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ANALYSIS OF BRIGHTNESS INDICATORS OF WINTER WHEAT VARIETIES IN LIGHT GRAIN SOILS

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Abstract: *This article presents an analysis of the germination rates of winter wheat varieties under the conditions of light sierozem soils in the Kashkadarya region. According to the research results, the germination of winter wheat varieties was studied depending on the weight of 1000 seeds and the sowing rate. According to the results of the 2022 study, the number of autumn sprouts for the "Tanya" variety was 392.2 m²/pcs, for the "Asr" variety 381.4 m²/pcs, and for the "Yaksart" variety 394.5 m²/pcs; the number of winter sprouts (in the spring of 2023) was 363.4 m²/pcs, 350.6 m²/pcs, and 370.2 m²/pcs, respectively, and the number of dead plants was 28.8 m²/pcs, 30.8 m²/pcs, and 24.3 m²/pcs, respectively.*

Keywords: *light sierozems, winter wheat, sowing rate, germination, seedlings, indicator, agrotechnics, irrigation, irrigation methods, irrigation regimes.*

Аннотация. *В данной статье описывается анализ показателей всхожести сортов озимой пшеницы в условиях светлых сероземов Кашкадарьинской области. По результатам проведенных исследований изучена всхожесть сортов озимой пшеницы в зависимости от массы 1000 штук семян и нормы посева. По результатам исследований 2022 года, если осенью у сорта «Таня» оно составило 392,2 м²/шт., у сорта «Аср» - 381,4 м²/шт., у сорта «Яксарт» - 394,5 м²/шт., то количество всходов, выросших зимой (весной 2023 года), по сортам составило соответственно 363,4 м²/шт., 350,6 м²/шт., 370,2 м²/шт., а количество погибших растений по сортам составило соответственно 28,8 м²/шт., 30,8 м²/шт., 24,3 м²/шт.*

Ключевые слова: *светлые сероземы, озимая пшеница, норма посева, всхожесть, всходы, показатель, агротехника, орошение, методы орошения, режимы орошения.*



Annotatsiya. *Ushbu maqolada Qashqadaryo viloyatining och tusli bo‘z tuproqlari sharoitida kuzgi bug‘doy navlarining unib chiqishi ko‘rsatkichlari tahlili bayon qilinadi. Olib borilgan tadqiqot natijalariga ko‘ra kuzgi bug‘doy navlarining unuvchanligi, 1000 dona urug‘ vazni hamda ekish me‘yoriga bog‘liq holda tadqiq qilindi. 2022 yildagi tadqiqot natijasiga ko‘ra kuzda unib chiqqan nihollar “Tanya” navida – 392,2 m²/dona, “Asr” navida – 381,4 m²/dona, “Yaksart” navida - 394,5 m²/donani tashkil qilgan bo‘lsa, qishdan chiqqan nihollar soni (2023 yil bahorda) navlar bo‘yicha tegishlicha 363,4 m²/dona, 350,6 m²/dona, 370,2 m²/donani, nobud bo‘lgan o‘simliklar esa navlar bo‘yicha tegishlicha 28,8 m²/dona, 30,8 m²/dona, 24,3 m²/donani tashkil etganligi aniqlandi.*

Kalit so‘zlar: *och tusli bo‘z tuproqlar, kuzgi bug‘doy, ekish me‘yori, unuvchanlik, nihollar, ko‘rsatkich, agrotexnika, sug‘orish, sug‘orish usullari, sug‘orish tartiblari.*

INTRODUCTION

On a global scale, the role and significance of the agricultural sector in ensuring food security are increasing day by day. In particular, in our country, the rational use of available resources and opportunities, the guaranteed provision of agricultural products to the population, the further increase of productivity and interest, and the introduction of scientific achievements and modern approaches into the industry are also relevant issues [1].

It should be acknowledged that Uzbekistan, where 80 percent of the water resources it consumes are formed on the territory of neighboring countries, is an initiator among the countries of the region in the direction of efficient use of water resources, the widespread introduction of water-saving irrigation systems and the expansion of opportunities for the use of modern technologies in water resource management in order to mitigate the growing water deficit, especially in recent years [2].

In a number of countries around the world, including the USA, Australia, Russia, China, India, Pakistan, Bangladesh, North Africa, Kazakhstan, and Transcaucasia, the problems of preventing salinization in arid regions are being solved through the application of agrotechnical, agrochemical, and land reclamation measures. Therefore, irrigation and seasonal irrigation rates, as well as irrigation timelines, are carried out based on the water consumption of each crop, depending on natural and climatic conditions [3].

