

ECOLOGICAL PROBLEMS OF GEORGIAN AGRICULTURE

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Environmental problems are increasing day by day all over the world. One of the main problems is environmental pollution. This problem is also relevant in Georgia.

The use of modern technologies and techniques in various fields of human activity has a significant negative impact on the environment. Agriculture is one of the main sources of ecological problems. In the recent period, agricultural and technological operations used in intensive agriculture, which are carried out during cultivation, maintenance, harvesting, primary processing of raw materials and other processes of this or that culture, in most cases have a certain negative impact on the environment. It can be said that agriculture creates no less environmental problems than industry, transport and other sectors.

At present, the field of agriculture in Georgia covers a significant part of the earth's territory. New areas are constantly being exploited, the landscape of the continents is changing, forests, jungles, slopes covered with bushes are intensively cut down, fields and pastures are cultivated, which ultimately causes a number of local and regional ecological problems. Areas occupied by agriculture are unsustainable from the point of view of ecological security, since their improper exploitation causes soil washing, salinization, wind and water erosion. Intensive, incorrect exploitation of pastures leads to their desertification, elimination of natural vegetation, etc.

The main factors causing the negative events mentioned above are:

- Plowing the soil with a winged plow and systematically loosening the surface of the soil;
- Excessive use of mineral fertilizers and poisonous chemicals;
- Improper melioration of areas;
- Intensive exploitation of pastures;
- Improper use and utilization of agricultural waste;

It is impossible to completely eliminate the factors causing environmental problems, but with a planned and controlled approach, it is possible to significantly reduce the negative impact of one or another factor on the environment. 1. Annual plowing and surface treatment of the soil, along with the destruction of its structure and reduction of fertility, contribute to the development of wind and water caused erosion. Wind-based erosion is the intensive movement of soil particles on the surface of the earth, which takes place under the action of the wind at a speed of 15-20 m/s, when the soil is loosened and not covered by plants.

In the areas of wind and water-based erosion, it is necessary to carry out soil protection measures: introduction of crop rotation, strip sowing, cordoning of heavily eroded lands, creation of buffer strips, retention of snow with perennial grasses, afforestation of sandbars, planting of forest strips, as well as tillage to prevent soil overturning, leaving topsoil on the surface, etc. Soil erosion is especially dangerous in the mountains. The main reason for their occurrence is improper cutting of forests, as well as excessive cattle grazing and snow avalanches. In the zone of water-borne erosion, it is necessary to cultivate and sow the soil around the slope, deepen the arable layer and use other methods to reduce the surface water flow.

Recently, in many countries of the world, including Georgia, "minimal" and "zero" soil cultivation technology has been introduced. In the case of using these technologies, annual soil plowing, surface loosening, cultivation and other operations that destroy the soil structure are not used. In the case of using such technologies, after 3-4 years, the original natural state of the soil is restored, its structure, moisture content, air and water regime, fertility, humus content are improved, soil density is regulated, etc. Accordingly, the necessary conditions for the growth and development of the plant are created.

Currently, the consumption of mineral fertilizers and pesticides (poison-chemicals) in agriculture is increasing day by day, since their use is necessary to increase the yield. During the last ten years, as a result of incorrect exploitation, agricultural soils have lost their fertility, their depletion, structure breakdown and other negative events have occurred. Therefore, it is necessary to improve soils without chemicals. Along with the increase in yield, the use of mineral fertilizers leads to soil pollution with biogenic elements and ballast substances. Water-soluble ballast elements are washed out of the soil and end up in surface and groundwater, while water-insoluble substances accumulate in the soil and after reaching a certain concentration end up in plant structures, and then in animal and human organisms. Sometimes their amount reaches toxic levels, causing people to be poisoned. Pesticides, which are sprayed into the air by airplanes, are carried by the wind in different directions, get not only on the surface of the soil, but also in rivers, reservoirs, lakes, and cause the destruction of useful organisms- fish, algae and others- living in water.

The range of pesticides is expanding day by day, which includes up to 700 chemical substances belonging to different classes of organic and inorganic substances. Thousands of tons of poisonous chemicals are imported into Georgia every year, and sometimes the doses and norms of their application are not specified; Their consumption takes place without any control and preliminary testing, which leads to undesirable results and negatively affects the environment.

Improper land melioration leads to soil washing, in many cases to its salinization. The process of salinization and desiccation causes a decrease in soil fertility. The ongoing salinization process in the soil may be connected with the depletion of salt-bearing rocks, mineralized ground water, as well as the insecurity of irrigation norms, as a result of which secondary salinized soils are formed. Salinized soils are restored by lowering the ground water level, washing, sowing grass and other agrotechnical measures. Desertification is often caused by improper exploitation of pastures. In the territory of

Georgia, the danger of desertification exists more in the Kakheti Shida and Kvemo Kartli regions, however, it is possible to have other areas sensitive to desertification.

One of the factors of environmental pollution is the incorrect use and utilization of agricultural waste. In agriculture, organic fertilizers, livestock and poultry residues: manure, compost, poultry droppings and others, which contain a large amount of relatively easily decomposable organic substances, are used on a large scale. Their use significantly reduces the need to use mineral fertilizers. If organic fertilizers are used on a large scale, if used correctly, the amount of used waste will be reduced, their utilization will be easier, and accordingly, the possibility of negative impact of waste on the environment will be reduced.

Improper use of livestock and poultry wastes can contaminate soil and plants with pathogenic microorganisms and weed seeds. Also, excessive organic fertilizers lead to an increase in the content of zinc and iron in the soil. Sometimes it is possible to increase the content of nitrates, which negatively affects the growth and development of the plant.

Currently, one of the directions of partial solution of the ecological problems arising in agriculture is the development of bio-production, which, along with the production of traditional, harmless agricultural products, also provides for the solution of ecological tasks, such as: environmental protection, preservation of soil fertility, preservation of natural resources, use of correct methods of animal breeding and other.

In horticulture, according to the specific rules of bio production, such methods of soil treatment and cultivation should be used, which will contribute to the preservation of organic substances in it, protect it from erosion and hardening. In order to maintain soil fertility and biodiversity, it is recommended to use perennial crop rotation, benefit plants, legumes, green manure, organic manure and organic waste. Greenhouse production, perennial plants, permanent pastures are accepted. The amount of manure added to the soil, etc., is defined. It is noteworthy that the production, storage and use of biofertilizer should not pollute surface and ground waters.

In case of proper management of organic farming, the products obtained are much cheaper than the products produced with high-intensity technologies. Since the use of expensive toxic chemicals is excluded in organic production, the farmer uses the manure obtained in their farm - bio humus and compost. Against pests and plant diseases, they use plant tincture, ash, salt, lime and all the safe means that are allowed and accepted to obtain ecologically clean organic products. In this way, bio production, along with solving social and ecological problems, will significantly improve the economic situation of the farmer producing bio products.

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