



# INFLUENCE OF HARVEST TIME OF WINTER WHEAT VARIETIES TO THE GRAIN YIELDS IN THE CONDITIONS OF THE SOUTHERN REGION

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## ABSTRACT

*This article describes the differences of winter wheat "Selyanka", "Jayhun", "Krasnadarskaya-99" and "Turkiston" in the conditions of ancient irrigated, grazing light gray and barren soils of Kashkadarya region. the Turkestan variety was observed on May 14, May 22, June 8, respectively, while the phase was observed on May 21 and the full ripening phase on June 7; Krasnadarskaya-99 variety matured on May 16, May 24, June 10 and Jayhun variety on May 18, May 26, June 12, or the Turkestan variety growing season was 1 day, Krasnadarskaya-99 variety ripened for 3 days and Jayhun variety ripened 5 days later than Selekt. Turkestan and Krasnadarskaya-99 varieties of winter wheat and Selyanka and Jayhun varieties of winter wheat in the conditions of high irrigated soils, when the harvest period reaches the stage of full ripening on June 5-7 in the conditions of light gray soils grazing in order to obtain high and quality harvests of winter wheat. June 7-12 to reap the full maturity stage, when the impact of information.*

**KEYWORDS** – previously irrigated, grazing light gray soil, barren soil, winter wheat varieties “Selyanka”, “Jayhun”, “Krasnadarskaya-99” and “Turkiston”, harvest dates, grain harvest of winter wheat.

## 1. INTRODUCTION

Nowadays, the steady growth of the world's population is important in meeting the growing needs of humankind in food and agricultural products, as well as in increasing the yield and quality of cereals, including winter wheat. It is also home to more than 200 million people in more than 100 countries around the world. Wheat is planted on more than a hectare and 729.0 million tons of grain is grown. Of this, the share of winter soft wheat is 90-95 percent. At the same time, in many countries there is a growing interest in the timing of the harvest of winter wheat in order to obtain high quality crops. According to a report by the United Nations (UN) and the Food and Agriculture Organization (FAO) in October 2017, global grain production was high in 2017, at 2.612 billion tonnes, up from 6.8 million tonnes in 2016. tons. The huge reforms implemented in Uzbekistan over the past short period of independence

have made it possible to radically diversify agriculture and fully provide the population with ecologically clean food products and export them. One of the important tasks in the Action Strategy for further development of the Republic of Uzbekistan for 2017-2021 is "3.3. Application of intensive methods in agricultural production, first of all, modern agro-technologies that save water and resources", [1,2,3].

Taking into account these tasks, to conduct scientific research on the maintenance of soil fertility and land reclamation, as well as the development of optimal timing of sowing, irrigation regimes, mineral fertilizer standards, harvesting timing of winter wheat in different soil climates. is up to date.

Lukyanenko P.P. in gaining high and quality grain harvest from winter wheat. Krasnodar Agricultural Research Institute, Saratov Agricultural Research Institute



"Yuga-Vostoka" and Serbian Novi Sad Field Vegetable Research Institute (Russian Federation), International IKARDA, SIMMIT leading research centers Autumn wheat agrotechnologies from foreign scientists: Sayko V.F, Prutskov F.M, Osipov I.P, Nikolaev E.V, Wahdan A.A, Abd El Aty, Ibrahim M., Dr. Zoltán Adamis, János Kátai and studied by others.

Research on the characteristics of the variety, adaptation to different soil and climatic conditions, the development of agrotechnologies for obtaining high and high-quality grain crops in the cultivation of winter wheat on irrigated lands of the Republic Khalikov B., Siddikov R., Amanov A., Khalilov N., Atabaeva H., Ibragimov N., Amanov O., Bakhranov A., Isaev S., Abdurahmanov S., Hoshimov I and other scientists conducted scientific research [4,5,6,7,8,9].

