

GROWING ONIONS AS A SECONDARY CROP FROM SEEDLINGS IN UZBEKISTAN

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ABSTRACT

The article provides a comprehensive assessment of 10 varieties and hybrids capable of growing onions as a secondary crop in Uzbekistan and recommends the planting of promising varieties. At the same time determine the optimal planting dates for seedlings of a certain age. A correlation between important traits of this crop has been proven.

Banko onions F1, Daytona F1 Scientifically based recommendations have been given to expand the cultivation of Daytonaduragaylar and Istiqbol varieties as seedlings. Timing of planting seedlings, plant placement schemes and leaf and root of onion seedlings 1/3 Elements of cultivation technology have been improved, such as sowing part of the crop. Recommendations for the correct selection of seedling age according to the timing of planting onion seedlings are given

1. Introduction

Onions are now sold in 4.444 million countries worldwide. About 85.795 million tons of crops are grown per hectare, with an average yield of 19.31 tons per hectare. China produces 22.345 million tons of onions and India 19.299 million tons. t., the United States - 3.159 million tons, Iran - 2.382 million tons, and onions are one of the main crops in vegetable growing in other European countries. In Russia and the CIS countries of Europe, ordinary onion bulbs are grown in two years by planting onions.

At present, the area under onions in the Republic of Uzbekistan is more than

36,000 hectares, with a gross yield of 1,463,700 tons and an average yield of 25.6 tons per hectare. The area under onions and the gross yield from them are second only to tomatoes. Onion harvest meets the needs of the local population and is exported to neighboring countries. This is due to the fact that in Central Asia there are climatic conditions for growing onion bulbs, which are fully grown in one season by sowing onion seeds. The need to increase the production of onions in order to fully meet the needs of the population of Uzbekistan and to achieve large-scale exports of onions remains a requirement of the times. Increasing its production cannot be done at the expense of expanding the area under which it is grown, as our irrigated agriculture is limited. One of the resources to increase onion production is to grow it as a secondary crop in irrigated arable lands free of early vegetables such as cabbage, radishes, ultra-fast ripening potatoes, cereals and others. However, these lands are emptied of early crops in late May and early June, and planting onion seeds in these lands does not fully form and ripen the bulbs due to the artificial shortening of the growing season. This can be achieved by planting onion seedlings to get a ripe onion in a short season. The method of obtaining fully ripe bulbs by planting onions from seedlings is partially used as the main crop in regions where the onion crop is grown for two years. In the climatic conditions of Uzbekistan, the technology of onion seedlings and their cultivation as a secondary crop through seedlings is an unexplored, topical scientific problem.

Onion has been studied as the most common vegetable crop in the world. Higher education institutions and research centers in many parts of the world are interested in the attitude of onions to environmental factors, selection of promising varieties, cultivation of seedlings, planting scheme, timing and leaf and root planting. Leskovar Daniel., Vavzina Charles S., Mollica V.S., Egon F.C, Kumaran S.S, Muthuvel I. Alekseeva M.V ., Konyaev N.F., Trulevich V.K. and V.I.Zuev, R.S. Research was conducted by Akabirov, N.S. Bakuras and others. Given that no fundamental or practical research has been conducted in Uzbekistan on the cultivation of onions as a repeat crop, the selection of varieties of onions suitable for cultivation on the basis of this technology, the most suitable planting scheme, seedling age and planting time, and pruning of leaves and roots Scientific research on the appropriateness or inadequacy of planting is of scientific and practical importance.

The purpose of the study to compare and contrast varieties and hybrids suitable for growing as a secondary crop, to assess the appropriateness or inadequacy of planting the root system and 1/3 of the leaf, to determine the age and planting time for planting as a secondary crop, to grow in the seedling method is to determine the scheme of planting seedlings.

2. Research methods.

The research was conducted at the Department of Vegetables, Melons and Potatoes of Tashkent State Agrarian University. Field experiments were conducted in 2016-2018 on the experimental farm of SUE "Center for Innovative Development and Consulting in Agriculture."

