EVALUATION OF PHOTOSYNTHETIC ACTIVITY OF PARSNIP VARIETIES IN THE CONDITIONS OF THE RIGHT-BANK FOREST-STEPPE OF UKRAINE

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In a market economy, it is important to expand the range of products due to less common crops. Of great interest is parsnip, the value of which lies in the fact that the roots contain biochemicals that are essential for the human body.

Crops as photosynthetic systems must have a high total density, a large surface area in contact with the environment and the size of the root system. These conditions are regulated by sowing density and plant feeding area. The size and configuration of leaf placement depends on the amount of light energy absorbed by the crop, the total transpiration and the possible primary production of organic matter.

An important factor in increasing the productivity of parsnip plants for cultivation in the Right-Bank Forest-Steppe of Ukraine is the selection of high-yielding varieties and improvement of technology elements in order to optimize growing conditions for maximum realization of their genetic potential.

The purpose of research - is to study the dynamics of leaf surface formation in varieties of parsnip sowing in the Right-Bank Forest-Steppe of Ukraine.

Methodology of research. Field research was conducted in 2015-2017 in the research field of the Department of Vegetable and Closed Soil in the NL "Fruit and Vegetable Garden" NULES of Ukraine in the Right-Bank Forest-Steppe of Ukraine. The soil of the experimental site is medium-podzolic, roughly dusty, easy loamy.

Varieties were studied: Petryk (control), Stymul, Boris and Pulse. The size of the accounting experimental plot was 11.3 m^2, the repetition was fourfold. Variants in the experiment were placed systematically. The predecessor for parsnip was cucumber. Sowing was carried out in the II decade of April according to the scheme 45x10 cm to a depth of 1.5-2 cm with a seeding rate of 3 kg/ha. In the phase of two true leaves formed the final density of plants.

Results. Observations of parsnip plants showed that on average over the years of research on July 1, the leaf surface area, depending on the variant of the experiment varied from 23.8 to 28.6 thousand m^2/ha. The highest indicators of leaf surface area were observed in the variety Stymul (27.1 thousand m^2/ha) and Pulse (28.6 thousand m^2/ha), which is significantly higher than the control by 3.3 and 4.8 thousand m^2/ha. In the Boris variety, this indicator did not differ significantly from the control. As of August 1, the leaf surface area in the variety Stymul significantly exceeded the control by 3.4 thousand m^2/ha. In other varieties, the leaf surface area was at the level of control. The most powerful leaf surface was formed on September 1 in the range from 69.6 to 73.8 thousand m^2/ha with the highest value for the variety Stymul and Pulse.

As of July 1, the photosynthetic potential of the studied varieties was unsatisfactory and ranged from 0.39 to 0.46 million m^2 per day/ha. As of August 1, the photosynthetic potential increased significantly and fluctuated between medium and high. The highest value of photosynthetic potential is characteristic of the variety Stymul - 1.54 million m^2 per day/ha and Pulse - 1.48 million m^2 per day/ha. The maximum value of photosynthetic potential was observed on September 1. In the variety Stymul and Pulse, this indicator was the largest in the experiment and exceeded the control by 0.2 and 0.13 million m^2 per day/ha, respectively.

As of July 1, the net productivity of photosynthesis for the variety Stymul, Pulse and Boris significantly exceeded the control by 0.95 g/m^2 per day (26.5%), 0.61 g/m^2 per day (17.0%) and 0, 42 g/m^2 per day (11.7%), respectively. On August 1, the studied indicator for the experiment ranged from 4.05 to 5.46 g/m^2 per day. On September 1, the highest value of net photosynthesis productivity was observed in the varieties

Stymul and Pulse, which is 1.06 g/m^2 per day (18.9%) and 0.84 g/m^2 per day (15.0%) more than the control.

On average, over the years of research, the highest yields of root crops were obtained in the variety Stymul (45.4 t/ha) and Pulse (44.4 t/ha), which is 6.2 t/ha or 15.8% and 5.2 t/ha ha or 13.3%, respectively, more than the control. The average weight of root crops in the variety Stymul and Pulse was 207 g and 203 g, respectively, with a marketability of 89% and 87%, which is 28 g and 25 g and 6% and 4%, respectively, more than the control. Yield in the variety Boris was at the level of control and amounted to 41.4 t/ha.

Conclusions. The studied cultivars of parsnip sowing formed a high area of active assimilation surface, the dynamics of which depends on the stage of organogenesis, soil and climatic conditions of the year and varietal characteristics. With the highest average for the growing season leaf surface area (49.0-49.6 thousand m^2/ha), photosynthetic potential (1.79-1.83 million m^2 per day/ha) and net productivity of photosynthesis (5.32-5, 56 g/m^2 per day) were characterized by varieties Stymul and Pulse in terms of other varieties.

It is established that in order to obtain a consistently high yield (44.4-45.4 t/ha) and marketability of root crops (85-93%) in the conditions of the Right-Bank Forest-Steppe of Ukraine it is necessary to sow high-yielding varieties of parsnip sowing Stymul and Pulse.