

The Influence of Seed Sowing Times and Rate of Fertilizer Application on the Total and Productive Number of Stemps

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Annotation: In this article, the interaction of seeding rate, planting time and mineral fertilizer feeding rates on total stems, productive stems and productive stand of triticale in conditions of dry typical gray soils of Jizzakh region is studied and scientifically substantiated.

Keywords: Triticale, common stem, productive stem, tillering, planting time, planting rate, mineral fertilizers, nitrogen, phosphorus, potassium.

Today, "in more than 60 countries of the world, 4.9 mln. 13.5 mln. more than a ton of grain is being grown" [11]. In the world, Poland, Germany, France, Belarus, and Japan are the leading countries in the cultivation of triticale in Turkey, but the cultivation of grain yields higher than hectare corresponds to the countries of China and Turkey. According to statistical data, "in 2023, the cultivation of triticale in the world increased by 2.64 percent compared to 2020" [12]. It can be seen that the demand of the world's population and livestock for products made from triticale grain is steadily decreasing.

However, despite the fact that there has been a certain improvement in the cultivation of triticale grain, the problem of fully satisfying the needs of the world's population and livestock for triticale grain still remains an urgent problem. In this regard, creating new varieties that are resistant to the extreme conditions of nature and have high drought tolerance, which are intended for cultivation in dry areas, conducting scientific researches on the study of their planting periods, seed norms, mineral fertilizers during the growing season, is one of the urgent issues of today. is questioned [10].

One of the most important indicators of grain yield in autumn grain crops is the number of fertile clusters and fertile stems. A long period of moderate temperature and soil moisture from the beginning of tillering to tillering and earing has a positive effect on productive tillering [7, 8, 9].

According to V. F. Dorofeev, the indicators determining the productivity of grain crops are the number of fertile stems per 1 m², the number of grains in one spike, and the weight [1, 4, 5,].

N.G. Yodgorov's experiment revealed that there is a positive correlation between the number of fertile stems, the number of grains in 1 spike, and the number of grains in the spike in the case of high yield of grain crops with autumn spikes [2, 6].

Studies have shown that triticale has a high germination rate even in years with up to 250 mm of rainfall [3].

Research methods: According to the method of the International Classifier (SEV Triticum type, 1984) developed by the Russian Scientific Research Institute of Plant Science in field conditions in phenological observations, biometric analysis according to the method of the State Variety Testing Commission of Agricultural Crops (1989), conducting field experiments was determined according to UzPITI, Tashkent-2007 method.

The research was conducted in 2019-2021 at the central experimental site of the Scientific Research Institute of Rainfed Agricultural, Gallaorol district, Jizzakh region. Field experiments two autumns (1-10.11) and spring (20-28.02) periods, three planting rates of 2.5 million, 3.0 million and 3.5 million seeds and 4 fertilizer rates, 1 control were planted in a total of 30 options was studied.

According to the results of the study conducted in 2019, when studying the productive accumulation of the triticale variety "Sardor" in the autumn period (1-10.11) and the number of productive stems per 1 m², the control (without fertilizer) variant 1, planted at a sowing rate of 2.5 million seeds, yielded 1.6 seeds, the number of productive stems was 196.3 seeds/m², and in variants 2, 3, 4 and 5, which used mineral fertilizers P₃₀K₃₀ Fon, Fon+N₃₀, Fon+N₄₀, Fon+N₅₀, the productive accumulation was 1.7 seeds, the number of productive stems was 218.2-236-231.8-224.0 and 237.1 seeds/m².

