

Importance of Biological Properties of Winter Wheat in Cultivation

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Annotation: Currently, the total area is 235.9 million in more than 132 countries of the world. Wheat is grown on more than 100,000 hectares, and the total yield is 755.2 million. tons. In 2021, wheat was grown on more than 1 million hectares of land in our republic. A comfortable temperature for seed germination is 12-20.

Keywords: Cereal production, winter wheat, biological, optimal, minimal, energy of accumulation, tuberization.

Grain production is one of the most important branches of world agriculture and is considered one of the most important sources of power of any country. Therefore, the standard of living of the country's population depends primarily on the supply of necessary food products to the members of the society. Among the food products consumed by the population, one of the most urgent issues is meeting the need for flour, bakery products, cereal and confectionery products. Currently, the total area is 235.9 million in more than 132 countries of the world. Wheat is grown on more than 100,000 hectares, and the total yield is 755.2 million. tons. In 2021, wheat was grown on a total of more than 1 million hectares in our republic. In Uzbekistan, winter wheat cultivation takes the leading place in terms of productivity and gross yield compared to other crops.

In the cultivation of winter wheat, studying its biological properties is the main factor in obtaining a good harvest from it. Winter wheat seeds can germinate even at a temperature of 1-2 °C. However, biochemical and physiological processes in wheat growing at such a low temperature are slow. A favorable temperature for seed germination is 12-20 °C, reaching a temperature of 30 °C reduces the germination of seeds in field conditions and the formation of weeds. When there is enough moisture in the surface layer of the soil, at 14-16 °C, grasses are formed in 7-9 days. When the daily temperature is 10 °C, grass germinates in 12 days, at 20 °C it takes 5-7 days after planting. The

optimum temperature for seed germination is 25 °C. Depending on the temperature, seeding depth and humidity and other factors, the sowing-germination period can be from 7 to 50 days, and even more in non-irrigated lands. In irrigated lands, winter wheat seeds germinate in 6-8 days when planted in sufficiently moist soils at optimal times. During the germination period of winter wheat, the effective temperature is 116-139 °C. The minimum temperature for the process of photosynthesis is 3-4 °C. As the temperature increases and other conditions are favorable, carbon absorption increases. The assimilation process slows down when the temperature is 35-36 °C.

In irrigated areas, when there is sufficient moisture, temperature, and nutrients, a plant planted early and at an optimal time forms 3-7 shoots in the fall. Plants that form 2-5 shoots in the fall winter well.

The energy of winter wheat is greatly affected by the supply of moisture and nutrients. If the soil layer where the shoot node is located lacks moisture, the formation of side shoots may sharply decrease or stop completely. In artificial conditions, the Odessa-3 variety of winter wheat formed up to 334 stems (V.I. Bondarenko). In field conditions, 5-7 shoots are formed on one plant, and up to 3 shoots are formed in late sowing periods. Along with the formation and growth of side shoots at the shoot node, a system of articular (secondary) roots is formed. Unlike primary (tubercular) roots, secondary roots develop from the rooting node. Rooting in winter wheat occurs slowly at a temperature of 2-4 °C. It accelerates when the temperature increases to 5 °C. As the temperature increases, the rate of rooting and the formation of the secondary root system increase. However, rooting may stop at a temperature of 25-30 °C. This is due to the rapid drying of the soil surface layer and the consumption of water for transpiration. In the germination phase, the formation of leaves and the growth of the root system can occur at temperatures of 4-30 °C and higher. In field conditions, when winter wheat is sown at the optimal time, when there is sufficient moisture in the soil, the average daily temperature should be from 15-17 to 8-10 °C. During late sowing periods, even in irrigated areas, the plant forms one to three leaves and goes into hibernation. The germination phase continues in the spring. In such cases, the germination phase lasts 100-150 days. The depth of the location of the apical node depends on the depth of sowing, its size, soil density and structure, the quality of soil preparation, temperature, humidity, and light. When these factors are in favorable proportions, the apical node is located at a depth of 2-3 cm. If the weather is cloudy and humid at the end of the germination phase, the apical node is located at a depth of 0.5-1 cm from the soil surface. In dense, structureless soils, the apical node is located on the surface. Sunny, open air helps it to settle deeply. Under favorable conditions, when the average temperature is 8-10 °C, the apical phase begins. With increasing temperature, the growth of stems and leaves accelerates. This phase takes 35-40 days to complete at a temperature of 11 °C, 30-32 days at a temperature of 13-15 °C, and 18-20 days at 20-25 °C. At temperatures of 22-25 °C and above, growth processes accelerate, the duration of the phase is shortened, but the lack of moisture in the soil leads to a violation of the water regime and slows down the growth of the stem and leaves. The temperature regime in the regions where winter wheat is grown is different. Therefore, the average daily temperature sum for the completion of this phase reaches 380-500 °C.

The supply of moisture and nutrients to the plant during the tillering phase is also of great importance. Their deficiency reduces growth, the accumulation of plastic substances, worsens the conditions for the formation of the ear, and as a result, leads to a decrease in yield. The most favorable water regime for the plant during this period is achieved when the soil is at least 80% of the limited field moisture capacity. In some irrigated areas, when winter wheat is sown at different times, the tillering phase was observed from April 25 to May 10. The time from the beginning of the tillering phase to the tillering phase was 25-30 days. Depending on weather conditions, tillering may begin earlier or later than the specified period. In cool, rainy weather, tillering begins 36-40 days after the start of tillering, and in dry and hot weather - 20-25 days.

Winter wheat begins to bloom 2-3 days after tillering. In some cases, under very unfavorable conditions, the spike may flower and set seed before it emerges from the last leaf sheath. This is observed during severe drought and high temperatures, and is associated with the cessation of

growth of the last internodes of the stem. In cool, rainy weather, the period between earing and flowering can reach 5-8 days. A single spike blooms for 3-5 days, and spikes in the field bloom for 6-7 days. The largest number of flowers is observed 2-3 days after the beginning of flowering and decreases towards the end. If wheat pollen does not fall on the pollinator, it loses its viability quickly, within 2-3 hours. Pollinators retain the ability to accept pollen for 6-8 days. Flowering and germination occur normally at a temperature of 11-30 °C. They occur rapidly at an air temperature of 20-25 °C. Flowering and germination occur normally even at a temperature of 25-30 °C, provided that there is sufficient moisture in the soil. The duration of the stages of earing, flowering, and germination varies from 5-8 days to 10-12 days. Winter wheat ripens in June, and in mountainous regions in July.

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