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ASSESSMENT OF TECHNOLOGICAL INDICATORS OF COTTON

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Abstract
Cotton farming is one of the areas of great importance in providing the population with food products, solving existing problems, especially in providing permanent employment to the rural population, and in strengthening the fodder base of animal husbandry. The main product of cotton is fiber. Fiber is an invaluable raw material for the textile industry and is always of strategic importance in the world market. Comparing the selling price of cotton with grain and fuel on the world market shows that it is valuable as a technical plant.
In order to increase the yield and quality of cotton, determination of effective fertilizer norms, restoration of soil fertility, ecological assessment of soils are one of the urgent problems.
Key words: *cotton, fiber quality, fiber length, technological feature.*

İntroduction

The cotton (Gossypium hirsutum L.) plant is one of the leading technical crops grown in the world. The fiber is formed in the form of hair-like outgrowths on the seed. This makes it different from other fibrous plants.
Despite the fact that various types of artificial fibers are used in production, cotton fiber always maintains its exceptional importance due to its universality.
The fiber is mainly used in the preparation of various types of cotton and paper fabrics.
Cotton products are used in all areas of the national economy.
Its importance in the national economy is that it occupies the main place among fiber plants.
There are many organic acids in various organs of the cotton plant. Among them, citric and malic acids take the main place by volume.
Citric acid is widely used in the food, textile, and medical industries. It is known that cotton is considered a strategically important technical plant due to the wide use of cotton products in many fields of the national economy, the purchase of hundreds of different products from cotton products, the fact that cotton fiber is an invaluable raw material for the textile industry, and the use of its seeds as valuable oil and strong feed in animal husbandry.
Maintenance and restoration of soil fertility requires optimization of agrochemicals to improve

ecological status and obtain high yields from agroecosystems.
Many researchers note that sufficient organic fertilizers should be applied to the soil to restore soil fertility indicators, including soil structure. The conducted studies show that it is possible to get a stable and sufficiently high, most ecologically clean crop on fertile and cultivated soils on gray soils.
According to the information provided by the agrochemical service departments, the amount of humus in the cultivated areas fluctuates between 4.63-6.60%. Each soil type has its own characteristics.
Therefore, in the study of the soil fertility of each area, its management, optimal use, including agrotechnical, agrochemical, reclamation, etc. necessary for this purpose. the study of physical and chemical properties is of great importance in solving issues such as the implementation of measures.
The gray grassland soils of the study area are poorly supplied with nutrients. In order to obtain a high yield and high-quality fiber, those soils must be fertilized.
On scientific grounds, depending on the soil and climate conditions, organic and mineral fertilizers should be given to the cultivated areas in the prescribed rate, taking into account the vegetation period, according to the demand of each plant.
The weight of raw cotton from the cocoon is one of the main economic indicators.
This indicator is both the increase in productivity and the price given to the variety. As the weight of raw cotton from a cocoon increases, the yield increases and the price of the variety rises.
The yield of fiber in the cotton plant is one of the main economic indicators and has great national economic importance.
High fiber yield means high productivity. One of the quality indicators of cotton fiber is the length and strength of the fiber
The main goal of the research was to maintain soil fertility and productivity by applying fertilizers.

Material and methods

The researches were conducted with the Ganja-8 cotton variety in 2019-2020 in the Mil area of the former Azerbaijan Cotton Growing Institute.
The experiment was carried out in 6 options 4 repetitions,with the total area of each variant being 120.0 m2 (40x3.0 m), sowing was carried out in a 60x15 (1 plant) cm planting scheme, in the 1st decade of April (50 kg of germinating seeds per hectare).

