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WATER AND RESOURCE-SAVING AGROTECHNOLOGIES FOR THE CULTIVATION OF SOIL VARIETIES IN THE CONDITIONS OF GRAY SOILS

Mamadjonova Nafisakhon Abdimannobovna[1]

[1]Doctor of Philosophy in Agricultural Sciences, Head of the Department "Farming and Melioration", Andijan Branch of Tashkent State Agrarian University. E-mail: nafisamamadjonova@mail.ru

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ABSTRACT: In the Republic, cotton is cultivated on an area of 1.1 million hectares, where more than 3 million tons of raw cotton is harvested. The study of the effective applicable norms of non-traditional agricultural crops in addition to mineral fertilizers to produce an abundant and high-quality crop using resource-saving agricultural technologies in cotton growing, as well as the scientific, practical and economic justification of the significance of these measures to recommend production, is an urgent task in cotton growing.

KEYWORDS: Unconventional agro (bentonite), Agro physical and agrochemical processes, Salmon, Flowering, Fruit organs, Climate.

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I. INTRODCUTION

Today, more than 25 million tons of cotton is harvested in the world, growing on an area of 33 million hectares. This requires a lot of water and a lot of agro-technical measures when watering crops. Nearly 2,0 percent of the available water is freshwater, and 20 percent of freshwater accounts for groundwater and 1 percent for Rivers and lakes. Therefore, the improvement of water-saving technologies in irrigation of crops on a global scale is an urgent issue [1]. In terms of maintaining and increasing soil fertility on scientific basis, in the conditions of shortage of fresh water in agriculture, 12 million tons of non-traditional agrarian products are extracted annually in 45 countries, using them extensively in various fields of the national economy, in the field of agriculture.

II. THE MAIN FINDINGS AND RESULTS

In the world's leading cotton-growing countries, guidelines have been developed and scientifically based for the use of non-traditional agro-ores in a variety of soil conditions as a supplement to mineral fertilizers. As a result of the application of non-traditional agro-ores to the soil as a resource-saving technology, the agrophysical and agrochemical properties of the soil have been improved. One of the important issues in the development of high-quality and high-quality cotton is the development of agro-measures to save water and mineral fertilizers, using non-traditional agro-ores.

With more than one million hectares of care in the Republic, more than three million tons of cotton are grown, supporting resource-saving agro-technologies in cotton growing, studying the norms of effective application of non-traditional Agro-Farms in addition to mineral fertilizers in obtaining abundant and high-quality yields, as well as substantiating the scientific, practical and economic importance of these activities, In paragraph 3.3 of the "strategy of action on five priority directions of development in 2017-2021 years" approved by the decree of the president of the Republic of Uzbekistan № PD-4947 "on the strategy of action on further development of the Republic of Uzbekistan" on February 7, 2017...it was noted that particular attention should be paid to the" introduction of elements of extensive use of water and resource-saving agro-technologies in the effective use of mineral fertilizers in the care of varieties of geese" [2, 2017].

The degree to which the problem has been studied. Extensive research has been conducted by S.N. Rijov, M.P. Mednis, N.F. Bespalov, F.M. Sattarov, Q.M. Mirzajonov, A.E. Avliyoqulov, M.X. Khamidov, Sh.N. Nurmatov,

S. Boriev, M. Tojiev, A.S. Shamsiev, S.X. Isaev, A. Isashov, J.Q. Shadmanov scientists in the country and abroad, such as J.B. Kincer, K.S. Gangwar, on the study of optimal irrigation procedures and water demand for agricultural crops.

L. Slesareva, R. Nazarov, N. Orazmatov, S. Boltaev, D. Tungushova, S. Abdurakhmonov and other scientists have studied in their scientific work on the use of mineral fertilizers in addition to mineral fertilizers in the feeding of crops in agriculture, and to some extent achieved positive results. However, to date, in the conditions of light gray soils of Andijan region, insufficient research has been conducted on the irrigation regime used in the care of medium-fiber cotton varieties "Andijan-37" and "Sultan" and the use of non-traditional agro-ores (bentonite).

