EFFECTIVENESS OF INTENSIVE AGROTECHNOLOGIES

Mamadjonova Nafisa Abdimannobovna

Doctor of philosophy (PhD), associate professor, "Agriculture and melioration" department, Andijan Institute of Agriculture and Agrotechnologies

Abstract. In agriculture, special attention should be paid to reducing the cost of the product using innovative technologies that minimize the cost of fertilizers, fuels, and lubricants, mechanization services for the placement of fertile varieties in conditions of appropriate soil and climate based on the integration of science, education and practice.

Key words: soil, bentotite, water, fertilizer, crop varienty, cotton, rotation.

Introduction. The aim of work is to develop a technology for the use of non-conventional agro-ore material (bentonite clay) to save irrigation water and mineral fertilizers depending on an irrigation scheduling in the cultivation of early, highly-productive and high-quality yields of upland cotton varieties in conditions of the light sierozem soils of the Andijan province.

The object of study is light sierozem soils, upland cotton varieties “Andijan-37” and “Sultan”, bentonite clay.

Scientific novelty of research is the following:

for the first time in conditions of the light sierozem soils of the Andijan province, a resource-saving agrotechnology for the use of unconventionfl agro-ore as an addition to mineral fertilizers before soil plowing at a rate of 6000 kg ha^{-1} and during the budding phase of cotton varieties at a rate of 750 kg ha^{-1} has been developed;

Literature review. Comprehensive soil improvement, increasing yields and economic efficiency is one of the important issues for the future development of agriculture.

- optimal water consumption has been identified, up to 25% reduction of

the use of mineral fertilizers in the cultivation of cotton varieties achieved due to the use of non-traditional agro-ore (bentonute), wich resulted in increase of soil water-holding capacity;

- the impact of the effective use of non-traditional agro-ore as resource-saving agrotechnologies in the cultivation of cotton varieties “Andijan-37” and “Sultan” on their irrigation scheduling, fertilization and on growth, development and yield has been determined;

- the effect of using non-traditional agro-ore as supplements to mineral fertilizers once everu three years before soil fertility, agrophysical, agrochemical properties as well as on the 10-15% increase of economic efficiency of resource-saving technology has been determined.

It is very important to make right choice of cotton varieties reliable to the local climate, fast ripen, highly productive, stable to diseases and vermins; to locate them reliable to the zones, to seed cotton in double raws, to till the soil and get ready for seeding, thin cutting, applying growth controlling minerals; cutting cotton plant top, fertilizing, eliminating qualified effective agritechnical processes on time.

Growth conferming minerals effect elevating of plants sprouting capacity, their stability to drought and activity, diseases and vermins of agricultural crops, their ripening speedelevating.

His very important to make right choice of cotton varienties reliable to the local climate, fast ripen highly prodactive, stable to diseases and vermins, to locate them reliable to the zones, to seed cotton in dubble ravs, to lill the soil and get ready for seeding, seeding, thin cutting, applying growth controlling minerals. Cutting cotton plant top, firtilizing, eliminating qualitied effective agritehnical processes on time.

There exist lots of factors to increase crop productivity but the most decisive part have meliorative state of soil, fertilizer, crop variety and crop rotation. Without firtilizing cotton productivity can not run over 12-14 centner per hectare, when fertilized with mineral it can reach 20-30 centners and with organic

fertilizers 30-33, with crop rotation it reaches 35-40 centners /hec. (J.Akhmedov, K. Mirzajonov, 2007). Having studied the scientific conclusions of a number of scientists we experimented Sulton and Andijan-37 cotton varieties in Asaka, Izboskan districts of Andijan region and in Andijan Agriculture Institute experimental campus in 2011-2014.We studied growth, vegetation and agritechnical processes and those varieties.

Research methodology. Studying were carried out in the field conditions of Uz.S.V.I. (Uzbekistan scientific verfiection) based on "Methods of carrying out field experiments" (2007). Field experiments were located out at 12 varients, general area of 200 m^2, 100 m^2, in total; 8 rows and 3 repetitions [2].

