

“AQRAR SEKTORDA İNNOVATİV TEXNOLOGİYALARIN

İNKİŞAF PERSPEKTİVLƏRİ” MÖVZUSUNDA

BEYNƏLXALQ ELMİ KONFRANSIN

MATERİALLARI

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**AZƏRBAYCAN RESPUBLİKASI ELM VƏ TƏHSİL NAZİRLİYİ
LƏNKƏRAN DÖVLƏT UNİVERSİTETİ**

**“AQRAR SEKTORDA İNNOVATİV TEXNOLOGİYALARIN İNKİŞAF
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The effect of hybrid composition on the yield and quality of tomato under drip irrigation conditions in the south of Ukraine

Tomatoes have a significant place among vegetable crops and occupy an area of up to 87 thousand hectares in Ukraine. Their main production occurs in the steppe regions. Tomatoes are valued for their calorie content, sugar content, nutrients, and vitamins. Marinades, pickles, tomato paste and juices are made from them. According to research by scientists of the Institute of Nutrition of the Academy of Medical Sciences of Ukraine, the annual rate of tomatoes per person is 32 kg. In order to fully provide the population of Ukraine with tomato products, it is necessary to increase the volume of tomato cultivation by 1.5–2.0 times.

The south of Ukraine has favorable soil and climatic conditions for obtaining a high yield of tomatoes with high quality indicators. To increase the productivity of this crop, it is necessary to introduce into production new varieties and hybrids well adapted to specific growing conditions. This issue is of great importance in the modern agro-industrial complex.

New hybrids of tomatoes of different maturity groups were studied on the southern light loam chernozem of the private farm "Organic Systems" in the village of Nova Zburiyivka of the Holoprystan district in 2020. Hybrids of 3 maturity groups were studied: early-ripening – H 2206 F1, HM 5108 F1; medium-ripening – H 1015 F1, H 9997 F1; late-ripening – H 1541 F1, LS 785 F1. Agricultural cultivation techniques were generally recognized for the conditions of drip irrigation in the south of Ukraine. The seedling method of culture cultivation was used in the experiment.

The height of tomato plants depended on the ripeness group of the grown hybrid. It was determined to be the minimum for growing the hybrid H 9997 F1 (147 cm), the maximum – LS 785 F1 (188 cm). On average, the height of tomato plants during the period of reaching the first tassel was 8.25 cm, and during the period of full ripeness of the fruits – 12.5 cm. In general, the LS 785 F1 hybrid had the highest plant height indicators in the experiment in all periods of determination.

The size of the bush is a genetic feature of each hybrid, all hybrids grown in the experiment differed in this indicator. The hybrids H 1015 F1 and LS 785 F1 formed the large size of the bush, and the compact size was formed by the hybrid H 9997 F1. All other hybrids grown in the experiment formed medium-sized bushes.

The number of ovaries on tomato plants also differed significantly according to the options of the experiment. It was determined to be the maximum when growing the hybrid LS 785 F1 – 27 pcs., and the minimum indicators were provided by the hybrid H 9997 F1, the number of ovaries on its bush was 18 pcs.

The maximum yield of marketable tomato fruits was formed by the hybrid LS 785 F1 – 137.2 t/ha, the minimum – by the hybrid H 9997 F1 – 96.5 t/ha, which was 30% less, compared to the maximum value in the experiment (fig. 1).

The best physico-mechanical properties of fruits in the experiment were determined when growing the hybrid H 9997 F1: the effort to tear off the peduncle was 1.47 kg, to crush it was 4.9 kg, the puncture strength of the skin and pulp was 187 g/mm² and 118 g/mm² respectively. The minimum indicated indicators were provided by the cultivation of the H 1015 F1 hybrid.

The hybrid composition affected the content of dry matter in tomato fruits. Their maximum was formed by the hybrid HM 5108 F1 (5.57%), the minimum – H 1015 F1 (4.21%). The LS 785 F1 hybrid provided the highest conditional yield of dry matter per hectare of crops, due to its higher fruit yield.

