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THE EFFECT OF SOWING TIME, SOWING RATES AND FERTILIZATION RATES TOFIELD GERMINATIONOF WINTERBREAD WHEAT VARIETIES

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ABSTRACT

In recent years, global weather and climate change in the world may lead to a decline in higher and higher quality grain yields from agricultural crops, including winter soft wheat. Taking into account the different soil and climatic conditions of the country, it is necessary to further improve the technology of cultivation of high-quality varieties of cereals, suitable for the conditions of each region, high-yielding, early ripening, resistant to various diseases, salinity, drought and heat. This article evaluates the effect of sowing time, sowing rate and fertilization norms on field fertility of winter wheat varieties, selects and recommends the most optimal options that have a significant positive effect on field germination.

KEYWORDS: *Bread Wheat, Variety, Sowing Time, Sowing Rate, Fertilizer Rate, Field Germination.*

INTRODUCTION

In the largest wheat-growing countries in the world, the increase in grain yield and quality is achieved through the use of soil conditions, varietal characteristics and advanced methods of cultivation. It is important to increase the yield and grain quality of winter bread wheat varieties, to select promising winter wheat varieties that are high yields, resistant to diseases and pests. Depending on the soil and climatic conditions, the development and implementation of the timing of sowing, norms, fertilizer rates of winter wheat is one of the urgent tasks of the grain industry.

A number of scientists have shown experimentally that the field germination of winter bread wheat seeds sown very early or late was much lower than that sown at optimal times **[6, 7]**.

In experiments carried out in the conditions of typical gray soils of Kashkadarya region, Krasnodarskaya-99 variety of winter bread wheat was sown early (October 1), field germination was 88.6%, medium-term (October 10) -89.6% and late sowing (November 10) -80, 7% **[2, 3, 4]**.

When J.Saidov, K.Muminov studied sowing time, norms and fertilization norms ($N_{200}P_{140}K_{100}$ ва $N_{240}P_{160}K_{120}$ kg / ha) of Nota, Jasmina, Yaksart varieties of winter bread wheat in Surkhandarya region, field seed germination control (88.3 without fertilizers) was used. from 84.8% to 3mln. when seeds were sown, 89.6% and in 6 million -86.6% of seeds germinated [6].

The optimum temperature for full, flat and sloping germination of seeds of winter bread wheat varieties is 12-20^{0}C, usually the average daily temperature sum required for germination of plants on the soil surface is 120-140 ^{0}C [1, 4, 6, 7].

This means that only when the bread winter wheat varieties are sown at the optimal time and norms for the region will the seeds germinate evenly, the plant will grow strong, accumulate well, prepare well for winter and be resistant to severe winter frosts.

Materials and methods. Feeding of winterbread wheat varieties in the experimental field was carried out in accordance with the experimental structure. The entire annual rate of phosphorus and potassium fertilizers was applied under plowing, 40% of the nitrogen fertilizer rate was given during the period of tillering and shooting, and the remaining 20% was during the heading phase (Table 1).

TABLE 1 STANDARDS AND TIMING OF APPLICATION OF MINERAL FERTILIZERS TO WINTER WHEAT.

№	Annual norms of mineral fertilizers, kg/ha	Before planting, kg/ha		Feeding with nitrogen fertilizers during the growing season, kg/ha		
		P_2O_5	K_2O	Tillering	Shooting	Heading
1	**N_{180} P_{108} K_{54}**	108	54	72 (40%)	72 (40%)	36 (20%)
2	**$N_{210}P_{147}K_{105}$**	147	105	84 (40%)	84 (40%)	42 (20%)

Field experiments were conducted in 2014-2016 in light gray soils of the experimental fields of the Kashkadarya branch of the Scientific Research Institute of Cereals and Legumes. The level of groundwater is located at a depth of 2.5-3.0 m, not saline with harmful salts, the granulometric composition of the soil is average, the previous crop is cotton. The following options were explored in the field experiment.

The area of each option is 100 m^2 (length 41.7 m, width 2.4 m), of which 50 m^2 is taken into account. The number of variants was 36, the experiment was placed in 3 replications, the variants were placed in 3 tiers. Our research was conducted in accordance with generally accepted recommendations and guidelines.

