

The value of sulfur and its ratio to nitrogen by a coefficient its using by wormwood whitish

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The obtained results indicate that the amount of nitrogen used from soil and fertilizers of whitish wormwood grown on typical gray soil varies from 36.0 to 56.5%. The authors found that the greater use of nitrogen by the plant occurs at a ratio of N: S = 1: 0.2 (or 40 kg / ha of sulfur), and on rubbly gray soil, the nitrogen used by the plant is 50.5 to 64.0%. When ratio N: S is 1: 0.25 (50 kg / ha of sulfur), the sulfur utilization rate is 64.0% or 7.5% more than on typical gray soil. A further increase in the sulfur dose to 50 kg / ha on typical gray soils and 60 kg / ha on detrital gray soil had no effect on the efficiency of nitrogen on wormwood whitish. Consequently, in the optimal variants for each soil difference, the introduction of sulfur is an important factor in increasing the coefficient of useful effects of nitrogen on the plant.

Key words. Nitrogen, phosphorus, potassium, sulfur, protein synthesis, nucleic acids, aminoacids, nutrient medium, metabolism, plant productivity.

Purpose of the study. As known, wormwood whitish is responsive to nitrogen, phosphorus and potassium nutrition. However, in the course of the life cycle of wormwood whitish, like other plants, needs in many other elements. Thus, a positive effect of sulfur was revealed when combined with NPP for cereals (Tolstousov, 1974, Mosolov, 1979). The physiological role of NPP and sulfur is associated with their participation in the synthesis of proteins, nucleic acids, aminoacids, etc. Therefore, their presence in a nutrient medium is important condition for the activation of metabolic processes underlying the high productivity of plants. At the same time, as noted above, not saline irrigated soils of the cotton zone feel a deficit to sulfur, due to a change in the range and a reduction in the production of sulfur-containing industrial fertilizers. On the other hand, the dynamics of the sulfur content in irrigated soils and its effect on the amount of nitrogen used by cotton and other crops remained practically unexplored (Gulimov, 1980, Tadesse, 1988, and others). Our research task was to determine the optimum ratio nitrogen to sulfur.

Methods of investigation. To solve this issue, field experiments are applied with the use of an increasing dose of sulfur (20, 30, 40, 50 and 60 kg / ha or at a ratio of N: S ~ 1: 0; 1: 0.10; 1: 0.15 1: 0.20, 1: 0.25 and 1: 0.30) against a background of 70 kg / ha of phosphorus, 50 kg / ha of potassium and 100 kg / ha of nitrogen.

Table 1

Nitrogen fertilizer balance, depending on the ratio of N: S and soil conditions.

Field experiments, average for 2009-2011.

Number of variant	N:S ratio	Taken with fertilizers, intaken by plant, kg/ha	Taken from fertilizers	Used from fertilizers, %
Typical gray soil				
1	1:0	-72-72	-	-

2	1:0,10	165+72	72	36,0
3	1:0,15	175+72	103	51,5
4	1:0,20	180+72	108	54,0
5	1:0,25	187+72	115	56,5
6	1:0,30	181+72	101	50,5
Gravelly gray soil				
1	1:0	-82-82	-	-
2	1:0,10	183+82	101	50,5
3	1:0,15	185+82	102	51,0
4	1:0,20	200+82	118	59,0
5	1:0,25	200+82	128	64,0
6	1:0,30	193+82	109	54,5

Note: The annual nitrogen dose is 100 kg / ha. The coefficients of sulfur use by the plant were determined by the method of "Differences".

Results of the study. From the data given in Table 1, it can be seen that the amount of nitrogen used from soil and fertilizer by wormwood whitish grown on a typical gray soil varies from 36.0 to 56.5%. A greater use of nitrogen by the plant occurs at a ratio of N: S = 1: 0.2 (or 40 kg / ha sulfur), and on rubby gray soil, the plant uses nitrogen from 50.5 to 64.0%. When ratio N: S of 1: 0.25 (50 kg / ha sulfur), the sulfur utilization rate is 64.0% or 7.5% more than for typical gray soil (Table 1). A further increase in the sulfur dose to 50 kg / ha on typical gray soils and 60 kg / ha on detrital gray soil had no effect on the efficiency of nitrogen on wormwood whitish. Consequently, in the optimal variants for each soil difference, the introduction of sulfur is an important factor in increasing the coefficient of useful The effects of nitrogen on the plant.

Conclusions. The results of the crop accounting established that increased stalk growth, a greater number of fruit bodies and a high yield (biomass) on typical gray soil are provided by applying 40 kg / ha sulfur (or at a ratio N: S = 1: 0.20), and on detrital gray soil at a Sulfur dose 50kg / ha (or with the ratio N: S = 1: 0.25).