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The Influence of Mycotic Biological Compounds on the Germination of Main Crops in the Western Region of Romania

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Abstract: In the realm of sustainable agriculture, this study investigates the influence of beneficial fungal organisms in "Mycofriend" on seed germination and crop development. The outdoor experiment, employing treated and untreated seeds, reveals promising results after 18 days. The study signifies potential advancements in sustainable farming practices for increased yield and ecological resilience.

• Introduction

Romania's Western region is a key player in the country's agricultural landscape, boasting a diverse range of crops pivotal for food security and economic stability. Sustainable agriculture, particularly the impact of mycorrhizal biological compounds on crop germination, has garnered attention. These naturally occurring symbionts enhance water and nutrient absorption, promoting healthier plant growth with reduced reliance on chemical inputs. Tailored research in the region aims to unravel specific interactions, offering practical solutions for farmers and advancing environmentally friendly practices in this vital agricultural sector.

• Material and method

In this section, we outline the materials, procedures, and goals of our study, conducted during the spring of 2023, to assess the impact of the mycorrhizal biopreparation "Mycofriend" on agricultural crops. The experiment, held in a controlled environment, featured the unique Mycofriend composition, encompassing mycorrhizal fungi, microorganisms supporting mycorrhiza, phosphate-mobilizing bacteria, and biologically active substances. Plant varieties such as wheat, barley, corn, sunflower, and rapeseed were cultivated in outdoor metal containers, each undergoing a distinctive pretreatment. The study's key objectives included assessing germination and root growth effects, aiming to contribute significantly to understanding the physiological and biochemical mechanisms in young plants responding to biostimulants.

• Results and discussions

In this study, we examined plant development at six and eighteen days after sowing to evaluate the influence of the "Mycofriend" treatment on germination, above-ground and below-ground growth, and the seed germination process. Significant differences between treated and untreated groups suggested a negative impact on these aspects. At six days, untreated plants exhibited robust germination, while treated plants showed none. At eighteen days, above-ground development showed no significant difference, but roots in untreated plants were better developed. Seed germination varied, with treated sunflower and rapeseed showing suboptimal rates. The study raises questions about the treatment's chemical impact and long-term effects on plant development, necessitating further investigation.

• Conclusions

The study concludes that "MYCOFRIEND" treatments significantly influenced plant development, particularly the root system, but inhibited germination without notable growth improvement. Notably, the biopreparation completely hindered rapeseed germination, challenging its recommended use.

Despite being 100% natural, the study suggests the dosage used was unfavorable. Future research should explore alternative "Bacillus"-based products and their recommended dosages, emphasizing the importance of adjusting treatments based on plant species and specific crop conditions.

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