FEEDING COTTON WITH MINERAL FERTILIZERS DURING THE GROWING SEASON IN THE CLIMATE OF ANDIJAN REGION

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Annotation. *In the article, the norms of foliar application of the suspension prepared on the basis of urea fertilizers in the cotton variety "Andijan-35" grown in the conditions of typical gray soils of the Andijan region during the development periods of cotton, the effect on plant growth and development, cotton yield was determined.*

Keywords: *Cotton, macro, microelements, mineral fertilizers, "Andijan-35" and "Sultan", saline-free, KAS, phenological observations.*

Mineral fertilizer feeding should be completed by July 10 in areas where the normal method is used, and by June 20 in areas where the film is used. If mineral fertilizers are additionally applied with local fertilizers, the seed weight increases. The cob is fully developed.

When feeding cotton with mineral fertilizers, the annual rates of phosphorus and potassium fertilizers are taken in relation to the annual rates of nitrogen fertilizers established for the intended crop (N:P:K - 1.0:0.7:0.5) and are stratified depending on the amount of mobile phosphorus and exchangeable potassium in the soil.

Phosphorus fertilizers are applied at 60-70% under the plow and the rest at flowering, while potassium fertilizers are applied at 50% under the plow and 50% at tillering. Nitrogen fertilizers are applied at 10% at planting, 20-25% when 3-4 leaves appear, 35-40% at tillering and 30% during the flowering period. If

fertilizers are not applied at the specified time and in the prescribed rates, soil fertility and productivity decrease year after year. In addition, it is worth noting that 50% of the crop is accounted for by fertilizers.

During the first feeding, the fertilizer is applied 15-18 cm from the plant row and 12-14 cm deep, during the tillering period at a distance of 20-22 cm to a depth of 14-16 cm, and during the flowering period in the middle of the rows (60 cm between rows) to a depth of 14-16 cm. If the cotton row spacing is 90 cm, then 2-4 true leaves and during tillering are applied at a row spacing of 60 cm, and during flowering, the fertilizer is applied 30-35 cm from the plant row to a depth of 14-16 cm. It is worth noting that if only nitrogen fertilizers are applied without the application of phosphorus and potassium fertilizers, the opening of the bolls will be delayed by 15-20 days, and the quality of the crop will decrease. Therefore, it is necessary to apply phosphorus and potassium fertilizers in appropriate rates and at appropriate times. When feeding cotton, mineral fertilizers are applied to the soil using cultivator fertilizers.

For 25-30 s of cotton, N-200, P-140, K-100 kg, for 30-35 s, N-250, P-175, K-125 kg, for 35-40 s, N-300, P-210, K-150 kg, in saline soils, the rate of nitrogen fertilizer is increased by 10-15 percent, phosphorus and potassium fertilizers are applied based on agrochemical cartograms.

The research was conducted on the basis of the methodological manuals “Methods of agrochemical, agrophysical and microbiological studies in irrigated cotton regions”, “Methodology of field experiments with a cotton planter under irrigation conditions”. Mathematical and statistical analysis of the data was carried out according to the method of B.A. Dospekhov and the Microsoft Excel program.

It was found that the effect of suspensions based on different rates of KAS and urea fertilizers on cotton varieties “Andijan-35” and “Sultan” in the conditions of typical gray soils of the Andijan region depends on the periods of cotton development. It was proved that during the 2-3-petal, boll and flowering periods of

cotton, the phosphorus and potassium fertilizers, which are largely insoluble in water, in the suspensions used on farms do not affect cotton yield, and only optimal rates of suspensions based on KAS and urea fertilizers should be used. Table 1.

