

Influence of Agrotechnical FACTORS ON INDICATORS OF PRODUCTIVITY OF WINTER Rye

Yodgorov N.G

Doctor of Philosophy of Agriculture, Senior Researcher

Khasanov B.R.

Junior Researcher Southern Research Institute of Agriculture. Karshi city, Kashkadarya region,
Republic of Uzbekistan.

Article Information

Received: March 28, 2023

Accepted: April 16, 2023

Published: May 18, 2023

Keywords: *Rye, ordinary stalks, productive stalks, sowing dates, sowing rate, rate of mineral fertilizers.*

ABSTRACT

This article analyzes and highlights the results of the influence of sowing dates, norms and mineral fertilizers on the performance of winter rye varieties grown on light gray soils of the Kashkadarya region.

Introduction

Today, the food problem is becoming one of the global problems in the world. The reason for this is, firstly, the increase in the population of the globe, and secondly, the soil and weather conditions are changing dramatically. The cultivation of winter rye in changing weather conditions is more economically efficient, in accordance with which the high adaptability of rye crops, the stability of grain yield, agrotechnical importance in crop rotation, as well as soil fertility, low need for fertilizers, herbicides and pesticides among cereals.

Winter rye is a plant that requires soil and climatic conditions, mineral fertilizers and moisture of the region where it is grown, and depending on these factors, its yield varies. The yield is

determined by the quality of the sown seeds, fertility, soil fertility and land reclamation, the thickness of seedlings in the cultivated area and the number of productive stems.

According to the conclusions of studies conducted by many scientists, it was found that in order to obtain a high yield of grain crops, including rye, there should be 550-600 productive ears per m^2 [1]. S.I. Novoselov, an increase in the number of productive stems in $1 m^2$ by 600 pcs. increases the survivability of plants, and as a result, leads to a decrease in the mass of grain in the ear [2.]. P.I. Podgorny indicates that the overall coefficient of overcrowding in winter rye is 4-10 times higher than that of winter wheat, and the productive coefficient of overcrowding can be 2-3 times [3; 4; 5; 6].

Our scientific research was carried out in the conditions of light gray soils of Ya. Omonov, which is the central experimental field of the Southern Research Institute of Agriculture of the Karshi district of the Kashkadarya region in Uzbekistan.

Field experiments, periods 01-05.10 and 20-25.10 sowing varieties of winter rye "Ns Savo" and "Вахшская 116", 4.0; 5.0; 6.0 million norm units/ha and one control unit without fertilizers (Control); as well as two units of $N_{200} P_{100} K_{75}$; $N_{240} P_{120} K_{90}$ kg/ha were carried out in accordance with the norms. In field experiments, the total number of variants was 36, placed in 1 tier and 3 repetitions systematically. In the experiment, the number of plots was 108, giving each plot a total area of $180 m^2$, 50 m long and 3.6 m wide.

In our studies carried out on light gray soils of the Kashkadarya region, it was found that the sowing dates, norms and norms of mineral fertilizers had a significant impact on the total and productive number of winter rye varieties.

According to the analysis of the results of the study, in varieties of winter rye by variants, the total number of stems on an area of $1 m^2$ was recorded from 506 to 891 pieces, and the number of productive stems - from 208 to 626 pieces, in which the formation of spike-shaped stems per $1 m^2$ from 41, 1% to 70.3% (Table 1).

In our studies, in the period 01-05.10 sowing, the number of stems in varieties of winter rye is 4.0; 5.0; 6.0 million when standard options were compared, the results were noted as follows. In particular, the total number of stems (pieces/ m^2) in varieties "Ns Savo" and "Вахшская 116" of winter rye amounted to 4.0 million pieces. sowing.553-763 and 520-686 pcs., 5.0 million pcs. in accordance with the norm of varieties per unit/ha. 590-856 and 566-782 pcs. per unit/ha 6.0 million units. When calculated per unit/ha, it was noted that only 49.4-70.3 and 41.8-69.0 percent of the total stems produced were produced, compared to 614-891 and 588-847 respectively. In this case, the number of productive stems is 273-502 and 218-450 pieces, in accordance with the above planting norms and varieties; 314-587 and 246-525 pieces; 339-626 and 294-584 pieces.

As a result of mutual comparisons of the above options, the total number of plant stems at a rate of 4.0 million pieces/ha was 520-763 pieces, the number of productive stems was 218-502 pieces, the planting yield was 41.8 -65.7%, when planting 5.0 and 6.0 million pcs/ha total number of stems 37-96 and 61-160 pcs. according to planting standards, the number of productive stems is 28-89 and 66-134 pieces, and the formation of prickly stems per $1 m^2$ increased by 1.6-3.9% and 3.5-8.3%.

