



LEAF LEVEL INDICATORS OF COMMON SPRING WHEAT VARIETIES

A.Juraev

Southern Agricultural Scientific Research Institute (Uzbekistan)

Abstract. *The article presents the results of trials of spring wheat varieties "Janub gavhari," "Bahor-1," and "Navröz" at different times and rates. Based on the obtained results, it was established that in the conditions of the southern region, the leaf blade area of spring soft wheat varieties was highest during the flowering period. Increasing sowing rates affects the reduction of leaf surface area per plant, and delaying sowing dates ensures high leaf blade area.*

Keywords. *Spring wheat, variety, leaf surface area, growing season, growing season, early maturity, sowing rate.*

Аннотация. *В статье представлены результаты испытаний сортов яровой пшеницы "Жануб гавҳари," "Баҳор-1" и "Навруз" в разные сроки и нормы. По полученным результатам установлено, что в условиях южного региона площадь листовой пластинки сортов яровой мягкой пшеницы была самой высокой в период цветения. Увеличение норм высева влияет на уменьшение площади листовой поверхности на одном растении, а задержка сроков высева обеспечивает высокую площадь листовой пластинки.*

Ключевые слова. *Яровая пшеница, сорт, листовая поверхность, вегетационный период, вегетация, скороспелость, норма высева.*

It is known that 90-95% of the substances in crop yields and all the potential chemical energy stored within them are transformed products of photosynthesis and converted solar energy, initially assimilated by plants [1]. The leaf is the primary organ for absorbing solar radiation, and as the organ responsible for photosynthesis, it facilitates the formation of primary products. The size of leaves, their quantity, and the intensity of their activity ultimately determine the yield of agricultural crops [2].

According to I.S. Shatilov and A.F. Sharov, leaves play a dominant role in CO₂ absorption throughout the entire vegetation period; they account for 67-70% of the total crop assimilation [3].

In the forest-steppe zone of the Orenburg Pre-Ural region, the largest photosynthetic leaf surface area in favorable years is observed in varieties of steppe and forest-steppe Volga ecotypes during the stem elongation phase, while in varieties of forest North Russian and forest-steppe West Siberian ecotypes, it occurs during the heading phase. Under arid conditions, the peak leaf area was observed during the heading phase. This was characteristic of all variety groups [4].

The leaf area of spring soft wheat during the tillering and stem elongation phases was greater on the western slope exposure. In the heading phase, the situation changed - on the eastern slope, the leaf surface of wheat crops developed more extensively compared to the western slope [5].



The maximum photosynthetic leaf surface during the heading phase on both slopes was observed when spring wheat was sown at the onset of soil physical ripeness (first sowing date). On the eastern-facing slope, the maximum leaf area of soft wheat developed with a seeding rate of 5.5 million germinating seeds per hectare, while on the western-facing slope, two seeding rates stood out: 4.5 and 5.5 million germinating seeds per hectare.

To determine the relationship between spring soft wheat yield and the photosynthetic leaf surface area during the heading phase, a correlation-regression analysis was conducted according to the method of B.A. Dospekhov (1985) [6].

According to the results of the analysis of the leaf surface of spring soft wheat varieties in the phases of tillering, heading, flowering, and wax ripeness on 1 plant, when sowing seeds of the Bahor-1 variety in the early period at a rate of 3.0 million seeds, respectively, 86.1; 136.2; 116.4; 55.7 cm², when sown at the rate of 3.5 million seeds, respectively 66.5; 108.8; 89.3; 44.1 cm², when sown at a rate of 4.0 million seeds, respectively 76.4; 122.8; 103.6; 49.4 cm², and when sowing seeds of the Janub gavhari variety at a rate of 3.0 million seeds, respectively 87.9; 138.6; 118.1; 57.3 cm², 3.5 million seeds, respectively 55.4; 86.1; 75.6; 36.4 cm², with a sowing rate of 4.0 million seeds, respectively, 73.7; 115.9; 97.5; 47.2 cm², when sowing seeds of the Navruz variety at a rate of 3.0 million seeds, this indicator was 91.3; 143.6; 121.8; 58.6 cm², when sown at the rate of 3.5 million seeds, respectively 70.0; 114.9; 64.1; 45.8 cm², when sown at a rate of 4.0 million seeds, respectively 68.6; 110.6; 91.3; 44.0 cm² (Table 1).

