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"RESISTANT TO THE COMPLEX STRESS FACTORS (SALT, DROUGHT, DISEASE) OF THE ”OROLBO'YI” REGION, THE YIELD OF SPRING WHEAT, THE QUALITY INDICATORS OF THE GRAIN WILL BE STABLE HIGHER. ACTIVITY IMPLEMENTED WITHIN THE FRAMEWORK OF DEVELOPMENT OF TECHNOLOGY

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ABSTRACT

Wheat is essential to ensure a sustainable food solution around the world. In the past few years, there have been changes related to the cultivation of wheat. Climate change, drought and salinization of cultivated areas were the main reasons for this change. Therefore, in this article, a resource-efficient agrotechnology for the selection of varieties of spring wheat that are resistant to complex stress factors (salt, drought, disease) and have high grain quality indicators is presented in this article. Let's look at the conclusion of some researches. Based on the soil and climate conditions of Karakalpak, ridges with high photosynthetic productivity during the short vegetation period of spring wheat were identified. In this case, the location of the leaf surface in the area unit was determined by determining the surface of the leaf surface where photosynthesis takes place. Also, by determining the amount of chlorophyll in the leaves of varieties and ridges at different developmental stages, ridges with high photosynthetic productivity were selected. Spring wheat varieties and rows were evaluated for their nutritional value and grain quality using modern tools and equipment, and rows with high protein and gluten contents were selected. Fusarium resistance of cultivars and ridges was evaluated in laboratory and field conditions, and resistant ridges were selected. Drought resistance is an important and valuable physiological characteristic of spring wheat, and special

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attention was paid to this characteristic when selecting varieties suitable for the conditions of the island.

Keywords Soil, bread wheat, climate, variety, line, grain quality.

INTRODUCTION

Wheat (*Triticum aestivum L.*) is considered one of the world's most important cereal crops. Every year 704 million tons of grain is produced worldwide. Bread wheat croplands cover 17% of the total crop area. In recent years, sudden changes in air temperatures have a negative impact on the morphological, physiological, biochemical and molecular properties of wheat and grain yield. Therefore, it is important to create high yielding and resistant varieties of bread wheat to abiotic factors and to develop its primary source in the condition of different regions [10]. Water stress reduces plant growth and manifests several morphological, physiological and biochemical alterations leading to massive loss in yield[8]. Drought tolerance does not exist as a unique and easily quantifiable plant attribute, it is a complex physiological, morphological and molecular character connected with relative water content (RWC), relative water loss (RWL), chlorophyll fluorescence, cell membrane stability (CMS)[9]. Hot-dry winds observed in early May and June in the southern regions of the Republic of Uzbekistan affect the growth and development of bread wheat, which leads to a decrease in productive elements. Therefore, the selection and introduction into production of bread wheat varieties corresponding to the climate conditions of the region is an important task [11].

MATERIALS AND METHODS

Field experiments were carried out during 2022 – 2023 in Grain and rice research and production association experimental fields of Southern Agricultural Research Institute. The laboratory experiments conducted in "Determination of technological quality indicators of grain and physiology" laboratory of this branch. Experimental layout and phenological observations, calculation and analysis during the experiment were carried out according to the method of All-Union Institute of Plant Science and biometric analysis according to the methods of the State Variety Testing Commission of Agricultural Crops

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(1985) . Technological quality indicators of winter wheat grain grown in the experimental field were studied according to methodical manuals "Methodological recommendation for grain evaluation", "Methods of biochemical study of plant", gluten content was compared according to GOST 13586-1-68, grain hardness by GOST 10987-76, grain moisture by GOST 13586-5-93, test weight by GOST 3040-55, 1000 seeds weight by GOST 10842-89. Statistical analyses were performed by the method of B.A. Dospekhov[7].

