Tomato grafting has a considerable scientific and practical interest, because it promotes plant resistance to illnesses, pests, stress factors, improves nourishment conditions and as a result increases crop yields and contributes to the greening of cultivation. The study of this issue is actual for the indoor ground conditions, particularly, for growing in glass greenhouses using low-volume hydroponics method. In Ukraine, this area of research began only in 2003, and the study of the effectiveness of varietal-rootstock combinations on new hybrids of tomato F1 for growing it in greenhouses of the Venlo type was not performed at all. Each rootstock has an individual effect on the hybrid-rootstock, which largely depends on the growing conditions. Therefore, the choice of the optimal varietal-rootstocks combinations for each hybrid is the main agronomic practices that determines the efficiency of growing crops by grafting.

The main goal of the experiments was to find out the efficiency of varietal-rootstocks combinations on the indeterminate hybrids F1 tomato.

Experiments for studying three indeterminate hybrids of tomatoes Torero F1, Barteza F1 and Merlice F1 with grafting on rootstocks Maxifort F1, TD-1 F1 and Emperador F1 were conducted in the “Venlo” type on Private Joint Stock Company «Combinat «Teplychnyy». Experimental variants were randomized in triplicate. Area
of the observation plot was 5.6 m². Seedlings were planted to a permanent place in the phase of 9–11 true leaves. The scheme of placement was 4 plants per 1 mat 100 × 20 × 7.5 cm. The volume of the substrate under one plant was 3.75 liters. The plant density was 2.5 tomatoes per m². Fourteen plants were grown on the observation plot. The technology of growing plants in the experiment corresponded to the existing requirements for early-maturing hybrids and was the same for all variants.

The use of rootstocks for growing Torero F₁ hybrids contributed to an increase in early yields on average in 2015–2017 by 4.1–6.4 % compared to non-grafted plants. The best indicator was the varietal-rootstock combination Torero F₁/TD-1 F₁ – 30.4 kg/m², which is 1.8 kg/m² more for control. The effect of using rootstocks for growing Barthes F₁ hybrid was higher compared to Torero F₁, as early yields increased by an average of 7–10.7 % over 3 years compared to non-grafted plants. The influence of rootstock Emperador F₁ provided a significant increase in yield in all years of research, respectively, this variety-rootstock combination contributed to the formation of the highest average yield – 30.53 kg/m², exceeding the control by 2.96 kg/m². Varietal-rootstock combinations with the Merlis F₁ hybrid had a medium effect compared to other studied hybrids, which provide a yield increase of 5.1–9 % before control. In this case, also only the rootstock Emperador F₁ created the conditions for a mathematically significant increase in yield over all years of research. The average yield of this varietal-rootstock combination was the highest – 31 kg/m², exceeding the control by 2.57 kg/m². Mathematically significant difference in early yield between the studied varietal-rootstock combinations was not found.

Thus, we found that the effect of rootstock on the hybrid on the formation of early yields is individual and depends on both the varietal-rootstock combination and the growing conditions of the year.

According to the results of our research, it was found that the grafts affected the rootstocks and, accordingly, the quality of the fruit. The biochemical composition of tomato fruits differed significantly depending on the variety of rootstock combination. The usage of the rootstocks also improves biochemical indicators, particularly, contributes to the increasing the dry matter content in the fruits of all
hybrids by 0.1–0.8 %. Emperador F₁ rootstock causes an increase in the total sugar content in tomatoes by 0.3–0.5% and ascorbic acid by 1–4.7 % for all studied rootstocks. The optimal ratio of sugars and acids, which indicates the balance of taste of tomato fruits, was found in Torero F₁/Emperador F₁, Barteza F₁/Maxifort F₁ and Merlis F₁/Maxifort F₁, the ratio of sugar and acid was 6.9, 7, 3 and 7.4 respectively. It should be noted that the use of grafting significantly increased the ratio of sugar-acid, compared with the control, in all variants except Barteza F₁/TD-1 F₁.

It is recommended to use such grafting options as Torero F₁/TD-1 F₁; Barteza F₁/Emperator F₁; Merlice F₁/Emperator F₁ with a view to increasing the share of early yield (10th July) in modern block hydroponic winter greenhouses of the “Venlo” type at the level of 30.4–31.0 kg/m² with high biochemical indicators of fruits.

**Keywords:** tomato, hybrid, graft, rootstock, varietal-rootstocks combining, yield, biochemical composition.