The shelf life of grain is the period of complete shelf life of all quality indicators in the baking of edible bread. The shelf life of seed grains is slightly shorter than the shelf life of grains used for consumption. Storage of seed grains is divided into two shelf life. The first shelf life is the biological shelf life, which is called the final shelf life of the grain, or the period during which it is able to retain its viability, even if only one. The second is the shelf life, which is important for the farm, depending on the type of grain, the period of germination that meets the requirements of state standards. The technological shelf life of grains is also taken into account. This shelf life is the period during which the grain mass fully meets the conditioning requirement according to the state standard, depending on the area of use (technical purposes for feed for consumption), [10].

If the varietal purity of the seeds is 99.5%, they are divided into the second and third categories if the first is 98 and 95%. Variety purity of elite seeds should be 99.7%. The quality indicators of seeds of winter wheat cereals are as follows: the main seed quantity (purity), contamination and germination. Depending on these parameters of the grain, the seeds are divided into different classes, [15,16,17,18,19,20].

The study of winter wheat varieties Selyanka, Jayhun, Krasnadarskaya-99 and Turkiston on the timing of harvest, as well as the effect on the quality of grain has not been studied in the conditions of lightly irrigated pastures and light gray and barren soils of Kashkadarya region.

### The Aim of the study

To determine and recommend recommendations for the production of high-quality grain of winter wheat from Selekt, Jayhun, Krasnadarskaya-99 and Turkestan varieties in the conditions of ancient irrigated pastures and light gray and barren soils of Kashkadarya region in the southern region of Uzbekistan.

**Object of research:** ancient irrigated grazing light gray and barren soils, winter wheat varieties

"Selyanka", "Jayhun", "Krasnadarskaya-99" and "Turkiston".

As a subject of research growth and development and yield of winter wheat, as well as the technological quality of the grain.

## 2. THEORY

Conducting laboratory and field experiments, phenological observations and biometric measurements, soil and plant sampling and their analysis in the research work "Methods of field opiods with cereal cultures", "Methods of state sortoispytaniya selskokhozyaystvennyeken kultur", "Methodology of agricultural culture", "Methodology of agricultural culture" «Methods of biochemical research of plants», «Methods of conducting field experiments» and «Methods of agrochemical, agrophysical and microbiological research in polyvnykh khlopkovy rayonax carried out on the basis of guidelines, manuals, [11,12,13,14].

Once the grain crop is ripe, it is definitely time to start harvesting them. However, the yield is lower than the identified biological yield structure and approbation data. This is due to the fact that the harvest was not carried out on time, the work was not organized properly. Failure to take into account the economic characteristics of varieties of winter wheat, the lack of placement of varieties depending on the characteristics of the region at the time of sowing affects the yield and technological quality of grain.

## 3. STATEMENT OF THE PROBLEM

Kashkadarya region is located in the south-west of Uzbekistan, its northern and western sides are surrounded by mountains. Therefore, the Karshi steppe (Bahoristan, Mubarek, Mirishkor, Kasbi, Kasan, Karshi and Nishan districts) located in the region receives cold air from the north and hot air from the west from Karakum. This situation in turn creates a sharp continental climate. Summers are hot, long and dry, winters are short and cold, and springs are relatively humid. The weather changes with the wind blowing from the steppe to the mountains. Positive temperature is + 49000-5000 degrees, effective temperature is + 2519-2980 degrees, cold days are 213-233 days.

The first autumn frost occurs from October 14 to November 2, and the last spring frost occurs on March 16-25. Constant temperature above +10 degrees occurs 14-19 times in a typical gray soil zone.

In the zone of typical and light gray soils it is +25.3 degrees. The average daily temperature in July is +28 degrees in the middle reaches of Kashkadarya and +31.6 degrees in the desert zone. The maximum temperature in this zone reaches 47-50 degrees. During



this period, the relative humidity decreases to 22%, and during the day there is a hot wind due to drought.