One of the ways to solve the problem of saving water resources in irrigated agriculture is the introduction of economical irrigation technologies. In today's conditions, the shortage of water resources, which is of paramount importance in ensuring the sustainable development of our country, is increasing every year. Based on this situation, one of the priority issues is the efficient use of water using modern water-saving technologies [4].



Research methods. Research work was conducted in 2022-2024 under the conditions of irrigated light sierozem soils of the Karshi district. The varieties "Tanya," "Asr," and "Yaksart" were selected as the object of the experiment. The soil of the experimental plot is light sierozems with low salinity; groundwater is located at a depth of 5-5.5 meters and is poorly mineralized. The field experiments consisted of 18 variants, arranged in 3 repetitions and 3 tiers. Each plot consisted of 8 rows, including 4 rows in the middle and 60 cm between rows, with a total area of 240 m² per plot, of which the design area was 120 m².

In the field experiments, winter soft wheat varieties "Tanya," "Asr," and "Yaksart" were irrigated using two irrigation methods: furrow irrigation (control) and sprinkler irrigation with a pre-irrigation soil moisture content of 65-70-60%, 70-75-65%, and 75-80-70% of the maximum field moisture capacity.

Analysis of the study. It is known from the experimental results of many scientists that factors such as winter wheat germination, plant density, development period, and yield depend on sowing wheat at optimal dates and rates. Due to the delay in sowing dates, winter resistance and yield of winter wheat decrease, as a result of which the consumption of seeds per hectare increases.

According to our research conducted during 2022-2024, in our experiments conducted under the conditions of irrigated light sierozem soils

in the Kashkadarya region, 4.5 million germinating seeds of winter wheat seeds were sown on days 10-15 of October. According to the recommendations of scientists from the Research Institute of Grain and Leguminous Crops, it was taken into account that sowing rates should be set at 4.5 million seeds and 1000 seeds in weight and kilograms. To correctly determine the sowing rate, the weight and germination of 1000 seeds were determined under laboratory conditions.

According to the research results, the germination of the "Tanya" variety was 95%, the weight of 1000 seeds was 46.5 g, and the sowing rate was 215 kg/ha; the germination of the "Asr" variety was 98%, the weight of 1000 seeds was 47.0 g, and the sowing rate was 200 kg/ha; the germination of the "Yaksart" variety was 97%, the weight of 1000 seeds was 45.5 g, and the sowing rate was 195 kg/ha.

Laboratory analyses were conducted to achieve the same number of seedlings in the experimental variants of the studied varieties. This, in turn, served as one of the factors creating conditions for the correct determination of the established irrigation regimes.

During the research work, winter wheat varieties were sown at the same dates, and the irrigation rates were also set at the same level. Observations to determine the plant density of winter wheat varieties at the beginning of the growing season were carried out when the sprouts were fully formed across all



varieties (at 3 points separated by special stakes per 1 m²). There was no significant difference in the number of sprouted seedlings between the varieties as a result of determining seed norms, taking into account field and laboratory germination.

According to the results of observations conducted at the beginning of the growing season in the years of the study, the number of sprouts for the "Tanya," "Asr," and "Yaksart" winter wheat varieties was as follows:

- in the autumn of 2022, the "Tanya" variety had 392.2 m²/pcs, the "Asr" variety had 381.4 m²/pcs, and the "Yaksart" variety had 394.5 m²/pcs; the number of winter sprouts (in the spring of 2023) was 363.4 m²/pcs, 350.6 m²/pcs, and 370.2 m²/pcs, respectively, and the number of dead plants was 28.8 m²/pcs, 30.8 m²/pcs, and 24.3 m²/pcs, respectively.

In the data of subsequent years of research, the observation results for the number of sprouted seedlings by variety were also close to the initial results.

During observations conducted at the beginning of the winter wheat growing season (number of sprouts, number of wintered sprouts, and number of dead sprouts), the effect was not felt due to the absence of irrigation regimes.

In conclusion, it should be noted that factors such as winter wheat germination, seedling density, development period, and yield depend on optimal sowing dates and rates; observations to determine the seedling density of winter wheat varieties at the beginning of the growing season were carried out at full germination at all repeated stages of the experiment (at 3 points separated by special stakes per 1 m²). There was no significant difference in the number of germinated seedlings between the varieties as a result of determining seed norms taking into account field and laboratory germination. During observations conducted at the beginning of the growing season for winter wheat varieties, the effect was not felt due to the absence of irrigation regimes.

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