The Role of Legume Crops in Improving the Ecological State of the Soil

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ARTICLE INFO
Published Online: 17 January 2022
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ABSTRACT
In this article is considered the role of legumes in improving the ecological state of the soil and the problem of developing energy-efficient, inexpensive, biologically and environmentally clean production technologies for crop production. The use of valuable chemical fertilizers and pesticides in order to obtain high yields from crops increases the pollution of the environment, ie soil, air and groundwater, the products contain nitrates, herbicides, fungicides, insecticides, residues harmful to human health. High levels of nitrogen fertilizers are harmful to the environment when applied to plants. Decomposing organic matter activates the activity of soil microflora, reduces the amount of humus in the soil. Some of the nitrogen is added to the water bodies and some to the groundwater. Nitrogen in the form of nitrate in food and feed increases, and they lead to disruption of metabolism, locomotor, nervous system activity, heredity in plants, animals and humans.

INTRODUCTION
The use of valuable chemical fertilizers and pesticides in order to obtain high yields from crops increases the pollution of the environment, ie soil, air and groundwater, the products contain nitrates, herbicides, fungicides, insecticides, residues harmful to human health. High levels of nitrogen fertilizers are harmful to the environment when applied to plants. Decomposing organic matter activates the activity of soil microflora, reduces the amount of humus in the soil. Some of the nitrogen is added to the water bodies and some to the groundwater. Nitrogen in the form of nitrate in food and feed increases, and they lead to disruption of metabolism, locomotor, nervous system activity, heredity in plants, animals and humans.

MAIN BODY
Growing peas in irrigated lands enriches the soil with biological nitrogen and organic matter, improves the water-physical properties of the soil, increases its fertility, while meeting the needs of the population in protein.

Mankind cannot give up high yields of field crops. In the future, as the productivity of field crops increases, so will their demand for nitrogen. Biological nitrogen increases crop yields and eliminates the harmful effects of nitrogen on the environment. One such biological nitrogen-fixing legume is the pea plant.

Peas, like other legumes, enrich the soil with nitrogen compounds using nitrogen-fixing bacteria (Rhizobium cicer) located at the roots and increase soil fertility. (I.H.Hamdamov, M.Xaitova, 2005). According to P.Sh. Shukurullayev (1969), all bacteria in pea root develop before flowering. After flowering, the bacteria die and the buds break down and organic matter begins to accumulate at its base. However, I.H. Hamdamov, M. Khaitova (2005) and Polikarpova (2008) note that the formation of nodular bacteria in pea root continues until the budding phase. Even according to Polikarpova (2008), the largest number of nodes corresponded to the phases of the nodule. According to him, the number of nodules in the root was 154 in the flowering phase when 0.6 million seeds per hectare were sown in 1m² area, while in the flowering period this figure was 134. Taking this into account, we also studied the effect of sowing dates on the formation of nodules at the root of pea varieties Yuldzu, Uzbekistanskiy-32 and Umid.
We conducted field experiments in the conditions of gray soils of Samarkand region. The experimental area was 1875.2 m², the calculation area was 1800 m², and the area of 1 pile was 25 m², which was carried out in four repetitions. During the experiment, peas were watered 3 times - (growth period), - budding - in the stages of gross flowering. 600-700 m³ of water per hectare was given at each irrigation. In the experiment, Yulduz, Uzbekskiy-32 and Umid varieties of peas were taken as objects.

RESULTS AND DISCUSSIONS
In our study, it was found that the weight of the nodule formed in the pea root changes with the delay of planting times. For example, the average weight of chickpeas planted in the Umid variety, planted for an average of three years, was 13.8 grams on 23 February, compared to 15.9 on 5 March; 15.3 on March 15, 13.2 on March 25, 12.0 on April 5, and 11.9 grams on April 15. The optimal time for nodule root formation was in the variant planted on March 5, and it was found that when planted on late April 15, the weight of the nodule formed in the roots was 4.0 grams more. A similar pattern was observed in Yulduz and Uzbekskiy-32 varieties. When we analyzed the formation of nodules by plant phases, the greatest nodule weight was observed in the legume phase. For example, when the Umid variety was planted on February 23, the average weight of the nodule was 12.2 grams in the budding phase, 12.9 grams in the flowering phase and 13.8 grams in the budding phase. Or it was observed that the average weight of the nodule in the budding phase was 1.6 grams more than the weight of the nodule in the budding phase and 0.9 grams more than the weight of the nodule in the flowering phase. Such regularity was observed in all sowing periods and in the studied varieties. When analyzing the nodule by variety, the average nodule weight in three years was shown in the Umid variety, which was 16.5 grams when planted on 5 March. The star variety weighed 15.9 grams, and the Uzbek-32 variety weighed 15.3 grams. In other words, it is 0.6 grams more than Yulduz and 1.2 grams more than Uzbekistan-32. The fact that the nodule continues to the pea plant until the budding phase means that the soil moisture and temperature are at an optimal level.

CONCLUSION
The weight of the tuber formed at the root of the pea differed not only among the varieties, but also in terms of sowing dates and developmental phases that is, among the varieties, the Umid variety was recorded on March 15 for all varieties in terms of sowing periods, the most leguminous phase when analyzed by plant development phases. When the Umid variety of pea is planted on March 15, it is a source of biological nitrogen for past crops in increasing soil fertility and crop rotation by assimilating free nitrogen from the air and helping to solve the problem of developing clean crop cultivation technologies.

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