The cotton plant is demanding on fertilizers. One-third of the nitrogen fertilizer norm was given equally as feeding in the pre-sowing cultivation, and the rest in the second and third cultivation. During the first feeding, nitrogen fertilizer was given to a depth of 8-10 centimeters with a distance of 10-12 centimeters from the rows, during the second feeding, in the middle of the 60-centimeter row spacing, in a 90-centimeter scheme, 25-30 centimeters from the row.
60 percent of the nitrogen fertilizer was given under the main plow, and the rest at the beginning of the budding stage.
Experiments have proven that it is advisable to apply all of potassium fertilizer under the plow. Phenological observations were made on 25 plants in 2 replicates, and raw cotton yield was reported for all replicates and variants. In order to determine the fiber yield of cotton and the technological quality of the fiber, 25 cotton bolls from each replicate and variant were collected and analyzed before harvesting.
The agrotechnical measures accepted for the Mil-Karabakh region were carried out in the experimental area.
The results of the experiment were confirmed by mathematical calculations.
The analysis of the technological properties of cotton fiber was carried out in accordance with the generally accepted methodical indicators in the DS-3M dynamometer and in the MSHU-1, MPRSH-1, MPV-1, PVS-1 devices.

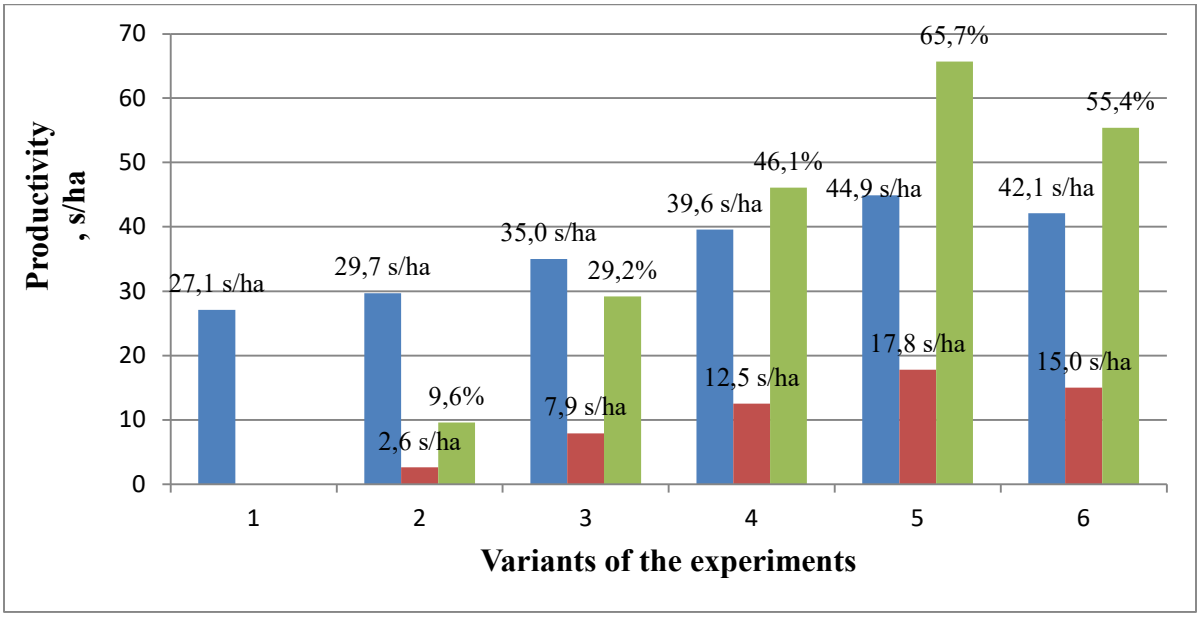
Discussion and results

In order to achieve high productivity in the conducted studies, the application of the rotation system of cropping in the cultivated areas, the correct implementation of soil cultivation, the application of organic, mineral and microfertilizers depending on the degree of provision of nutrients to the soil, the use of local fertilizers, silt deposits collected from river waters are very important to use it.
The effect of fertilizers on cotton plant productivity in gray-brown soils was studied.
It was determined that in order to obtain a high and quality raw cotton crop, manure 10 t/ha +

$N_{90}P_{120}K_{90}$ fertilizer rates were recommended to farms.

The effect of fertilizers on the productivity of the cotton plant

Figure 1



E=0,50-0,87 s/ha

P=1,35-2,30%

Productivity mainly depends on the variety of the plant, the number of plants per hectare and bar elements per bush, its weight, etc. depends a lot on factors.

Fertilizers are one of the most important factors that influence the increase in the productivity of the cotton plant.

