https://cejsr.academicjournal.io

The Effect of Mineral Fertilizers on the Yield of a Leaf Turnip Plant

Rakhmatov Anvar Mamatovich
PhD, senior researcher, Research Institute of vegetables, melon crops and potato

ABSTRACT

This article provides information on the effect of mineral fertilizers of the "Darmon" variety of leaf turnip on the yield of a leaf turnip plant. A new variety of leaf turnips, which is considered promising based on the information. Since 2016, the state has been submitted to the nav test. In 2018, fixed agricultural crops were included in the state reserve with Certificate No. 003. The leaf of mineral fertilizers significantly affects the yield of the turnip plant. It was laid at the time of laying the soil before planting seeds in the ground 100% of potash and phosphorus fertilizers, which are tested taking into account the growing season. Nitrogen fertilizers, on the other hand, were given at the time when the plants fully sprouted and produced 2-3 true leaves. Mineral fertilizers also significantly affected the manifestation of important economic signs of leaf turnip.

KEYWORDS: *leaf turnip, mineral fertilizers, leaves, tubers, yield.*

Introduction. Worldwide, today turnips are planted in an area of 1 368 358 ha and 38 835 235 tons of products are grown, with an average yield of 28,4 t/ha [3]. In the vegetable growing of the USA, Japan, China, Ireland, Israel, Russia, Sweden, England, Belgium and other European countries, turnips are considered one of the main crops [2; 4]. One of the urgent problems is the introduction of leaf turnips into our republic, which are of national economic importance in the countries of South-East Asia, and the improvement of the technology of their cultivation, while the organization of a healthy eating style and the expansion of the range of food products is considered relevant [1].

Discussion. Leaf turnip sprouts are harvested in 25-30 days after germination from the ground. It was laid at the time of laying the soil before planting seeds in the ground 100% of potash and phosphorus fertilizers, which are tested taking into account the growing season. Nitrogen fertilizers, on the other hand, were given at the time when the plants fully sprouted and produced 2-3 true leaves.

To determine the demand of the Leaf turnip plant for optimal mineral fertilizers, the seeds were sown in one day (on August 10). Seeds took 3-4 days to germinate 10% -75% from sowing. Between the options germination of sprouts-the appearance of the first True Leaf appeared 3-4 days earlier in our option 2, which increased the amount of control and mineral fertilizers by 25% (Table 1.).

Table 1. Phenological observations on the effect of mineral fertilizers on a leaf turnip plant 2015-2017 yy.

№	Options	Germination of sprouts, date		appearance of the first true leaf, date	Appearance of 5-6 leaves	Formation of leaves suitable for consumption	Harvest period
		10%	75%				
1	Without fertilizer (St)	13,08	14,08	20,08	02,09	05,09	15,09

https://cejsr.academicjournal.io

2	$N_{125}P_{93,7}K_{62,5}$	12,08	13,08	17,08	31,08	02,09	12,09
3	$N_{100}P_{75}K_{50}$ (St)	13,08	14,08	18,08	01,09	03,09	13,09
4	$N_{75}P_{56,2}K_{37,5}$	13,08	14,08	20,08	02,09	05,09	15,09

In the option without fertilizers and reducing the amount of mineral fertilizers by 25%, germination of sprouts-the appearance of the first True Leaf took 6 days. In the case when the appearance of 5-6 leaves from germination was carried out in 15-16 days in control and 2-options, this process in the tested 1-4 options took place in 18 days.

The formation of plants suitable for consumption was carried out in 18-19 days at a time in control and 2 - options. In 1-4 variants, it was observed that this process took place in 21 days. The harvest period from full germination to full germination was 27-30 days between all variants.

The timing of the implementation of the phenological phases in determining the demand of the Leaf turnip plant for optimal mineral fertilizers is given in Table 2. As can be seen from the data presented in the tables, it was noticeable that the implementation of phenological phases took place between the options 2-3 days earlier in our variants, where the norm of mineral fertilizers increased.

Table 2. The duration of the growth and development phases of the Leaf turnip plant is 2015-2017yy.

№	Options	The day of seed germination		A day after sprouting			
		10%	75%	the appearance of the first true leaf	Emergence of 5-6 leaves	formation of edible leaves	harvest time
1	Without fertilizer (St)	3	4	6	18	21	30
2	$N_{125}P_{93,7}K_{62,5}$	2	3	3	15	18	27
3	$N_{100}P_{75}K_{50}$ (St)	3	4	4	16	19	28
4	$N_{75}P_{56,2}K_{37,5}$	3	4	6	18	21	30
average		**3**	**4**	**5**	**17**	**20**	**29**

The duration of the phenological phases from planting to germination, germination to first true leaf, germination to 5-6 leaves, and to edible plants varied among variants (Tables 1-2).

