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Photosynthetic Indicators of Different Shade Varieties Growing in Surkhandarya Region

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ANNOTATION

In this article given results of bioecological and morphological features klof the perspective varieties of soybean in the conditions of Surkhandarya region. Certain photosynthetic index (maintenances of pigments, productivity of photosynthesis) of different sorts of soy.

Key words: sorts of soy, photosynthesis, pigment, productivity of photosynthesis.

Introduction

Photosynthesis is the global natural source of renewable energy on earth, ensuring the full functioning of all the organs of a green plant. Therefore, it serves as a key factor in the production process of agricultural crops, resulting in the formation of up to 95% of the organic matter in the crop. [1,2]. Photosynthesis, which is the main process of plant nutrition, depends on the biological properties of plants, as well as complex external factors: sunlight, air temperature, the amount of carbon dioxide in it, soil moisture and the level of mineral nutrition (3).

Any change in environmental conditions primarily affects the intensity and direction of photosynthesis processes. This ultimately leads to changes in plant growth, development and productivity. The growth and productivity of plants in different climates and soil conditions depends on the adaptation of various physiological processes, especially photosynthesis, to environmental conditions.

Therefore, the main indicators of photosynthesis in the leaves of plants of different shade varieties in the specific soil and climatic conditions of Surkhandarya region - leaf level, net productivity of photosynthesis and the amount of plastid pigments were studied.

Object and methods of research.

The A.A. Nichiporovich method (based on the formula of Kidda, VestaiBriggsa) [5] was used to determine the net productivity of photosynthesis in plants.

It is now common to use chlorophyll counters to determine chlorophyll or leaf greenness. For this reason, we also used the chlorophyll meter ZYS-4N (Hangzhou quality lab scientific instrument co., Ltd., China) in our study to determine the amount of chlorophyll.

Research results and its discussion. Based on the above data, we studied the photosynthetic properties of soybean varieties by their phases of development.

Pure productivity of photosynthesis. The net productivity of photosynthesis is the amount of dry matter in grams accumulated per 1 m2 of leaf surface in 1 day. The value of this indicator for different crops is between 1-20 g / m2 per day.

The growth of plant productivity is ensured by two main processes of their vital activity - photosynthesis and growth balance. Growth processes that reflect general functional and metabolic changes in plants are closely related to their accumulation of biomass and dry matter from the air.

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The photosynthetic activity of plants is closely related to the size of the assimilating surface of the leaf apparatus and its function. Therefore, it is very important to know what the activity of the leaves is and whether it depends on various influences. These indicators are the photosynthetic potential of crops and the net productivity of photosynthesis

It is known that during the process of photosynthesis, various compounds are formed that are necessary for the growth, development and reproduction of plants. Depending on the plant genotype and habitat, it makes different effective use of assimilants in photosynthesis. Therefore, in the conditions of Surkhandarya region, the net productivity of the process of photosynthesis of different shade varieties was determined at different growing seasons. The results obtained are presented in Table 1.

It was found that the net productivity of photosynthesis in plants of different shade varieties varies at different stages of vegetation depending on the biological characteristics of soybean varieties.

The pure productivity of photosynthesis was observed in Ustoz MM-60 and Vilana varieties of soybean compared to other varieties. In all shade varieties, the net productivity of photosynthesis increased from the period of budding to the period of legume formation: its maximum value coincided with the period of gross flowering, and then slowed down slightly.

Table 1

Net productivity of photosynthesis in different shade varieties in Surkhandarya region (g / m2 / day)

Shade varieties	Development cycles		
	budding	gross flowering	Dukkak formation
Baraka	8.93	9,60	9.11
Tomaris man-60	7.34	7,87	7.58
Teacher MM-60	**9.** 33	10,72	9. **57**
Vilana	8.11	12,39	9.79

The amount of plastid pigments in the leaves of soybean varieties.

Accurate assessment of photosynthetic pigments of leaves is an important element in controlling plant stress and fertilizer application and in managing overall plant productivity, especially in agricultural systems where yields are directly related to plant condition. The photosynthetic pigments of the leaves are the main variables characterizing the photosynthetic reaction and gross primary production in the biosphere, pigments play a central role in light harvesting, protection of photosystems and other growth functions [5-6].

The amount of leaf chlorophyll provides a key indicator of photosynthesis ability and is a very important factor for plant productivity along with measurements such as leaf area index. Therefore, the amount of plastid pigments in the leaves of soybean varieties grown in field experiments was studied. The results obtained are presented in Table 2.

Table 2 **The amount of plastid pigments in the leaves of soybean varieties**

(Chlorophyll index using ZYS-4N chlorophyll meter for soybean varieties, 2020-2021)

Shade varieties	Development cycles	Indicator of plastid pigments
Baraka	Trueleaf	40,84
	Flowering	43,32
	leg formation	38,37
Tomaris man-60	Trueleaf	43,81
	Flowering	46,51
	leg formation	41,14
Teacher MM-60	Trueleaf	39,61
	Flowering	40,98
	leg formation	37,28

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Vilona	Trueleaf	43,52
	Flowering	48,26
	leg formation	42,75

Studies have shown that the amount of chlorophyll in the leaves of Vilana and Tomaris man-60 varieties of soybeans is higher than in other varieties. It was also observed that the amount of chlorophyll changed during the growing season of the soybean plant, i.e., it was highest during the flowering period, followed by a decrease in the amount.

Thus, it was found that the amount of plastid pigments in the leaves of the studied soybean varieties varies during the growing season depending on the biological characteristics of the varieties. Large amounts of plastid pigments to some extent express the intensity of photosynthetic processes in the plant, providing their growth, development rates and weight of the crop.

Chlorophyll counter readings can be affected by many factors other than nitrogen alone. It has been found that anything that can change the color of plants (e.g., diseases, nutrient deficiencies) can affect chlorophyll meter readings.

CONCLUSION

Studies have shown that the net productivity of photosynthesis in plants and the amount of plastid pigments in the leaves depend on the biological characteristics of soybean varieties and growing conditions.

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