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Annals of Biological Research, 2021, 12 (S4): 020  
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ISSN 0976-1233  
CODEN (USA): ABRNBW

## Characteristics and uses of Pesticides in Agriculture

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### DESCRIPTION

Pesticides are poisonous compounds used to keep pests at bay. Herbicides, insecticides, and other pesticides are all included in the word pesticide (which may include insect growth regulators, termiticides, etc.) nematicide, molluscicide, pesticide, avicide, rodenticide, bactericide, insect repellent, animal repellent, antimicrobial, fungicide, and lampricide are some of the most common pesticides. Herbicides are the most frequent of them, accounting for nearly 80% of all pesticide use. Plant protection products (also known as crop protection products) are insecticides that protect plants from weeds, fungi, and insects in general.

Pesticides are chemicals (such as carbonate) or biological agents (such as a virus, bacterium, or fungus) that prevent, incapacitate, or kill pests. Insects, plant diseases, weeds, mollusks, birds, animals, fish, nematodes (roundworms), and bacteria that harm property, cause nuisance, or transmit illness, as well as disease vectors, are all examples of target pests. Pesticides offer advantages and disadvantages, such as possible harm to people and other creatures.

Pesticides are classified by their target organism (herbicides, insecticides, fungicides, rodenticides, and pediculicides see table), chemical structure (organic, inorganic, synthetic, or biological (bio pesticide), and physical state (e.g., organic, inorganic, synthetic, or biological (bio pesticide). Microbial pesticides and biochemical pesticides are examples of bio pesticides. Plant-based insecticides, sometimes known as "botanicals," have been rapidly evolving. Pyrethroids, retinoid, nicotinoids, and a fourth category that contains strychnine and scilliroside are among them.

Chemical groups can be used to classify insecticides. Organ chlorines, organophosphates, and carbonates are three major insecticide families. Dichlorodiphenyl ethane, cyclodiene compounds, and other similar chemicals might be isolated from organ chlorine hydrocarbons (e.g., DDT). They work by interrupting the nerve fiber's sodium/potassium balance, forcing the nerve to transmit continually. Their toxicity varies significantly, but because of their persistence and propensity for bioaccumulation, they have been phased out. Organ chlorines were mostly superseded by organophosphate and carbonates. Both work by inhibiting the enzyme acetyl cholinesterase, enabling acetylcholine to continue to transmit nerve impulses forever and generating a range of symptoms like weakening and paralysis. Organophosphates are extremely harmful to vertebrates, and less toxic carbonates have been used in some circumstances to replace them. Carbamates are divided into two subclasses: thiocarbamates and dithiocarbamates. Herbicides in the phenoxy and benzoic acid families, triazines (e.g. atrazine), ureas (e.g. diuron), and chloroacetanilide families. Rather than grasses, phenoxy chemicals tend to specifically target broad-leaf weeds. Herbicides like phenoxy and benzoic acid act like plant growth hormones, causing cells to divide abnormally, crushing the plant's nutrition delivery system. Photosynthesis is hampered by triazines. Many routinely used herbicides, such as glyphosate, are not included in these families.

Pest control chemicals are often applied by dispersing the chemical in a solvent-surfactant solution (commonly hydrocarbon-based) to produce a homogenous formulation. The biological mechanism function or application technique of pesticides can be used to classify them. The majority of insecticides act by poisoning insects. Following

absorption by the plant, a systemic pesticide goes inside the plant. This migration is generally upward (*via* the xylem) and outward with insecticides and most fungicides. As a result, efficiency may improve. Bees and other pollinators may be killed by systemic pesticides, which poison pollen and nectar in blooms.

#### **CONCLUSION**

Pesticides are used to keep organisms that are harmful or destructive to their environment under control. They're used to eliminate mosquitoes that may spread illnesses like West Nile virus, yellow fever, and malaria, for example. They can also kill stinging insects such as bees, wasps, and ants, which can trigger allergic responses. Insecticides help protect animals from parasites like fleas, which can cause sickness. Human illness caused by moldy food or infected produce can be avoided with the application of pesticides. Herbicides can be used to eliminate weeds, trees, and brush off the side of the road. They can also eliminate invasive weeds that might harm the environment.