

Net primary production of vegetable peas depending on variety features, limitation of soil and nutritional system

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The article presents the solution of an important scientific problem – increasing the yield of vegetable peas. Peculiarities of vegetable pea yield formation under the influence of environmental conditions and application of relevant scientifically substantiated elements of cultivation technology are established. The increase of aboveground mass of plants, leaf surface, photosynthetic potential of sowing, net productivity, productivity depending on the studied factors is investigated. Correlations between these indicators and yield have been identified. The increase in aboveground mass of plants, leaf surface index (LAI), photosynthetic potential (PP) of crops, net productivity of photosynthesis (NPP) and yield depending on the studied factors was studied. Correlations between these indicators and yield have been identified. The increase of above-ground biomass (AGB), area (LA) and leaf surface index (LAI), photosynthetic potential (PP) and net photosynthesis productivity (NPP) was studied. There is a high correlation ($r > 0.9$) between the yield in absolutely dry matter (DM) and the photosynthetic potential (PP) for the period from the microstage to BBCH 49–54 77-79, as well as between the number of beans per plant and the area of assimilation plant surfaces ($r > 0.9$). The maximum yield in terms of dry matter (DM) in the varieties Skinado - 2.97 and Somerwood - 2.52 t/ha was obtained on the version of the experiment, which was carried out liming (1.0 norm per h.a.) on the background of mineral fertilizers N30P60K60, and pre-sowing treatment of seeds with Rhizobophyte and microfertilizer Vuxal Extra Solvo and foliar fertilization was applied with microfertilizers Vuxal Microplant at microstages BBCH 12-13 and Vuxal Calcium, Boron at microstages BBCH 51-59. This is 0.68 and t/ha more than in the control, where the yield in terms of DM in the varieties Skinado - 2.29 and Somerwood - 2.84 t/ha.

Keywords: vegetable peas, microfertilizer, Rhizobophyte, yield, photosynthesis, leaf surface area (LA).

1 Introduction

Providing the population with organic food rich in protein is important. One of the crops that can play an important role in solving this problem is vegetable peas. In Ukraine, not enough pea products are produced, which does not meet the needs of the population and the recommended consumption rates (3.3 kg of green peas and other legumes per year). Peas are able to provide themselves with nitrogen by 60-70% and leave in the soil 60-140 kg/ha of its biological equivalent. But for this it is necessary to provide plants with trace elements, improve their availability, in addition, they are low-cost when applied and do not harm the environment (Didur and Mostovenko, 2020; Kaletnik, et al. 2020; Kupchuk, et al. 2021).

Soils with a high acid content can be used for peas after appropriate measures of radical improvement (liming). Peas grow best in moderately acidic soil reactions (pH 6-7), and high yields are formed on carbonate soils with a neutral or slightly alkaline reaction (Wani et al., 2016).

Through their research, the scientists confirm that it is very important for plants to provide them with micronutrients that come to them together with microfertilizers, which are now an integral part of modern technologies for growing crops, especially in the introduction of high-yielding vegetable peas that require a balanced level of nutrition. However, the issues of developing technological methods of

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