Results. In our experiments in 2014-2016, it was observed that when sowing the seeds of winter bread wheat varieties (Krasnodarskaya-99, Yaksart, Bunyodkor, Gozgan) earlier or later, the field germination of seeds decreased. In the control (fertilizer-free) variant of the experimental field, winter bread wheat varieties were 4.0; 5.0 and 6.0 million seeds were sown at normal rates. Sowing periods were carried out in the early time (October 1), medium time (October20) and late time (November10) periods. In the sown variants, it was studied that the field germination of seeds depends on the sowing time and norms. According to the results, the field germination of Krasnodarskaya-99 variety is 76.0-73.6%; 83.3-81.7; 68.5-66.9%, Yaksart variety 77.9-76.0;

84.5-81.6; 71.0-69.2%, in Bunyodkor 79.1-74.0; 84.1-82.0; 72.3-68.7% and in the Gozgan variety ranged from 77.9-75.0 83.1–81.2 and 71.5–69.5% (Table 2).

In the study, when Krasnodarskaya-99, Yaksart, Bunyodkor, Gozgan varieties of winter soft wheat were sown in the early (October 1) period against the background of $N_{180}P_{108}K_{54}$ kg / ha with 5.0 million seeds, the field germination of seeds was 76.9; 78.4; 80.6; and 78.2%.When planted in the medium sowing period (October 20) and late sowing period (November 10) field germinations found to be 8.0; 6.7; 5.9; 6.0% higher and 5.8; 6.9; 7.0; 4.9% lower. It was found that the field germination of seeds in the early (October 1) period was 78.3, 79.3, 80.8, 78.9% when sown wheat varieties on the background of mineral fertilizers ($N_{210}P_{147}K_{105}$ kg / ha) in the above period and norms. In the medium-term planted variant (October 20) was found to be 6.3, 7.3, 6.6, 6.8% less. In the late sown variant (November 10), it was noted that the field germination of seeds was higher by 5.9, 5.3, 6.6, 5.3%.

In the experimental field, high field germination rates of seeds were observed in winter bread wheat varieties sown in the medium (October 20) period. Field germination of seeds at different sowing rates (4.0; 5.0; 6.0 million seeds / ha) compared to early sowing (October 1) was found to be as high as Krasnodarskaya-99, Yaksart, Bunyodkor, Gozgan, respectively, from 7.0 to 7.5%, from 7.4 to 6.8%, from 5.2 to 5.7%, from 3.7 to 7.3%.

With the delay in sowing the seeds of winter soft wheat varieties, a decrease in seed germination was taken into account in all sowing norms as well.

According to a number of studies in cereals, sowing rates also have a significant effect on seed germination. There are conflicting opinions among researchers on this issue.

In our experiments, sowing norms had a significant effect on the field germination of seeds of autumn bread wheat varieties sown at different times.

TABLE 2 INFLUENCE OF SOWING TIMING, NORMS AND FERTILIZERS ON FIELD GERMINATION OF WINTER BREAD WHEAT VARIETIES (AVERAGE 2014-2016).

Variants			Early time (October 1)		Medium time (October 20)		Late time (November 10)	
			Germination plants in 1м^2					
			piece	%	piece	%	piece	%
Krasnodar-99	Control	4 mln.	304	76	334	83.3	275	68.5
		5 mln.	375	75.1	413	82.7	337	67.4
		6 mln.	442	73.6	490	81.7	404	66.9
	$N_{180}P_{108}K_{54}$	4 mln.	313	78.3	341	85.3	294	72.8
		5 mln.	385	76.9	420	84	358	71.1
		6 mln.	456	75.8	500	83.3	415	69.2
	$N_{210}P_{147}K_{105}$	4 mln.	316	79	343	85.8	304	73.6
		5 mln.	392	78.3	423	84.6	365	72.4
		6 mln.	468	77.9	501	83.6	432	71.4
Yaksart	Control	4 mln.	311	77.9	338	84.5	284	71
		5 mln.	386	77.2	415	83.1	352	70.4

