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EFFICIENCY OF FERTIGATION METHODS FOR IRRIGATION AND FEEDING THROUGH A FLEXIBLE PIPELINE IN GHUZAN

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ABSTRACT
Effectiveness of applying different rates of mineral fertilizers with the method of fertigation in furrow irrigation and in mulching with black polyethylene film of cotton in the condition of old irrigated typical sierozem soils of Tashkent province were presented in article.
KEY WORDS: *typical ice soils, guzanian irrigation, black polyetylene film, mineral fertilizers, fertigation, flexible pipeline, soil moisture, history.*

INTRODUCTION

In the cotton industry of the country, high results are achieved through the use of water and resource-saving technologies in the system of agro-technologies for cotton growing, irrigation and mineral fertilizers. In particular, in recent years, cotton fields have been irrigated not only by drip irrigation and polyethylene film between rows, but also by the use of water-soluble mineral fertilizers and the distribution of irrigation water through artificially bent pipes. The Action Strategy of the Republic of Uzbekistan for 2017-2021 identifies one of the important tasks as "the application of intensive methods, especially water and resource-saving agro-technologies in agricultural production." Therefore, in the effective use of available water resources and mineral fertilizers in cotton growing, it is necessary to introduce the method of fertilization of irrigation and feeding between rows of cotton.

Many years of research have been carried out by scientists to determine the timing and rate of irrigation of cotton to the lowest acceptable limits of soil moisture in the layer containing the root system of the plant. Many scientists have noted that the pre-irrigation soil moisture content for cotton crops is

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between 60 and 80 percent of the field moisture content (FDL).

In scientific research conducted by FMSattarov [1], it is possible to save 15-20% of water during the growing season and to add an average of 3-4 centners per hectare of cotton. proven.

According to the results of A. Avliyokulov's research [2], in the conditions of typical glacial soils of Tashkent region in the cultivation of drought-resistant varieties of cotton "Denov" irrigation is applied at a rate of 65-65-60% per 100 kg of nitrogen, 100 kg of nitrogen fertilizers per 100 kg of nitrogen per hectare. 36.8 quintals of cotton were harvested.

MATERIALS AND METHODS

According to M. Hasanov [3], in order to increase soil fertility and efficient use of water resources, it is necessary to clearly define the elements of water balance in the cotton field. For example, in relation to the total amount of water consumed during the growing season, it is recommended that the water consumption be 20-25% before flowering, 60-65% during flowering, and 15-20% during ripening. The field experiment was conducted in 2015-2017 at the Aksakov Experimental Station of PSUEAIT KOH Contour 86 on an area of 1.1 ha. The mechanical composition of the soil is heavy sand, typical ice, groundwater is located at a depth of 18-20 m, and it is irrigated from the old. The experiment was carried out in the following system. In the research, a promising, medium-fiber cotton "Navruz" was planted. Irrigation was carried out in the order of 70-70-60% relative to the soil moisture content. The experiment consisted of 9 variants, each plot area was 240 m2, arranged in three rows, one tier. All observational measurements and analyzes in the study were conducted on the basis of the methodological manual "Methods of field experiments with cotton in the conditions of cultivation" adopted by PSUEAITI (former UzPITI), agro-technical measures were taken on the farm. Irrigation is carried out under climatic, soil-ameliorative, hydrogeological, economic conditions, in order to get the desired yield from crops grown on the farm.

Experimental list

№	Experiment options	Nitrogen fertilizers	Soil moisture layer, cm
1	Traditional application of nitrogen fertilizers (crop irrigation)	200	70-100-70
2	Application of nitrogen fertilizers by dissolution in water by fermentation (irrigation by means of flexible wells)		
3	Fertilization of nitrogen fertilizers by dissolving in water on film-coated crops (irrigation of film-coated crops through flexible pipes)		50-50-50
4	Traditional application of nitrogen fertilizers (crop irrigation)	140	70-100-70
5	Application of nitrogen fertilizers in water by fermentation (irrigation by means of flexible wells)		
6	Fertilization of nitrogen fertilizers by dissolving in water on film-coated crops (irrigation of film-coated crops through flexible pipes)		50-50-50
7	Traditional application of nitrogen fertilizers (crop irrigation)	100	70-100-70
8	Application of nitrogen fertilizers in water by fermentation (irrigation by means of flexible wells)		
9	Fertilization of nitrogen fertilizers by dissolving in water on film-coated crops (irrigation of film-coated crops through flexible pipes)		50-50-50

In the irrigation and feeding of cotton, artificially bent pipes were used to drain the cotton with the help of water drains or siphons. TP-120, KOP-200 portable water supply pipes were used for water distribution between the cotton rows based on the technical parameters of the flexible water supply

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pipes. The method of arranging irrigation networks according to the daily scheme was used to supply water to farmers. In the case of daily irrigation, the slope of the field is equal to the slope of the irrigated area, and the slope of the field to the temporary ditch and land horizons in the irrigation network. Main technic features of the pipe: 1. Name of the brend - KOP -200; 2. Diameter - 200 mm; 3. Water consumption - 20 ÷ 40 l / s; 4. Required pressure - 1 ÷ 1.5 m; 5. Length -200 m; 6. The distance between the holes - 0.60; 7. Number of pipes - 2 pieces; 8. The length of one pipe is 100 m; 9. Service life - up to 3-5 years; 10. Number of employees - 1 person; 11. Material - polyethylene. In the case of flexible irrigation pipes, the water was laid at a certain slope in the field so that it was evenly distributed along its length. Depending on the size of the cross-section of the flexible pipe and the intensity of water distribution, the slope of the pipeline is adjusted.

