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THE EFFECT OF STALK FORMING SCHEMES ON THE YIELD OF SPRING AND SUMMER GREENHOUSE CUCUMBERS

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The article provides the estimation of the economic and biological indicators of Barvina F1 parthenocarpic cucumber hybrid of Nunhems selection (the Netherlands), in film greenhouses in terms of using different schemes of stem forming. It is defined the yield of plants and given the dynamics of fruits income per month. They are established cash and non-cash crop parts and market quality of fruits.

Cucumber, hybrid, market quality, productivity

The level of cucumber yield in greenhouses depends on the growing season, abidance by all parameters of the medium in which plants grow and develop, and the scheme of their formation. Formation of the stem is an important agrotechnical measure regulating the growth and fruiting of cucumber. Proper formation provides optimal fruit amount and provides strong plants with well-developed root system [1, 4]. Ignoring the rules of stem forming can lead to inhibition of plants caused by condensation, shading and appearance of stem rots.

Formation of plants is divided into several stages: blinding of leaf axils of bottom of the plants, pruning of side shoots, regulation of fruits on the main stem, and forming the apex of the main stem. Parthenocarpic cucumber hybrids are characterized by more powerful plant habitus when compared to mellittophilae and their formation defines the dynamics of yield income and value [4, 5].

The formation of cucumber becomes really important when it is grown in the spring, when even minor changes in technology affect the cost and profitability

of production [6]. Therefore, in the studies it was determined the effect of various plant forming schemes on the dynamics of income, market quality and yield of cucumber fruits.

The aim of the research is to determine the productivity of parthenocarpic cucumber in terms of various ways of stem forming while growing in spring and summer greenhouses.

Material and methods of the research

Experiments were carried out in 2013-2014 in spring greenhouses of PE "Barannik", Dnipropetrovsk region, Pokrovskyi district, village Oleksandrivka. The material was Barvina F1 parthenocarpic cucumber hybrid of Nunhems selection (the Netherlands), a subdivision of the Bayer group (Germany).

Until the stem got the trellis, all plants were formed in the same way. The control variant was the scheme by which were formed the cucumber plants in greenhouses: blinding of six leaf axils, up to the height of 1 m side shoots were pruned over the second leaf, higher – over the third one. The apex of the main shoot was pruned over the fourth node after growing out of trellis. After tipping over trellis they were formed two shoots, each of which was normalized to one fruit and one leaf. In another variant, after growing out of trellis wire two side shoots were released, pruning them in every 50 cm. The third variant – after hitching over the trellis there was left one shoot. Up to 1.5 m over the substrate it was formed the shoot with three fruits and three leaves, and lower (0.5 m over the substrate) – with one fruit and one leaf.

The study was conducted according to the methods of research in vegetable and melon growing, and methods of field experiment [2, 3]. The variants were placed by the method of complete randomization. Tire was three times. The number of plants in tire was 15 pcs. The seedling planting scheme was 130 x 35 cm. The number of plants per 1 m^2 was 2.2 pc. In the experiment they were applied basic research methods: experimental, calculation, analysis and comparison.

Results. On average, for two-year studies they were observed changes in the dynamics of income of cucumber fruits (Fig. 1). Cucumber productivity in March

and April was not significantly different; the difference between researched variants was 0.1 - 0.3 kg / m^2. Since May there was a significant increase in yield of the variant number 2, in which after tipping over the trellis they were released two side shoots, pruning them in every 50 cm.