Precipitation is very low, 40-140 mm during the growing season, 104-394 mm in autumn, winter and spring. Moisture evaporation is 1110-1580 mm during the growing season and 394-402 mm during the off-season.

In the 2011 experiment, the average daily air temperature rose from 5-80C in January and February to 350S in July, then dropped to 100S in December. In 2012, it rose sharply from 100S in January to 350S in May, and to 380S in July and August.

Field experiments were carried out on the experimental plot of the Kashkadarya Research Institute of Cereal Breeding and Seed Production in the conditions of ancient irrigated pastures of light gray and barren soils of Kashkadarya region. The mechanical composition of the soil of the experimental field is sandy, the groundwater depth is 2.5-3.0 m, the area of winter wheat varieties "Selyanka", "Jayhun", "Krasnadarskaya-99" and "Turkiston" is 360 m<sup>2</sup>. (row length 64.3 m, ie 8 rows x 0.7 = 5.6 m), of which 180 m<sup>2</sup> are taken into account, 4 rows, all options are schematically placed in one tier and determine the optimal timing of ripening of winter wheat grain, harvest - Science-based technology for the timely and correct organization of harvesting The purpose of the creation of the INI.

Field and laboratory experiments were carried out on the basis of the methodological manual of the All-Russian Scientific Research Institute of Botany. Phenological observations and biometric analyzes were carried out in accordance with the methodological guidelines of the State Commission for Variety Testing of Agricultural Crops.

In the conditions of ancient irrigated grazing light gray soils, the content of humus in the tillage (0-30 cm) layer of the soil is 1.26%, total nitrogen 2.13%, phosphorus 2.11%, potassium 2.41%, their mobile forms are 14, respectively. 6; 25.3; At 223 mg / kg, the soil volume was 1.32 g / cm<sup>3</sup>, the specific gravity was 2.74 g / cm<sup>3</sup>, and the porosity was 51.8%, while the plowing of the soil in the conditions of ancient irrigated grazing fallow soils (0-30 cm) in the layer contains humus 1.14%, total nitrogen 2.43%, phosphorus 2.31%, potassium 2.32%, their mobile forms are 13.9, respectively; 22.5; At 212 mg / kg, the soil volume was 1.34 g / cm<sup>3</sup>, the specific gravity was 2.76 g / cm<sup>3</sup>, and the porosity was 52.4%.

The results of the research show that the number of plants per 1 m<sup>2</sup> of each variety, the number of productive stems, accumulation and plant height were as follows based on the biological characteristics of the varieties, ie the number of plants per 1 m<sup>2</sup> of Selyanka variety of winter wheat grown in light gray soils. 308 grains, the number of productive stalks was 385 grains, the accumulation was 0.8 grains and the plant height was 82 cm, while the Turkestan variety of winter wheat was 383 in accordance with the above; 479; 1.1 and 84 cm, Krasnadarskaya-99 variety 305; 381; 1.7 and 80 cm and 306 in the Jayhun variety of winter wheat; 386; 1.2 and 92 cm. When studying the same varieties in the conditions of barren soils, the Selyanka variety of winter wheat had 309 plants per 1 m<sup>2</sup>, the number of productive stems was 387, the accumulation was 0.9 and the plant height was 85 cm, while the Turkestan variety was 385; 473; 1.2 and 89 cm, 308 in Krasnadarskaya-99 variety; 379; 1.5 and 86 cm and 307 in Jayhun variety; 383; 1.2 and 87 cm were observed.

