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Negative Effect Of Harmful Chemical Waste On Plant Development

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ABSTRACT

At a high concentration of toxic gases in the air, the processes of photosynthesis stop immediately or after a few minutes. Excessive accumulation of heavy metals from the air and soil on the leaves and the retention of dust on the surface of the leaves sharply reduces the absorption of CO₂ by plants, treatment with biologically active compounds accelerates biochemical reactions in plants, eliminating harmful substances.

KEYWORDS

Photosynthetic processes, chemical, photochemical, physicochemical reactions, phytotoxins, improvement of the water regime, gibberillin, auxin.

INTRODUCTION

Artificial pollution of the atmosphere occurs as a result of human activities. By the origin of air pollution: primary production, engine

emissions and secondary pollution of the atmosphere occurs due to harmful substances formed as a result of chemical, photochemical,

physical and chemical reactions of substances in the natural composition. Chronic poisoning occurs due to short-term exposure of the plant to high concentrations of gases or prolonged exposure to low concentrations of gases. As a result, spots appear on the leaf between the veins, darkening, loss of tension, leaf fall,

branch drying. In acute and chronic lesions, the number of leaves decreases and the tree is almost "bare". Therefore, this problem remains relevant today.



The value of the system.

The harmful effect of dust in the atmosphere on plants depends on its chemical composition and solubility in water, retention time, plant

resistance to such effects, and a number of other environmental factors. Dusty leaves transmit less light, reflect more, so the process

of photosynthesis in pollinated leaves slows down. The greater the thickness of the dust falling on the sheet, the higher the water consumption for transpiration. Particulate matter that gets on the leaves together with dust disrupts plant growth, the activity of assimilating organs, and the quality of the crop. The most harmful for plants are salts of heavy metals in waste from vehicles and industrial enterprises, which pollute the air. In the air of industrial cities, they contain relatively more lead, iron, copper, cobalt, nickel, cadmium and mercury. These elements are transferred from the root to the soil through the leaf of the plant. As a result of exposure to toxic substances in the atmosphere, physiological

changes occur in plants. These changes depend on the composition of the affected chemical, the strength of the impact, environmental factors, and the physiological activity of the plant. Photosynthesis is a process that is very sensitive to environmental factors, especially the chemical composition of the atmosphere. Slowing down the process of photosynthesis disrupts the metabolism in plants, regardless of any factors, reduces autotrophic nutrition, the amount of accumulated substances, as a result of which resistance to harmful substances decreases.



METHODOLOGY

Low concentrations of toxic gases in the air cause a slow decrease in photosynthesis in the plant, invisible damage to the leaves. With a high concentration of toxic gases in the air, the processes of photosynthesis stop immediately or after a few minutes. Excessive accumulation of heavy metals in plant leaves from the air and soil, as well as the persistence of dust on the surface of the leaves, dramatically reduces the absorption of CO₂ by the plant. Many changes occur under the influence of phytotoxicants, especially chlorophyll. Even very small

amounts of gases in the atmosphere from automobiles and industrial plants also enhance plant photosynthesis. This causes an increase in the amount of pigments and an increase in photochemical activity. This condition is a manifestation of the plant's struggle for survival. In the respiratory processes of plants, organic matter is stored in several stages, which leads to efficient storage of energy.

The accumulation of energy and the disruption of the oxidation process depend on the type of plant, the growing conditions, primarily on the

level of their resistance to the effects of 344 different types of toxic gases. In apricot, walnut, pea leaves, gas exchange processes are enhanced by 1.5-2 times, when there is still no visible damage. Respiratory activity decreases with the appearance of necrosis spots on 20-30% of the leaf area. When the atmosphere is polluted, water exchange in plants also depends on metabolism, physicochemical properties of protoplasm, and the structure of internal and integumentary tissues. Under the influence of poisonous gases, the leaves become dehydrated to a certain extent. The processes of transpiration through the urethra and cuticle are gradually stopped. Strong harmless amounts of chlorine, sulfur oxides and fluorides increase the leaching of organic and mineral substances by plants such as corn, sunflower, 1.5-2 times. Air pollution has a great impact on the metabolism of carbohydrates, one of the most important processes in plants, along with photosynthesis, respiratory processes, and metabolism. The amount of carbohydrates also changes the structure of enzymes that allow simple carbohydrates to be converted into complex polysaccharides. The direction of these changes depends on the chemical composition of phytotoxicants, their prevalence, and the amount of accumulation. Atmospheric phytotoxicants affect the metabolism of carbohydrates in plants, the activity of enzymes and the accumulation of substances. As toxic gases accumulate in the leaves, the amount of mineral orthophosphorus increases. The oxides of fluorine, chlorine, sulfide anhydride and nitrogen, formed during industrial production, have a great effect on the metabolism of orthophosphate in plants. As a result, the formation of organophosphates and carbohydrates, proteins and fats in plants slows down.

RESULTS OF THE STUDY

As air pollution increases, the process of natural selection of plants intensifies. The

resistance of plants to phytotoxicants in the atmosphere depends on the processes by which they feed on mineral fertilizers. Soil treatment with organic and mineral fertilizers neutralizes phytotoxicants. In this case, the use of ammonium nitrate with phosphorus, potash fertilizers gives good results.

- Treatment of plants with micronutrients increases their resistance to phytotoxicants. Spraying trees with a 0.1% solution of zinc sulfate salt leads to the fact that the plant becomes resistant to adverse factors, increasing the leaf surface.
- Improving the water regime in the plant increases its resistance to harmful gases that pollute the atmosphere.
- Precipitation removes dust and other debris from plants and reduces absorption.
- Treatment with biologically active compounds gibberillin, auxins, which accelerate physiological processes in plants, accelerate biochemical reactions in plants, eliminate harmful substances.

Thus, there are many and varied ways to increase the resistance of plants to harmful gases. Adequate processing with them during the growth and development of plants, in turn, has a positive effect on food security.

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