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DETERMINATION OF NITROGEN AND PHOSPHORUS SATURATION OF SOILS AT THE BOTTOM OF COTTON, SUBJECT TO IRRIGATION EROSION

***Rakhimov Zhura Suyunovich**, candidate of agricultural sciences, associate professor of the department "OTD" (KarIEI)*

***Abstract.** The article presents the results of a study on the result of irrigation erosion, within one irrigation map, soils are divided into non, eroded, medium, strongly eroded and soil accumulations. To obtain an evenly large yield of raw cotton, the annual NPK rates on the slope should be differentiated.*

***Key words:** Form of nitrogen fertilizer, the degree of erosion, growth, development, cotton yield.*

Introduction. Before differentiating the application of NPK for cotton in the conditions of sloping eroded soils, I would like to briefly dwell on the value of NPK for plant life.

About the importance of nitrogen for the life of cotton, MA Belousov [1] writes that nitrogen in the mineral nutrition of plants has a special role as an indispensable component of proteins, nucleic acids, chlorophyll, lipoids and enzymes. Nucleic acids in the form of nucleproids, being an important constituent of the nucleus and other structures of the plant cell, determine the heredity of the organism - the transmission of metabolism, characteristic of this species, to generations.

Phosphorus participates in various processes of the plant organism in most cases in the form of a residue of orthophosphoric acid, which, when it comes into contact with organic compounds, forms bonds with significant energetic tension [2].

In the body, phosphoric acid residues that have entered into the composition of one or another organic substance in the process of phosphorization can be transferred to other substances and thus form new phosphorus-containing compounds necessary for the life of the body. Phosphorus compounds in plants are diverse in chemical composition and physiological functions. Of these, first of all, nucleosides should be named, including AMP, ADP and ATP. Their active physiological role in the conversion of carbohydrate biosynthesis, lipid and protein metabolism has been established.

Potassium plays an important physiological role in the life of plants. It participates in metabolism and has a positive effect on the outflow of carbohydrates, from the leaves to the root system and generative organs, the growth and development of plants has a positive influence on the processes.

Experiments on this issue were carried out according to the methodology of the Soyuz NIKHI [3, 4].

On the territory of the experimental base, the Institute of the Uzbek Scientific Research Cotton Growing. The soil is old-irrigated typical sierozem.

Differentiation of norms. To obtain an equal yield of raw cotton along the entire length of the slope, its fertility must be leveled. This requires differentiating the rates of mineral fertilizers by slope elements depending on the content of nutrients, the planned harvest, and choosing the right form of fertilizers.

Nitrogen fertilizers. With an increase in the annual norms of nitrogen fertilizers for cotton, the share of their pre-sowing and pre-sowing application increased. The rest of the nitrogen is used for feeding in the phase of 3-4 true leaves and mass flowering. This distribution of nitrogen fertilizers according to the timing of application has found wide acceptance in the cotton-growing republics of Central Asia.

Table

Differentiated distribution of the annual rate of nitrogen fertilizers on soils subject to irrigation erosion

Index	Average annual rate, kg / ha	The degree of soil erosion			
		Indelible	Strongly washed away	Medium washed	Medium-washed
Annual nitrogen rate	262,5	250	350	300	150
Introduced in the pre-sowing period	112,5	100	200	150	-
Introduced in top dressing I	75	75	75	75	75
II	75	75	75	75	75

How should the annual nitrogen norm be distributed when differentiating it according to slope elements? If, for example, on the unwashed upper part of the slope, it is necessary to apply 250 kg / ha - 100%, then on the heavily washed off - 350 kg / ha - 140%, on the medium washed off 300 kg / ha - 120% and on the medium washed - 150 kg / ha - 60 % of the annual nitrogen norm.

When and how to apply nitrogen fertilizers for cotton?

Before sowing, nitrogen in the indicated doses for each soil difference is applied across the slope by a cultivator-fertilizer to a depth of 16-18 cm. Pre-sowing application should preferably be carried out with amide and ammonium forms of nitrogen, and top dressing can be done with ammonium nitrate.

Phosphate fertilizers. The entire annual rate of phosphorus, taking into account the content of P2O5 in the soil, is applied across the slope with the limitation of the boundaries of soil differences in terms of the degree of erosion.

However, as a rule, slope lands with different content of mobile forms of phosphorus, when compiling agrochemical cartograms, are referred to one gradation according to their phosphorus supply, averaging the obtained indicators for phosphorus for the entire slope, since the slope belongs to a certain contour. This approach to compiling agrochemical cartograms does not reflect reality.