Table 1

Dynamics of leaf surface formation on individual plants of spring soft wheat varieties, cm²

№	Planting time	Name of variety	Sowing rate, million seeds/ha	Leaf area, cm ² /plant			
				Tubing	Heading	Flowering	Wax melting
1	Early period (February 20-28)	Bahor-1	3,0	86,1	136,2	116,4	55,7
2			3,5	66,5	108,8	89,3	44,1
3			4,0	76,4	122,8	103,6	49,4
4		Janub gavhari	3,0	87,9	138,6	118,1	57,3
5			3,5	55,4	86,1	75,6	36,4
6			4,0	73,7	115,9	97,5	47,2
7		Navruz	3,0	91,3	143,6	121,8	58,6
8			3,5	70,0	114,9	64,1	45,8
9			4,0	68,6	110,6	91,3	44,0
10	Medium-term forecast (March 1-10)	Bahor-1	3,0	72,9	116,8	98,7	48,6
11			3,5	53,3	87,3	71,1	33,7
12			4,0	68,8	112,4	92,7	44,6
13		Janub gavhari	3,0	75,8	122,9	104,2	50,8
14			3,5	72,2	113,3	74,7	46,3
15			4,0	55,9	89,8	76,8	36,5

16	Navruz	3,0	50,7	78,9	66,4	33,5
17		3,5	63,0	101,0	70,0	41,1
18		4,0	54,4	85,0	73,8	34,5
19	Bahor-1	3,0	81,1	126,7	107,0	53,3
20		3,5	61,5	101,0	72,2	41,4
21		4,0	55,4	85,5	72,7	33,0
22	Janub gavhari	3,0	110,2	177,1	152,3	73,3
23		3,5	82,2	130,5	110,9	54,3
24		4,0	89,8	142,3	121,4	58,1
25	Navruz	3,0	77,4	120,1	104,6	47,8
26		3,5	66,2	106,6	89,5	42,3
27		4,0	103,2	162,2	138,1	67,0

In the medium-term sowing of the Bahor-1 variety at a rate of 3.0 million seeds, the leaf area in the phases of stem elongation, heading, flowering, and wax ripeness was 72.9; 116.8; 98.7; 48.6 cm², 3.5 million seeds, respectively 53.3; 87.3; 71.1; 33.7 cm², when sown at a rate of 4.0 million seeds, respectively 68.8; 112.4; 92.7; 44.6 cm², and the variety Janub gavhari when sown at a rate of 3.0 million seeds, respectively, 75.8; 122.9; 104.2; 50.8 cm², when sown at the rate of 3.5 million seeds, respectively 72.2; 113.3; 74.7; 46.3 cm², when sown at a rate of 4.0 million seeds, respectively 55.9; 89.8; 76.8; 36.5 cm², and the Navruz variety, when sown at a rate of 3.0 million seeds, respectively 50.7; 78.9; 66.4; 33.5 cm², when sown at the rate of 3.5 million seeds, respectively 63.0; 110.0; 70.0; 41.1 cm², when sown at a rate of 4.0 million seeds, respectively 54.4; 85.0; 73.8; 34.5 cm².

In our field experiments, we examined the leaf surface area of three wheat varieties (Bahor-1, Janub gavhari, and Navro'z) sown at different seeding rates during the late sowing period. The leaf surface area was measured at four growth stages: stem elongation, heading, flowering, and wax ripeness. For the Bahor-1 variety: - At 3.0 million seeds per hectare: 81.1, 126.7, 107.0, and 53.3 cm² - At 3.5 million seeds per hectare: 61.5, 101.0, 72.2, and 41.4 cm² - At 4.0 million seeds per hectare: 55.4, 85.5, 72.7, and 33.0 cm² For the Janub gavhari variety: - At 3.0 million seeds per hectare: 110.2, 177.1, 152.3, and 73.3 cm² - At 3.5 million seeds per hectare: 82.2, 130.5, 110.9, and 54.3 cm² - At 4.0 million seeds per hectare: 89.8, 142.32, 121.4, and 58.1 cm² For the Navro'z variety: - At 3.0 million seeds per hectare: 77.4, 120.1, 104.6, and 47.8 cm² - At 3.5 million seeds per hectare: 66.2, 106.6, 89.5, and 42.3 cm² - At 4.0 million seeds per hectare: 103.2, 162.2, 138.1, and 67.0 cm² These measurements correspond to the four growth stages mentioned earlier, respectively. 53.3 cm², when sown at a rate of 3.5 million seeds, respectively 61.5; 101.0; 72.2; 41.4 cm², when sown at a rate of 4.0 million seeds, respectively 55.4; 85.5; 72.7; 33.0 cm², and the variety Janub gavhari when sown at a rate of 3.0 million seeds, respectively, 110.2; 177.1; 152.3; 73.3 cm², when sown at the rate of 3.5 million seeds, respectively 82.2; 130.5; 110.9; 54.3 cm², when sown at a rate of 4.0 million seeds, respectively 89.8; 142.32; 121.4; 58.1 cm², and the Navruz variety was sown at a rate of 3.0 million seeds, respectively 77.4; 120.1; 104.6; 47.8 cm², when sown at the rate of 3.5 million seeds, respectively 66.2; 106.6; 89.5; 42.3 cm², 4.0 million seeds, respectively 103.2; 162.2; 138.1;



In conclusion, it can be stated that the spring soft wheat varieties exhibit the highest leaf surface area during the heading phase, which ranges from 78.9 to 177.1 cm² in the conditions of the southern region of the republic.

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