

# Influence Of Microelement Fertilizers In Foliar Feeding Of Cotton On Changes In Cotton Boll Weight.

**Davronov Qakhramonjon Anvarjonovich**

Fergana State University, Doctor of Agricultural Sciences, Associate Professor,

**Teshaboyev Nodirbek Ikromjonovich** (0000-0002-7685-2651)

Independent researcher at Fergana State University Nodirbek Teshaboev

**Abstract:** *The importance of the microfertilizer “Cafolon”, which is used to feed plants from leaves when caring for cotton, in changing the weight of one cotton boll was studied.*

**Keywords:** *cotton, agriculture, cafolon, plants, soil.*

**Relevance of the topic.** Cotton growing is one of the important branches of agriculture in our republic. A lot of scientific and practical work has been done in the cultivation of cotton, but it is necessary to pay more attention to cotton yield and seed quality, increasing soil fertility, correctly determining the rate and duration of mineral fertilizer application, correctly organizing the duration and rate of irrigation, rational use of organic fertilizers, and treating cotton with microfertilizers. It is necessary to carry out timely agrotechnical measures aimed at increasing the weight of the cotton boll through moderate fertilizing and the use of physiologically active substances in accordance with natural and climatic conditions.

**Background of the topic.** B.Kh.Tillabekov, N.Orazmatov [4] Sh.Abdualimov [2] and others conducted scientific research on foliar feeding (suspension) of cotton and growing high and high-quality cotton crops, mainly using nitrogen, phosphorus and potassium mineral fertilizers. When foliar feeding cotton, a suspension was prepared and the optimal timing and norms for plant treatment were determined. It is known that cotton grows very slowly before the heading phase. It develops very slowly, especially during the formation of the first, second, third, fourth and fifth chin leaves. In addition, it is resistant to various diseases and pests, and is more susceptible to aphids and thrips. At this time, the plant is very demanding of nutrients, especially nitrogen and phosphorus. If during this period you feed the plant with dissolved (suspensions) NPK fertilizers through the leaves, this will have a positive effect on the further development of the plant, accelerating harvesting and increasing the overall yield. Similar conclusions have been proven as a result of many years of scientific research (Tillabekov B., Orazmatov N. [4, 6, 7])

Even in developed countries, when growing cotton, the plant is fed with ready-made liquid fertilizers (Davronov K., Tokhtashev F. [6]).

Our studies examined the timing and application rates of the new Kafalon microfertilizer for foliar feeding of cotton.

Currently, it is necessary to study the production of new liquid microfertilizers by chemists and determine the norms and timing of their use when growing cotton based on the results of stationary field experiments and laboratory analyzes. Therefore, we set ourselves the goal of studying the effect of the newly produced multi-element fertilizer Kafolon on the growth, development, mass and quality of plants in the conditions of our republic.

**Research methods.** Scientific research was carried out at the Department of Cultivation, Storage and Primary Processing of Agricultural Products of the Fergana Polytechnic Institute and at the Fergana Scientific Experimental Station PGUEAITI in 2020-2022 based on experiments in laboratory and field conditions. Observations and laboratory analyzes in the experiments were carried out on the basis of the “Methodological manual of UzPITI” [1].

"Kafolon" is a liquid microfertilizer, a complex microfertilizer containing a high level of phosphorus. It is used in the initial phase of plant growth, the formation of generative organs, flowering, in general, when phosphorus deficiency is observed in all periods.

(Picture 1).

**Advantages:**

- At the initial stage, it provides plants with easily digestible phosphorus compounds.
- Develops the root system and improves nutrient absorption. P
- Phosphorus is more effective under conditions that limit root uptake (low temperature, high soil pH, etc.).
- Due to the composition of macro-, meso- and microelements, it satisfies the need of plants for mineral nutrients, especially phosphorus.
- Increases frost resistance of winter crops.

In this research work, for the first time, the use of microfertilizer (Kafolon) was studied at the stage of formation of 3-4 feathers of cotton seedlings, tillering and flowering, as well as the rates and timing of fertilizer application.

In 2021, on an experimental plot of cotton variety S-8290, the effectiveness of applying Kafolon microfertilizer in the 3-4 periods of cotton processing, tillering, flowering and fruiting was studied. In the experiment, the control (untreated) option was compared with the currently recommended option (Kafolon), treated with a suspension at the rate of 2.0 l/ha.

Field experiments were carried out on the basis of agrotechnical measures adopted in the experimental farm of the Fergana Scientific Experimental Station PGUEAITI.