The purpose of the study is to develop technologies for the use of non-traditional agronomic (bentonite)in the cultivation of fairy-tale, high-quality cotton crop from the middle-fiber varieties "Andijan-37" and "Sultan" of the goose in the conditions of hungry soils of the Andijan region, water consumption in connection with irrigation procedures and saving cotton.

The objectives of the study are to determine the effect of non-traditional Agro-ores on soil agrophysical properties used in the care of the soil varieties;

- To determine the effect of used unconventional agrochemicals on soil agrochemical properties;
- Optimal irrigation standards, water consumption and water consumption under the influence of non-traditional agro-crops in the cultivation of varieties of geese determine the water consumption for a Centner crop;
- To examine the effects of Applied non-traditional Agro-ores on the growth, productivity and fiber quality of hemp varieties;
- To evaluate the effect of non-traditional Agro-ores on economic efficiency in the cultivation of grain varieties.

As an object of the study, the hungry grassy soil, the middle fiber of the goose is "Andijan-37" and "Sultan" varieties, bentonite.

The subject of the study is mineral fertilizers, bentonite and its norms, agrophysical texture and properties of soil, water, Andijan-37 and "Sultan" varieties of porcine, the growing and development of porcine, quality indicators of cotton crop and fiber, economic efficiency.

III. METHODS OF THE STUDY

In the study, on the basis of "methods of conducting field experiments" adopted in the field of observation and analysis, the study of agrophysical and agrochemical properties of soil in experimental variants was carried out according to the methodological application "study of agrochemical, agrophysical and microbiological properties of soil", the accuracy and reliability of the data obtained were generally accepted .Mathematical and statistical analysis using B.A. Dospekhov's method of field experiments was carried out on the basis of a computer program in Microsoft Excel.

IV. RESULTS OF THE STUDY

The experimental field soil was considered to be a hungry grassy soil with a medium coarse mechanical content, not saline. The flown water levels are located at a depth of 4-5 meters, the average daily air temperature ranges from 100C to a higher temperature 202-222 days, the sum of useful temperatures is 1962-25550C degrees, and the average annual precipitation is 240 mm on gray grassy soils shown to be up to.

Field and laboratory research was carried out on the basis of the manual "Methods of conducting field experiments" adopted at PSUEAITI, and the data on productivity were mathematically analyzed on the basis of B.A. Dospekhov's manual "Methods of field experiments." At the beginning and end of the field experiments, soil samples were taken from the topsoil (0-30 cm) and subsoil (30-50 cm) layers of soil, in which the total amount of humus I.V. Tyurin, the total amount of total nitrogen and phosphorus A.F. Gritsenko and in the improved methods of I.M. Maltseva, the amount of nitrate nitrogen was determined by the iono-metric method, mobile phosphorus B.P. Machigin, by the methods of P.V. Protasov on the exchangeable potassium flame photo-colometer.

In determining the changes in agrophysical and agrochemical properties of experimental field soil, the application of "methods of conducting agrochemical, agrophysical and microbiological research in irrigated cotton fields" was used, the bulk mass and porosity of the soil was determined by N.A. Kachinsky method, water permeability was

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determined by S.I. Dolgov and S.N. Rizov method, and in accordance with the work program scientific research conducted details of all agro-technical activities conducted are covered.

The agrochemical properties of the area, which was experimented with in the conditions of hungry soils, were illuminated, and it was determined that it was poorly supplied with humus (humus) and nutrients.

In the years of the experiment, along with the feeding of "Andijan-37" and "Sultan" varieties of goose in the norms of N150P105K75 kg/ha of mineral fertilizers, bentonite was introduced in the calculation of 750 kg (every year), as well as irrigation of goose varieties in the order of 70-70-60% compared to LFWR, the amount of nutrients in the amount of nutrients ensured an increase of 10-15 percent, in addition to the reduced norm of mineral fertilizers by 25 percent (once in 3 years), bentonite was introduced to 6000 kg/ha and in the variants conducted in the order of 70-70-60% compared to LFWR irrigation of goose varieties, it was determined that the amount of nutrients in the general form in the 0-30 cm layer of soil increased by 12-15.