Agrochemical indicators of the experimental field

Incision	Depth	humus %	General %			Changeable, mg/kg			Carbonates, CO_2	Gypsum, SO_4 %
			N	P_2O_5	K_2O	N-NO_3	P_2O_5	K_2O		
K-1	0-22	1,12	0.074	0,215	1,70	11.24	37,2	305	7.60	0.156
	22-37	0,87	0,044	0,195	1,53	9,0	33,64	252	7.42	0.099
	37-58	0,75	0,039	0,144	1,19	7,74	30,32	223	7.66	0.115
	58-103	0,63	0,031	0,118	0,87	9,73	28,98	215,5	7.63	0.123
	103-130	0,34	0,025	0,075	0,77	9,24	26,32	203	7.66	0.139

The soil of the experimental farm is a typical gray soil that has been irrigated for a long time. This soil contains 1.12-0.87% humus, 0.074-0.044% total nitrogen, 0.215-0.195% total phosphorus, and 1.70-1.53% total potassium in the 0-22 and 22-37 cm arable layers, indicating that the nutrients used by the plant during the growth period are in very small quantities. (Table 1). The mobile forms of nutrients in the experimental field are N–NO_3 11.24-9.0 mg/kg, P_2O_5 37.2-33.64 mg/kg, and K_2O 305-252 mg/kg in the 0-22 and 22-37 cm arable layers.

The soil is not saline and this soil is characterized by water permeability and difficulty in loosening. The experimental field is not sufficiently supplied with nitrogen and phosphorus. If mineral and organic fertilizers are used, it is possible to obtain high yields from field crops.

The scientific significance of the research results is explained by the scientific basis of the effect of optimal norms of suspensions prepared on the basis of KAS and urea fertilizers on the yield and quality of cotton depending on the leaf level during the cotton development periods.

In order to obtain high and quality yields on farms, optimal norms for applying urea-based suspensions at the stage of 2-3 cotyledons, at the beginning of the budding and flowering periods of cotton have been developed, and recommendations for foliar application have been given.

In cotton cultivation, a urea-ammonium nitrate suspension prepared from mineral fertilizers was used for foliar feeding of cotton based on improved agrotechnology and was introduced on 20 hectares of cotton-growing areas at the "Marjon Yer" farm of the Oqtom massif of the Ulugnor district of Andijan region in 2019-2020. As a result, when the suspension prepared at a rate of 6.0 l/ha was applied to the cotton at the 2-3 true leaf stage, an additional yield of 2.0 t/ha was obtained compared to the control. When 8.0 l/ha of KAS was applied during the cotton-carding period, a high cotton yield of 2.4 t/ha was obtained compared to the control. When 9.0 l/ha of KAS was applied at the beginning of the cotton flowering period, the additional cotton yield increased by 3.6 t/ha compared to the control (30.4 t/ha), resulting in a 15% higher profitability level. Table 2.

The most effective nitrogen standarts in suspensions prepared based on KAS urea fertilizers

K A S			Urea	
Cotton development stages	In the water	Pure nitrogen kg/ga	In the water	Pure nitogen kg/ga
2-3 true leaves	6 l/ga	1,97	5 kg/ga	1,86
Bollarding	8 l/ga	2,7	7 kg/ga	3,1

flowering	9 l/ga	3,54	10 kg/ga	4,4

Phenological observations were carried out at the beginning of the cotton development periods (2-3 true leaves, tillering, flowering and ripening), and the height of the cotton headstock (1.06; 1.07; 1.08 and 1.09), the number of true leaves (1.06), the number of tillers (1.07), the number of crop branches (1.08, 1.09), and the number of bolls (1.09) were determined. Before and after spraying the suspensions, the change in the surface area of the cotton leaf surface was determined in all variants by the method of Nichiporovich [68; 94 b], and the net productivity of photosynthesis was also calculated.

Conclusion

It was found that KAS (carbamide-ammonium nitrate) and Urea-based suspensions, regardless of the application rates and the stages of cotton development, had a favorable effect on plant growth and development, and on the formation of the leaf surface. Relatively higher results were observed when the suspensions were applied during the cotton boll and flowering periods, and the effect of the urea-based suspension was higher in all stages.

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