



Selection Of High Photosynthetic Productivity Of Broad Bean (*Vicia Faba L.*) Lines

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Abstract: Bean (*Vicia faba L.*) is one of the legumes that has the potential to be grown as a multi-purpose crop in areas with a short growing season. Bean (*Vicia faba L.*) is cultivated in many regions of the world due to its high nutritional value, medicinal properties and efficient biological fixation of nitrogen. In this paper, the photosynthetic productivity indicators of bean (*Vicia faba L.*) cultivars and ridges during branching and podding are analyzed. According to the results of the research, with the formation of pods of the bean crop, the plant's water demand increased, when the total water content of the plant was analyzed, it was found that it was low in 9 ridges, and these ridges transferred 27.7-57.4 percent of the evaporated water to transpiration, and the remaining 42.6-72 it was found that 3 percent is used for the formation of organic matter.

Key words: branching, podding, ridge, leaf level, biomass, total water content.

In recent years, special attention has been paid to the cultivation of non-traditional crops and the establishment of plantations in our republic. Therefore, in the following years, large-scale work is being carried out in the field of breeding non-traditional types of crops in the soil conditions of our republic and creating a base of raw materials. However, in order to find a scientific solution to the problems, adaptation of new non-traditional crops to the climatic conditions of the Republic, development of advanced breeding technologies remains one of the urgent tasks.

The expansion of crop varieties is important for the agricultural industry. In modern agriculture, these legume crops are inexpensive, high in protein, and enrich the soil with organic compounds for food and fodder.

Bean (*vicia faba L.*) is an annual herbaceous plant belonging to the legume family, with serous leaves and a strong root system, and it is a cold-resistant plant that can grow at low temperatures. It is also adaptable to cold temperatures down to -80C. It is not very demanding on soil moisture and fertility. There are two types of them, Pliny bean (*F. Plinina Trabut.*) and horse bean (*F. Bona Medic.*) (*Vulture Vicia faba L., Faba vulgaris Moench., Faba sativa*



Bernh.). Pliny's beans have no practical value. They also grow wild in Algeria. All varieties grown around the world belong to one species - horse bean [7].

Bean (*vicia faba* L.). the root system of the plant penetrates to a depth of 1.5-2.0 m, as a result of which microelements pass from the underground horizons to the arable layer: phosphorus, potassium, etc., the air and water regime, physical properties, soil structure are improved. [4;5]. One of the important factors that determine the yield of bean seeds is soil conditions. Beans can also be grown in lighter soils, but they must be sufficiently moist. Soil acidity for beans should be 6.5. [2;3;6;1].

Taking into account the above, studies were conducted in order to select the rows with high photosynthetic productivity of the studied varieties and samples planted in the experimental field of the Southern Agricultural Research Institute. From the experimental field, samples of 25 varieties and ridges of bean crops were taken during branching and podding, and photosynthetic productivity indicators were analyzed.

Leaf level and high plant biomass are important in the process of photosynthesis. Higher leaf area and higher plant biomass lead to higher yields.

According to the results obtained during the branching period of the bean plant, the leaf area was 84.4-293.7 cm², and the dry weight was 0.2-1.1 grams. It was found that the total amount of water in the bean plant was 75.7-97.3%. It is known that with the increase of generative organs in a plant, the amount of leaf area and biomass increases.

Indicators of photosynthetic productivity of *vicia faba* L bean crops.

