

PESTICIDE USE AGAINST PESTS

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Abstract

The article presents the current significance of chemical preparations used against pests of agricultural crops and the classification of pesticides.

Keywords: Productivity, plant, pest, insect, chemicals.

Introduction

One of the main factors in increasing yields in agriculture is the selective sowing of seeds of high-yielding varieties that are resistant to various diseases, pests and extreme conditions, as well as high-tech crop care.

It should be noted that despite the control measures taken, part of the expected harvest is still destroyed by harmful organisms. According to the statistical analysis of specialists, yield loss for all types of crops is 43.7%, including weeds 12%, pathogens 15.1% and pests 16.6%.

Sucking pests suck the sap of the plant, delaying its development, reducing quality and yield, and are also vectors of various infectious diseases. The waste of some insects (aphids and whiteflies) contaminates the leaves and other parts of the plant, thereby creating a favorable environment for the development of saprophytic fungi, as a result of which the process of photosynthesis is disrupted. Among the sucking pests, the spider mite is especially dangerous. The coincidence of the periods of restriction of early spring treatment with chemicals against spider mites, as well as its development and damage to the plant (April-May) leads to a delay in cotton ripening by 10-15 days and a loss of 15-20 percent of the yield.

The list of chemicals and their use against harmful organisms of agricultural crops is constantly increasing.

Pesticides are classified as follows:

Pesticides derived from inorganic substances (mercury, fluorine, sulfur, copper compounds, chlorates and borates);

Pesticides derived from organic matter are a very large group.

Pesticides of plant origin (pyrethrins, phytoncides, etc.);

Pesticides derived from microorganisms (bacteria, fungi and viruses).

According to the chemical composition of pesticides, it is classified as follows:

Organophosphate pesticides;

Organochlorine pesticides;

synthetic pyrethroids;

Pesticides containing derivatives of thio-, dithiocarbamic and carbamic acids;

Pesticides containing nitro derivatives of phenols;
 Mineral oils;
 Organic mercury compounds;
 Urea derivatives;
 Symm-triazines, etc.;

Pesticides can be classified according to the type of pest against which they are used:

Acaricides (acarus – mite) – against spider mites;
 Insecticides (insecta – insect) – against insects;
 Ovicide (ovum – egg) – against the eggs of insects and mites;
 Larvicides (larva – larva, worm) – against worms (larvae) of insects and mites;
 Aphids (aphis – plant aphids) – against plant aphids;
 Nematicides (nematos) – against nematodes;
 Limacides (lima – slugs) – against slugs;
 Zoocides, rodenticides (zoo-animals) - against rodents-pests;
 Molluscicides – against mollusks;
 Algaecides (algus – algae) – against algae;
 Arboricides (arbore – tree) – against undesirable trees and shrubs;
 Herbicides (herba – grass) – against weeds;
 Bactericides (Bacteria) – against bacteria;
 Fungicides (mushroom-mushroom) are pesticides used against fungi.

The classification of pesticides depending on the type of object of application is somewhat conditional, since many pesticides have the ability to exert different effects simultaneously against different harmful organisms (they kill both insects and larvae, and mites). For example, karbofos or karate have both insecticidal and acaricidal effects. Many herbicides exhibit arboricidal properties when the application rate increases, so they have the ability to destroy trees and shrubs. Preparations containing sulfur have fungicidal and acaricidal properties, as they are able to affect many fungal diseases and mites.

Pesticides are classified according to the method of penetration of pests into the body as follows:

Intestinal - pesticides penetrate with nutrients into the pest's body (plant parts treated with pesticides) and affect it through the gastrointestinal system. They are used against insects and rat mice, whose mouthparts are of the gnawing or sucking type.

Contact pesticides that poison harmful organisms by penetrating through intact skin. Contact pesticides burn and damage the outer cover of pests, and also have the ability to penetrate with nutrients into the pest's body. Contact pesticides include a variety of organochlorine and organophosphate pesticides.

Fumigants are pesticides that poison animals and pests, penetrating the body in the form of gas or steam. At the same time, the body of the pest (especially insects) develops a specific protective reaction to the action of the pesticide. As insects feel the presence of fumigants in the air, they immediately close their respiratory openings and, due to the supply of oxygen in the tracheal system, they live for a long time without contact with the external environment.



When insects exhaust oxygen in their body and the tracheal system is completely covered with carbon dioxide, they are forced to open their breathing holes and breathe from the external environment. Only then does the fumigant open the way to their body.

The presence of such a protective reaction in insects requires the creation of a lethal dose of fumigant in the atmosphere for a certain period of time when fighting them. Such a situation can certainly be created in enclosed spaces such as warehouses and greenhouses.

The fumigant, getting into the tracheal system of the insect in the process of diffusion through the walls of the trachea and tracheola, penetrates into the hemolymph, through it spreads throughout the body of the insect, affecting the tissues and organs necessary for life and poisoning the body.

Pesticides that act through the gastrointestinal tract can cause a protective reaction when the pest enters the body with nutrients through the oral apparatus. In this case, the pest stops eating food.

Gnawing pests are poisoned by pesticides and fumigants that act only through the gastrointestinal tract, unlike insects and other arthropods.

After entering the stomach of the insect, the pesticide begins to be absorbed, the absorption process is greatly influenced by the stomach environment (pH value). The pesticide is absorbed in the stomach and intestinal walls, enters the hemolymph, spreads throughout the body and poisons it.

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