In the experiment, phenological observations and laboratory analyzes were carried out according to the options. After sowing and at the end of the growing season, the thickness of cotton seedlings in the field was determined. Phenological and biometric observations were carried out on the height of the cotton plant, the number of bolls, comb, flower, boll, the number of opened cotton plants and the location of shedding bolls.

Also, based on laboratory analysis, parameters such as leaf surface, dry weight, photosynthetic productivity, cotton yield, and plant fiber quality were studied.

In the experimental field, cotton was weeded once at the beginning of the growing season, weeded twice, between rows 4 times, watered 3 times, fed 3 times, the seedlings were treated with Kafolon microfertilizer 2 times and 3-4 pine leaves were given during the carding, flowering and fruiting periods. Treatment was carried out at the rate of l/ha.

**Research results.** When growing cotton, it was found that feeding the plant with microfertilizers from leaves has a positive effect on the growth and development of the plant according to the studied options.

Based on the results of scientific research conducted in 2021, the obtained scientific data on the change in boll weight of cotton variety S-8290 under the influence of applied agrotechnical measures are presented in Table 1.



**Table 1**  
 The effect of foliar application of microfertilizers on the cotton boll effect, (g), 2021

Option order	Annual norms of mineral fertilizers, kg/ha			Mineral fertilizers with microelements, ml, l/ha	1-skin		Average	2-skin		Back	2-average for skin
	N	P	K		Back			Возвращает			
					I	III		I	III		
1	130	90	65	—	5,6	5,4	5,5	3,8	4,0	3,9	4,7
2	130	90	65	Liquid microelements	5,6	6,0	5,8	4,3	4,1	4,2	5,0

3	130	90	65	Liquid NPK and microelements	6,0	5,8	5,9	4,2	4,2	4,2	5,1
4	130	90	65	Kafolon	5,9	5,9	5,9	4,0	4,2	4,1	5,0
5	180	125	90	–	6,0	5,8	5,9	4,0	3,8	3,9	4,9
6	180	125	90	Liquid microelements	6,1	6,1	6,1	4,0	4,2	4,2	5,1
7	180	125	90	Liquid NPK and microelements	6,2	6,2	6,2	4,2	4,2	4,2	5,2
8	180	125	90	Kafolon	6,0	6,2	6,1	4,2	4,0	4,1	5,1
9	230	160	115	–	5,9	5,9	5,9	3,9	3,9	3,9	4,9
10	230	160	115	Liquid microelements	6,2	6,1	6,0	4,1	3,9	4,0	5,0
11	230	160	115	Liquid NPK and microelements	6,2	6,1	6,2	4,2	4,2	4,2	5,2
12	230	160	115	Kafolon	6,1	5,9	6,0	4,1	3,9	4,0	5,1

It is known that the weight of one cotton boll is 6.0-6.1 g [2, 3].

The data obtained in this experiment confirm this, however, it was found that the change in boll mass depends on the rates of fertilizer application, foliar microelements and cotton yield.

Based on the application of mineral fertilizers at the rate of N130, P90, K65 kg/ha (in 2021 conditions), the mass of pods in the 1st harvest is proportionally 5.6 and 5.4 g and averages 5.5 g in the 2nd harvest. in the 2nd harvest was 3.8 and 4.0 g, on average 3.9 g, on average in the 2nd harvest 4.7 g.

Against the above background of mineral fertilizers, liquid microelements were applied 3 times through cotton leaves, while in the 2nd option, the average weight of cotton in the 1st and 2nd harvests was 5.8 and 4.2 g, respectively. neither, but the average weight of 2 skins is 5.0g. 0.3 g from control. was observed higher than Thus, it was observed that microelements in liquid form, introduced through the leaves, had a beneficial effect on the surface of the cotton leaf, then on the level of flowering and opening of bolls, as well as on the increase in the weight of cotton bolls.

In option 3, in which liquid NPK and microelements were applied 3 times (3.0, 3.5 and 4.0 l/ha) through cotton leaves, the weight of one cotton boll averaged 5.9 and 4.2 grams with 2 yields are proportional to the yield, and the average is 5.1 g. 0.4 and 0.3 from the control, an average of 0.4 g and 0.1 g more compared to option 2.

Against the background of mineral fertilizers N130, P90, K65 kg/ha, the liquid complex of microfertilizers Kafolon is applied 4 times at 2.0 l/g, the indicated indicators are proportional to 5.9; 4.1 on average 5.0 g from the 2nd trimester. In case of excess, liquid microelements are equal to the indicator of the used 2nd option (5.0-5.0 g), liquid NPK and microelements - 0.1 g of the effect of the mixture and it was noted that it is less.