We know that each variety can be distinguished according to its biological characteristics. Depending on the results of phenological analysis, it is possible to determine the duration of the process of growth and maturation of the plant. According to the results of the observation, Selyanka variety of winter wheat, grown in light gray soils, passed into the milk ripening phase on May 12, wax ripening phase on May 20 and full ripening phase on June 6, Turkestan variety on May 13, May 21, June 7, respectively. ; Krasnadarskaya-99 variety was matured on May 15, May 23, June 9 and Jayhun variety on May 17, May 25, June 11, or Turkestan variety vegetation period was 1 day, Krasnadarskaya-99 variety was 3 days late and Jayhun variety was 5 days late compared to Selekt variety. . In the study of winter wheat varieties under similar tillage conditions, Selyanka variety entered the milk ripening phase on May 13, wax ripening phase on May 21 and full ripening phase on June 7, Turkestan variety on May 14, May 22, June 8, respectively; Krasnadarskaya-99 variety matured on May 16, May 24, June 10 and Jayhun variety on May 18, May 26, June 12, or Turkestan variety has a 1-day late ripening period, Krasnadarskaya-99 variety has a ripening period of 3 days and Jayhun variety has a 5-day late ripening period. , Table 1.



**Table-1**  
**Influence of winter wheat varieties on phenological observations**

№	Varieties	Grassing	Gathering	Tubing	Forming ears	Ripening period			Vegetation period
						milk ripening	wax ripening	Fully ripening	
<b>In light gray soil conditions</b>									
1	Selyanka	20.11	7.01	10.03	20.04	12.05	20.05	6.06	185
2	Jayxun	23.11	12.01	15.03	25.04	17.05	25.05	11.06	190
3	Krasnadarskaya-99	23.11	10.01	13.03	23.04	15.05	23.05	9.06	188
4	Turkiston	21.11	8.01	11.03	21.04	13.05	21.05	7.06	186
<b>In the conditions of barren soils</b>									
1	Selyanka	21.11	8.01	11.03	21.04	13.05	21.05	7.06	186
2	Jayxun	23.11	13.01	16.03	26.04	18.05	26.05	12.06	191
3	Krasnadarskaya-99	23.11	11.01	14.03	24.04	16.05	24.05	10.06	189
4	Turkiston	22.11	9.01	12.03	22.04	14.05	22.05	8.06	187

In the research methodology, using a four-term harvest, the 1st harvest is carried out when the plant stem is 75% yellow (approximately 10 days before full ripening); 2nd harvest when the plant reaches the full ripening phase; 3 days after the full ripening phase of harvest 3; The 4th harvest was carried out 20 days after the full ripening phase, Table 2.

According to the results, a separate harvest period was determined for each variety. In the conditions of ancient irrigated grazing light gray soils, depending on

the harvest time, the highest yield was 61 ts / ha from Krasnadarskaya-99 variety when the 2nd crop reached full maturity, the lowest yield was 52.1 ts / ha from Jayhun variety, 4th crop. when carried out after 20 days from the full ripening phase in all varieties ranged from 32.8 ts / ha to 42.4 ts / ha. It was observed that the highest yields were obtained from the Selyanka variety at 53.3 t / ha and the lowest yield at the Krasnadarskaya-99 variety at 50.7 t / ha when the same varieties were grown in loamy soils.

**Table -2**  
**Impact of harvest times on grain yield of winter wheat, ts / ha**

№	Sorts	1st harvest	2- acceptable term	3 <sup>rd</sup> harvest	4 <sup>th</sup> harvest	Назоратга нисбатан фарқ		
						With respect to the 1 <sup>st</sup> harvest	With respect to the 2 <sup>nd</sup> harvest	With respect to the 4 <sup>th</sup> harvest
<b>In light gray soil conditions</b>								
1	Selyanka	59,5	60,0	54,9	36,1	-4,6	5,1	-18,8
2	Jayxun	49,1	52,1	48,0	38,7	-1,1	4,1	-9,3
3	Krasnadarskaya-99	51,9	61,0	55,3	42,4	3,4	5,7	-12,9
4	Turkiston	53,5	55,0	48,8	32,8	-4,7	6,1	-16,0
<b>In the conditions of barren soils</b>								
1	Selyanka	50,6	53,3	52,1	50,0	1,6	1,2	-2,1
2	Jayxun	49,7	51,5	48,8	46,9	-0,9	2,7	-1,9
3	Krasnadarskaya-99	46,1	50,7	48,3	45,5	2,1	2,4	-2,7
4	Turkiston	51,0	51,5	48,1	46,8	-2,9	3,4	-1,3



Samples from winter wheat varieties were first taken from freshly harvested wheat grains and placed in a thermostat at 200 C to determine germination, and 100 grains from each variety were placed in parallel in 4 turns, Table 3.

