

INFLUENCE OF IRRIGATION AND FEEDING RATES ON SPROUTING AND WINTERING OF WINTER WHEAT

Yodgorov N.G. Email: Yodgorov6111@scientifictext.ru

*Yodgorov Normumin Gulomovich - Candidate of Agricultural Sciences, Senior Researcher,
LABORATORY OF PLANT PROTECTION, AGROCHEMISTRY AND AGRICULTURAL ENGINEERING,
KASHKADARYA BRANCH
RESEARCH INSTITUTE FOR GRAIN AND LEGUMINOUS CROPS,
KARSHI, REPUBLIC OF UZBEKISTAN*

Abstract: *this article reveals the field fertility of winter wheat seeds of the varieties "Alekseevich", "Bunyodkor" and "Shams" per 1m² of area, the number of overwintered plants in the conditions of the upper mountain typical gray (Shakhrisabz district and lower gray (Karshi district) soils of Kashkadarya oasis, the irrigation regime, the influence of the norms of mineral fertilizers. It is known that the most important agrotechnical measure in the cultivation of all agricultural crops, including winter wheat is to grow a plant of certain thickness per hectare. This is due to the fact that under certain conditions, the thickness of crops depends primarily on the germination of seeds, the rate and timing of sowing, soil and climatic conditions, soil preparation for sowing and planting, nature of the cultivated variety and a number of other factors.*

Keywords: *winter wheat, varieties, fertilizer, irrigation, norm, amount, growing, agrotechnical, indicator.*

ВЛИЯНИЕ НОРМ ПОЛИВА И ПОДКОРМКИ НА ПРОРАСТАНИЕ И ЗИМОВКУ ОЗИМОЙ ПШЕНИЦЫ

Ёдгоров Н.Г.

*Ёдгоров Нормумин Гуломович - кандидат сельскохозяйственных наук, старший научный сотрудник,
лаборатория защиты растений, агрохимии и агротехники,
Кашкадарьинский филиал
Научно-исследовательский институт зерна и зернобобовых культур,
г. Карши, Республика Узбекистан*

Аннотация: *в статье раскрывается полевое плодородие семян озимой пшеницы сортов «Алексеевич», «Бунёдор» и «Шамс» на 1м² площади, количество перезимовавших растений в условиях верхней горной серой типичной (Шахрисабзский район) и нижней серой (Каршинский район) почвы Кашкадарьинского оазиса, режим орошения, влияние норм минеральных удобрений. Известно, что важнейшим агротехническим мероприятием при возделывании всех сельскохозяйственных культур, в том числе озимой пшеницы, является выращивание растения определенной толщины в год с гектара. Это связано с тем, что при определенных условиях густота посевов зависит в первую очередь от всхожести семян, нормы и сроков посева, почвенно-климатических условий, подготовки почвы к посеву и посадке, характера возделываемого сорта и ряда других факторов.*

Ключевые слова: *озимая пшеница, сорта, удобрение, полив, норма, количество, выращивание, агротехника, показатель.*

UDC 631.5, 631.8, 633.111

INTRODUCTION.

It is known that the most important agrotechnical measure in the cultivation of all agricultural crops, including winter wheat is to grow a plant of certain thickness per hectare.

This is due to the fact that under certain conditions, the thickness of crops depends primarily on the germination of seeds, the rate and timing of sowing, soil and climatic conditions, soil preparation for sowing and planting, nature of the cultivated variety and a number of other factors.

Studies show that the main reason for the destruction of wheat sown in autumn is the weak emergence of plants, their development during the hot autumn period, as well as a sharp change in temperature in snowy and snowless winters.

In our experiments, it was noticed that when autumn wheat varieties were damaged by the cold (after the snow melted), the leaves turned yellow, the joints and roots turned brown and dried out.

However, in healthy plants, after a few days, the leaves revive, the roots turn white, and they begin to go through the growing season.

The object of the research.