Mineral fertilizers were applied at the rate of N180, P125, K90 kg/ha in the control options (5-8), the average weight of one cotton boll was 5.9-3.9 g in proportion to the yield, and the average for the yield was 4.9 g, reaching 0.4-0.0 and 0.2 g from the control in the I-background. Thus, it was found that the weight of

one bag of cotton increases when the rates of mineral fertilizers change from H130, P90, K65 kg/ha to H180, P125, K90 kg /ha.

Against this (II) background of mineral fertilizers, it was noted that with 3-fold spraying with liquid microelements (150+200+300 ml/ha) through the leaves, the mass of one cotton boll was 6.1 and 4.1 g, respectively. to the harvest, and on average - 5.1 g, 2-0.3 and 0.2 g, as well as 0.3-0.0 and 0.1 g from the parallel (2) option on the I-background.

It is worth noting that in option 7, relatively acceptable indicators were obtained when applying liquid NPK and microelements in the form of a suspension through cotton leaves 3 times (3.0, 3.5 and 4.0 l/ha) against a background of H180, P125, K90 kg . /ha, the weight of one cotton boll was 6.2-4.2 g, on average 5.2 g, depending on the harvest.

So, only with these standards of mineral fertilizers and under the influence of microelements, in addition, the mass of one cotton boll in the 1st harvest is 6.1-6.2 g. At the same time, according to the authors of the cotton variety, the mass of cotton is 6.0 -6.1 g only when creating optimal agrotechnical conditions.

**Conclusions.** The experiment established that changes in the mass of cotton bolls depend on climatic conditions, biological characteristics of the variety, applied agrotechnical measures and, finally, on which tier of the plant bush the samples were taken from. Despite this, there is a change in the weight of the cotton boll against the background of H180, P125, K90 kg/ha with foliar feeding of a mixture of NPK and microelements.

#### References:

1. Методы проведения полевых экспериментов. УзПИТИ. Ташкент, 2007, 147 с.
2. Абдуалимов Ш., Абдуллаев Ф. Эффективный стимулятор Гумимакс // Ресурсо- и водосберегающие технологии получения обильного растениеводства в системе земледелия. Сборник статей международной научно-практической конференции. УзПИТИ. -Ташкент, 2010. - Б.233-236.
3. Ш. Абдуалимов, К. Давронов, Ю. Сориев, Ш. Каримов, Ф. Абдуллаев. Влияние препарата Гумимакс на хлопок // АГРО ИЛИМ. Научное приложение журнала сельского хозяйства Узбекистана. Ташкент, 2010. – №2 (14). -Б. 17-18.
4. Тиллабеков Б.Х., Оразматов Н., Сиддикова Д., Каримов Ш., Нурматов А., Хаитбоев Х. Эффективность внекорневого внесения суспензий минеральных удобрений на сорта хлопчатника. Актуальные проблемы хлопководства. Ташкент. 2009 год 336-308 с.
5. Давронов, Қ. (2022). СУЮҚ АЗОТЛИ ЎҒИТЛАР МЕЪЁРЛАРИ ВА СУСПЕНЗИЯ ҚЎЛЛАШНИНГ ПАХТА ҲОСИЛИГА ТАЪСИРИ. *Models and methods in modern science*, 1(18), 29-31.
6. Давронов, Қ., & Тўхташев, Ф. (2022). ҒЎЗНИ РИВОЖЛАНИШ ДАВРЛАРИДА БАРГИДАН ОЗИҚЛАНТИРИШНИНГ БАРГ СОНИ, ОҒИРЛИГИ ВА ЮЗАСИГА ТАЪСИРИ. *Академические исследования в современной науке*, 1(19), 316-319.
7. Қ Давронов, Н Тешабоев. (2023). МИКРОЭЛЕМЕНТЛИ ЎҒИТЛАРНИ ЎСИМЛИКНИ БАРГИ ОРҚАЛИ ҚЎЛЛАШНИНГ ҒЎЗНИ 1000 ДОНА ЧИГИТ ВАЗНИ ҲАМДА БИР КЎСАКДАГИ ПАХТА ВАЗНИ НИНГ ЎЗГАРИШИГА ТАЪСИРИ. *Science and innovation*, 1811-1815
8. Қ Давронов, Н Тешабоев (2023). THE EFFECT OF FOLIAR APPLICATION OF MICRO ELEMENT FERTILIZERS ON COTTON FLOWERING DYNAMICS IN COTTON CULTIVATION. *Science and innovation*, 193-196