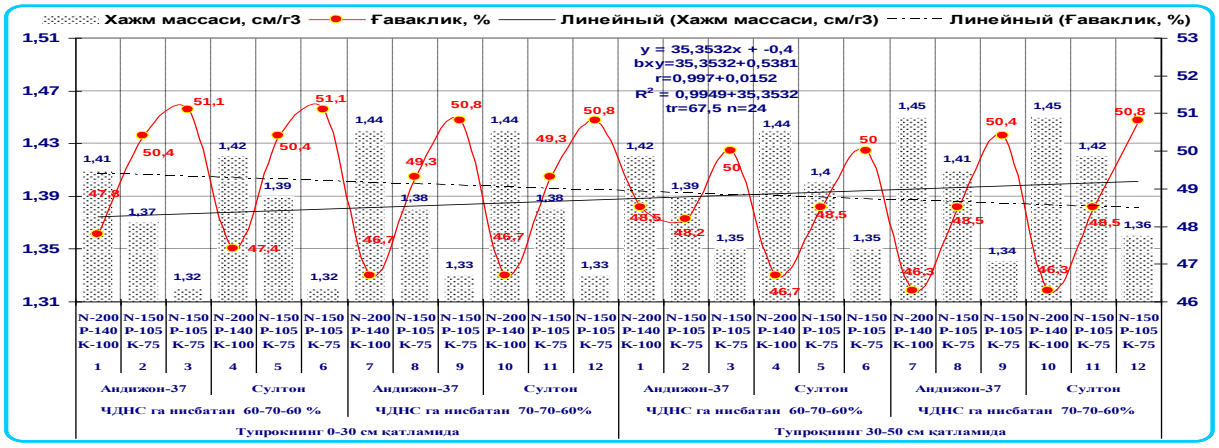

Figure 1: Changes in Volumetric Mass and Porosity of Experimental Field Soils, 2015

Note: 6.0 tons per hectare (once in 3 years) was fed to options 3, 6, 9 and 12 before cultuvation, and 750 kg / ha of bentonite was fed annually to options 2, 5, 8 and 11 during mowing.

In the experiments carried out in the conditions of light gray soils of Andijan region, the soil mass was reduced by 0.08 g / cm3 compared to the beginning of the application period in 6000 kg of bentonite per hectare before sowing (once in 3 years), a decrease of 0.12–0.13 g / cm3 was observed over an average of 3 years compared to the variant.

Soil water permeability was observed in light gray soils, cotton varieties were fed at the rate of mineral fertilizers N150P105K75 kg / ha during the period of cotton mowing with the addition of 750 kg of bentonite per hectare, and irrigation options with 60-70-60% and 70-70-60% of LFWR, 691.9 and 674.9 per hectare for an average of three years during the 6 hours at the beginning of the period; 681.1 and 677.9 m3 / ha. The water absorption at the end of the application period was 15.6 m3 per minute, low standards of mineral fertilizers were applied and the results were close to those of the variants with an additional 6000 kg / ha of bentonite. In the control variants, the water permeability of the soil decreased by the end of the application period, and in the variants fed cotton varieties N200P140K100 kg / ha, the water permeability of the soil for 6 hours was 184.3-185.8 m3 / ha compared to the beginning of the application period decreased to 463.2-464.3 m3 / ha formed. The water permeability of these options is 70-100 m3 / ha compared to the bentonite-filled options was found to decrease.

In the experiments, irrigation regimes and mineral fertilizers N150P105K75 kg / ha were applied, along with fertilization of Andijan-37 and Sultan cotton varieties, 750 kg of bentonite per hectare was applied between rows during the cotton ginning phase, and 6,000 kg / ha of phosphorus and potassium fertilizers were applied before driving. In the variants cotton played an important role in the longer growth of soil moisture between rows, in the growth and development of cotton.

