



EARLY AND EARLY HARVESTING OF EGGPLANTS IN UNHEATED GREENHOUSE

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Annotation

In this article, based on the results of our scientific research, scientific experiments on growing vegetables in greenhouses, which are currently given special attention by our government in the field of agriculture, were conducted. Today, one of the most pressing tasks facing the field of vegetable growing is to conduct scientific research on vegetable varieties that are not included in the State Register of varieties and hybrids created specifically for greenhouses. The purpose of our research is to grow eggplant in greenhouses and to provide the population with quality and marketable eggplant in the off-season, as well as to identify varieties with valuable economic characteristics and recommend them to farmers for cultivation in greenhouses.

Keywords: Greenhouse, Variety Samples, Aurora, Aydin F1, Diamond, Black Shark, Eggplant Fruit, Farm, Agriculture, Seedling.

Introduction

Today, the area under eggplant in the world is 10,000 hectares, and its yield has increased from 26 t / ha to 55 t / ha. As a result, production increased by 9.1% to 51.3 million tons. At present, eggplant exports are estimated at 0.45 million tons or 13%. In this regard, eggplant producing countries are China (34.13 million tons), India (12.83 million tons), Egypt (1.4 million tons), Turkey (836.3 thousand tons) and Azerbaijan (CIS). 79.7 thousand tons), Spain (13%), Mexico (34%) and the Netherlands (14%) lead in exports. France (58%), the United States (12%) and Germany (11%) are the world's leading eggplant importers. In recent years,





Uzbekistan has produced a total of 10.9 thousand tons of eggplant with a yield of 22.1 t / ha.

The development of Uzbekistan and its growing population are leading to an increase in demand for the type and quality of food, especially vegetables. Due to the fact that vegetable crops are a unique food product rich in human health, its ability to work and biologically active substances, vitamins, enzymes, mineral salts, etc., great attention is paid to increasing their cultivation in our country.

In this regard, protected land vegetable growing is one of the main sectors of agriculture and plays an important role in providing the population with fresh, vitamin-rich products in the off-season. The existing greenhouses in Uzbekistan mainly grow tomatoes (50%) and cucumbers (30%), while the rest are citrus and other vegetable crops. In the developed countries of protected lands vegetable growing is carried out on a variety of vegetable crops. This creates a basis not only for the domestic market, but also for the growth of export potential.

Therefore, in expanding the range of vegetable crops protected in our country - eggplant is one of the most promising vegetables. This is due to the ever-increasing demand for it in the foreign and domestic markets in the off-season in the expansion of eggplant production and the relatively high cost of the product sold. One of the important factors determining the yield of vegetable crops in unheated greenhouses is the optimal planting time of the plant. In a set of agro-technical measures aimed at obtaining high and quality yields, it is very important to determine the optimal planting dates for seedlings. Seedlings are planted at different times, depending on the biological characteristics of vegetable crops, primarily on temperature and duration of the growing season, soil, climate, weather conditions, as well as the production plan and the purpose for which the product is grown. In addition, seedlings are planted at different times to prolong the period of consumption of the product.

The weather and soil climate conditions of the republic are changing from year to year. This requires our scientists to create new vegetable crops adapted to the climatic conditions of the country, as well as to study the optimal planting times of the created crops in open and protected areas to get higher yields and meet the needs of the population in vegetable crops throughout the year.

Eggplant is grown as a vegetable crop on farms, dehkan farms and on people's lands. However, in unheated greenhouses, the cultivation of eggplant is hampered due to the lack of scientific justification for optimal planting times in ensuring the earliest and most viable yield. Therefore, the main goal of our research is to determine the optimal planting dates for early, high and quality harvest of eggplant.





Based on the phenological observations of the studies, the growth and development of eggplant varieties at different planting times in the unheated greenhouse varied. This is because the eggplant plant requires heat to catch the seedlings when planted early (January 20). The duration of the seed capture period required 3-5 days for the standard Aurora (st) variety to retain 10-75% when planted on January 20, while the Chyornaya shark variety and Aydin G'1 hybrid required 2-4 days. However, delaying the planting period ensured that the seedlings were fully retained. This can be explained by the fact that the outdoor temperature was slightly higher between February 1 and February 10, and this factor caused the seedlings to catch up faster in later periods. In the standard Aurora variety and Aydin G'1 hybrid, the period of germination of seedlings during the January 20 planting period was April 1-15, while in the Chyornaya shark variety it was from March 27 to April 12 (Table 1).