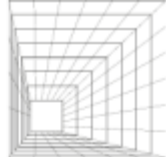
1 table



№	Name	Horning				Beaning			
		Leaf level, cm	Biomass, g		Total water content, %	Leaf level, cm	Biomass, g		Total water content, %
			Moist mass	Dry mass			Moist mass	Dry mass	
1	Local check (cr)	149,1	3,7	0,4	88,3	874,3	23,5	5,1	78,3
2	KR20-FBIHTN-6	91,7	2,6	0,6	75,7	498,4	6,5	4,7	27,7
3	KR20-FBIHTN-14	85,7	2,4	0,2	89,9	547,6	7,8	4,6	41,0
4	KR20-FBIHTN-19	88,5	6,3	0,3	96,0	418,8	10,1	5,0	50,5
5	KR20-FBIF4N-SAEA-8	150,0	3,1	0,4	88,4	978,4	26,0	5,9	77,3
6	KR20-FBIHTN-1	90,0	1,9	0,3	86,5	949,2	24,9	6,3	74,7
7	KR20-FBIHTN-8	108,3	7,1	0,5	92,8	840,3	21,1	6,2	70,6
8	KR20-FBIHTN-15	113,9	6,2	0,4	94,1	606,0	11,2	5,3	52,7
9	KR20-FBIHTN-20	84,4	7,6	0,2	97,2	563,4	16,2	4,9	69,8
10	KR20-FBIF4N-SAEA-10	255,0	6,7	0,4	94,8	523,9	12,7	2,2	82,7
11	KR20-FBIHTN-2	179,0	6,0	0,5	92,4	901,7	20,6	6,1	70,4
12	KR20-FBIHTN-10	63,0	3,9	0,4	90,8	532,3	10,0	5,8	42,0
13	KR20-FBIHTN-16	106,3	6,1	0,5	92,6	661,5	14,1	6,6	53,2
14	KR20-FBIHTN-21	200,0	8,1	0,5	93,3	399,1	11,7	5,0	57,3
15	KR20-FBIF4N-SAEA-11	131,1	2,8	0,3	88,0	983,4	27,4	7,1	74,1
16	KR20-FBIHTN-3	201,3	9,5	0,3	97,3	998,1	28,8	6,1	78,8
17	KR20-FBIHTN-11	262,6	5,9	0,6	89,6	874,3	13,6	5,8	57,4
18	KR20-FBIHTN-17	111,8	5,1	0,4	92,9	899,7	17,2	3,9	77,3
19	KR20-FBIHTN-22	293,7	13,7	0,9	93,4	851,5	26,2	7,9	69,8
20	KR20-FBIF4N-SAEA-29	231,8	14,8	1,0	93,3	989,5	25,5	6,1	76,1
21	KR20-FBIHTN-5	147,8	12,6	0,6	95,2	699,9	15,0	7,3	51,3
22	KR20-FBIHTN-12	236,8	7,6	0,9	88,4	931,1	29,4	8,2	72,1
23	KR20-FBIHTN-18	231,8	13,1	1,1	91,6	868,9	13,5	5,5	59,3
24	KR20-FBIHTN-23	271,4	17,5	0,9	94,7	940,4	25,7	6,4	75,1
25	KR20-FBIF4N-SAEA-32	276,8	12,8	0,8	93,6	945,5	26,5	6,6	75,1

High plant biomass and leaf level during pod formation is considered important in the process of grain formation, and when the leaf level and biomass are high, the grain in pods is fully developed and leads to high yield. In this phase, the leaf area of the plants was 399.1-998.1 cm², the amount of dry mass was 2.2-9.2 grams, and it was found that the area of leaves was small and the amount of dry mass was small in 6 ridges, and the average ridges were 10 organized. There were 9 ridges with high leaf area and biomass. Thus, the leaf level and biomass of the studied ridges showed the progress of the photosynthesis process in the plant. In conditions of optimal water supply, high total water content in plant leaves has a positive effect on plant growth and development. Water demand of bean crop increased with pod formation and it was observed that there was a significant difference. In the results of the analysis, the highest index was observed in the catalog number KR20-FBIHTN-3 (78.8%), the lowest index was observed in the sample KR20-FBIHTN-6 (27.7%).

Based on the results of the analysis, it was found that the photosynthetic productivity of bean



crops was different, and it was known that the amount of leaf and biomass was high in 9 ridges. The total water content of the bean leaf was found to be low in 9 ridges, and it was found that these ridges used 27.7-57.4% of the evaporated water for transpiration, and the remaining 42.6-72.3% for the formation of organic matter.

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