Applying mineral fertilizers (under 2015 conditions) at N150P105K75 kg / ha rates, soil moisture and irrigation standards in bentonite variants at 6,000 kg per hectare before plowing differed compared to other variants, and the effect of bentonite on soil composition was longer and moisture content was higher than other variants. As a result, during the growing season of cotton varieties allowed to sharply reduce water consumption in both irrigation regimes.

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Irrigation was carried out in the order of 60-70-60% of the field moisture capacity between 27 and 28 days, with an average water consumption of 882 m3 / ha and a total of 2646 m3 / ha 3 times during the season. In this irrigation mode, the number of irrigated cotton varieties was reduced by one, saving 1717 m3 / ha of water consumption compared to the control option. Also, when irrigation was carried out in the order of 70-70-60% relative to the limited field moisture capacity, cotton was given a total of 3188 m3 / ha 4 times a season between 26 and 28 days, consuming an average of 797 m3 / ha. This means that even in this irrigation mode, water consumption is saved by 1699 m3 / ha compared to the control option. Even in this irrigation scheme, the number of irrigations of cotton varieties was reduced by one.

As a result of the positive effect of 6,000 kg of bentonite applied to the soil during the cotton growing period, the irrigation interval was extended by 10-13 days, and cotton varieties were watered for 26-28 days in the 70-70-60% irrigation variant with limited field moisture capacity. If we pay attention to the differences in the methods of application of bentonite, the evaporation of soil moisture in the order of 60-70-60% relative to the limited field moisture capacity of irrigation is 0.96-1.0% per day, evaporation of soil moisture in the variant of 70-70-60% irrigation is 0, It was observed that evaporation under the positive effect of bentonite was reduced by half compared to the options conducted in the order of 60-70-60% with respect to the limited field moisture capacity of irrigation, which was 40-0.44%.