Table 1 Growth and development of eggplant varieties at different planting times in an unheated greenhouse (2018-2020)

Variety samples	Sowing time	Date of formation of genetic organs					
		Buds		Flowering		Fruiting	
		10%	75%	10%	75%	10%	75%
Aurora (st)	20/I	10/IV	15/IV	18/IV	20/IV	28/IV	7/V
	1/II	10/IV	25/IV	28/IV	30/IV	8/V	17/V
	10/II	30/IV	5/V	8/V	10/V	18/IV	27/V
Black shark	20/I	27/III	12/IV	14/IV	18/IV	26/IV	4/V
	1/II	10/IV	15/IV	26/IV	28/IV	6/V	15/V
	10/II	22/IV	5/V	8/V	10/V	15/V	24/V
Aydin G'1	20/I	2/IV	15/IV	18/IV	22/IV	28/IV	7/V
	1/II	15/IV	20/IV	25/IV	5/V	10/V	15/V
	10/II	25/IV	5/V	10/V	15/V	20/V	26/V

According to our research, the later implementation of the comparative planting dates, eggplant varieties samples have a significant impact on the flowering and fruiting period of plants. That is, when planted at the same time (February 1), the flowering and fruiting period of Chyornaya shark was 2 days earlier than the standard Aurora navigator.

In the comparable January 20 planting period, the standard Aurora variety had a plant height of 112.5 cm and a diameter of 1.6 mm, while the Chyornaya shark variety was 120.0 cm and 1.6 mm, respectively. However, in Aydin G'1 hybrid, plant height was significantly higher than standard Aurora (27.5 cm) and Chyornaya shark (20 cm), (Table 2).



Table 2 Morphological features of plants of eggplant varieties at different planting times in greenhouses (2018-2020)

Variety samples	Sowing dates	The plant		Number of side branches, pcs	Number of leaves, pcs
		height, cm	diameter, cm		
Aurora (St)	20/I	112,5	1,6	5	55,4
	1/II	108,1	1,4	4	53,0
	10/II	107,0	1,4	4	50,1
Black shark	20/I	120,0	1,6	6	59,0
	1/II	114,5	1,6	5	57,3
	10/II	110,4	1,6	5	55,5
Aydin G'1	20/I	140,0	2,1	4	58,0
	1/II	131,0	2,0	4	54,5
	10/II	130,1	2,0	4	53,4
R%		2,5	0,3	0,5	5,9
NSR05		1,5	3,1	4,2	2,6

According to Table 2, the delay in planting dates only affects the height and diameter of the plants. Perhaps the number of leaves on the plants will also decrease. However, it was found that 50-56 leaves were formed in all eggplant cultivar samples planted during the February 10 sowing period.

This, in turn, increases the number and weight of fruit from a single plant 1 m² area laid the groundwork for crop formation. When the eggplant varieties were planted on January 20, the standard Aurora variety yielded 3.3 pieces, the Chyornaya shark variety produced 3.5 pieces, and the Aydin G'1 hybrid yielded 2.5 pieces of fruit (Table 3).

Table 3 Influence of different planting times in unheated greenhouses on the yield of eggplant varieties (2018-2020)

Variety samples	Sowing time	Fruit soni, dona	Fruit weight, g	Yield, kg / m ²			
				2018 й.	2019 й.	2020 й.	ўртача
Aurora (St)	20/I	3,3	181,4	6,2	8,7	8,5	7,8
	1/II	2,7	216,0	5,6	5,2	5,4	5,4
	10/II	2,5	163,0	4,1	4,4	4,7	4,4
Black shark	20/I	3,5	623,5	10,5	10,8	10,5	10,6
	1/II	3,2	224,4	9,0	9,5	9,1	9,2
	10/II	2,8	422,2	7,3	7,8	7,7	7,6
Aydin G'1	20/I	2,5	264,0	6,5	6,9	6,4	6,6
	1/II	2,5	232,0	5,6	5,8	6,0	5,8
	10/II	2,8	178,6	4,6	5,1	5,3	5,0
R%		1,2	105,2	1,2	1,1	1,3	1,0
NSR05		2,6	3,1	1,5	2,1	1,4	2,2



The weight of the fruit when planted on January 20 was 623.5 g, while on February 1 - 224.4 g and on February 10 - 422.2 g. The increase in fruit weight on February 10 compared to the February 1 planting period was due to the number of fruits in the bush.