The same rules as above were observed when comparing during the sowing period 20-25.10. In this In this case, at a planting rate of 4.0 million pieces/ha, the total number of stems of winter rye varieties was 506-757 pieces, the number of productive stems was 208-465 pieces, the formation of spiked stems per $1 m^2$ was 41.1-61.5% , at planting rates of 5.0 and 6.0 million pcs/ha, the total

number of stems according to planting rates is 37-97 and 55-142, the number of productive stems is 26-69 and 48-108, and the number of thorny stems per 1 m² and their formation increased by 0.7-2.6 and 2.3-4.6%.

Influence of timing, norms and mineral fertilizers on the productivity of winter rye varieties.

No. Var	Winter rye varieties	Seeding rate , mln pcs/ha	Norm of mineral fertilizers, kg/ha	date 01-05.10			date 20-25.10		
				Common stems, 1 m ² /pc.	Productive stems, 1 m ² /pc.	The formation of prickly stems per 1 m ² , %	Common stems, 1 m ² /pc.	Productive stems, 1 m ² /pc.	The formation of prickly stems per 1 m ² , %
1	"Ns Savo"	4.0	Control (no fertilizer)	553	273	49.4	542	251	46.4
2			N ₂₀₀ P ₁₀₀ K ₇₅	705	456	64.6	658	394	59.9
3			N ₂₄₀ P ₁₂₀ K ₉₀	763	502	65.7	757	465	61.5
4		5.0	Control (no fertilizer)	590	314	53.2	579	280	48.3
5			N ₂₀₀ P ₁₀₀ K ₇₅	801	544	68.0	739	456	61.6
6			N ₂₄₀ P ₁₂₀ K ₉₀	856	587	68.5	833	518	62.2
7		6.0	Control (no fertilizer)	614	339	55.2	597	299	50.1
8			N ₂₀₀ P ₁₀₀ K ₇₅	812	556	68.4	801	501	62.6
9			N ₂₄₀ P ₁₂₀ K ₉₀	891	626	70.3	878	560	63.7
10	"Бахшыска я 116"	4.0	Control (no fertilizer)	520	218	41.8	506	208	41.1

eleven		N ₂₀₀ P ₁₀₀ K ₇₅	642	407	63.5	619	356	57.6
12		N ₂₄₀ P ₁₂₀ K ₉₀	686	450	65.5	671	398	59.4
13	5.0	Control (no fertilizer)	566	246	43.4	557	234	42.0
14		N ₂₀₀ P ₁₀₀ K ₇₅	692	455	65.7	688	414	60.2
15		N ₂₄₀ P ₁₂₀ K ₉₀	782	525	67.1	768	467	60.9
16	6.0	Control (no fertilizer)	588	294	50.1	571	260	45.4
17		N ₂₀₀ P ₁₀₀ K ₇₅	737	493	67.0	734	457	62.2
18		N ₂₄₀ P ₁₂₀ K ₉₀	847	584	69.0	810	507	62.6

According to the results of the above studies, as a result of the sowing period 20 days later (October 20-25), compared to October 01-05, the total number of stems increased from 3 to 62, the number of productive stems increased. from 10 to 89, and the formation of prickly stems per 1 m² was 0.7. It was found that it decreased from % to 6.5%.

In the course of the research, it was found that the effect of mineral fertilizers on the total number of productive stems of winter rye varieties was significant. Therefore, compared with the option without mineral fertilizers (Control), in the options where mineral fertilizers were used (N₂₀₀P₁₀₀K₇₅ and N₂₄₀P₁₂₀K₉₀ kg/ha), due to the sufficient supply of plants with nutrients and, in turn, their rapid growth, a high number of common and productive stems was noted.

In particular, during the sowing period 01-05.10 mineral fertilizers were not applied (Control) 1; 4; In the 7 th variants, the total number of stalks of winter rye variety "Ns Savo" - 553; 590; 614 pieces, number of productive stems 273; 314; 339 pieces, formation of spiky stems per 1 m² 49.4 ; 53.2; 55.2%, mineral fertilizers N₂₀₀P₁₀₀K₇₅ kg/ha 2; 5; 8 th variants, the total number of stems is 705; 801; 812 pieces, number of productive stems 456; 544; 556 pieces, collection productivity 64.6; 68.0; 68.4%, mineral fertilizers N₂₄₀P₁₂₀K₉₀ kg/ha 3; 6; 9 options total number of stems 763; 856; 891 pieces, number of productive stems 502; 587; 626 pieces, the formation of prickly stems per 1 m² was 65.7; 68.5; 70.3%, with a sowing time of 20-25.10 min. fertilizers were not applied (Control) 1; 4; in the 7th variant, the indicators for the above are 542; 579; 597 units, 251; 280; 299 pieces and 46.4; 48.3; 50.1%, mineral fertilizers N₂₀₀P₁₀₀K₇₅ kg/ha 2; 5; 8 options 658; 739; 801 pieces, 394; 456; 501 units and 59.9; 61.6; 62.6%, fertilizer N₂₄₀ P₁₂₀ K₉₀ kg/ha 3; 6; 9 options 757; 833; 878 pieces, 465; 518; 560 pieces and 61.5; 62.2; 63.7%.