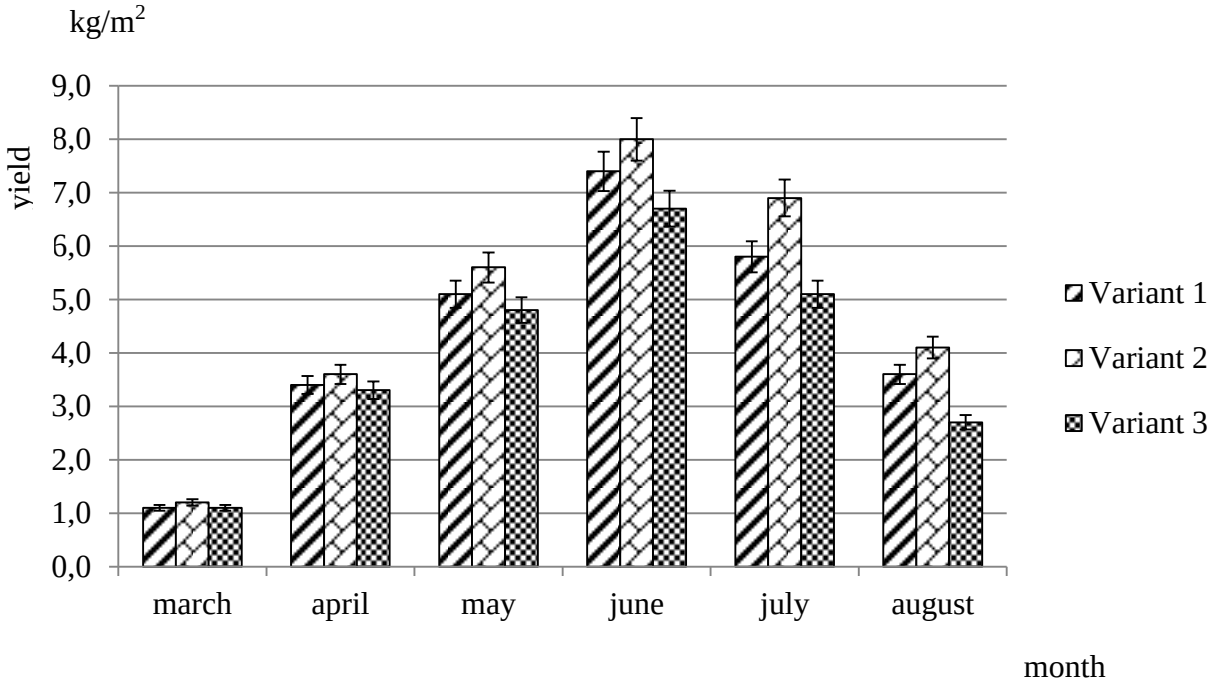

Fig. 1 Dynamics of cucumber income under different schemes of plant forming, average for 2013-2014

The peak of hybrid yield was observed in June. The best result had the variant number 2, the yield of which increased from 5.6 kg / m² to 8.0 kg / m², exceeding the control by 0.6 kg / m². The lowest yield was obtained from plants of the variant number 3 – 6.7 kg / m², which is less than the control by 1.3 kg / m². Such tendencies in yield formation lasted for the following months. By the end of fruiting it was sharply decreased the yield of the crop – 2.7 - 4.1 kg / m², which is explained by physiological aging of plants, and consequently a decrease in processes of assimilation and metabolism, as well as the emergence of diseases.

Experimental data suggest that a significant increase of the total cucumber yield when compared to the control was the variant number 2 (Table. 1). Its figure exceeded the control by 3.0 kg / m².

Table 1. The yield and fruit quality of cucumbers, the average for 2013-2014

Hybrid	Cucumber yield, kg/m^2			Marketability, %
	total	including		
		cash	non-cash	
Variant 1 (control)	26.4	24.9	1.5	94.5
Variant 2	29.4	27.5	1.9	93.7
Variant 3	23.7	22.3	1.4	94.1
HIP_{05}	2.8	2.1	0.8	–

According to the research the percentage of marketable products in cucumber fruits of studied variants ranged from 93.7 to 94.5%. In plants of all variants the index of non-cash part of yield ranged from 1.4 to 1.9 kg / m² and was not significantly different from the control. Despite the lowest percentage of marketability (93.7%) and that of non-cash yield – 1.9 kg / m², the number of products for implementation in the variant number 2 was significantly higher than that of the other variants and was 27.5 kg / m². Thus it was found that renewal of shoots in every 50 cm without limitation of vegetation and generative mass allowed obtaining the highest yield of cucumber, especially in the last months of fruiting.

So, the greatest impact on formation of general cucumber yield was obtained in the variant number 2, in which after tipping over the trellis they were released two side shoots, pruning them in every 50 cm.

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