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Characteristics of water exchange of soybean varieties.

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Abstract: The characteristics of water exchange during the podding phase of different soybean varieties were studied in the soil and climate conditions of Surkhandarya region.
Key words: soybean varieties, growth, development, transpiration, drought

Currently, the seeds grown in the region consist of several varieties, which differ from each other in terms of overall yield and crop quality. In some years, the lack of precipitation and the water used for irrigation is less than planned, which has a negative impact on the total amount and quality of the harvest. Therefore, it is an urgent problem to determine the degree of drought resistance of soybean varieties and to recommend the development of relatively resistant varieties. Both field and laboratory research is needed to further increase drought tolerance.

The water exchange characteristics of plants are one of the main indicators that ensure their growth, development, yield and quality of the crop.

Drought resistance (the ability not to cause significant damage to productivity due to dehydration and overheating) allows you to get a guaranteed harvest in adverse conditions. Fast and uniform germination, growth and development of plants during their growing season and during the formation of pods mainly depends on the water regime of planted seeds and seedlings.

Based on the above information, we studied the water exchange characteristics of soybean varieties, their growth and development phases.

1.1- Table.

No	Varieties	In the leaves			
		Total Water Content %	Transpiration rate, g/m ^{2} s	Water deficit, %	Water storage capacity
1	Baraka	74.5 %	87.23	35.8 %	76.1 %
2	Tomaris man-60	73.3 %	60.47	26.10 %	76. %
3	Master MM-60	73.9 %	96.23	57.32 %	69 , 9%
4	Vilona	74.0 %	75.82	30.6 %	70.4 %

the Baraka variety is 74.5%, which is the same as that of the Wilona variety. The total water content of Tomaris man-60 variety is equal to 73.3%, which is almost the same as Ustoz MM-60 .

From these data, it was found that in relation to the amount of water in the leaves of To'maris man-60 and Ustoz MM-60 soybean varieties , Baraka and It was found that the leaves of the Vilona soybean variety have a high water content.

transpiration occurring in plant leaves is also one of the features of water exchange in plants. From the data shown in the table (Table 1.1), it can be determined that 96.23 g of water was evaporated on 1 m ^{2} leaf surface of the leaves of the Ustoz MM-60 variety for 1 hour, and 60.47 g of water was evaporated from the leaves of the To'maris man-60 variety during this period. g of water evaporated, that is, during this period, Ustoz MM-60 variety evaporated 35.76 g more water than Tomaris man-60 variety. The rest of the varieties took intermediate places and evaporated less water compared to the Ustoz MM-60 variety , that is, the Baraka variety 9.0 g. The Vilona variety evaporated 20.41 g less water. This indicator shows that the varieties differ sharply from each other in terms of the speed of transpiration .

The water deficit in the leaves of soybean varieties also varies depending on the cultivar characteristics. The water deficit in the leaves of Ustoz MM-60 is 57.32%, while that of To'maris man-60 is 26.10%, it is

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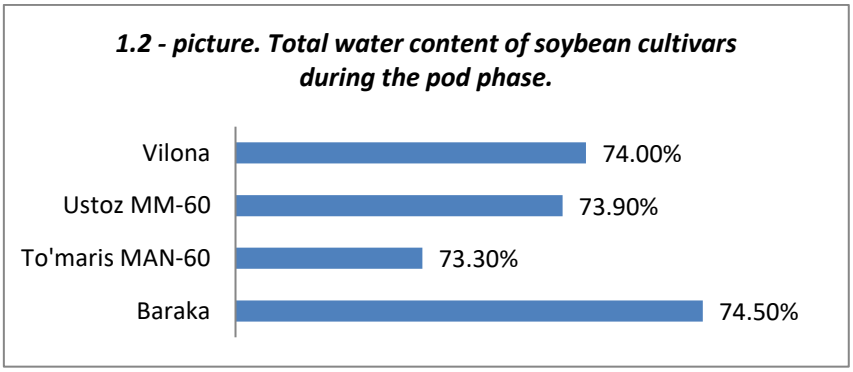
31.22% compared to Ustoz MM-60 , 26.72% in Wilona and Baraka. 21.52 % water deficit was found to be higher in comparison to leaves of soybean variety Ustoz MM-60 .

Similar to water deficit, the ability of leaves to store water is the most important indicator that characterizes the degree of resistance of plants to drought. The water retention capacity of the leaves of Baraka soybean variety is the highest compared to other varieties, and the amount of water consumed during 1 hour is equal to 23.9%, while Ustoz MM-60 soybean variety consumed 30.1% of water during this period, and the difference between them is 6.2%.

Tomaris Man-60 variety is equal to 24%, it contains less oil by 0.1%, while the leaves of the Vilona variety evaporated 29.6% of water and evaporated 0.5% less water during this period. These data show that Ustoz MM-60 variety has the lowest water holding capacity and Baraka soybean variety has the highest water holding capacity. The rest of the varieties occupy an intermediate place in terms of their ability to retain water. Thus, based on the water retention characteristics of soybean varieties, their drought resistance level can be placed in the following order: Ustoz MM- 60 < Vilona < To'maris man-60 < Baraka <

Ustoz MM-60 has the lowest drought tolerance among the varieties studied, Baraka variety has the highest drought tolerance and the rest of the varieties are in between.

The most important physiological process that indicates the degree of drought tolerance of soybean cultivars is the total water content of the leaves. Compared to other indicators, this indicator directly characterizes the degree of drought resistance of varieties. These data obtained in our experiment are more clearly illustrated in Figure 1.2.



1.2 - picture. Total water content of soybean cultivars during the pod phase.

According to the collected data on the level of drought resistance of soybean varieties, that is, their total water content, Baraka variety is relatively drought-resistant among all studied varieties. The total water content in the leaves of this variety was found to be 74.50%.

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