It can be noted that compared to organic fertilizer, mineral fertilizer has a good effect on both the soil fertility and the high yield of the plants planted there. Because when mineral fertilizers are given to the soil, it can fully use those mineral fertilizers that year, resulting in abundant harvest.

Organic fertilizer decomposes and mineralizes in the 2nd year after it is applied to the soil, and the plant can use it after mineralization.

Therefore, organic fertilizer, being a source of spare nutrients for plants, finally shows its effect in increasing the productivity of the plant.

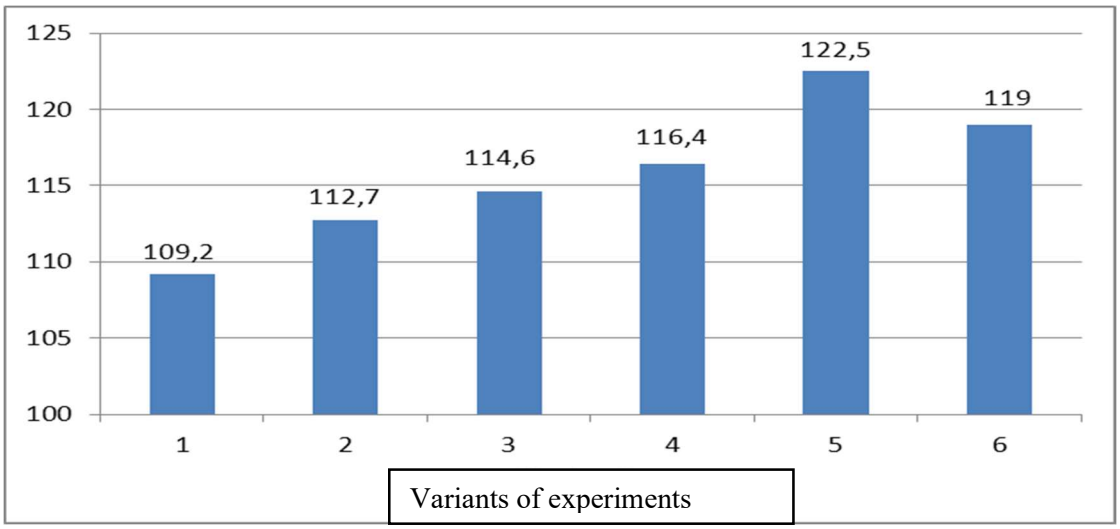
Organic and mineral fertilizers had a significant effect on the growth of the cotton plant and the amount of bar elements.

Compared to the control (unfertilized) variant of the experiment, the number of cones in one bush and the mass of one cone were higher in all variants with fertilizer applied.

The effect of fertilizers on economic indicators of the cotton plant (2019)