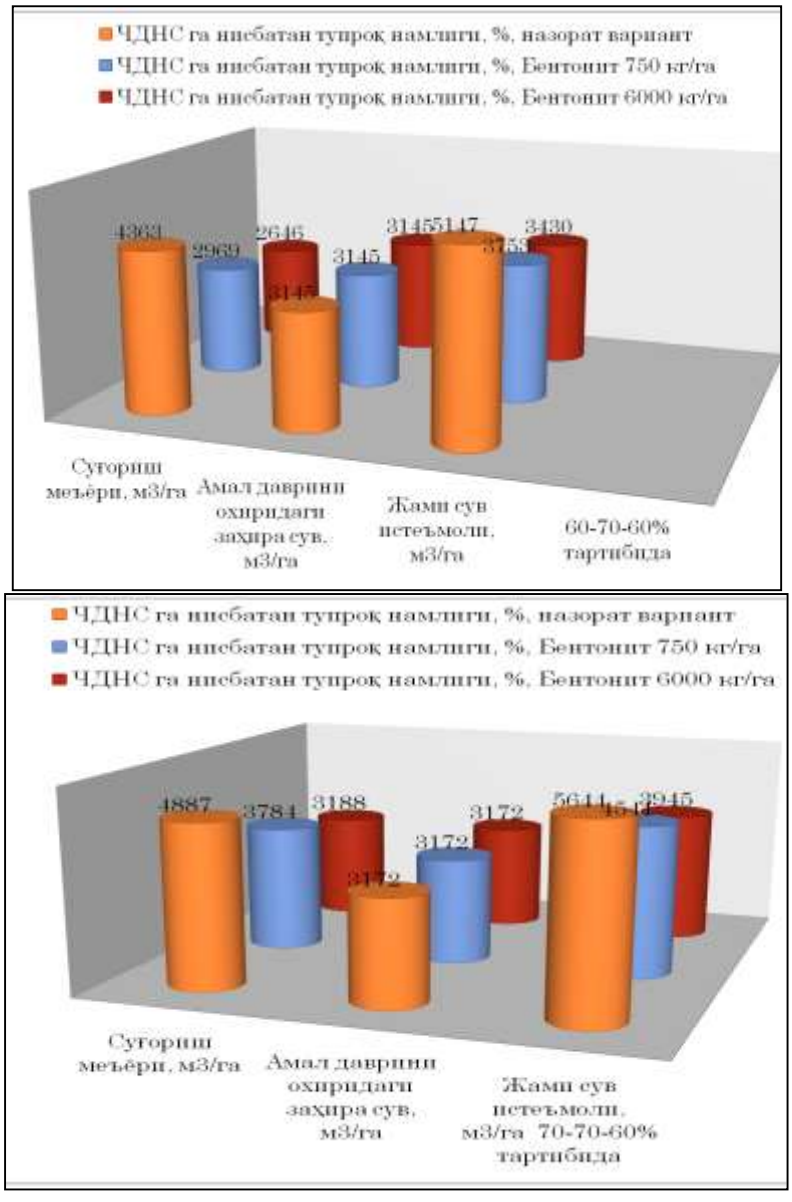

Figure 2: Average Water Consumption by Experimental Field Options, 2015

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Mineral fertilizers N150P105K75 kg / ha were fertilized with 750 kg / ha of bentonite between rows during the cotton mowing period and 60-70-60% of the limited field moisture capacity, including reserve water and rainwater ha, the amount of water consumed in the variants conducted at soil moisture content of 70-70-60% relative to the limited field moisture capacity of irrigation was 4590 m3 / ha. Pre-driving mineral fertilizers N150P105K75 kg / ha with an additional 6000 kg of bentonite and a limited field moisture capacity of 60-70-60% in the case of irrigated irrigation combined with reserve water and rainwater for a total of 3473 m3 / ha, limited field moisture capacity for a total of 3 years The amount of water consumed in the irrigated variants at a relative soil moisture of 70-70-60% was 3911 m3 / ha. According to the results of the study, mineral fertilizers N150P105K75 kg / ha were fed by adding 750 kg / ha of bentonite between rows during the cotton mowing period and 1319 m3 / ha of water compared to the control option due to the effect of bentonite in the irrigated 60-70-60% range allowed.

25% reduction in mineral fertilizer bentonite yield up to 6000 kg/ha and bentonite yield up to 1499 m3/ha in options irrigated in the order of 60-70-60% compared to the limited field wet capacity and water saving up to 1776 m3/ha in options irrigated in the order of 70-70-60% compared to the limited field wet capacity.

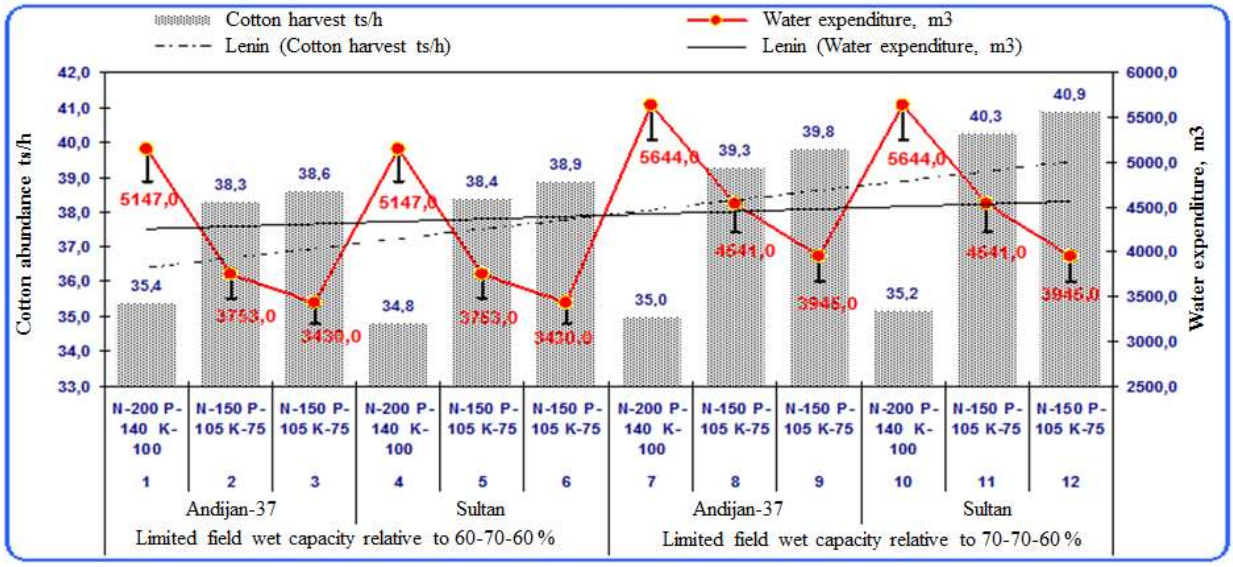

Figure 3: The Amount of Water Spent on Cotton Yield Obtained by Experimental Options, 2015