Field experiments were carried out on the basis of VF Belik's "Methods of experimental work in horticulture and horticulture", BJ Azimov, BB Azimov's "Methods of conducting experiments in vegetable, melon and potato growing." Statistical analysis of the data using Microsoft Excel B.A. It was carried out on the basis of the dispersion method shown by Dospekhov. The following 4 experiments were conducted to solve the planned problem:

Experiment 1 Identification of onion varieties suitable for cultivation by seedlings in repeated crops. The following varieties of onions were tested:

1. Karatalskiy st,
2. Daytona F₁,
3. Banko F₁
4. Ellou Spanish
5. Peshpazak
6. Zafar
7. Spanish 313
8. Istikbol
9. Margilan extended local
10. Sumbula.

The experiment was conducted over 4 years in 4 repetitions, taking into account the surface area of 8.4 m². Onion seedlings on 1 branch 3m long in a three-row ribbon-like manner $\frac{40+15+15}{3} \times 7,5$ planted in the scheme. 40 saplings were planted in each strip of the tape, and 120 bushes were planted because the tape had 3 rows. 480 seedlings of each variety were planted, 530 seedlings of necessary seedlings. For this 0.5 m² 4 g of seeds of each variety were sown in a 4x1 cm scheme on the ground. The required seedling area is 5 m² formed.

2- experience Evaluate the planting of the root system and one-third of the leaf to capture the seedlings. The experiment was conducted in the following scheme:

1. All seedlings were planted without roots and leaves (control).
2. Bargning $\frac{1}{3}$ part of the saplings were planted.
3. Root only $\frac{1}{3}$ part of the saplings were planted.
4. Leaf and root $\frac{1}{3}$ part of the saplings were planted.

The experiment was conducted in a manner similar to the previous experiment.

The experiment was carried out with the variety "Istikbol", for the preparation of seedlings 16 g of seeds 2 m² planted in the field.

3- experience Determining the most suitable planting scheme and feeding area when growing as a repeat crop in the seedling method. In the experiment, the placement of plants in a ribbon-like manner on a 70 cm wide field, the feeding area and the planting thickness of the plants were studied:

1. Two rows $\frac{50+20}{2} \times 5 \text{ cm} = 0,0175 \text{ m}^2$ or 571,4 thousand plant / ha.
2. That in itself $\times 7,5 \text{ cm} = 0,02625 \text{ m}^2$ or 380,9 thousand /ha.
3. That in itself $\times 10 \text{ cm} = 0,0350 \text{ m}^2$ or 285,7 thousand per hectare.
4. Three rows $\frac{40+15+15}{3} \times 5 \text{ cm} = 0,01116$ or per hectare 857,6 thousand bush.
5. That in itself $\times 7,5 \text{ cm} = 0,0175 \text{ m}^2$ or per hectare 571,4 thousand bush.
6. That in itself $\times 10 \text{ cm} = 0,0233 \text{ m}^2$ or per hectare 428,6 thousand bush.
7. Four rows $\frac{40+10+10+10}{4} \times 5 \text{ cm} = 0,00875 \text{ m}^2$ or per hectare 1142,8

thousand bush.

8. That in itself $\times 7,5 \text{ cm} = 0,01312 \text{ m}^2$ or per hectare 762,2 thousand bush.

9. That in itself $\times 10 \text{ cm} = 0,0175 \text{ m}^2$ or per hectare 571,4 thousand bush.

Experiment 4 was repeated, taking into account the surface area of 16.8 m^2 , two ribbons 3 m long. The number of plants in each strip of tape ranged from 60 to 120 bushes, and the total number of plants varied according to the number of tapes in that tape. For this experiment, 72 g of seeds were planted in a 9 m^2 nursery.

4- Experience Determining the optimal planting time and age of seedlings

The experiment was conducted as follows;

5. 45-day-old seedlings were planted on May 21-25.

6. 35-day-old seedlings were planted on May 21-25.

7. 25-day-old seedlings were planted on May 21-25.

8. 45-day-old seedlings were planted on June 1-5.