		6 mln.	456	76	490	81.6	415	69
	$N_{180}P_{108}K_{54}$	**4 mln.**	318	79.5	346	86.6	293	73
		5 mln.	393	78.7	427	85.4	357	71
		6 mln.	466	77.6	505	84.1	420	70
	$N_{210}P_{147}K_{105}$	**4 mln.**	320	80	349	87.4	299	74.0
		5 mln.	396	79.3	433	86.6	370	73
		6 mln.	471	78.4	511	85.2	431	71.8
Bunyodkor	**Control**	**4 mln.**	316	79.1	336	84.1	290	72.3
		5 mln.	377	75.5	413	82.7	351	70.2
		6 mln.	444	74	492	82	413	68.7
	$N_{180}P_{108}K_{54}$	**4 mln.**	328	82.1	351	87.7	296	74.0
		5 mln.	376	80.6	432	86.5	367	73.6
		6 mln.	470	78.3	505	84.2	428	71
	$N_{210}P_{147}K_{105}$	**4 mln.**	332	83.1	353	88.3	300	75
		5 mln.	404	80.8	437	87.4	371	74.2
		6 mln.	475	79.2	510	84.9	435	72.4
Gozgon	**Control**	**4 mln.**	311	77.9	332	83.1	287	71.5
		5 mln.	383	76.7	409	81.8	351	70
		6 mln.	450	75	487	81.2	417	69
	$N_{180}P_{108}K_{54}$	**4 mln.**	325	81.2	343	85.7	292	73.0
		5 mln.	390	78.1	420	84.1	365	73.2
		6 mln.	459	76.4	498	83	426	71
	$N_{210}P_{147}K_{105}$	**4 mln.**	331	82.7	345	86.4	297	74
		5 mln.	394	78.9	423	84.7	367	73.6
		6 mln.	461	76.9	505	84.2	435	72.3

Fertility of seeds in field conditions varied depending on sowing norms, duration and varieties. For example, winter wheat varieties have an acceptable (October 20) When sown in fertilizer-free plots at the rate of germinated seeds of 4.0; 5.0; 6.0 million / ha, seed germination in accordance with sowing norms ranged from 83.1 to 81.7% in Krasnodarskaya-99 variety, from 84.5 to 81.6 in Yaksart variety; The Bunyodkor variety ranged from 84.1 to 82.0% and the Gozgan variety from 83.1 to 81.2% (Table 2).

At the above sowing rate and duration, seed germination when fertilizers are applied $N_{180}P_{105}K_{54}$ kg / ha is 85.3-83.3, depending on the variety; 86.6-84.1; 87.7-84.2 and 85.7-83.0%, respectively. In fertilizers applied $N_{210}P_{147}K_{105}$ kg / ha, these values are 85.8-83.6, respectively; 87.4-85.2; Ranged from 88.3-84.9 and 86.4-84.2%. Fertility of seeds of winter soft wheat varieties in field conditions was the highest (87.4-85.7%) in Bunyodkor and Gozgan varieties when sown at an acceptable level (5.0 million seeds / ha) and on time (October 20). When seeds of winter bread wheat varieties were sown below the acceptable norm (4.0 million units / ha) or more (6.0 million units / ha) in the early (October 1) or late (November 10) periods, a decrease in seed germination under field conditions was observed.

In our experiments, Bunyodkor and Gozgan varieties of winter bread wheat were sown early (October 1) from 7% to 82.7%, the increase in the sowing rate during this period to 6.0 million

germinated seeds reduced the germination of varieties in field conditions by 4.8 and 5.8%, respectively. A similar pattern was observed in the medium (October 20) and late (November 10) planting periods. When sowing of seeds of winter bread wheat varieties were carried out later than the optimal time (November 10), the field germination of seeds decreased in all sowing norms. However, in the late sowing period (November 10), the difference in sowing rate from 4.0 million germinating seeds per hectare to 6.0 million germinating seeds was only 2.5 and 1.9%, respectively.

Thus, in our experiment, as the sowing rate increases throughout the sowing period, the germination of seeds of winter bread wheat varieties decreases in the field. This decrease is explained by the fact that most researchers release a lot of harmful (toxic) substances during seed germination and germination. .

CONCLUSION

In the conditions of light gray soils of Kashkadarya region to sow the seeds of winter bread wheat varieties for full and short-term sowing in optimal terms (October 20) and sowing rates (5 million seeds / ha) on the background of mineral fertilizers $N_{210}P_{147}K_{105}$ kg / ha, seeds of Bunyodkor and Gozgon varieties provided the highest (87.4 and 85.7%) field germinations.

It was found that when field seeds of winter wheat were sown earlier (October 1) or late (November 10) than the optimal sowing period, less than the sowing norm (4 million seeds) or more (6 million seeds), the field germination of seeds decreased.

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