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The Effect of Repeated Mung Bean on the Growth of the Crop in Relation to the Norms of Mineral Fertilizer after the Fall on Typical Burrow Soils Exposed to Irrigation Erosion

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Abstract – The article proves the need to apply mineral fertilizers in the conditions of typical gray soils subject to irrigation erosion, stratified into bean planted as a secondary crop after winter wheat, N50, R80, K60 kg / ha to the mung bean crop in the washed part of the soil and N25, R80, K60 kg / ha to the washed part of the soil were found to have a positive effect on the increase in the number of pods of the repeated mung bean crop.

Keywords – Irrigation Erosion, Typical Gray Soil, Winter Wheat, Bean, Legumes, Growth, Development, Nitrogen, Phosphorus, Potassium.

I. INTRODUCTION

Today, land reclamation is deteriorating due to irrigation and wind erosion, salinization, pollution, swamping and subsidence, leading to a decline in soil fertility. Irrigation erosion has affected more than 56% of the world's arable land to varying degrees, resulting in the washing away of 75 billion tons of fertile soil, leading to a decline in soil fertility and a 15-20% reduction in agricultural production[1].

In the care of agricultural crops, special attention is paid to research in each soil-climatic zone, strictly taking into account the properties and characteristics of soils, the norms, timing and cycles of irrigation. In particular, the selection of crops that increase soil fertility, prevent irrigation erosion, and fully meet the needs of the population in food and livestock producc as a secondary crop in areas free of winter wheat is a topical issue.

The area of eroded lands in the country is 1772.3 thousand / ha or 40% of the total area of arable lands. As a result of irrigation erosion, 100-150 tons of soil per hectare is washed away, including 500-800 kg of humus, 100-120 kg of nitrogen and 75-100 kg of phosphorus. This has a negative impact on soil fertility. In the system of short-rotation crop rotation of agricultural crops to increase soil fertility and obtain high and quality grain yields from repeated crops, B.M.Xalikov [6; 71 – p] according to the information given by the rotation 2: 1, winter wheat + repeat crop (mung bean): winter wheat + repeated crop (mung bean): cotton or winter wheat + repeated crop (mung bean): autumn wheat + repeated crop (mung bean) + intermediate crop (rye): cotton and 1: 1: 1, winter wheat + repeated crop + intermediate crop (triticale): soybean: 185–215 kg of biological nitrogen remained in the soil after one rotation in cotton systems. On repeated crops, D.Abdukarimov [1; p. 36–37] noted that after

[1]http://anrcatalog.ucdavis.edu

the harvest of winter wheat, when legumes are sown twice a year as a secondary crop, on the other hand, it increases soil fertility and reduces weeds in the fields. In this regard, he noted that the most important agro-technical measures are the use of legumes, maintenance and increase of soil fertility in the rotation or rotation of agricultural crops. Ya.Buriev, J.U.Abdullaev [2; p. 271–272;] according to the resulc of scientific research conducted by farmers in the conditions of fertile soils of Kashkadarya region, it has been proved that it is economically viable to plant different crops in one place all year round. To do this, after harvesting grain crops (55–61 c / ha of grain, 80–85 c / ha of straw and 60–65 c / ha of rooc and stalks), legumes (20.9–21.1 c / ha of grain, 34.7 c / ha of root and dung residues), intermediate crop rye (454.8 c / ha of blue mass, 50.3 c / ha of dry mass and 28, in the soil enriched with ic dung and root remnanc) They said that they have proven in their experimenc that it is possible to earn 9 c / ha of rooc and sorghum residues) and to earn additional income by planting soybeans (6.2 c / ha of grain) in the spring as a partner crop with cotton (40.9 c / ha).

Also, foreign scholars J.K. Bisht, A.S Chandel [8; according to p-429-432], cotton yields increase in the sequence of growing corn for soybeans because soybean plants fix atmospheric nitrogen and increase soil fertility, especially soil nitrogen, and consequently increase the yield of subsequent crops.

B.C. Ball, I.Bingham, R.M. Rees, C.A. Wacon, A. Litterick [7; In the scientific work p-557-577], the sequence of crops in crop rotation not only increases the removal of nutrients, but also the return of plant residues, the development and spread of biopores and the dynamics of microbial communities and the activity of microorganisms.

One of the urgent issues is to maintain and increase soil fertility, to correctly determine the norms of cereals and their mineral fertilizers in the system of effective crop rotation in order to obtain high yields from crops. With this in mind, the state grant of the Scientific research institute of cotton breeding and cultivation agrotechnologies QX-YoA-QX-2018-5 in the practical project "Determining the optimal feeding regime of cotton after winter wheat and legumes in different soil conditions" "(In the conditions of typical gray soils of Tashkent region subject to irrigation erosion) 2017-2019 over the years, scientific research has been conducted and the intended goal has been achieved.