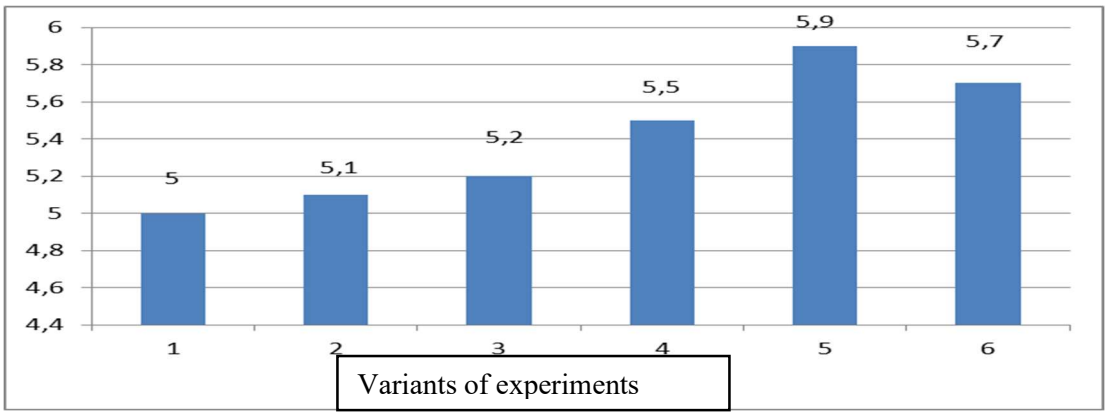
Mass of 1000 seeds, gr

Figure 2



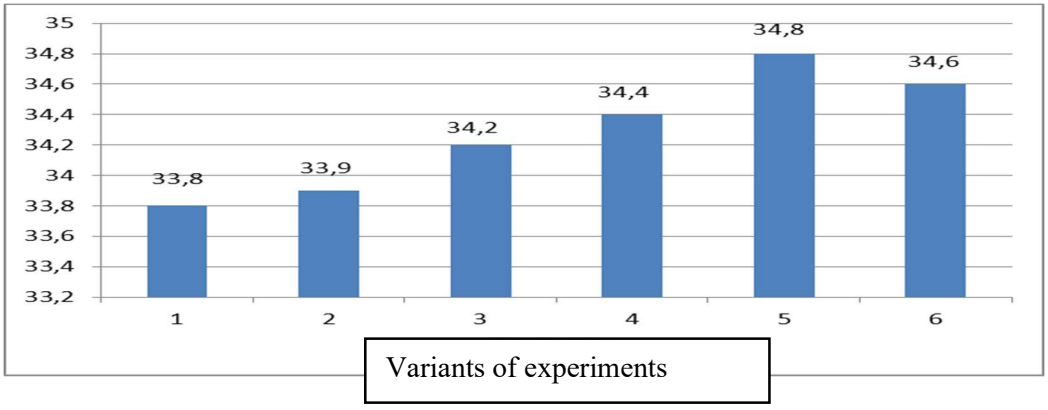
Mass of raw cotton in one cocoon, gr

Figure 3



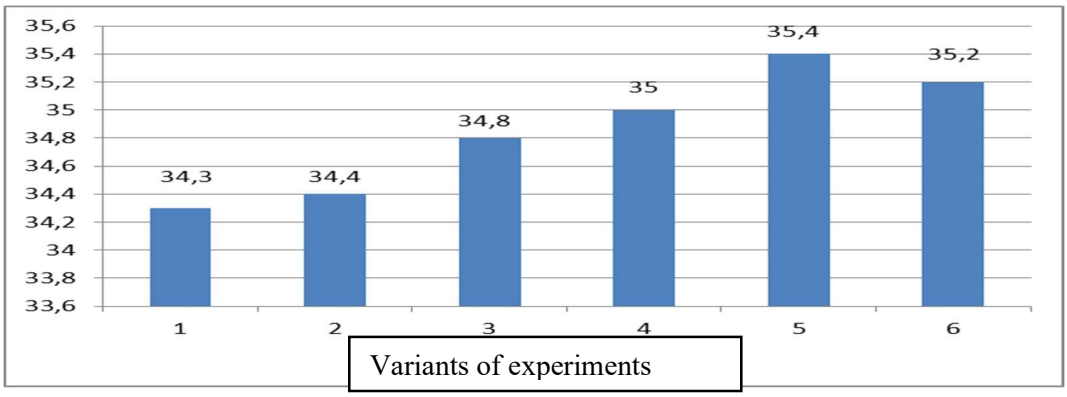
Fiber length, mm

Figure 4



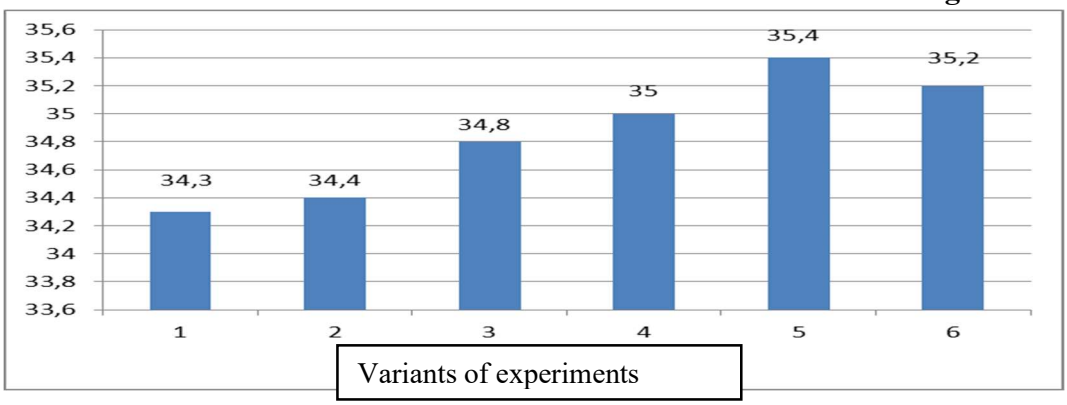
Fiber output %

Figure 5



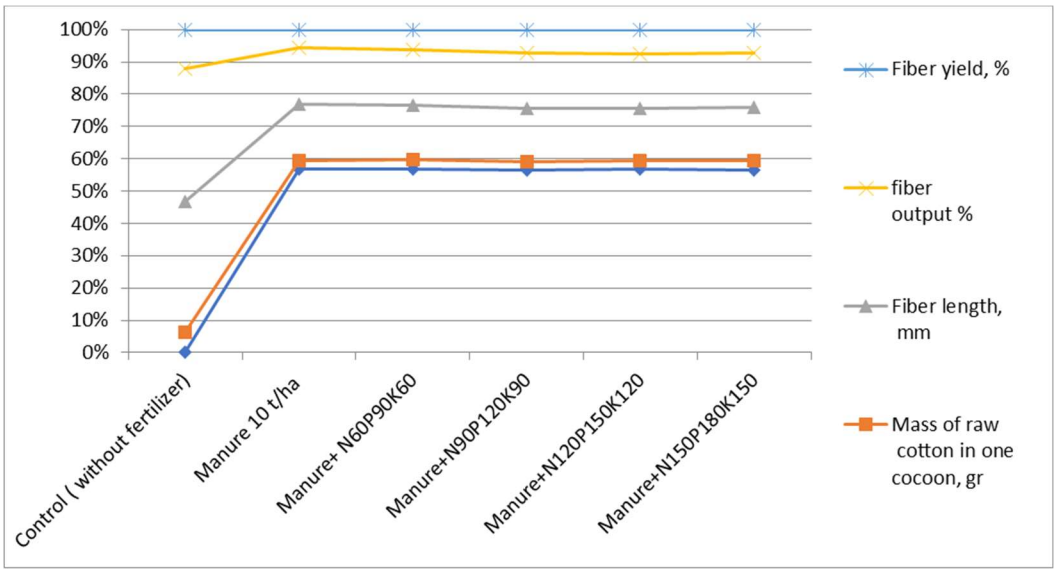
Fiber yield, %

Figure 6



The effect of fertilizers on economic indicators of the cotton plant (2020)

Figure 7



As can be seen from the table, in the control (without fertilizer) variant, the mass of 1000 seeds is 103.6-108.5 grams, the mass of raw cotton in one cocoon is 5.1-5.3 grams, the fiber length is 34.0-34.2, the fiber yield is 34, 3-34.5%, fiber yield is 9.4-10.2 s/ha.

In the fertilizer 10 t/ha variant, the mass of 1000 seeds is 108.2-112.2 grams, the mass of raw cotton in one cone is 5.2-5.4 grams, the fiber length is 34.2-34.4 mm, the fiber yield is 34.5-34.8%, fiber yield is 10.5-11.0 s/ha, fiber yield increase is 0.8-1.1 s/ha or 7.8-11.7%.

The application of different norms of mineral fertilizers on the manure ground significantly increased the agricultural value indicators of the cotton plant compared to the control and manure 10 t/ha options. Thus, in the soil+$N_{60}P_{90}K_{60}$ variant, the mass of 1000 seeds is 113.5-116.6 grams, the mass of raw cotton in one cone is 5.4-5.6 grams, the fiber length is 34.4-34.6 mm, the fiber yield is 35.0 -35.2%, fiber yield was 12.4-12.7 s/ha, fiber yield increase was 2.5-3.0 s/ha or 24.5-32.0%. The highest indicators were observed in the ground+$N_{120}P_{150}K_{120}$ variant and were respectively 122.8-125.3 grams, 5.9-6.3 grams, 35.4-35.8 mm, 36.3-36.6%, 16, 6-17.0 s/ha, 6.8-7.2 s/ha or 66.7-76.6%. As the mineral fertilizer rates increased with the soil ($N_{150}P_{180}K_{150}$), the studied indicators decreased compared to the soil+$N_{120}P_{150}K_{120}$ option.

