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EFFECT OF SOME MICROMYCETES ON SEED GERMINATION AND SEEDLING GROWTH IN SUNFLOWER

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INTRODUCTION

Sunflower (*Helianthus annuus* L.) is an important oilseed crop globally, but its productivity is frequently compromised by various fungal pathogens. Among the fungi reported to colonize sunflower seeds, prevalent species include *Alternaria alternata*, *Aspergillus flavus*, *A. fumigatus*, *A. niger*, *Chaetomium atrobrunneum*, *Fusarium oxysporum*, *F. solani*, *Penicillium brevicompactum*, *P. expansum*, and *Rhizopus stolonifera*. Seed-borne fungi are known to induce seed rot, damping-off, and other diseases upon germination, resulting in diminished seed viability and compromised seedling establishment. On the other hand, several seed-borne fungi establish symbiotic relationships with plants, enhancing tolerance against both biotic and abiotic stresses.

This study aimed to investigate the influence of some fungal strains - *Alternaria alternata*, *Aspergillus niger*, *Fusarium oxysporum*, and *Rhizopus arrhizus* - on the germination and growth of sunflower seedlings at the early developmental stage.

RESULTS

Sunflower seeds of the local hybrid Oscar were subjected to treatment with conidial suspensions of each fungal strain, adjusted to a concentration of 10^6 conidia mL^{-1}. Control plants were treated with sterile distillated water. At the end of the experiment the plant height, root length and fresh/dry weight of plants was recorded.

I – control, **II** – *Fusarium oxysporum,* **III** – *Rhizopus arrhizus,* **IV** – *Alternaria alternata,* **V** – *Aspergillus niger,* **VI** – mix of fungi

During the study, it was noted that *A. alternata* and *A. niger* significantly reduced seed germination by 55%. In contrast, *F. oxysporum* and *Rh. arrhizus* did not show any discernible effect on the percentage of seed germination. Significant enhancement (ranging from about 22% to 35%) in most growth parameters, except shoot length, were observed in sunflower seedlings co-cultured with *Rhizopus arrhizus*. *Fusarium oxysporum* and *Aspergillus niger* exhibited a less pronounced positive effect (10% to 18%) on root length and fresh biomass accumulation. Conversely, treatment with *Alternaria alternata* resulted in the lowest values across all growth variables. The height of the plants ranged from 8.5 and 10.6 cm, representing a 6% to 24% reduction compared to non-inoculated seedlings.

CONCLUSIONS

This study underscores the varying impacts of seed-borne fungal strains on sunflower seedling growth. *Rhizopus arrhizus* notably enhanced several growth parameters, suggesting a potential for promoting sunflower growth under controlled conditions. Further exploration of these fungal interactions is essential for elucidating their potential applications in agriculture, particularly in strategies aimed at enhancing crop resilience and productivity.

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