II. Research Methodology And Materials

The central experimental farm of CBSPCARI in Kibray district of Tashkent region is located 7-8 km from the Chirchik River, on the right bank of the Boz-Suv canal, 20-23 km in the north-eastern part of Tashkent.

The location of the institute is about 580 m above sea level. P.N.Besedin [3; P. 16], the Central experimental farm soils fall into the classification of typical gray soils, which have been irrigated for a long time, are not saline and are located around deep (18-20 m) groundwater. This soil humus and total nitrogen, phosphorus is in short supply. Studies have shown that the amount of humus decreases sharply as the soil layer deepens. Typical gray soils fall into the classification of medium and heavy sands according to their mechanical composition. The slope is 1.5-2 C.

We conducted experiments taking into account that the main part of the soils affected by irrigation erosion consists of the washed part of the soil and the washed part. We used mineral fertilizers in "Durdona" variety of the study in 3 different rates (N_{25}, R_{80}, K_{60}; N_{50}, R_{80}, K_{60}; N_{75}, R_{80}, K_{60}) in the washed part of the soil and we observed the growth and development of the mung bean crop, which was also fed in the washed-out parts of the soils of these mineral fertilizer norms. The experiments on the mung bean crop consisted of 6 variants and three iterations, the experimental field was initially divided into appropriate reversals and variants, and the experimental system was divided into ammonium nitrate (34% N), urea (46% N), superphosphate (17-20% P_2O_5) and potassium chloride (51-60% K_2O) mineral fertilizers were applied.

Experiments, phenological observations were carried out in accordance with the manual "Methods of conducting field experiments" [4, p. 16].

III. Research Results And Their Discussion

After the winter wheat was harvested, the experimental field was replanted on July 9 and seeded on July 11-12. Bean seeds germinated fully in 7 days after watering. Four days after full germination, the seedlings began to produce true leaves. Flowering period was observed in August, 20–25 days after leaf emergence. 7-10 days after the start of flowering (August 25), the bean began to bloom, and on September 1-5. Mung beans start to ripen on September 25-30 and are fully ripe on October 15-20. The mung bean lasted 93 days from full germination to full ripening. When we observed the growth development of the mung bean in August, the height of the plant differed from one variant to another. Hence, our studies have shown that mineral fertilizer standards have different effects on the growth and development of mung bean, with each variant being differentiated. In variant 1, planted as a repeat crop in the washed part of the soil, the plant height was 18.2 cm in 2-3-leaf dervishes, 43.6 cm at the time of fruiting and 44.9 cm at the end of the application period, the highest rate was observed in variant 3. In this variant, when the norms of mineral fertilizers were fed N_{75}, R_{80}, K_{60} kg / ha, the plant height was 25.5 cm during the 2-3 leaf period, 48.3 cm during the fruiting period and 51.0 cm at the end of the fruiting. In the washed part of the soil, the highest values were observed in 3 variants. Although mineral fertilizers $N_{75,}$ R_{80}, K_{60} kg / ha were applied to this variant, the number of pods decreased at the end of the mung bean period. In the experiment, it was observed that the number of pods at the end of the validity period was 27.8 in the variant where mineral fertilizer norms N_{50}, R_{80}, K_{60} kg / ha were applied, which was 4.9 more than in the first variant and 2.5 more in variant 3. In the experiment, it was observed that the growth of replanted mung bean in the washed part of the soil was higher than in the washed part, ie in 4 variants, the length of the mung bean plant was 27.7 cm at the time of 2-3 leaves and 6.4 cm at the time of budding. the number of pods was 6.3 and by the end of the validity period, the number of pods 48.5 cm in height was 29.2. In the washed part of the soil, the highest plant height was observed in 6 variants. N_{75}, R_{80}, K_{60} kg / ha of mineral fertilizers were applied to this variant, but at the end of the mung bean period the number of pods decreased by 2.8 compared to 4 variants.

IV. Conclusion

According to the results of the study, in the conditions of typical gray soils subject to irrigation erosion, it is necessary to apply mineral fertilizers in the form of stratified mung bean, which is planted as a secondary crop after winter wheat, N_{50}, P_{80}, K_{60} kg / ha to the mung bean crop in the washed-out part of the soils affected by irrigation erosion and N_{25}, P_{80}, K_{60} kg / ha to the washed-out part of the soil were found to have a positive effect on the increase in the number of pods.

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