9. 35-day-old seedlings were planted on June 1-5.

10. 25-day-old seedlings were planted on June 1-5.

11. 45-day-old seedlings were planted on June 11-15.

12. 35-day-old seedlings were planted on June 11-15.

13. 25-day-old seedlings were planted on June 11-15.

The experiment was repeated 4 times, and the area to be considered was 4.2 m^2 , the plot was divided into two rows and planted in a 3-row ribbon-like manner.

Identification of varieties and hybrids suitable for growing onion as a secondary crop through seedlings was carried out on 10 varieties. In the remaining experiments, the Istiqbol variety of onion was tested.

Research results. Selection of varieties and hybrids suitable for growing onions as a secondary crop from seedlings, planting scheme - determining the feeding area In the experiment, the selection of varieties in the soil climate of Tashkent region and the most favorable planting scheme feeding area were identified. Observations have shown that Daytona is one of the ten varieties of onions tested F_1 , Banko F_1 hybrids and other varieties studied in terms of the development of the Future variety as well as It was found to have a significant advantage over Karatalsky. These are varieties and hybrids as It was noted that the bulb enters the stage of formation 5 days earlier than the cultivar. It was also found that the amount of error varies from one week after planting seedlings and before the stage of yellowing of leaves - onion varieties. Daytona F_1 , Banko F_1 hybrids and the total error amount of the prospect type as in accordance with this index of the variety 14,6; 12,8 and 13,9 percentage was found to be low (Table 1).

Table 1 Quality of marketable yield of onion varieties and hybrids in repeated crops (2016-2018)

Varieties and hybrids	Commodity product composition											Notovar		
	brand				fully completed			incomplete				the amount of onions, %	yield, t / ha	
	the amount of onions, %	yield, t / ha	st relatively, %	average weight of bulbs, g	amount of onions, %	yield, t / ha	relative to control %	average weight of bulbs, g	amount of onions, %	yield, t / ha	relative to control, %			average weight of bulbs, g
Karatalskiy st	90,2	25,3	100	72,1	87,9	22,2	100	76,9	12,1	3,1	100	68,0	9,8	2,8
Daytona F ₁	98,1	43,2	170,7	93,0	95,4	41,2	185,6	97,8	4,6	2,0	64,5	88,2	1,9	0,9
Banko F ₁	97,2	38,2	151,0	84,0	93,2	35,6	160,4	103,2	6,8	2,6	83,8	64,8	2,8	1,1
Ellou spanish	97,8	32,1	126,9	76,9	90,1	28,9	130,2	78,5	9,9	3,2	103,2	75,3	2,2	0,7
Peshpazak	98,2	35,5	140,3	79,0	92,0	32,7	147,3	86,4	8,0	2,8	90,3	71,6	1,8	0,6
Zafar	92,1	28,7	130,4	76,0	82,2	23,5	105,9	84,1	17,8	5,1	164,5	67,9	7,9	2,6
Spanish 313	93,3	27,2	107,5	71,0	88,4	24,0	108,1	72,8	11,6	3,2	103,2	69,2	6,7	2,0
Istikbol	98,8	38,3	153,4	82,0	93,9	36,0	163,9	94,6	6,1	1,2	77,4	69,4	1,1	0,4
Margilan extended local	91,7	25,1	98,0	61,1	80,9	20,1	90,5	67,9	19,1	4,7	151,6	54,3	8,3	2,6
Sumbula	97,1	32,6	129,6	74,2	89,9	29,5	132,9	86,3	10,1	3,3	106,5	62,1	2,0	0,8
EKMT ₀₅	-	0,2	-	0,4	-	0,4	-	0,4	-	0,2	-	0,4	-	-
EKMT _%	-	0,7	-	0,5	-	1,4	-	0,5	-	5,5	-	0,5	-	-

The total average yield of these hybrids and cultivars was 44.1; 39.3 and 38.8 ha / t, and the commodity yield was 17.8, respectively, in comparison with St. Karatalsky; 12.8 and 12.9 ha / t respectively. Daytona has the most fully grown bulbs in the composition of the commodity crop compared to the St. Karatalsky variety F₁ (185,6 %), Banko F₁ (160,4 %), Istikbol (163,9 %), Peshpazak (147,3 %), Sumbula (132,9 %) and Ellou Spanish (130,2 %) formed, this figure of the remaining varieties did not differ sharply from that of the st variety.