RESULTS AND DISCUSSION

New varieties and lines of spring wheat, which ripen in 90-100 days and accumulate a large amount of green mass in a short period of time, were selected. The grain quality of spring wheat varieties and lines was analyzed, and the grain contained 14-15% protein, 28-29% gluten content, 1000 grain weight 38-45 g, grain nature 750-800 g, high grain technological quality indicators were selected. As a result, the grain production volume of the republic will increase, and the population will be provided with high-quality bread and bakery products. In addition, the selected varieties were evaluated according to their tolerance to island stress factors.

As a result of growing spring wheat in the saline and arid region of the archipelago, it is considered as a strategic task to ensure food security. Soil degradation is prevented as a result of the expansion of spring wheat fields in the difficult climatic conditions of the Aral Bay region. As a result of the creation of new high-yielding varieties of spring wheat, the productivity of irrigated fields can be increased by 5-6 s/h. This serves to satisfy the demand of our people for high-quality grain products. As a result of the selection and production of varieties resistant to Fusarium disease, the economy of fungicides used for the fight against the disease is achieved. As a result of the creation of new productive varieties of spring wheat and cultivation of existing varieties in arid and saline areas of the island region, the standard of living of the population living in this area will be improved. Quality seeds are produced as a result of the organization of seed production of new varieties.

Resource-efficient agrotechnology of Janub Gavhari, Navro'z and Parvoz varieties of spring wheat was developed using No-till technology.

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In addition, soft wheat cultivars Janub Gavhari, Navro'z and Parvoz and several ridges were planted in artificially saline soils under laboratory conditions. Table 1. The experiments were carried out in four cycles, and in the first cycle, the amount of salt in 1 l of water was 9.7 g. The average fertility of all soft wheat samples planted on this substrate was 71.16%. In addition, it was found that the germination of the samples planted in the maskur salt concentration was significantly lower than that of the samples with other salt concentrations. In the substrate of the second experiment, the total amount of salts was 6.3 g of salt, it was determined that the fertility was from 70 to 85 grains, and the average fertility was 79.91%. Germination of seeds in the third substrate solution showed a germination index starting from 82 seeds to 93 seeds. In the last control experiment, it was witnessed that the germination of seeds started from 95 to 99 seeds. In the last experiment, seed germination started earlier.

Graphical arrangement of some experimental samples with different salt concentrations.