The late ripening hybrid LS 785 F1 provided the maximum values of total sugars and vitamin C content in tomato fruits – 2.48% and 20.52 mg/kg (table 1). The lowest indicators indicated in the experiment were determined for the cultivation of the hybrid H 9997 F1 – 2.41% and 18.87 mg/kg. The content of nitrates in the tomato fruits of all the hybrids that were studied was three times lower than the maximum permissible amount.

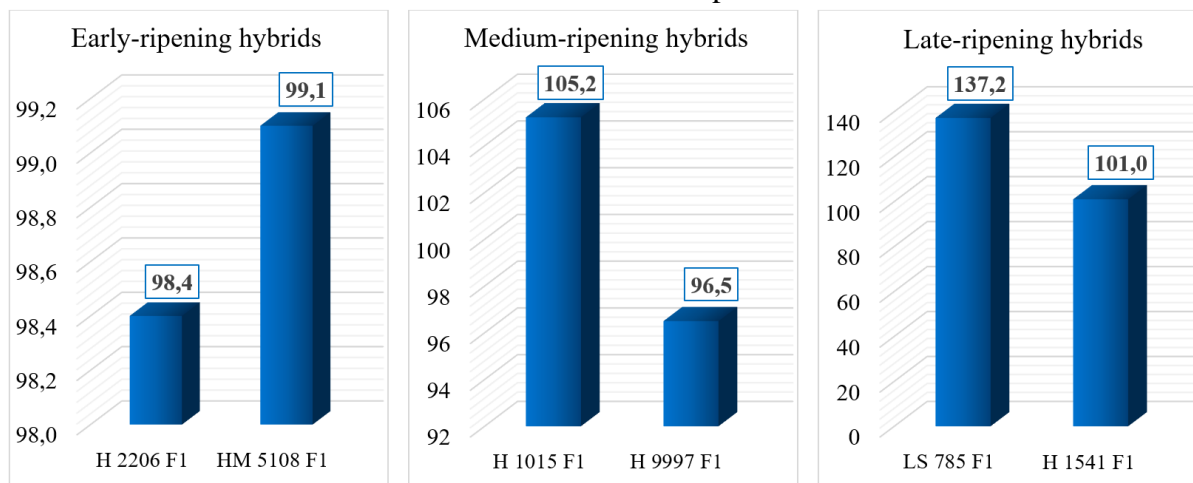


Figure 1. Yield of tomato fruits depending on the hybrid composition, t/ha

Table 1
Indicators of the quality of tomato fruits depending on the hybrid composition

Tomato hybrids	Content in fruits		
	total sugars, %	vitamin C, mg/kg	nitrates, mg/kg of raw substance
Early-ripening hybrids			
H 2206 F1	2,44	19,72	27,13
HM 5108 F1	2,45	19,88	31,16
Medium-ripening hybrids			
H 1015 F1	2,42	19,10	30,42
H 9997 F1	2,41	18,87	31,24
Late-ripening hybrids			
H 1541 F1	2,47	20,12	29,44
LS 785 F1	2,48	20,52	27,02

Taking into account such indicators as the unit cost of production, net profit and the level of profitability, the most effective from an economic point of view was the cultivation of the early-ripening hybrid HM 5108 F1, the medium-ripening hybrid H 1015 F1 and the late-ripening hybrid LS 785 F1.

Ensuring a high level of tomato fruit yield under drip irrigation on chernozem in the southern Steppe zone of Ukraine is achieved by growing early-ripening hybrid HM 5108 F1, medium-ripening hybrid H 1015 F1 and late-ripening hybrid LS 785 F1. This will ensure the yield of marketable fruits at 99.1; 105.2 and 137.2 t/ha with indicators of net profit of 356522–585086 UAH/ha and the level of profitability of 149.8–245.7%.