The effect of the planting scheme on the error rate and developmental stages of onion seedlings in repeated crops onion in practice “Istikbol” 9; two rows 50 + 20/2 × 5 cm, 50 + 20/2 × 7.5 cm, 50 + 20/2 × 10 cm, three rows 40 + 15 + 15/3 × 5 cm, 40 + 15 + 15 / 3 × 7.5 cm, 40 + 15 + 15/3 × 10 cm and four rows 40 + 10 + 10 + 10/4 × 5 cm, 40 + 10 + 10 + 10/4 × 7.5 cm, 40+ 10 + 10 + 10/4 × 10 cm schemes were studied. Feeding area in phenological observations 0,0175 m² дан 0,00875 m² shrinkage or increase in seedling thickness from 571.4 thousand / ha to 1142.8 / ha showed an acceleration of plant development - the period of yellowing of leaves and a decrease in the number and length of leaves in each bush by 3.4 - 4.3 . The three-row ribbon planting scheme produced the highest total yield (42.4; 39.13 ha / t) and (41.1; 37.9 ha / t) per

hectare when planted between the strip plants at 7.5 and 10 cm, respectively. weight 115.4; 152.7 g (Table 2).

Table 2 Influence of sowing scheme on repeated crop on onion yield (2016-2018)

Planting scheme, ribbon	Gross yield, t / ha				Commodity yield, t / ha	Percentage of marketable yield, %
	2016	2017	2018	average		
Two lines $\frac{50+20}{2} \times 5 \text{ cm}$	36,2	34,7	35,5	35,47	34,8	98,2
Two lines $\frac{50+20}{2} \times 7,5 \text{ cm}$	34,2	32,2	32,6	33,0	32,6	98,8
Two lines $\frac{50+20}{2} \times 10 \text{ cm}$	30,2	28,3	29,1	29,2	28,8	98,6
Three rows $\frac{40+15+15}{3} \times 5 \text{ cm}$	40,3	38,2	40,9	39,8	37,8	95,0
Three rows $\frac{40+15+15}{3} \times 7,5 \text{ cm}$	42,3	41,0	43,9	42,4	41,1	96,9
Three rows $\frac{40+15+15}{3} \times 10 \text{ cm}$	40,1	38,2	39,1	39,13	37,9	96,9
Four rows $\frac{40+10+10+10}{4} \times 5 \text{ cm}$	40,5	38,7	37,2	38,8	34,8	89,7
Four rows $\frac{40+10+10+10}{4} \times 7,5 \text{ cm}$	33,4	35,1	34,1	34,1	31,6	92,7
Four rows $\frac{40+10+10+10}{4} \times 10 \text{ cm}$	31,2	33,2	34,3	32,9	31,0	94,2
EKMT ₀₅	0,3	0,4	0,5	0,2	0,3	
EKMT _%	0,9	1,2	1,3	0,5	1,1	

Evaluation of the effect of root and leaf transplanting of onion seedlings on repeated crops The fourth chapter, entitled “Istiqbol”, describes the effect of planting one-third of the root, one-third of the leaf and one-third of the leaf and root on the error rate, growth and development of seedlings before planting. It was found that if the seedlings were planted with 3/1 of the leaf, the amount of error decreased by 18.6% compared to the control, and when the root was sown, this figure increased by 42.2%. When 3/1 of the leaves are sown, the total and commodity yield is in accordance with the control: 11.8; An increase

of 13.8% was observed. It was shown that 3/1 part of the onion seedling root is formed 7 days after the seedlings are sown, 3 days after the seedlings are sown, 1 day after the leaves are sown, and 4 days after the roots and leaves are sown. In the third variant of the experiment at the stage of yellowing of the leaves, the number of leaves formed in each bush was 1.4 higher than in the control, and the length of the largest leaf was 2.3 cm higher (Table 3).

