Importance of fertilization rates for winter wheat varieties

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Abstract: The article presents analytical materials based on the results of research to determine the rate of feeding with mineral fertilizers and irrigation of winter wheat “Bardosh” and “Vassa” varieties.

Keywords: germination period, phosphorus, growing season top dressing, irrigation rate, autumn, planting, brine, limited field moisture capacity, meadow burrow soil, agricultural machinery

Before the independence of the Republic of Uzbekistan, grain crops, including winter wheat, could not be grown in irrigated fields. The needs of the population were met by bringing grain and similar products from abroad. For this reason, almost all scientific researches in grain cultivation were carried out in conditions of dry soils.

Therefore, in order to obtain abundant and high-quality grain crops in our Republic, it is necessary to create varieties suitable for the soil and climate conditions of each region, to develop planting norms, periods, fertilization norms and periods, as well as technologies for their cultivation. to have high quality indicators for preparation, especially the placement of crops based on the local conditions of each region, in which local varieties are planted in the main areas is attracting the main attention. In this regard, a number of our scientists are developing scientifically based recommendations

The use of mineral fertilizers is of particular importance among agrotechnical measures aimed at increasing grain and straw productivity of winter wheat. Nitrogen takes the main place in winter wheat feeding with mineral fertilizers. Therefore, nitrogenous fertilizers are the first necessary factor in obtaining high yields from crops in agriculture. Nitrogen participates in all the processes of growth and development of winter wheat, absorbing it in different amounts until the end of the growth period. Therefore, the level of use of mineral fertilizers is not always the same. They depend on soil and climatic conditions, mineral fertilizer rates, plant type and variety, thickness and other agrotechnical measures and they change.

Winter wheat has a very long growing season, which allows more complete use of nutrients from the soil. However, its nutrient requirements vary depending on the growth period of the plant. Therefore, it is suitable to yellow the top of autumn wheat in the spring. Nitrogen is needed during the growing season, but plants absorb it most intensively in the tube and ear phases. It is important to fertilize winter wheat in early spring, when nitrification processes can be suppressed due to low temperatures and

waterlogging of the soil, and water absorbs nitrate nitrogen into the deep layers of the soil, plants can experience nitrogen starvation even in well-fed soils. . This explains the high efficiency of the result when winter wheat top dressing is done correctly in the spring.

In agriculture, it is necessary to replenish the amount of phosphorus in the soil artificially, that is, at the expense of mineral and organic fertilizers. The total amount of phosphorus in the irrigated soils of Uzbekistan is classified as high compared to other soils (0.2-0.3%). But the main part of this phosphorus is in a form that is insoluble in water and cannot be easily absorbed by plants. The part that plants can easily absorb is found in small quantities. As a result of planting the same crop in one place for many years, phosphorus deficiency occurs in the soil, and in some soils, when plants are fertilized (even for several decades), the amount of mobile phosphorus increases. A part of phosphorus is absorbed by plants, and another part remains as a reserve in the soil. If the root of a plant is placed in a solution of phosphorus (32R), the element phosphorus can be found in the uppermost leaf of the plant within minutes. Phosphorus is not evenly distributed in plant organs. Young cells developing from the tissues of roots and leaves absorb a hundred and a thousand times more phosphorus than old cells. A developing young plant first supplies new leaves with phosphorus. If the supply of phosphorus from the external environment stops, the plant will use all the reserves in its body. Phosphorus moves from old, senescing leaves to new, young leaves. During formation and ripening, phosphorus is transferred from branches, stems and leaves to fruits.

During germination and at the beginning of development, wheat has a high need for phosphorus nutrition, which stimulates the normal development of the root system. With a good supply of moisture, the roots can penetrate deeper into the soil layer even in the fall itself, which helps the winter wheat to withstand the cold. Phosphorus increases the level of germination in the ear, that is, it allows to obtain a large number of grains. Without applying sufficient amounts of phosphorus feed during the growth period of wheat, later (for example, during the flowering or ripening period), this fertilizer cannot be compensated by the increase of this fertilizer for the plant.

In the period from the beginning of the growing season to the flowering of wheat, the lack of easily digestible potassium in the soil causes a significant delay in plant growth and a delay in plant development. And even a small change in temperature and soil moisture will have a negative effect on wheat. Sufficient supply of phosphorus and potassium to plants in autumn increases the winter hardiness of winter wheat, and sufficient amount of nitrogen increases the protein content of grain.

Potassium helps to carry out normal photosynthesis, the migration of carbohydrates in the plant, increase the resistance of the plant to dormancy, cold and drought. entry and the appearance of rust-like spots. Winter wheat absorbs potassium

fertilizer from the soil from germination to the flowering period. The most absorption of potassium fertilizer occurs during the period of tuberization and earing of winter wheat. If there is a lack of potassium during the flowering period, the grain yield and quality will decrease.

In irrigated meadow alluvial soils, the average content of humus is 0.6-0.8, nitrogen 0.019, phosphorus - 0.07, potassium - 2.2 percent. The amount of humus and total nitrogen, phosphorus, and potassium in various saline soils with a light layer in terms of mechanical composition can be partially changed in one direction or another from the above. Fertilizers for winter wheat dramatically increase yield as well as grain quality. In experiments conducted on irrigated lands at the Institute of Agriculture, the yield of winter wheat increased from 28.3 centners to 51.9 centners per hectare.

In the south of the republic, the increase in productivity from the optimal rate of nitrogen fertilizers was 10-10.6 centners, from phosphorus fertilizers - 1.2-1.6 centners, and from their combined effect - 12.1-16.9 s/h. That is, nutrients have a different effect on winter wheat. According to the scientists' conclusion, potassium fertilizers should be applied when the soil contains less than 300 mg/kg.

The rate of application of fertilizers is calculated by the balance method based on the level of the planned harvest, the availability of nutrients in the soil and the coefficient of their assimilation by plants. Damage to winter wheat significantly reduces the effectiveness of applied fertilizers, yield reduction reaches 12-15%.

An important way to increase the efficiency of the use of different fertilizers for winter wheat is their distribution in the same rate across the field. This situation should be approached with caution. Nitrogen fertilizers for winter wheat should be applied selectively, taking into account the local soil-climatic conditions, as well as the biology of the cultivated varieties, the planned harvest.

In light soils, as well as in heavy soils with very close groundwater, nitrogen fertilizers can be lost, so 30% of its annual norm before planting should be used for cultivation, and the rest can be applied in the spring, that is, during the growing season. In areas with increased nitrogen reserves in the soil, it is not recommended to apply nitrogen fertilizers in the fall, as this leads to excessive growth of plants and thickening of crops. In such cases, it is recommended to apply 40% of the annual nitrogen rate in early spring, and 60% later.

Conclusion:

In conclusion, this paper emphasizes the critical importance of optimizing fertilization and irrigation practices for enhancing the productivity and sustainability of winter wheat cultivation in Uzbekistan. It presents a compelling case for the integration of scientific research with practical agronomic practices, offering a blueprint for future agricultural innovation and food security.

This expanded article offers a comprehensive exploration of the factors influencing fertilization rates for winter wheat varieties, providing a detailed synthesis of research findings, practical recommendations, and strategic insights for agricultural practitioners, policymakers, and researchers.

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ВИРОБНИЦТВА SCIENTIFIC BASIS TO RAISE AGRICULTURAL PRODUCTION EFFECTIVENESS НАУЧНЫЕ ОСНОВЫ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ

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