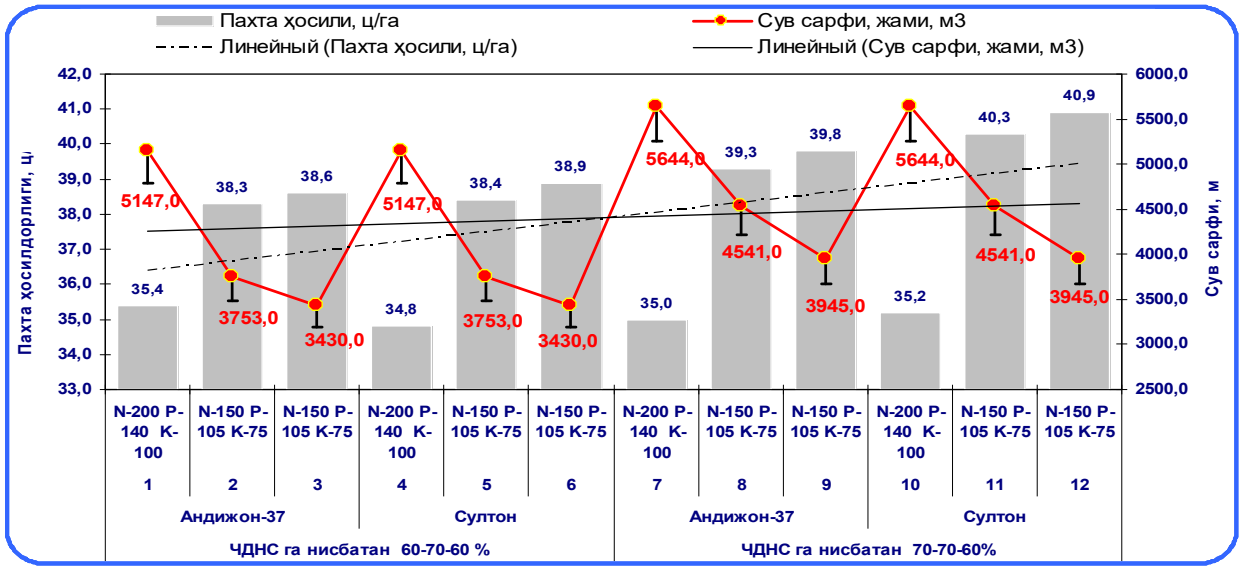
In the experiment Andijan-37 and Sultan cotton varieties were sowed at scheme 90x15-1-2. The variants were cultivated in LFCD (Limited field contained dampness) soil umidity during growing period 60-70-60 % and 70-70-60% in two different watering regimes, two seedlings density 100-110 and 120-130 thousand per/hec. , two kinds of fertilizers NPK 150-105-75 and NPK 200-140-100 kg/hec.

Before watering made the most realiable condition for growth and vegetation of plants aqnd for the plants of other soil condition concerning to 70-70-60 percent watering regime variants and agricultural mineral powder used variants soil humidity [3].

Primary conclusions:

- limited field humidity capacityof the field experimental soil (LFCD) in 0-100 sm layer made 24 % and mass uright made 1,35 gr sm^3 a little superiority of Sultan variety vegetation at the beginning of progressing period over Andijan-37 and capsule with bentonite was noticed;

- Cotton plant varieties were fertilized with NPK 150-105-75 kg/hec. mineral at 750 kg mixed with bentonite, in two different in comparison to varients LFCD 60-70-60% and 70-70-60% in both soil humidity variants watered with bentonite it effected fruitfully and maintained saving humidity in cotton plant rows, cavity of soil, water conductivity features during vegetation period in comaparision to usual soil humidity variants



- In the experiment in the soil condition fertilized with NPK 150-105-75 kg/hec. edding 750 kg bentonite concerning to both variants LFCD in both watering regimes diminishing soil capacity and improving its cavity considerably in creased its water absorbing capacity[4]. Soil layers watered in 60-70-60% soil humidity in comparison with LFDC showed the highest capacity of water absorbtion . Water absorbtion of soil in fertilized soil was 74,6 m^3 in comparison to the starting point of vegetation period it was 80,5 m^3/hec;

- in cotton plant cultivation use of NPK 150;105;75 kg/hec with minimal doses of bentonite made reliable condition for growth and vegetation of cotton plants. Efficacy of fertilizers in reased the process to 25%.

