Volume 2, Issue 1, January 2024
ISSN (E): 2938-3781

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Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Effect of Planting Periods on Growth and Development of Durum Wheat Cultivars Under Drought Conditions

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Abstract
The article presents the results of studies of sowing dates in dry farming conditions, as well as the development phases of durum wheat varieties. The activity of growth and development of varieties depending on the sowing period was studied.

Keywords: durum wheat, planting time, germination, tubering, germination-earing, earing-full maturity, germination-full maturity.

Introduction

Importance of the topic. Durum wheat is a hot and dry climate crop. Durum wheat is one of the most important grain crops, and about 17 million are grown in the world. 38.1 million in an area of more than one hectare. tons of durum wheat grain is grown [1]. Taking into account that the demand for the production of durum wheat (Triticum durum) , the most important raw material of the pasta and confectionery industry in the world, is increasing day by day, great attention is being paid to the efficient use of arable land. Currently, in order to further strengthen food safety and satisfy the population's need for pasta and confectionery products, the cultivation of high-quality grain from durum wheat is one of the most urgent issues, and researches on improving agrotechnologies for its maintenance are important have.

In our country, durum wheat is planted on an area of 4000 ha, mainly in Kashkadarya, Jizzakh and Samarkand regions. Determining the suitable planting period and norms of durum wheat and improving the important agrotechnological elements of its cultivation are urgent issues.

In rainfed areas farming regions, wheat is sown in two periods, autumn and spring, as mentioned. Winter wheat is mainly planted from October, and is sown until the second half of November and even December. Spring wheat is sown everywhere in the country in February or the first half of March. Only the one in the mountainous zone sometimes cannot be planted before April. In the majority of dryland regions, the winter lull between the fall and spring wheat planting seasons often occurs when the ground is covered with snow. However, in the southern part of Uzbekistan - in the territories of Kashkadarya and Surkhandarya regions, due to the fact that the winter is very hot, for many years wheat planting does not stop even in December and January [4].

According to the experiences of dryland farming scientific research, the formation of high yield from autumn grain crops is managed by optimizing the planting period [4,5].

The growth and development of the wheat plant depends on many factors, in particular, the genetic characteristics of the variety, temperature, soil and air humidity, the amount of

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nutrients, rainfall, damage to the plant by diseases and pests, the level of nutrition, it depends on the planting period and standards [6,7,13,14].

Research method and materials

We conducted field experiments in the dry farming conditions of Yashin-yamin farm in Yakkabog district of Kashkadarya region. On October 1, October 21, November 11, and December 1, durum wheat variety "Mingchinor" was applied 2.0 per hectare as an experimental object; 2.5; 3.0 and 3.5 million. one grain of fertile seed was sown. The size of the 4-reciprocating, 50 m^2, 2-tiered piles was placed in the field experiments . The method of V. Orlov was used to calculate the leaf level. The photosynthetic potential (PSP) of crops, the net productivity of photosynthesis was determined according to A.A.Nichiparovich, methods. In the experiment, biometric measurements and phenological observations were carried out according to the method of UzPITI [2]. The dispersion analysis of the obtained data on productivity was determined according to the method of B.A.Dospekhov [3].

Results of the research

In our experiments, durum wheat changed depending on the development phases and the length of the growing season, and the planting dates.

The period from planting to germination also had an effect on the growth period of durum wheat varieties, the length of this period directly depends on temperature, soil moisture, and seed planting depth.

In our experiments, the germination period of durum wheat planted on October 1 (control) was 56 days in Javakhir, Mingchinor and Yakut-2014 varieties, and 57 days in Langar variety. No difference was observed between durum wheat cultivars in the duration of the germination period. However, in the autumn of 2017, the amount of rain that fell in October and November was less than in many years, and the moisture in the soil was not enough for the germination of seeds, so germination was observed a little later than in 2018 and 2019. In the research years, the sowing of seeds of durum wheat varieties is 2018, when the germination period is short and favorable, and this has shown its positive effect on the harvest of 2019, and an abundant and high-quality harvest was obtained.

With the delay of planting dates, the germination period of durum wheat varieties is associated with a decrease in soil moisture and temperature, that is, according to the information of the Chimkurgan weather station, the average long-term precipitation amount is 14.6 mm in October, 42.5 mm in November and 25.4 mm in December, and the first autumn precipitation falls on the second and third ten days of October. This definitely had a positive effect on the germination and germination of durum wheat seeds.