However, the dependence of fruit weight not only on the number of fruits but also on the morphobiological properties of the variety can be seen in the example of the standard Aurora variety. That is, when the Aurora variety was planted on January 20, the fruit weight was 181.4 g, on February 1 - 216 g and on February 10 - 163 g. This is because the plants are able to absorb the optimum temperature and nutrients during the ripening period.

At the same time, in terms of yield per 1 m² of eggplant varieties at different planting periods studied, it was found that Chyornaya shark yielded the highest yield (10.6 kg / m²) when planted on January 20.

Yields per hectare were also variable. In 2018-2020, the highest yield was found in the variant where the Black Shark variety was planted on January 20, while the lowest yield was found in the variant in which the standard Aurora variety was planted on February 10 (Figure 1).

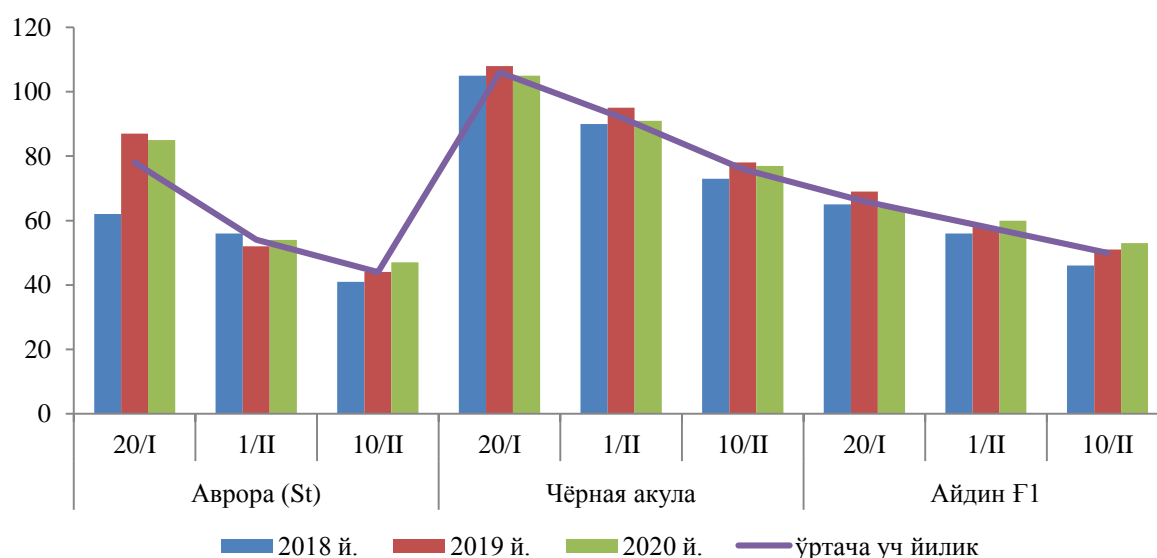


Figure 1. Yield of eggplant varieties at different planting times in unheated greenhouses, t / ha (2018-2020)

Eggplant cultivars grow in different natural conditions when planted in different periods and schemes. All of these factors significantly affect the chemical composition of the fruits produced by the eggplant plant (Table 4).



Table 4 Influence of sowing dates of eggplant varieties on the biochemical composition of the fruit of the plant in the cultivation of unheated greenhouses

Variety samples	January 20th		February 1		February 10	
	%	St %	%	St %	%	St %
Aurora (st)	8,6	100	8,4	100	7,4	100.0
Black shark	8,9	103	8,5	101	8.0	108
Aydin G'1	8,1	94	7,9	94	7,2	97

As can be seen from the figures in Table 4, the Black Shark variety of eggplant is superior to the standard Aurora navigator.

When planted on January 20, the fruit accumulated 0.3 mg% more dry matter. However, in the Aydin G'1 hybrid, it was found that the dry matter content of the fruit was 0.5 mg% lower during this period.

The amount of dry matter in the fruits of the studied eggplant varieties and the amount of sugar that is a component of it decreased when the planting period was postponed from early to late. The amount of vitamin C, on the contrary, increases.

Research results. In the experiment, the Aurora variety, which was included in the State Register of eggplant, was selected as a standard variety, and the advantages of valuable economic characteristics of the remaining varieties were studied. Among the specimens, the economic characteristics of the Black Shark specimen showed positive results from the standard variety. This will allow to bring the product to the market earlier and provide the population with fresh ripe eggplant. The variety differed from other varieties in that it was more resistant to disease and pests than the standard variety. Therefore, we recommend vegetable growers, farmers and gardeners to grow eggplant in greenhouses.

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