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The Effect of Pea Plant on Soil Fertility

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Annotation. The article examines the effect of pea grass on agrochemical soil soils under gray soils. After pea planting, it was found that there was a significant increase in the number of mobile NPK elements in the soil by 0–30 cm.

Keywords: peas, soil, nitrogen, phosphorus, potassium, humus, bacteria, soil solution medium.

Introduction: In carrying out measures to improve the agrochemical and agrophysical properties of irrigated arable land and increase its productivity, legumes with rhizobium bacteria, which accumulate free nitrogen in the atmosphere in the root system, are easily absorbed by the plant. cereals, including peas, are of great importance. Nitrogen accumulated by peas improves the structure of the soil, as well as its complete assimilation by plants. According to many research results, peas leave 40-80 kg of pure nitrogen per hectare. The effect of pea crop on soil fertility in the conditions of meadow gray soils of Samarkand region is almost zero. unexplored [2, 3].

Experimental Methods. The research was carried out in the conditions of meadow gray soils of the farm named after P. Nurmanov, Payarik district, Samarkand region. In the experiment, the Yulduz variety of pea was used. The experimental area was 1,500 m2, the calculation area was 648 m2, and the area of 1 pile was 36 m2, which was performed in three repetitions. In the experiment, the pea planting scheme was 60 cm in row spacing, 6 cm in row spacing, and the seeds were sown at a depth of 3-4 cm in the soil. During the experiment, peas were watered 3 times (growth period, budding, general flowering period). Field experiments, sowing, crop care, harvesting and calculation, observation and analysis were carried out on the basis of the recommendations of the Uzbek Scientific Production Association of Grain. The agrochemical composition of the soil in the experimental area was carried out using generally accepted methods before sowing and after harvesting the peas [1].

Research results and their analysis. Improving soil fertility by studying the symbiotic activity of peas and assimilating biological nitrogen from the atmosphere is an important challenge in agriculture.

It is known that pea root bacteria accumulate nitrogen in the soil and have a significant effect on the solubility and mobility of other nutrients in the soil [4]. As a result, soil agrochemical parameters will change for the better and soil fertility will increase. Most scientists point out that

most of the nitrogen assimilated by legumes remains in the plant itself, and that some of it remains in the soil with the remains of roots and stems after harvest [5 , 6].

Therefore, the nutrition, growth, development and productivity of peas are of great importance in improving the agrochemical properties of the soil and soil fertility. Therefore, in our study, we studied changes in soil agrochemical properties under the influence of pea plants.

Studies have shown that the amount of nutrients in a pea crop changes rapidly relative to the total amount of nutrients. One of the most important nutrients in the soil is mineral nitrogen. Plants feed on nitrogen, but legumes, especially peas, feed mainly on molecular nitrogen in the atmosphere. Therefore, the amount of nitrogen in the form of ammonium and nitrate is stored in the soil and increases due to the conversion of molecular nitrogen into mineral nitrogen. This pattern has been observed throughout the years of the study. In the analysis, the amount of ammonium nitrogen in the soil was 25.1 mg / kg in the 0-30 cm layer and 9.7 mg / kg in the 30-60 cm layer on average before planting the pea crop. At the end of the water period, this figure was found to be 29.0 and 15.3 mg / kg, respectively, an increase of 15.5 and 57.7%, respectively. Ammonium nitrogen changes were more pronounced in the driving layer. However, a significant increase in the amount of nitrogen in the form of ammonium was also found in the underlying layer. Along with ammonium nitrogen (N-NH4), nitrate nitrogen (N-NO3) nitrogen was also found in the soil under the influence of pea crops. This was observed in both soil layers, except that nitrogen in the form of nitrate was 21.3 mg / kg in the top layer of the soil before planting and 14.6 mg / kg in the bottom layer of the soil at the end of the pea crop growth period. this figure was found to be 30.2 and 20.9 mg / kg by layers, i.e., these values increased by 41.7 and 43.2%, respectively. This means that the pea crop has increased the amount of both ammonium nitrogen and nitrate nitrogen in the soil. As a result, the amount of mineral nitrogen in the topsoil and subsoil increases dramatically, which improves the nitrogen nutrition of post-pea crops. Another reason for the improvement of soil nitrogen regime under the influence of peas is the high content of protein and nitrogen in the residues of these crops.

Another important nutrient is mobile phosphorus in the soil. Mobile phosphorus is a key indicator of soil phosphorus regime. The amount of mobile phosphorus determined by the Machigin method changed significantly under the influence of pea crops. If the amount of mobile phosphorus in the driving layer of the soil before planting was 37.4 mg per 1 kg of soil in the field experiment, and 25.7 mg in the subsoil, after the end of the growing season of the pea crop The values were 42.1 and 29.1 mg, respectively, for the soil layers. An increase in the mobile phosphorus layer was observed more strongly in the drive layer. This is due to the fact that the main part of the root structure of the plant is located in the upper horizon, and the pea plant is transferred to the soil in a position where easily absorbed phosphorus is easily absorbed. At the same time, the pea plant leaves nitrogen and phosphorus-rich root and root residues in the soil, which leads to an increase in the amount of mobile phosphorus in the soil. An increase in the amount of ammonium and nitrate nitrogen under the influence of pea also increases the solubility of phosphates in the soil, which in turn increases the amount of mobile phosphorus in the soil. This means that after the pea, not only the nitrogen regime of the soil, but also the phosphate regime improves.

One of the most important nutrients for the pea plant is the exchange of potassium. The amount of exchangeable potassium also changes positively during the growing season under the influence of pea crops. In this case, the average amount of exchangeable potassium in both layers of the soil was 238 mg / kg, and in the subsoil 176 mg / kg, after the harvest of the pea crop, this figure was 257 by layers. and 192 mg / kg, which were found to increase by 8.0 and 9.1%, respectively.

Conclusions. The effect of pea on the agrochemical composition of the soil was significant. It was noted that after planting peas, the amount of mobile NPK elements in the soil increased significantly in the 0-30 cm layer. The change in the amount of mobile nutrients in the soil was more pronounced. Pea crops did not affect the pH of the soil solution. This, in turn, creates favorable conditions for the nutrition, growth and development of crops in rotation by improving the soil nutrient regime after the pea.

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