified. However, the use of both natural and synthetic fertilizers can result in excess nutrients, which can cause health and water problems. Excessive fertilizer use is commonly referred to as agrochemical waste, and it can pollute food and groundwater crops. Nitrates are highly soluble and can enter water bodies quickly. Phosphate-rich soils and high phosphate levels in groundwater have been detected in several countries. Pesticides can be metabolized, excreted, stored, or bioaccumulated in the body fat of humans and animals. Chemical pesticides have been linked to a variety of negative health effects, including dermatological, gastrointestinal, neurological, carcinogenic, respiratory, reproductive, and endocrine effects.

CONCLUSION

Over-intensification of agriculture without considering the environmental consequences not only degrades soil but also causes crop deterioration. The modern, innovative crop protection system should be based on agro-technology and biological components, and it should result in a reduction in the chemical load on the plants and soil. Although it may appear impractical to completely eliminate the use of conventional fertilizers and pesticides in agriculture, non-traditional approaches can significantly reduce their use and contribute to ecological and environmental sustainability.