ACCUMULATION AND ASSIMILATION OF NPK IN SAFFRON LEAVES GROWN ON SUBSTRATES BASED ON BIOLOGICAL FERTILIZERS

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In recent years, the plantation-style cultivation of saffron has gained considerable popularity. Extensive studies are currently underway to assess the impact of various mineral and biological fertilizers on the quality and productivity of saffron (*Crocus sativus* L.). While much of the existing literature has focused on biofertilizers derived from humic acid, as well as diverse mineral and nano-nutrient fertilizers, there has been a notable lack of attention on non-traditional biological fertilizers.

Specifically, recent research exploring the enrichment of soil organic content with zoohumus—derived from nutrient-rich insects—has been limited. The production of zoohumus is expanding, presenting opportunities to enhance the yield of medicinal plants. Furthermore, it is essential to evaluate the indicators that ensure maximum preservation of the primary active substances produced by these plants.

This research investigates the relationship between the nitrogen, phosphorus, and potassium content in saffron leaves cultivated with zoohumus obtained from the insect *Tenebrio molitor*. The findings reveal that the accumulation of phosphorus and potassium in saffron leaves decreases when the concentration of zoohumus exceeds 50 g/5 l. Thus, at a concentration of 60 g/5 l of zoohumus, saffron leaves exhibited a phosphorus accumulation of 0.211% and potassium accumulation of 0.38%.

Comparative analysis indicates that saffron leaves grown in a substrate with 60 g/5 l of zoohumus had 0.047% less phosphorus and 0.04% less potassium than those grown in a substrate with 20 g/5 l. Additionally, in comparison to a substrate with 30 g/5 l of zoohumus, the accumulation levels revealed a deficit of 0.061% for phosphorus and 0.06% for potassium. When compared to a substrate with 40 g/5 l of zoohumus, the saffron leaves accumulated 0.036% less phosphorus and the same amount of potassium, while those grown with 50 g/5 l had 0.025% less phosphorus and 0.04% less potassium. Notably, at a concentration of 70 g/5 l of zoohumus, the accumulation of phosphorus and potassium in saffron leaves dropped significantly compared to both the control and concentrations of 10-60 g/5 l.

Upon reviewing the results, it became evident that the most effective concentrations of zoohumus for phosphorus accumulation in saffron leaves using biological fertilizers were 20 and 30 g/5 l. For potassium accumulation, the most effective concentrations identified were 30 and 40 g/5 l. Therefore, a concentration of 30 g/5 l of zoohumus was selected for further investigation due to its favorable impact on the accumulation of phosphorus and potassium in saffron leaves.

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