It depends on the correct timing and norms of irrigation for the growth, development and abundant harvest of cotton. At a time when there is a shortage of water in the country, it is important to control irrigation in order to produce high quality crops. Delayed and poor quality irrigation of cotton not only reduces productivity, but also has a negative impact on crop quality. As long as there is enough moisture in the soil, the plant will grow. This can be achieved through the improvement of irrigation equipment and technology. In the field experiment, the timing and rate of cotton irrigation were determined by soil moisture. Prior to each irrigation, samples were taken from each 0-10 cm layer of soil to a depth of 100 cm, and the moisture content was determined using a thermostat-scale method. Irrigation water consumption was measured using a 900-degree Thomson water meter. During the operation period, the soil moisture content of all irrigation methods was 70-70-60% relative to the CDNS.

Figure 1. The process of irrigating cotton with flexible plows.
Figure 2. The area between the rows of cotton is covered with black polyethylene film.

According to the results, in the typical irrigated glacial soils of Tashkent region, cotton was irrigated 6 times at the rate of 602-980 m3 per hectare during the period of operation in options 1, 2, 4, 5 and 7, 8, irrigated by ordinary crops, with a seasonal water consumption of 45 m3 per hectare. . In variants 3, 6 and 9, irrigated with black polyethylene film between rows, it was observed that during the cotton growing period, 3317 m3 of water was used per hectare, irrigated 6 times at the rate of 500-590 m3 per hectare. Pre-irrigation soil moisture was determined in 70-100-70 cm layers in variants 1, 2, 4, 5 and 7, 8, respectively, and in 50-50-50 cm layers in variants 3, 6 and 9, respectively. Irrigation was carried out to a lesser extent in the variants mulched with black polyethylene film. It was found that the seasonal water level was reduced by an average of 1232 m3 or 27.1% of irrigation water per hectare in the options irrigated with mulch between the rows of black polyethylene film, compared to the options irrigated by conventional irrigation. In our study, the use of soil moisture reserves. In variants 3, 6 and 9 with a calculated soil moisture layer of 50-50-50 cm, a black polyethylene film was placed between the rows of cotton, and nitrogen fertilizers were applied in a flexible pipe. Covering 1 m3 of irrigation water with cotton yields an average of 0.88 kg / ha in the 1st variant, which is traditionally applied at a rate of 100%, and 0.68 kg / ha in the 2nd variant, where the mineral fertilizers are dissolved in water at 100%. Mineral fertilizers were found to be 1.28 kg in Option 3, which was 100% dissolved in water with irrigation in film-covered areas (Table 2).

RESULTS AND DISCUSSION

This indicator averages 0.73-0.79 kg of experimental variants in variants 4 and 7, where mineral fertilizers are traditionally applied at the rate of 75-50% per annum. In options 8, the average weight was 0.79–0.73 kg. It was noted that the mineral fertilizers were dissolved in water in the film-covered areas with irrigation in the amount of 1.16-1.01 kg in variants 6, 9, applied at the rate of 75-50% per annum. The results showed that the highest values of the water balance of the experimental field were observed in the variants irrigated with a black polyethylene film between the rows of cotton, in these variants the surface of the

soil was covered with a film, and the surface was covered with a film.

In Experiments 3 and 6, the total amount of water used for 1 quintal of cotton was 72.6 and 77.2 kg / m3, which is 32% less than in the control option. It was found that the total amount of water used in the irrigated versions with black polyethylene film between the rows was 10–19 m3 less than in the other options. In general, the efficiency of irrigation was observed when cotton rows were irrigated with black polyethylene film.

The results of the study analyze the data on the yield of cotton. 0 centner and 28.2 centners in the 3rd variant fed at the rate of 100 kg.

Irrigated by ordinary crops and with nitrogen fertilizers 200 per hectare; 150; Feed by the method of fermentation when dissolved in water at the rate of 100 kg 4; 5; In options 6, the average was 34.9 per hectare; 32.0 and 27.0 quintals of cotton were harvested. Between the rows is irrigated with black polyethylene film and nitrogen fertilizers 200 per hectare; 150; Fertilized when dissolved in water at the rate of 100 kg 7; 8; In option 9, the average cotton yield is 38.2 per hectare; 34.7 and 30.2 cents, respectively. In the study, the highest cotton yields were achieved by an average of 2.0-3.1 quintals of cotton per hectare compared to the variants irrigated with black polyethylene film and fertilized with nitrogen fertilizers. In the analysis, the highest yields were obtained at the rates of 200 and 150 kg per hectare, and the average yield was 7.3-8.1 and 3.4-4.5 centners per hectare higher than the norm of 100 kg. The results of the experiment are evaluated on the basis of the obtained economic indicators. Economic efficiency is determined by the cost of all agro-technical measures and the sale of the harvest. In the experimental variants, economic indicators were determined only by additional yields, as all agro-technical measures were the same, except for irrigation methods.

CONCLUSION

Research Institute of Cotton Breeding, Seeding and Cultivation Agrotechnologies conducted a study of the old experimental farm on typical glacial soils in 2015-2017, which yielded a total of 35.9 quintals of cotton per hectare. income 6160440 soums, total expenses 4500000 soums, net income 1660440 soums, profitability 36.9%. The total yield from sales was 6,815,600 soums, total expenses were 467,9050 soums, and the net control was 21.75 percent, while the average yield was 38.2 centners in three years. relative profitability was found to be 8.8% higher. In short, the application of nitrogen fertilizers dissolved in water by fermentation by mulching with a black polyethylene film between the rows not only increases the efficiency of use of nitrogen fertilizers, but also increases the quality of sowing and watering cotton.

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