The type, color and number of leaf sockets were not significantly affected by the application of mineral fertilizers to turnip leaves at different rates. However, compared to the control option, slightly higher values of leaf height and width were observed in the option with increased amount of mineral fertilizers, on the contrary, it was observed that this indicator was slightly lower as the amount of mineral fertilizers decreased and in the options without fertilizers. In particular, the leaf height was 32,8 cm in the control option, while the leaf height was 36,1 cm in the 2nd option with a 25% increase in the amount of mineral fertilizers. This was 3,3 cm or 10,1 higher than the control variant. The leaf height was 26,8 cm in the 4th variant with a 25% reduction in the amount of mineral fertilizers and 23,7 cm in the non-fertilizer variant. This was observed to be 6,0-9,1 cm or 18,3-27,3% lower than the control variant. The same process was observed for other biometric parameters leaf width and number of leaves per plant (Table 3).

https://cejsr.academicjournal.io

Table 3. Morphological description of the turnip leaf 2015-2017 yy.

№	Options	Leaf						
		height		width		index	number per plant	
		(cm)	%	(cm)	%		in pieces	%
1	Without fertilizer (St)	23,7	72,4	10,7	82,6	2,22	8,0	100,0
2	$N_{125}P_{93,7}K_{62,5}$	36,1	110,1	13,1	101,6	2,75	8,6	107,5
3	$N_{100}P_{75}K_{50}$ (St)	32,8	100,0	12,9	100,0	2,54	8,0	100,0
4	$N_{75}P_{56,2}K_{37,5}$	26,8	81,7	10,6	81,8	2,53	7,9	98,8
average		**29,8**		**11,8**		**2,51**	**8,1**	
		r=0,87±0,35				**r=0,90±0,15**		

Correlation coefficient between the suitability of turnip leaves for consumption and the width (r) of the largest leaf height before harvesting was strong, r=0.87±0.35.

Correlation coefficient r=0.90±0.15 between the height of the largest leaf and the number of leaves per stem (r) was strong.

Correlation coefficient r=0.78±0.22 between the largest leaf width and the number of leaves per stem (r) was strong.

The rate of different mineral fertilizers significantly affected the yield in leaf turnip (Table 4). An increase in the rate of mineral fertilizers led to an increase in productivity. In the control option, the total yield was 18,7 t/ha. In the option of increasing the consumption of mineral fertilizers by 25%, the total yield was 23,4 t/ha. Compared to the control variant, it was correspondingly 4,7 t/ha or 25,3% more. On the contrary, as the rate of mineral fertilizers decreased, the total productivity decreased slightly (Table 4).

Table 4. The effect of mineral fertilizers on the productivity of leaf turnip in 2015-2017 yy.

Options	Productivity, t/ha				Relative to the control option, %	Product yield, %	Compared to the option without fertilizer, %	Average weight of one plant	
	2015 year	2016 year	2017 year	average				g.	%
Without fertilizer (St)	10,9	11,9	11,4	11,4	61,0	98,2	100,0	41,5	60,5
$N_{125}P_{93,7}K_{62,5}$	22,8	23,9	23,6	23,4	125,3	99,1	205,6	81,2	118,4
$N_{100}P_{75}K_{50}$ (St)	18,3	19,1	18,7	18,7	100,0	99,0	164,0	68,6	100,0
$N_{75}P_{56,2}K_{37,5}$	15,3	16,5	16,2	16,0	85,6	98,6	140,4	47,3	68,8
average	**16,8**	**17,8**	**17,3**	**17,4**				**59,6**	

It was observed that in option 4, when mineral fertilizers were reduced by 25%, the total yield was 16,0 t/ha or 2,7 t/ha or 14,4% less than the control option. The total yield in the non-fertilizer version was 11,4 t/ha. It was 7,3 t/ha or 39,0% less than the control option.

https://cejsr.academicjournal.io

A similar situation was observed in commodity productivity. The rate of mineral fertilizers significantly affected the average weight of one plant. As the rate of mineral fertilizers increased, the average weight of one plant also increased.

In the control variant, the average weight of one plant was 68,6 g (Table 4). When the rate of mineral fertilizers was increased by 25% compared to the control option, the weight of one plant was 81,2 g. This means 12,6 g or 18,4% more than the control variant. On the contrary, as the rate of mineral fertilizers decreased, the weight of one plant was slightly less. In option 4, which reduced the rate of mineral fertilizers by 25%, the average weight of one plant was 47,3 g, which is 21,3 g or 71,2% less than the control option.

Conclusion. 1. Summing up from the conducted studies, the rate of fertilizing leaf turnip with mineral fertilizers showed convenience when $N_{125}P_{93,7}K_{62,5}$ kg of mineral fertilizer per hectare is used in the 2nd variant. 2. Planting in this option allows to increase the yield to 23,4 t/ha. This means 4,7 t/ha or 25,3% more than the control option.

References

1. Bunin M.S. Salatnaya Repa-Novy ovotsh / / Sad I ogorod.- 1994.- VIP. 2/10. 16-21-P.
2. Zuev V.I., Qadirxujaev A., Adilov M.M., Akramov U.I. Vegetable growing and gardening. // Tashkent, 2009. 11-28-215-230-b.
3. Zuev V.I., Mavlyanova R.F., Dusmuratova S.I., Buriev X.Ch. Avatshi-ETA pitsha I legarstva. // Tashkent, 2016. 29-35-b.
4. Nuritdinov A.I., Baqiev A.B., Bakuras N.S. Vegetable growing, gardening and potato spravochnigi.Tashkent, Cocktail, 1987. 140-141-b.