Researchers were conducted in the condition of high mountainous typical gray (Shakhrisabz district) and low light gray (Karshi district) soils of the Kashkadarya oasis on October 10-15, winter wheat varieties "Alekseevich", "Bunyodkor" and "Shams" were planted, the effect on the number of plants was determined by

soil moisture LFMC (70-70-60) and LFMC (75-80-70) in the irrigation regime of 1 control (without fertilizer) and 3 (N₁₂₀P₈₀K₆₀; N₁₈₀P₁₂₀K₉₀ and N₂₄₀P₁₆₀K₁₂₀ kg/ha) 1 m² in the experimental variant.

The results of the research.

According to the biological characteristics of winter wheat varieties in the conditions of high mountainous typical gray soils of Kashkadarya oasis (Shakhrisabz district), in the irrigation regime of LFMC (70-70-60) the field germination of seeds averages 82.2-91.4%, LFMC (75-80-70) in the irrigation regime was 80.2-90.6%, respectively.

The temperature is directly related to the growth and development of winter wheat, and the average air temperature in December, January and February 2020 was 5.4;4.6 and 6.2 °C, and such temperatures slightly adversely affected the overwintering of winter wheat.

As a result, the wintering of winter wheat in the experimental field was average 71.0-93.5% in 2020.

In general, in the conditions of high-mountain typical gray soils (Shakhrisabz district) with the option of applying fertilizers N₂₄₀P₁₆₀K₁₂₀ kg/ha in order of irrigation of LFMC(70-70-60), germination of winter wheat seeds, other experimental options (Control without fertilizers); N₁₂₀P₈₀K₆₀ and N₁₈₀P₁₂₀K₉₀ kg/ha) is 0.8 -8.5 % higher than the average, 91.4% of the Alekseevich variety, 90.7% of the Bunyodkor variety, 88.7 % of the Shams variety and the number of overwintered plants - 93.5; 93.0 and 93.3 %, respectively (Table 1).

Table 1. The influence of irrigation regime and mineral fertilizer norms on germination and winter resistance of winter wheat seeds (in the condition of typical gray soils of Sakhrisabz district)

№ var.	Irrigation regime, (%)	Mineral fertilizer norms, kg/ha	Autumn wheat varieties	Number of plants per 1m ² (pieces)	Germination, (percent)	Number of plants before winter 1m ² , (pieces)	Number of overwintered plants,		
							pieces	percent	Rareness, percent
1.	LFMC (70-60)	Control (without fertilizer)	«Alekseevich»	434	86,8	417	317	76,0	24
			«Bunyodkor»	421	84,2	405	303	74,8	25,2
			«Shams»	410,8	82,2	393	291	74,0	26
2.		N ₁₂₀ P ₈₀ K ₆₀	«Alekseevich»	436	87,2	424	370	87,3	12,7
			«Bunyodkor»	432,4	86,5	420	357	85,0	15
			«Shams»	419,8	84	408	352	86,3	13,7
3.		N ₁₈₀ P ₁₂₀ K ₉₀	«Alekseevich»	450,9	90,2	440	408	92,7	7,3
			«Bunyodkor»	444,2	88,8	433	395	91,2	8,8
			«Shams»	431,2	86,2	419	381	90,9	9,1
4.	N ₂₄₀ P ₁₆₀ K ₁₂₀	«Alekseevich»	456,8	91,4	448	419	93,5	6,5	
		«Bunyodkor»	453,4	90,7	443	412	93,0	7	
		«Shams»	443,5	88,7	432	403	93,3	6,7	
5.	LFMC (75-80-70)	Control (without fertilizer)	«Alekseevich»	414,5	82,9	398	312	78,4	21,6
			«Bunyodkor»	409,6	81,9	392	283	72,2	27,8
			«Shams»	401,2	80,2	383	272	71,0	29
6.		N ₁₂₀ P ₈₀ K ₆₀	«Alekseevich»	428,9	85,8	418	354	84,7	15,3
			«Bunyodkor»	426,3	85,3	416	340	81,7	18,3
			«Shams»	412,7	82,5	401	336	83,8	16,2
7.		N ₁₈₀ P ₁₂₀ K ₉₀	«Alekseevich»	446,7	89,3	434	391	90,1	9,9
			«Bunyodkor»	438,8	87,8	428	377	88,1	11,9
			«Shams»	426,2	85,2	414	366	88,4	11,6
8.	N ₂₄₀ P ₁₆₀ K ₁₂₀	«Alekseevich»	452,8	90,6	444	402	90,5	9,5	
		«Bunyodkor»	448,7	89,7	438	394	90,0	10	
		«Shams»	439,5	87,9	428	384	89,7	10,3	