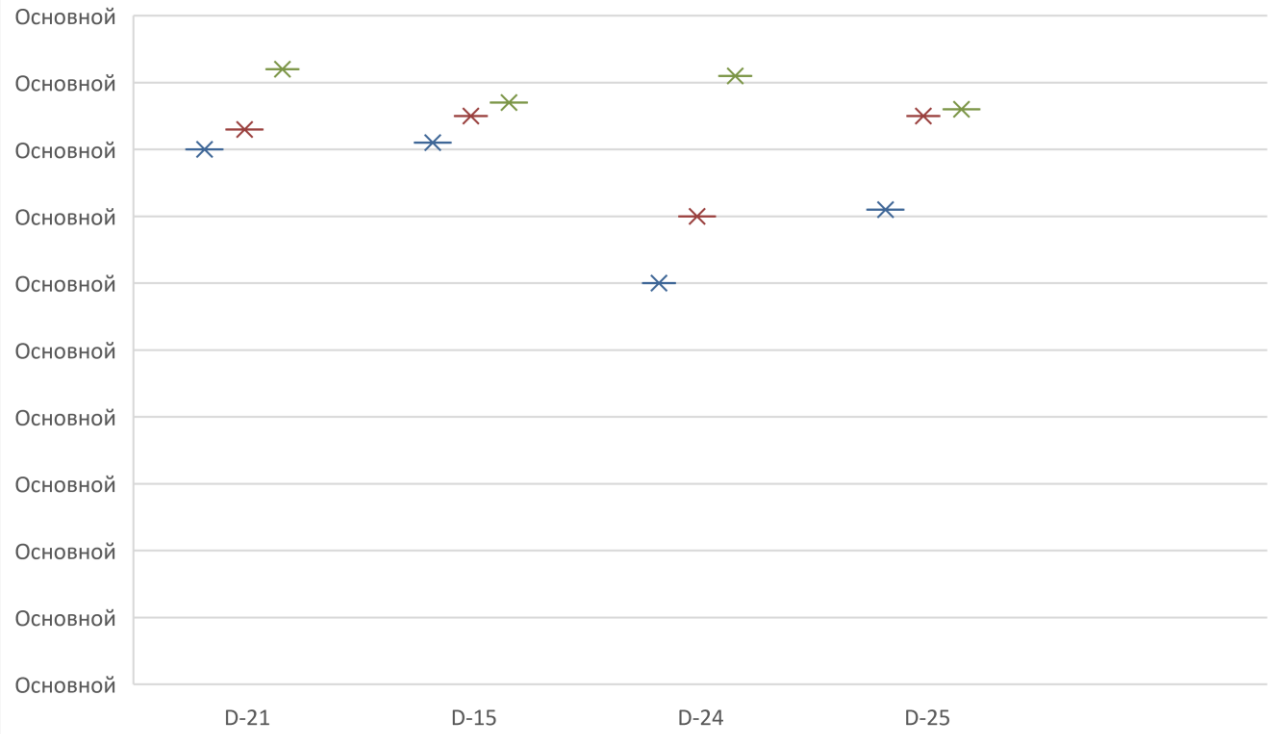

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Table 1 Fertility indicators of several varieties of soft wheat in laboratory conditions on substrates with different salt concentrations (per 100 grains)

№	Type returns number	The number of sprouted plants (9.7 g salt solution in 1 l of water).		The number of sprouted plants (in 6.3 g salt solution in 1 l of water).		The number of sprouted plants (in 4.7 g of salt solution in 1 l of water).		(control) The number of germinated plants in (normal irrigation water).	
		Germination		Germination		Germination		Germination	
		pcs	%	pcs	%	pcs	%	pcs	%
1	D-10	72	72	83	83	92	92	99	99
2	D-21	68	68	87	87	86	86	99	99
3	D-15	81	81	85	85	87	87	98	98
4	D-24	68	68	79	79	85	85	97	97
5	D-9	67	67	76	76	84	84	99	99
6	D-6	71	71	83	83	91	91	98	98
7	D-13	80	80	79	79	86	86	98	98
8	D-25	65	65	71	71	83	83	97	97
9	D-14	69	69	79	79	85	85	95	95
10	D-18	60	60	70	70	86	86	96	96
11	D-11	73	73	82	82	91	91	99	99
12	D-26	80	80	85	85	93	93	98	98
Average Germination %		71.16		79.91		87.41		97.75	

CONCLUSION

So, to conclude, the germination of soft wheat grain was determined in several experiments and it is possible to draw the following conclusions, the germination of seeds depends on the temperature, humidity, soil structure, planting period, as well as the concentration of salts in the soil solution. Fertilization is delayed or relatively behind if the soil contains more salts than normal. If the amount of salts in the soil is average, on the contrary, when there is excess moisture, germination is delayed. Therefore, it became known that the germination of seeds depends on a multifactorial factor.

Therefore, it is considered a very urgent issue for us to create varieties that are resistant to complex stress factors of the Orolbo'yi region, i.e. salt. According to some data, 250 kg of salt dust falls on each hectare of irrigated land in the Republic of Karakalpakstan, and up to 500 kg in some areas. From 15 million to 75 million tons of dust can rise from the dry seabed during a year. The width of

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salt dust storms is 40 km; length reaches 400 km. Salty dust spreads tens or even hundreds of kilometers from Aral sand, falling on natural meadows, crops in oases, gardens, cities and villages. Dust from the island even reached the glaciers on the peaks of the Tianshan and Pamir mountains, accelerating the melting of the glaciers there. Due to the acceleration of desertification and salinization, about 50,000 hectares of arable land has become unsuitable for agricultural use in recent years. Unfavorable ecological situation led to a sharp decrease in the yield of agricultural crops and the production of livestock products. Therefore, the creation of new varieties resistant to stress factors in the Orolbo'yi region is an incomparable issue from both ecological and economic aspects.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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