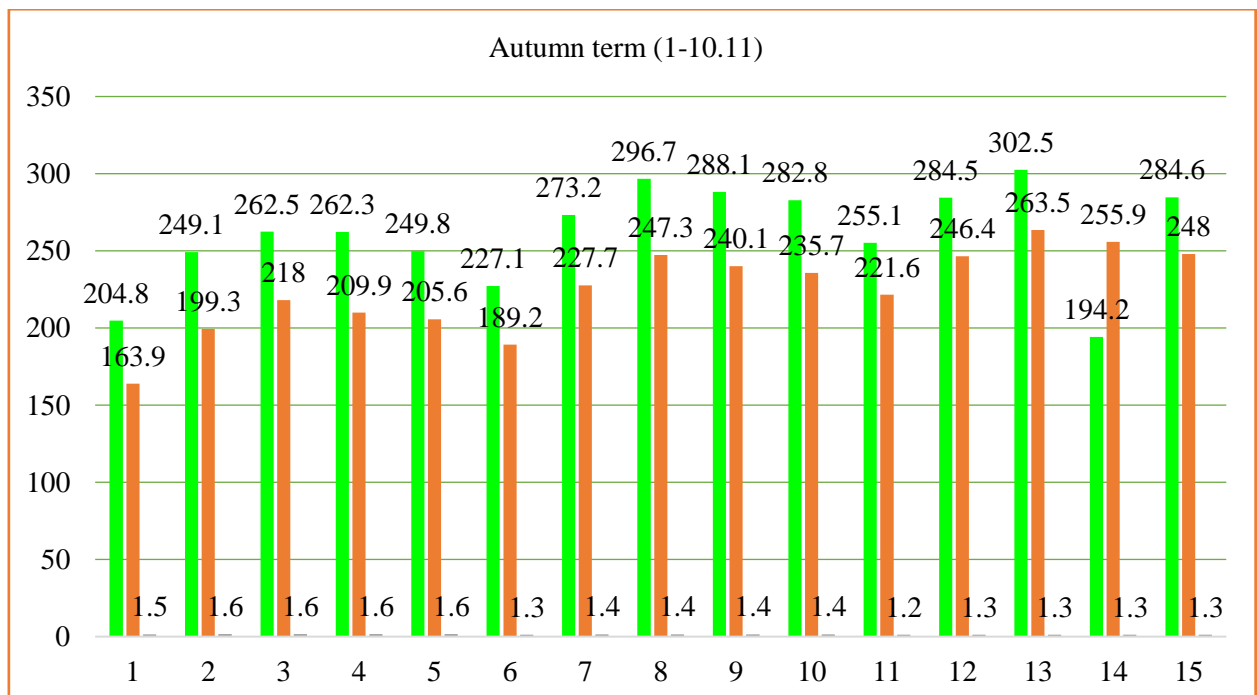


Figure 1. Total and productive stems number and accumulation rate of triticale in 2019.

The sowing rate was observed in the variants planted at the rate of 3.0 million seeds, where in the control (without fertilizer) variant 6, the productive accumulation was 1.4 seeds, the number of productive stems per 1 m² was 221.3 seeds, and in the variants 7, 8, 9 and 10, where mineral fertilizers P₃₀K₃₀ Fon, Fon+N₃₀, Fon+N₄₀, Fon+N₅₀ were applied at the rates, the productive accumulation was 1.5 seeds, the number of productive stems was 258.6-280.9-255.7-250.8 seeds/m², which were relatively high indicators.

It was found that in the control variant 11, planted at a sowing rate of 3.5 million seeds, the productive accumulation was 1.2 seeds, the number of productive stems per 1 m² was 223.6 seeds/m², and in variants 12, 13, 14 and 15, where mineral fertilizers P₃₀K₃₀ Fon, Fon+N₃₀, Fon+N₄₀, Fon+N₅₀ were applied, the productive accumulation was 1.3 seeds, the number of productive stems was 256.4-264.5-257.5-252.8 seeds/m² (Fig. 1).

According to the data obtained, the highest results when triticale was sown in the autumn period were observed in option 8, where it was sown at a rate of 3.0 million viable seeds per hectare and nitrogen fertilizer was applied at a rate of 30 kg per hectare against the background of mineral fertilizers P₃₀K₃₀.

According to data from the variants sown in the spring of 2019, when sowing at a rate of 2.5 million seeds, the yield in the control (without fertilizer) variant 16 was 1.5 grains, the number of productive stems was 163.9 grains/m², and in variants 17, 18, 19 and 20, where mineral fertilizers P₃₀K₃₀ Fon, Fon+N₃₀, Fon+N₄₀, Fon+N₅₀ were applied, the yield in the variant 17, 18, 19 and 20 was 1.6 grains, the number of productive stems was 199.3-218.0-209.9-205.6 grains/m².