The development and formation of the fiber and seed of the cotton plant in different agrotechnological conditions differ greatly from each other.

The amount of fertilizer and giving it in optimal periods, especially the timing of cultivation and irrigation, had different effects on the mass of raw cotton, fiber yield, fiber length, and strength.

The breaking length of the staple and fiber, the mass of 1000 seeds and the technological properties of the fiber can vary depending on the soil-climate and agro-technological measures. As a result of the research conducted in the conditions of the Mil plain, it was determined that the effect of agrotechnical measures on the fiber quality indicators was positive.

The technological quality of cotton fiber is its most important indicator. Therefore, the influence of mineral fertilizers on the basis of manure on the technological quality of cotton fiber, breaking load, linear density, relative breaking length and staple length was studied in our research.

Effect of fertilizers on technological quality of cotton fiber

Table 1

s/s	Variants of the experiments	Breaking load gg	Linear density m.tex	Relative breaking length gg/tex	Staple length mm
2019					
1	Control	4,6	5760	26,5	32/33
2	Manure 10 t/ha	4,6	5840	26,9	32/33
3	Manure+ $N_{60}P_{90}K_{60}$	4,7	5810	27,3	32/33
4	Manure+$N_{90}P_{120}K_{90}$	4,8	5770	27,7	33/34

5	Manure+$N_{120}P_{150}K_{120}$	4,9	6050	29,6	34/35
6	Manure+$N_{150}P_{180}K_{150}$	4,8	5880	28,2	33/34
2020					
1	Control	4,5	5780	23,1	31/32
2	Manure 10 t/ha	4,5	5850	24,4	32/33
3	Manure+ $N_{60}P_{90}K_{60}$	4,6	5860	25,3	32/33
4	Manure+$N_{90}P_{120}K_{90}$	4,7	5790	26,6	33/34
5	Manure+$N_{120}P_{150}K_{120}$	4,8	6070	29,1	34/35
6	Manure+$N_{150}P_{180}K_{150}$	4,7	5890	27,8	32/33

As can be seen from the table, the breaking load of raw cotton in the control (without fertilizer) variant is 4.5-4.6 g, linear density is 5760-5780 m.tex, relative breaking length is 26.0-26.5 g/tex and staple length .In the case of 31/32-32/33 mm, at 10 t/ha of manure, these indicators increased to a noticeable extent and, accordingly, 4.5-4.6 gq, 5840-5850 m.tex, 26.3-26 ,9 gg/tex and was 31/32-32/33 mm.

The application of different rates of mineral fertilizers on manure significantly increased the technological indicators of cotton fiber compared to control and manure 10 t/ha options. Thus, in the ground+$N_{60}P_{90}K_{60}$ variant, the breaking load of raw cotton is 4.6-4.7 kg, the linear density is 5810-5860 m.tex, the relative breaking length is 26.9-27.3 kg/tex, and the staple length is 31/32-32 /33 mm, and the highest indicators were observed in the ground + $N_{120}P_{150}K_{120}$ variant, and the breaking load of cotton fiber was 4.8-4.9 kg, the linear density was 6050-6070 m.tex, the relative breaking length was 29.1-29.6 kg/tex and staple length was 33/34-34/35 mm. The application of mineral fertilizers under the cotton plant together with manure has a significant effect on the technological qualities of raw cotton fiber in addition to productivity.

Conclusion

Application of mineral fertilizers together with manure under the cotton plant in gray-meadow soils has had a substantial effect on economic value characteristics of raw cotton along with productivity.

The highest indicators of economic value of raw cotton were observed in the manure 10 t/ha+$N_{120}P_{150}K_{120}$ variant.

At the same time, due to the influence of fertilizers, the technological qualities of raw cotton fiber increase significantly.

In order to obtain a high-quality crop from the cotton plant in gray-meadow soils and to maintain soil fertility, it was recommended to give fertilizers at the rate of manure 10 t/ha + $N_{120}P_{150}K_{120}$ every year.

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