Table 3 Influence of sowing of different vegetative parts of onion seedlings on the duration of growth and development stages (2016-2018)

Experiment options	Date, month, day when the seedlings were planted	Number of leaves in 1 bush, pcs	The time it takes for 5-6 leaves to form, KYH	The time, the day, that elapsed before the onion began to form	The time elapsed before the leaves begin to turn yellow, day	When the leaves begin to turn yellow	
						Number of leaves in 1 bush, pcs	The length of the largest leaf, cm
Planting without cutting leaves and roots (control)	12/ VI	3,6	26/ VI	8/VII	10/V III	12,0	40,3
Sow 1/3 of the root	12/ VI	3,8	1/VI I	15/V II	15/V III	10,4	34,8
Sprinkle 1/3 of the leaf	12/ VI	3,7	26/ VI	9/VII	24/V III	13,4	42,3
Sprinkle 1/3 of the root and leaf	12/ VI	3,7	29/ VI	12/V II	18/V III	11,0	36,2
EKMT ₀₅		0,3				0,7	0,4
EKMT _%		1,3				1,0	0,2

In the fifth chapter of the dissertation, entitled "Determining the optimal time and age for planting onion seedlings in the second crop", the planting of 45, 35 and 25-day seedlings in three periods on May 21-25, June 1-5 and June 11-15 and its effect on quality was determined.

In the section called the effect of planting time and age of seedlings on the quality of seedlings in all planting periods, 25-day-old seedlings averaged 2.3 ... 2.4 sin leaves in each bush, the length of the largest leaf was 14.1 ... 15.2 cm, average weight 1.3 ... 1.5 g and diameter of the false stem - 2.3 ... 2.5 mm; Suitable for 35-day seedlings: 2.8 ... 3.1 pieces, 20.1 ... 21.4 cm, 2.0 ... 2.5 g, 3.0 ... 3.5 mm; At 45 days, it was determined to be 3.8 ... 4.6 mm, 26.4 ... 27.8 cm, 5.8 ... 6.75, 4.3 ... 5.1 mm. Observations found that the younger the seedlings, the lower the error rate (Table 4).

Table 4 Influence of time and age of seedlings on repeated sowing on the amount of error (2016-2018), %

Sowing time	Seedling age						Total error rate by seedling age,%		
	25 days		35 days		45 days		In 25 days	In 35 days	In 45 days
	7 days after planting,%	At the stage of yellowing of leaves,%	7 days after planting,%	At the stage of yellowing of leaves,%	7 days after planting,%	At the stage of yellowing of leaves,%			
21-25 May	4,1	1,4	5,2	2,9	7,8	2,8	5,5	8,1	10,6
1-5 June	4,8	2,2	8,2	2,8	8,9	3,4	7,0	11,0	12,3
11-15 June	7,2	3,0	10,7	2,5	12,1	3,2	10,2	13,2	15,3

It was found that the younger the seedlings during all planting periods, the later they enter the stage of bulb formation and leaf yellowing. At all periods, the highest total yield of seedlings of all ages (25 days - 33.6 ha / t, 35 days - 37.1 ha / t, 45 days - 44.2 ha / t) was determined. If sowing is carried out from early to late, a decrease in yield (at 25 days - 12.8; 28.0%, at 35 days - 3.8; 19.7% and at 45 days - 5.4; 9.0%) was observed (5- table).

It was found that planting time and seedling age affect the quality of onion yield. 85.1 ... 76.2% of the total yield of 25-day-old onion seedlings, 89.2 ... 77.1% of the 35-day period and 97.1 ... 94.2% of the 45-day period. formed. The amount of ripe onions was 87.2 ... 77.1% at 25 days, 90.4 ... 84.1% at 35 days, 98.9 ... 94.6% at 45 days.

The analysis of cost-effectiveness of all tasks performed on the topic of the dissertation is given.