Studies showed that irrigation regimes and mineral fertilizers also effectively influenced on the wintering of winter wheat grasses and the number of plants that survived at the end of the growing season was 419 pieces of «Alekseevich» variety, 412 pieces of «Bunyodkor» variety, 403 m² pieces of Shams variety or 93.5; 93.0 and 93.3% respectively compared to grasses before the winter, with the lowest depletion (6,5;7.0 and 6,7%) and the influence of winter wheat irrigation regime of LFMC(70-70-60), in the variant with the norm of fertilizer N₂₄₀P₁₆₀K₁₂₀ kg/ha, and it was found that the winter wheat had an effective effect on the developmental periods.

Accordingly, the following studies were conducted in light gray soils of the lower part of Kashkadarya oasis (Karshi district), depending on the biological characteristics as well as soil moisture of LFMC(70-70-60) in the irrigation rate 1 m² in the experimental variant the number of plants in the area was 378-433, and after the winter-247-384, or the number of plants that overwinter was 65.3-88.6 % on average, the number of plants lost in autumn-winter period was 11.4-34.7%.

In accordance with the above, the irrigation regime of LFMC(75-80-70) was 374-429 units, 258-395 units, 69,0-92,1 %, 7,9-31,0 % (Table 2)

The maximum rareness of grasses was 29.2% in the variant of “Alekseevich” variety LFMC (70-70-60) controlled (without fertilizer) in the irrigation regime, while 18.2 % in the variant with the application of N₁₂₀P₈₀K₆₀ kg/ha, fertilizer application rate amounted to N₁₈₀P₁₂₀K₉₀ kg/ha, in the applied variant was 12.2%, and in the applied variant -11.4% the fertilizer rate N₂₄₀P₁₆₀K₁₂₀ kg/ha.

These figures are proportional to 25.9 in the irrigation regime of LFMC (75-80-70);15.4; the decreases were noted by 8.9 and 7.9%, respectively.

“Bunyodkor” variety was 33.2% in the variant with control (without fertilizer) in the irrigation regime of LFMC(70-70-60), 21.8% in the variant with N₁₂₀P₈₀K₆₀ kg/ha, in the variant with N₁₈₀P₁₂₀K₉₀ kg/ha was 14.5% and the option of applying N₂₄₀P₁₆₀K₁₂₀ kg/ha was 12.3%.

In proportion to the above, 30.7 in the irrigation rate of LFMC(75-80-70); 18.0 decreases of 10.8 and 8.6 % were noted.

Table 2. The influence of irrigation regime and mineral fertilizers norms on germination and winter resistance of winter wheat seeds (in the condition of light gray soils of Karshi district in 2020)