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Table 1 Effect of planting dates on duration of development phases of durum wheat varieties, days (2017-2020)

Planting period	Planting - sprouting	Germination-accumulation	Germination-sprouting	Germination-spiking	Spiking - full ripening	Germination-full ripening
Javakhir						
1.10 (control)	56	67	96	150	43	193
21.10	36	68	93	147	41	188
11.11	28	69	90	132	39	171
1.12	63	21	83	107	37	144
Mingchinor						
1.10 (control)	56	68	97	152	44	196
21.10	37	69	94	149	41	190
11.11	28	70	91	134	39	173
1.12	64	22	84	109	37	146
Langar						
1.10 (control)	57	69	98	154	44	198
21.10	37	70	95	151	41	192
11.11	28	71	92	136	39	175
1.12	64	23	85	111	37	148
Yakut-2014						
1.10 (control)	56	66	95	148	43	191
21.10	36	67	92	146	40	186
11.11	28	68	91	131	39	170
1.12	63	20	82	106	37	143

In our experiment, the germination period of durum wheat varieties varied from 20 to 71 days, depending on the planting dates (1.10 (control); 21.10; 11.11; 1.12). The duration of the germination period increased with the delay of planting dates. When sowing was carried out on October 1 (control), the period from sowing to germination was 56-69 days, on October 21 it was 36-70 days, on November 11 it was 28-71 days, on December 1 it was 21- It was 63 days. In late spring, full bloom was observed in the plots planted on November 11 and December 1 (Table 1).

In our experiment, full germination of seeds was observed in spring when durum wheat varieties were sown late on December 1, and in this case, the germination-to-heading period was 20-22 days in Spring [8,9,10,11,12].

The onset and duration of the phase in the germination-shooting period were affected by planting dates. The longest germination and tuber period was observed in Langar cultivar, when planted on October 1 (control) and was 98 days. During this period, plants entered the winter dormancy period, so it was longer compared to other phases and periods. In all varieties, the period of sprouting-sprouting was reduced with the delay of planting dates. Such pattern was observed in other stages of development.

An inverse and linear relationship was observed between durum wheat cultivars' growing season and planting dates. In this case, the regression equation of dependence is y = 212.5-

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16x, and it was determined that the correlation coefficient is equal to r = -0.96.
Based on the results of the statistical analysis, in conclusion, with a delay in planting durum wheat varieties, their vegetation period is shortened, and the probability of this event is high (R^2 =0.92), that is, in 92 cases out of 100 event was determined to occur (Figure 1).

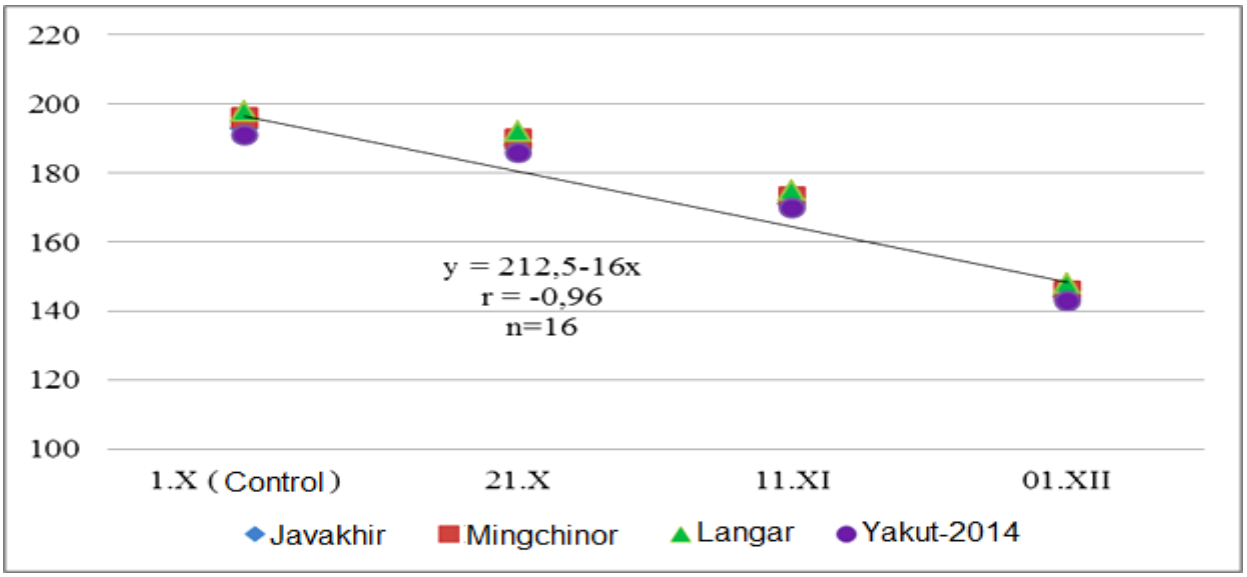

Figure 1. Dependence of durum wheat cultivars on planting dates of the growing season

To sum up, it was observed that the growth period of new varieties of durum wheat is shortened with the delay of planting dates in the dryland region of Kashkadarya region. Also, it was found that the growing period of the Langar variety studied in our experiments is 198 days, the Yaqut-2014 variety is the shortest, 191 days, and the growing period of the Mingchinor variety is also reduced with the delay of planting dates and the increase of planting standards.

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