In this case, mineral fertilizers were not applied during the sowing period 01-05.10 (Control) In relation to option 1; 4; 7, the norm of mineral fertilizers N₂₀₀P₁₀₀K₇₅ kg/ha was applied in 2; 5; 8 variants total number of stems 152; 211; 198 pieces, number of productive stems 182; 230; 217 pcs. and the formation of prickly stems per 1 m² by 15.3; 14.7; 13.3% more mineral fertilizers N₂₄₀P₁₂₀K₉₀ kg/ha in 3 variants; 6; 9, the fertilizer rate N₂₀₀P₁₀₀K₇₅ kg/ha was used, the above figures in relation to 2; 5; 8 options are 58; 55; 79 pieces, 46; 42; 70 pieces and 1.1; 0.6; 1.8%, was higher than in the sowing period of 20-25.10 min. fertilizers were not applied (Control) compared to option 1; 4; 7 applied mineral fertilizers N₂₀₀P₁₀₀K₇₅ kg/ha above comparisons in 2; 5; 8 options are as follows: 116; 160; 203 pieces, 143; 176; 202 pieces and 13.5; 13.3; 12.5%, mineral fertilizers N₂₄₀P₁₂₀K₉₀ kg/ha applied in variants 3; 6; 9 applied fertilizer rate N₂₀₀P₁₀₀K₇₅ kg/ha in relation to 2; 5; 8 options 99; 94; 77 pieces, 71; 62; 59 pieces and 1.6; 0.5; 1.2% turned out to be higher.

Similarly, when making these comparisons in the winter rye variety "Вахшская 116", it was revealed that among the variants there are patterns noted above.

In the course of the studies, the winter rye variety "Ns Savo" clearly differed in the intensity of growth rate compared to the variety "Вахшская 116". At the same time, the total number of stems of winter rye variety "Ns Savo" is 23-109 pieces, the number of productive stems is 42-89 pieces, and the formation of prickly stems per 1 m² is 0.2-9.8% compared to the variety "Вахшская 116" marked high.

The highest indicators of the total and productive number of winter rye varieties were noted, planting dates were 01-05.10, the norm was 6.0 million pcs/ha, the norm of mineral fertilizers was N₂₄₀P₁₂₀K₉₀ kg/ha. The total number of stems 891 pieces, the number of productive stems 626 pieces, and the formation of prickly stems per 1 m² is 70.3%, while the lowest rates the results of the research

were 20-25.10 sowing time, at the rate of 4.0 million pcs/ha in the 10 th variant, where mineral fertilizers were not applied, the variety "Бахшская 116" had a total number of stems 506, the number of productive stems was 208, and the formation prickly stems per 1 m² amounted to 41.1%.

If, based on the results of the research, it is concluded that in the conditions of light gray soils of the Kashkadarya region, the rye varieties "Ns Savo" and "Бахшская 116" should be planted on the dates of 01-05.10 and at the rate of 5.0 million pcs/ha, as well as the introduction of mineral fertilizers with a norm of N₂₀₀P₁₀₀K₇₅ kg/ha, it is possible to grow high-quality, cheap and cost-effective grain.

References:

1. Siddikov R., Mansurov A., Yusupov N. "Bulletin of Agriculture of Uzbekistan" - No. 10. - 2018. - B. 3-4.
2. Niklyayev V.S., Kosinsky V.S., Tkachev V.V., Suchilina A.A. "Fundamentals and technologies of agricultural production Agriculture and plant growing" Moscow. 2000. -B. 282-285.
3. Koledy K.V., Duduka A.A. - Grodno. 2010. - B. 53-63.
4. Kargin V.I. Scientific Aspects of Moisture Supply Regulation in Highly Productive Agrocenoses in the Forest-Steppe Middle Volga region: author. doctor dis. Yoshkar-Ola, 2009, p. 39.
5. Glushakov S.N. - Smolensk, 2000. Author's abstract - B. 20.
6. Potapova G.N., Ivanova M.S. // " Interactive Science" 11 (21) • 2017. - B. 69-75 p.