№ variant	Irrigation regime, (%)	Mineral fertilizer norms, kg/ha	Autumn wheat varieties	Number of plants per 1m ² (pieces)	Germination, (percent)	Number of plants before winter 1m ² , (pieces)	Number of overwintered plants,		
							pieces	percent	Rareness, percent
1.	LFMC (70-70-60)	Control (without fertilizer)	«Alekseevich»	420,3	84,1	401	284	70,8	29,2
			«Bunyodkor»	410,2	82,0	392	262	66,8	33,2
			«Shams»	398,5	79,7	378	247	65,3	34,7
2.		N ₁₂₀ P ₈₀ K ₆₀	«Alekseevich»	428,6	85,7	415	339	81,8	18,2
			«Bunyodkor»	425,3	85,1	411	322	78,2	21,8
			«Shams»	412,2	82,4	400	322	80,5	19,5
3.		N ₁₈₀ P ₁₂₀ K ₉₀	«Alekseevich»	437,4	87,5	425	373	87,8	12,2
			«Bunyodkor»	430,5	86,1	418	357	85,5	14,5
			«Shams»	418,3	83,7	404	346	85,8	14,3
4.	N ₂₄₀ P ₁₆₀ K ₁₂₀	«Alekseevich»	443,1	88,6	433	384	88,6	11,4	
		«Bunyodkor»	439,8	88,0	428	375	87,7	12,3	
		«Shams»	430,2	86,0	417	364	87,4	12,6	
5.	LFMC (75-80-70)	Control (without fertilizer)	«Alekseevich»	408,7	81,7	390	289	74,1	25,9
			«Bunyodkor»	404,7	80,9	384	266	69,3	30,7
			«Shams»	394,8	79,0	374	258	69,0	31,0
6.		N ₁₂₀ P ₈₀ K ₆₀	«Alekseevich»	423,2	84,6	411	348	84,6	15,4
			«Bunyodkor»	420,4	84,1	409	335	82,0	18,0
			«Shams»	402,8	80,6	389	325	83,5	16,5
7.		N ₁₈₀ P ₁₂₀ K ₉₀	«Alekseevich»	433,3	86,7	419	382	91,1	8,9
			«Bunyodkor»	425,6	85,1	413	369	89,2	10,8
			«Shams»	413,4	82,7	400	355	88,9	11,1
8.	N ₂₄₀ P ₁₆₀ K ₁₂₀	«Alekseevich»	439,2	87,8	429	395	92,1	7,9	
		«Bunyodkor»	435,2	87,0	423	386	91,4	8,6	
		«Shams»	426,3	85,3	413	379	91,8	8,2	

“Shams” variety was 34.7% in the variant of LFMC(70-70-60) with control (without fertilizer) in the irrigation regime, 19.5% in the variant with $N_{120}P_{80}K_{60}$ kg/ha in the variant with $N_{180}P_{120}K_{90}$ kg/ha, 14.3 %, while the fertilizer rate was 12.6% in the $N_{240}P_{160}K_{120}$ kg/ha variant.

In the proportion to the above, in the irrigation rate of LFMC (75-80-70) 31.0;16.5; were around 11.1 and 8.2% (Table 2).

CONCLUSION. So, the effect of low temperatures on irrigated lands on winter wheat varieties varies, depending on the time of plant germination, seed germination condition, weather condition of the plant at the time of entering the winter, as well as adequate nutrients.

The best resistance of winter wheat to adverse conditions in winter varies depending on the agronomic techniques of cultivation based on biological properties.

References / Список литературы

1. *Abbasov A.* Vliyanie navoza i mineraln’x udobreniy na uroжайnost ozimoy pshenits’ // Agrarnaya nauka. Moskva, 2015. № 5. S. 18-20.
2. *Atabaeva X.N., Xudoyqulov J.B.* Kuzgi bug’doy istiqbolli navlari hosiliga ma’dan o’g’itlar me’yorining ta’siri // O’zbekistonda bug’doy seleksiyasi, urug’chiligi va etishtirish texnologiyasiga bag’ishlangan birinchi milliy konferensiya. T: 2004. B. 161-165.
3. *Bobojanova S.* Kuzgi bug’doy navlari hosildorligida madanli o’g’itlar meyorining o’rni // O’zbekiston qishloq xo’jaligi. Toshkent, 2012. № 4. B. 28-29.
4. *Gafurova L.A., Mirzajonov K.M.* Vliyanie mineraln’x udobreniy pod ozimoy pshenitsu na erodirovannyyx serozemax. O’zbekistonda bug’doy seleksiyasi, urug’chiligi va etishtirish texnologiyasiga bag’ishlangan birinchi milliy konferensiya. Toshkent: 2004. B. 183-187.