While the moisture content of the grain harvested from the Selyanka variety of winter wheat was 12.5% when it was originally brought from the field, the moisture content of the grain also changed during storage due to air temperature and relative humidity. The germination energy was initially 2%, 79% after 1 month, 99% after 3 months, the yield varied from 12.2% to 99%, and the initial moisture content of the grain in the Jayhun variety of winter wheat was 11.4%. In this case, the grain harvested from the field was put into production. In this case, the germination energy is 3%, germination 18%,

after 1 month, the moisture content of the grain is 13.4%, germination energy is 81%, germination is 87%, after 3 months, the moisture content of the grain is 12.5%, The germination energy was 98%, the germination rate was 98%, the yield of winter wheat Krasnadarskaya-99 was 12%, the germination energy was 2.2%, the germination rate was 24%, and the germination rate was 12.2% after 1 month. %, germination energy 88%, germination 90%, initial moisture content of grain 12.5% when sown after 3 months, it germination energy 98%, germination 98%, winter wheat Turkestan wheat initial moisture content 12.4%, germination energy 2%, germination 16%, after 1 month the initial moisture content of the grain 13.3%, germination energy 67%, germination 78 %, Initial humidity after 3 months was 14%, germination energy was 99%, germination was 99%.

Table-3

Dependence of winter wheat grain germination on the physiological dormancy period of grain

Tracking time	Selyanka			Jayhun			Krasnadarskaya-99			Turkiston		
	grain moisture,%	ignition energy,%	yielding, %	grain moisture,%	ignition energy,%	yielding, %	grain moisture,%	ignition energy,%	yielding, %	grain moisture,%	ignition energy,%	yielding, %
After the harvest	12,5	2	12,2	11,4	3	18	12	2,2	24	12,4	2	16
After 1 month of storage	13,6	79	80	13,4	81	87	12,2	88	90	13,5	67	78
After 3 month of storage	14	99	99	13,8	98	98	12,5	98	98	14	99	100

## 5. CONCLUSION

Selyanka variety of winter wheat, grown in Kashkadarya region on irrigated, grazing light gray soils, passed to the milk ripening phase on May 12, wax ripening phase on May 20 and full ripening phase on June 6, Turkestan variety on May 13, May 21, 7, respectively. June; Krasnadarskaya-99 variety was matured on May 15, May 23, June 9 and Jayhun variety on May 17, May 25, June 11, or Turkestan variety vegetation period was 1 day, Krasnadarskaya-99 variety was 3 days late and Jayhun variety was 5 days late compared to Selekt variety. .

2. In the study of winter wheat varieties in the southern soils of the southern region, Selyanka variety entered the milk ripening phase on May 13, wax ripening phase on May 21 and full ripening phase on June 7,

Turkestan variety on May 14, May 22, June 8, respectively; Krasnadarskaya-99 variety was matured on May 16, May 24, June 10 and Jayhun variety on May 18, May 26, June 12, or Turkestan variety with Selekt variety had a 1-day growing season, Krasnadarskaya-99 variety with 3 days and Jayhun variety with 5 days late ripening. ;

3. Turkestan and Krasnadarskaya-99 varieties, Selyanka and Jayhun varieties of winter wheat grown in ancient irrigated soils in the southern region of the country in the conditions of light gray soils grazing in order to obtain high and high-quality winter wheat. Harvesting is recommended when it reaches the full ripening phase by June 12th.

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