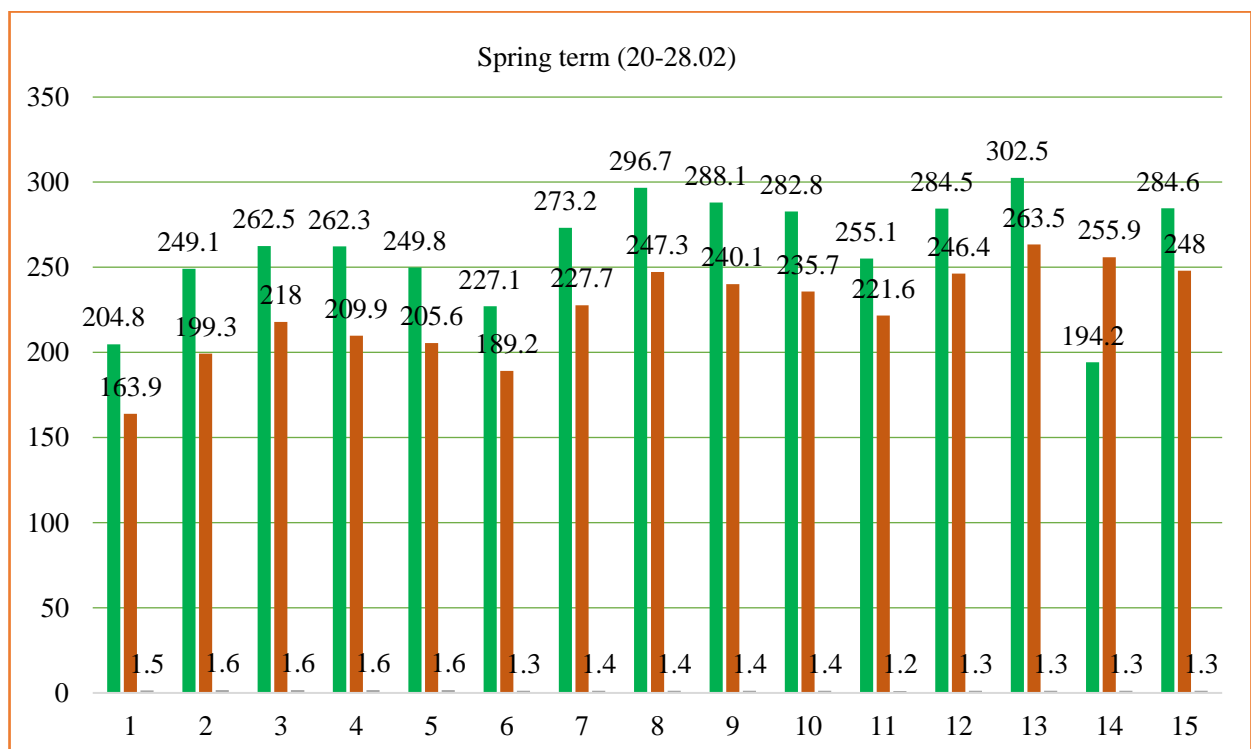


Figure 2. Total and productive stems number and accumulation rate of triticale in 2019.

In the control variant 21, planted at a sowing rate of 3.0 million seeds, the yield was 1.3 seeds, the number of productive stems was 189.2 seeds/m², and in variants 22, 23, 24 and 25, where mineral fertilizers P₃₀K₃₀ Fon, Fon+N₃₀, Fon+N₄₀, Fon+N₅₀ were applied, the yield was 1.4 seeds, the number of productive stems was 227.7-247.3-240.1-235.7 seeds/m². In the control variant 26, planted at a sowing rate of 3.5 million seeds, the yield was 1.2 seeds and the number of productive stems was 221.6 seeds/m², while in variants 27, 28, 29 and 30, where mineral fertilizers P₃₀K₃₀ Fon, Fon+N₃₀, Fon+N₄₀, Fon+N₅₀ were applied, the yield was up to 1.3 seeds and the number of productive stems was up to 246.4-263.5-255.9-248.0 seeds/m² (Fig. 2).

When triticale was sown in the spring, unlike the variants sown in the fall, the highest results were observed in variant 28, where 3.5 million seeds were sown per hectare and nitrogen fertilizer was applied at a rate of 30 kg per hectare against the background of mineral fertilizers P₃₀ K₃₀.

According to the results obtained, it can be concluded that in the conditions of typical gray soils of the Jizzakh region, the highest results in terms of productive accumulation and number of productive stems of the triticale variety "Sardor" were observed when sowing in the autumn period (1-10.11) with a sowing rate of 3.0 million units of viable seeds. It was found that the productive accumulation was 1.5 grains, and the number of productive stems was 221.3-280.9 grains/m², which is 0.1 grains more productive accumulation and 30.1-59.6 grains/m² more productive stems than other options.

The highest results were obtained when triticale was sown in the spring period (20-28.02) at a sowing rate of 3.5 million seeds per hectare, with a yield of 1.3 seeds and a number of productive stems of 221.6-263.5 seeds/m², which is 0.1 seeds higher than other options and only 17.1-41.9 seeds/m², according to the results of the research.

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