Therefore, on slope lands, depending on the erosion and alluviality of soils along the slope elements, the main contour should be subdivided into auxiliary ones, with the average P2O5 content being applied on them, and not attributed to the gradations of phosphorus supply (0-15, 16-30, etc.)

Scientists of Central Asia have done a lot to develop scientifically grounded norms of phosphorus fertilizers for cotton. However, the grades 0-15, 16-30, 31-45, 46-50 and> 60 mg / kg of P2O5 soil, according to which the phosphorus norms are determined, do not correspond to reality. This can be verified by taking two gradations 0-15 and 16-30 mg / g P2O5. In the first case, the annual rate of P2O5, according to the recommendation, is 225 kg / ha, and in the second, starting from 16 to 30 mg / kg, this figure is 180 kg / ha. As you can see, if the content of P2O5 in the soil is 15 mg / kg and lower, then the dose of phosphorus is 225, and at 16 mg / kg - 180 kg / ha. An increase in P2O5 in soil by 1 mg reduces the phosphorus dose by 45 kg / ha. Consequently, when setting the doses of phosphorus fertilizers for cotton according to this gradation and the content of mobile forms of phosphorus in the soil, the need is overestimated, especially for eroded ones. The range of phosphorus dose distortion is 45-75 kg / ha.

To establish a scientifically substantiated dosage of phosphorus fertilizers for cotton based on the P_2O_5 content in the soil, some adjustment should be made. It lies in the fact that the dose of phosphate fertilizers should be set for each specific average P_2O_5 in the soil.

To establish a scientifically grounded dose of phosphorus fertilizers for cotton, use the nomogram, where for 1 mg / kg of P_2O_5 in the soil, the dose of phosphorus fertilizers calculated by the equation Y = 300-5X is determined. Substituting the values of P_2O_5 content in the soil instead of X, we find the true dose of phosphorus.

For example, in strongly washed soil contains 17 mg / kg P_2O_5, you need to determine the dose of phosphorus. From the equation Y = 300-5X17 we find the dose of phosphorus for this soil. It will be equal to 215 mg / ha, and not 180 kg / ha, as shown in table. 2 with a gradation of 16-30 mg / kg.

If the content of P_2O_5 in the soil is high (52 or more mg / kg), then to maintain it at this level, it is necessary to introduce a biological rate of phosphorus of 45 kg / ha.

When compiling agrochemical cartograms for the content of P_2O_5 in soil, the average P_2O_5 readings from the analysis of mixed samples for each auxiliary circuit should be plotted on the map. This will make it possible to accurately determine the phosphorus rate for this auxiliary circuit using the proposed nomogram for determining the doses of phosphorus fertilizers based on the P_2O_5 content in the soil without any correction factors.

In the future, depending on the planned yield of raw cotton, the dose of phosphorus, determined from the nomogram, is adjusted. So, from a hectare of highly washed soil, where the P_2O_5 content is 17 mg / kg, it is planned to get not 30, but 40 c / ha. In this case, the biological requirement for the creation of 10 centners of raw cotton (15 kg / ha P_2O_5) is added to the scientifically grounded

rate, and the dose of phosphorus for the planned yield of 40 centners / ha will be 215 + 15 = 230 kg / ha.

Conclusion: The analysis results show that the studied soils are poor in humus, nitrogen, and phosphorus. According to the availability of phosphorus, soils are classified from "insufficiently provided" to "poorly provided".

It is known that with an increase in yield, the removal of nutrients from the soil by a plant increases. However, the correlation between yield and carryover changes. It is very important to determine the norms of nutrients that are economically justified by the increase in yields.

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ЭКСПЕРИМЕНТАЛЬНЫЕ ИССЛЕДОВАНИЯ МНОГОФУНКЦИОНАЛЬНОГО УНИВЕРСАЛЬНОГО АГРЕГАТА

Школьников Павел Николаевич, *доцент кафедры строительного производства и инженерных конструкций, ФГБОУ ВО Дальневосточный ГАУ*

Щитов Сергей Васильевич *профессор кафедры транспортно-энергетических средств и механизации АПК, ФГБОУ ВО Дальневосточный ГАУ*

Аннотация. *С целью снижение трудоёмкости приготовления и раздачи корма на малых фермах крупного рогатого скота, разработан многофункциональный универсальный агрегат. Для определения влияния конструктивно-технологических параметров на качество приготовления смеси были проведены экспериментальные исследования.*

Ключевые слова: *степень измельчения, корм, раздача, пропускная способность.*