In the experiment, the water consumption for the production of 1 t of cotton in the Andijan-37 variety of cotton in the irrigation mode of 60-70-60% of the limited field moisture capacity of irrigation was 93.1 m3. 3 m3 / ts decreased. While 37.4 ts / ha of cotton was grown in “Sultan” cotton variety, 92.9 m3 of water was used for 1 quintal of harvest, which is 53.3 m3 / ts less than its control variant. According to the results of a three-year study, in the cultivation of cotton varieties "Andijan-37" and "Sultan" to reduce the norms of mineral fertilizers before driving an additional 6000 kg / ha of bentonite irrigation in the order of 70-70-60% of the limited field moisture capacity or 1- The 2-1 irrigation system was considered optimal and was found to be a mineral fertilizer and water-saving agronomic measure. In the experiment, water consumption for the production of 1 ts cotton in the "Andijan-37" variety of goose in the order of 60-70-60% irrigation compared to the limited field wet capacity of irrigation was 93,1 m3, although the cotton yield increased compared to the control option, water consumption was 52.3 m3/ts. ga reduced identified. While cotton crop was grown on 37,4 ts/ha in" Sultan " rapeseed variety, 92,9 m3 of water was spent for 1 Centner harvest, and water was spent 53,3 m3/ts less than its control option. According to the results of the three-year research conducted, it was found that in the agro-technics of "Andijan-37" and "Sultan" varieties of porcine, in the order of 70-70-60% relative to the wet capacity of the field, the irrigation system with bentonite yield up to 6000 kg/ha in addition to the reduced standards of mineral fertilizer or 1-2-1 irrigation system was detected. Cotton yield of the cotton varieties of the goose studied in the experiment was 38,4 ts/ha of Andijan-37 varieties and 39.4 ts/ha of Sultan-grade of the goose, in the variants bentonite was placed before the drive to the norms of N150P105K75 kg/ha of mineral fertilizers and 39,4 ts/ha of Sultan-grade of the In comparison with the control options Fed in the norms of N200P140K100 kg/ha of ordinary mineral fertilizers, an additional yield of 4,0 and 4,6 ts/Ha was obtained, respectively. In all variants conducted in the order of 60-70-60% relative to the limited field wet capacity of irrigation of the varieties of buds, the same legislation is noted, the yield of cotton in

relation to options in the order of irrigation of 70-70-60% relative to the limited field wet capacity of the soil is 1,1-2,0 ga observed a decrease. Using the agro-technological elements used in the experiment, i.e. water and mineral OGHS-saving bentonite agronomic, it was determined that it is possible to grow a high-quality cotton crop from the varieties "Andijan-37" and "Sultan". The yield of Andijan-37 cotton is 37.8-38.4 ts / ha, with an additional yield of 3.4-4.0 t / ha compared to the control variant fed with mineral fertilizers N200P140K100 kg / ha. 29.2 and 36.1 percent, respectively. The use of bentonite agro-ore, which saves water and mineral fertilizers in the cultivation of cotton, has been identified as an agro-measure with high economic efficiency in the production of high quality cotton of Andijan-37 and Sultan varieties.

V. CONCLUSION

To conclude, in the care of Andijan-37 and Sultan cotton varieties in the light gray soils of Andijan region, the annual rate of fertilizers is set at N150P105K75 kg / ha. (bentonite), it is recommended to carry out irrigation at 70-70-60% of the limited field moisture capacity, in a 1-2-1 system (mowing-1, flowering-2, ripening-1).

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