Analysis and Results. In Andijan region light grey soil conditions fertilizing cotton plants in vegetation period at NPK 150-105-75 kg/hec with minimal doze of bentonite 750 kg/hec was observed to be the most agricultural process. It gave the opportumty to diminish technology resource use, water, fertilizer, fuel, cotton plant seeds application [5].

Based on the research results on the development of optimal norms for the use of unconventional agro-ore as a supplement to application of mineral fertilizers in order to increase cotton yields in conditions of light sierozem soils:

A “Recommendation on the use of agro-mineral bentonite to provide cotton with additional water and fertilizer” for farmers have been developed and approved (Reference of the Ministry of Agriculture, №02/020-227 from August 27, 2018). This recommendation is widely used as a guideline in the agricultural departments and farms of the Andijan province;

Agrotechnology allowing to ensure saving of mineral fertilizers during production cultivation of cotton varieties “Andijan-37” and “Sultan” has been introduced on an area of 61.6 ha in light sierozem soils of the Altynkul district (Reference of the Ministry of Agriculture, №02/020-227 from August 27, 2018). Mixing of 750 kg ha^{-1} agro-mineral bentonite clay with mineral fertilizers ($N_{150}P_{105}K_{75}$ kg ha^{-1}) during cotton budding phase allows reducing application of mineral fertilizers by 25%.

This resource-saving agrotechnology was implemented in the 45 ha of the Markhamat district and 50 ha of the Izboskan district, the Andijan province (Reference of the Ministry of Agriculture, №02/020-227 from August 27, 2018).

The use of agro-mineral bentonite clay at a rate of 6 t ha^{-1} (once in three years) before soil plowing in autumn with irrigation regime by a scheme of 1-2-1 (at 70-70-60% Fc) leads to savings of 870 to 920 m^3 ha^{-1} of water, obtaining an

additional yield of 3.8 - 4.0 t ha^{-1} of cotton yield, which is by 0.4-0.45 higher compared to the yields obtained with traditional agricultural technologies.

References

1. Н.А.Мамаджонова. Water and resource-saving agrotechnologies for the cultivation of soil varieties in the conditions of gray soils. Journal of Critical Reviews ISSN - 2394-5125 VOL 7, ISSUE 15, 2020. DOI: http://dx.doi.org/10.31838/jcr.07.14.196
2. Бобоев Ф. Тоштемиров А. Сув ва озиқа тартибларининг ғўза навлари ҳосилдорлигига таъсири. ”Ўзбекистон республикаси қишлоқ хўжалигида сув ва ресурстежовчи агротехнологиялар”. Халқаро илмий-амалий конференция маърузаларр тўплами. Тошкент, 2008.369-370 бет.
3. Жуманов Д., Мўминов К., Тоштемиров А. Сув ва хосил. “Ўзбекистон Қишлоқ хўжалиги” журнали. Тошкент, 2004. № 3, 23-24 бет.
4. Мамаджонова Н.А., Тухтасинова С. Морфо-биологические и агротехнические свойства перспективного сорта хлопчатника «Андижан-37» // V-ой Международной научно-практической конференции молодых учёных, посвящённые 25-летию ФГБНУ «Прикаспийский НИИ аридного земледелия» Приоритетные направления развития современной науки молодых учёных аграриев.11-13 мая 2016 г. С. 291-293.
5. Мамаджонова Н.А., Исашов А. Ғўзаларни қўшимча сув ва ўғит билан таъминлашда агромаъдан бентонитдан фойдаланиш бўйича Фермерларга тавсиялар // Тавсиянома. – Тошкент, 2018. Б. 30.