Table 5 Influence of planting time and seedling age on onion crop quality (2016-2018)

Sowing dates	Commodity yield, t / ha (%)			Ripe onion crop, t / ha (%)			Unripe onion yield, t / ha (%)			Average weight of ripe onions, g			The average weight of unripe bulbs, g			Notovarbob yield, t / ha (%)		
	Seedling age, day																	
	25	35	45	25	35	45	25	35	45	25	35	45	25	35	45	25	35	45
21-25 May	28,6 (85,1)	33,1 (89,2)	43,0 (97,1)	25,0 (87,2)	30,0 (90,4)	42,6 (98,9)	3,6 (12,8)	3,1 (9,6)	0,4 (1,1)	74,1	79,2	90,7	36,0	40,9	65,2	5,0 (14,9)	4,0 (10,8)	1,2 (2,7)
1-5 June	23,8 (81,2)	30,1 (84,3)	40,2 (96,0)	20,3 (85,1)	26,6 (88,2)	38,6 (95,9)	3,5 (14,9)	3,5 (11,8)	1,6 (4,1)	71,9	75,2	85,7	37,9	40,1	69,4	5,5 (18,8)	5,5 (15,4)	1,6 (3,8)
11-15 June	18,5 (76,2)	23,0 (77,1)	37,9 (94,2)	14,3 (77,1)	19,4 (84,1)	35,9 (94,5)	4,2 (22,9)	3,6 (15,9)	2,0 (5,5)	61,1	72,1	80,0	32,1	35,9	69,9	5,7 (23,5)	5,4 (18,1)	2,3 (5,7)
EKMT ₀₅	0,1	0,5	0,9	0,4	0,6	0,6	0,2	0,2	0,1	0,3	0,4	1,0	0,5	0,3	0,9	-	-	-
EKMT _{3%}	0,3	1,8	2,2	2,0	2,5	1,5	4,3	4,8	5,5	0,4	0,6	1,2	1,5	0,9	1,3	-	-	-

3. Conclusion.

From the studied onion varieties - samples Peshpazak, Istiqbol and Ellou Spanish varieties were found to produce full (75%) seedlings a day earlier than the controlled Karatalsky, Margilansky udlinënnyy mestnyy variety a day later, and the remaining varieties at the same time with st variety. In all varieties, the first chin leaves were formed after 12 ... 15, and the fourth and fifth chin leaves after 18 ... 22 days. Onion variety - 3.1 ... 4.1 leaves, the average length of the largest leaf is 17.9 ... 28.1 cm and seedling weight is 6.1 g. and 8.9 g. was The highest error rate was in the st Karatalsky variety (31.1%), while in the remaining varieties this figure was in the range of 14.1 ... 28.0%. Daytona F1 and Banko F1 hybrids and Istiqbol variety of ripe onion contain 95.4; 93.2 and 93.9 percent, respectively, the average weight of onions was 103.2 ... 94.6 g. was in the range. In all planting schemes, the increase in the distance between the plants in the tape (5.0 ... 10 cm) had a positive effect on the increase in the number of leaves formed in each bush and the relatively long length of the largest leaf. In the two-row tape method, the number of seedlings planted in the strip was 5 ... 10 cm, the total yield ranged from 34.8 t / ha to 28.8 t / ha, but the total yield was higher than in other planting schemes (98.2). ..98.6%). Among the studied planting schemes, seedlings planted in a three-row method with a spacing of 7.5 and 10 cm in the strip yield the highest total (42.4; 39.13 t / ha) and marketable (41.1; 37.9 t / ha) yields. detected. The total yield is 11.8 due to the fact that planting a third of the seedling leaf reduces the amount of planting error; the average yield of marketable onions was found to be 13.8% higher, and the average weight of marketable onions was found to be 7.7 g lower than the control. Planting of 25-day-old seedlings on May 21-25 is the highest total (33.6 t / ha), 35 seedlings in the first and

second periods (37.1; 35.7 t / ha), and 45-day-old seedlings in all periods (44, 2 ... 40.2 t / ha).

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