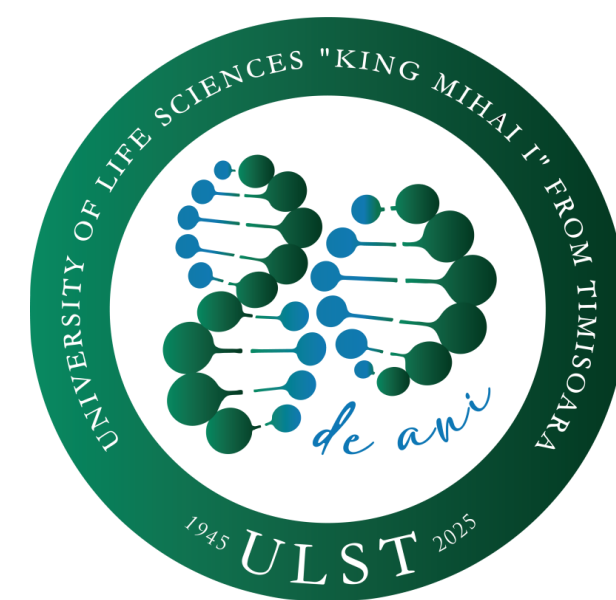




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PRELIMINARY RESULTS ON THE TERRESTRIAL PHYTOTOXICITY OF
DIFENOCONAZOLE ON RADISH (*RAPHANUS SATIVUS*) AND MAIZE (*ZEAMAYS*)

Diana-Maria ISTRATE¹, Cosmina-Alecsia COSMA¹, Adina-Daniela IACHIMOV-DATCU^{1,3}, Bianca-Vanesa AGACHI^{1,3},
Constantina-Bianca VULPE^{2,3}

¹Department of Biology, Faculty of Chemistry, Biology, Geography, West University of Timisoara, Pestalozzi 16, 300115, Timișoara,
Romania

²Department of Scientific Research in Biology, Advanced Environmental Research Institute, West University of Timisoara, Oituz, 4,
300086 Timisoara, Romania

³The Academy of Romanian Scientists, Ilfov 3, 050044, București, România

Abstract: Difenconazole is a triazole fungicide authorized for use in the European Union, but it may pose risks to non-target organisms such as terrestrial plants, either directly exposed through agricultural applications or indirectly affected in surrounding areas. Therefore, assessing its potential terrestrial phytotoxicity is essential. This study presents preliminary data on the phytotoxic effects of difenoconazole on two agriculturally relevant plant species, *Raphanus sativus* (radish) and *Zea mays* (maize), using a germination test on filter paper. Ten seeds of each species were exposed to 1.5 mL of five difenoconazole concentrations: 250, 12.5, 1.25, 0.125, and 0.0125 g/L. The preliminary results showed that the highest concentration (250 g/L) completely inhibited seed germination, while the lower concentrations allowed most seeds to germinate. In radish, the highest root growth occurred at 12.5 g/L, while lower concentrations allowed germination without significant differences among them. In maize, germination was also completely inhibited at 250 g/L, with lowest root growth at 12.5 g/L and increased growth at moderate to low concentrations, with no significant differences among the three lowest treatments. These findings suggest potential concentration-dependent phytotoxic effects of difenoconazole, with species-specific sensitivity patterns. Further research is needed to confirm these preliminary observations and to better understand the mechanisms underlying triazole-induced phytotoxicity in terrestrial plants.

• Introduction

Difenconazole is a triazole fungicide that is approved for use in the European Union, although it may be hazardous to non-target organisms like terrestrial plants if they are exposed to it directly through agricultural applications or are indirectly impacted in nearby areas. It is therefore crucial to evaluate its possible terrestrial phytotoxicity. This study provides initial information on the phytotoxic effects of difenoconazole on two agriculturally significant plant species, *Zea mays* (maize) and *Raphanus sativus* (radish).

• Material and method

Using a germination test on filter paper, seeds of each species (*Z. mays* and *R. sativus*) were exposed to 1.5 mL of five difenoconazole (DIF) concentrations:

- 250 g/L
- 12.5 g/L
- 1.25 g/L
- 0.125 g/L
- 0.0125 g/L

The test lasted for about 7 days in order for the seeds to germinate.

• Results and discussions

According to the preliminary results, most seeds were able to germinate at lower concentrations, while the highest concentration (250 g/L) totally prevented seed germination. Radish root growth peaked at 12.5 g/L, although germination was possible at lower concentrations with no visible differences. With no noticeable differences between the three lowest treatments, germination in maize was likewise totally suppressed at 250 g/L, with the lowest root growth occurring at 12.5 g/L and increasing growth at moderate to low concentrations.

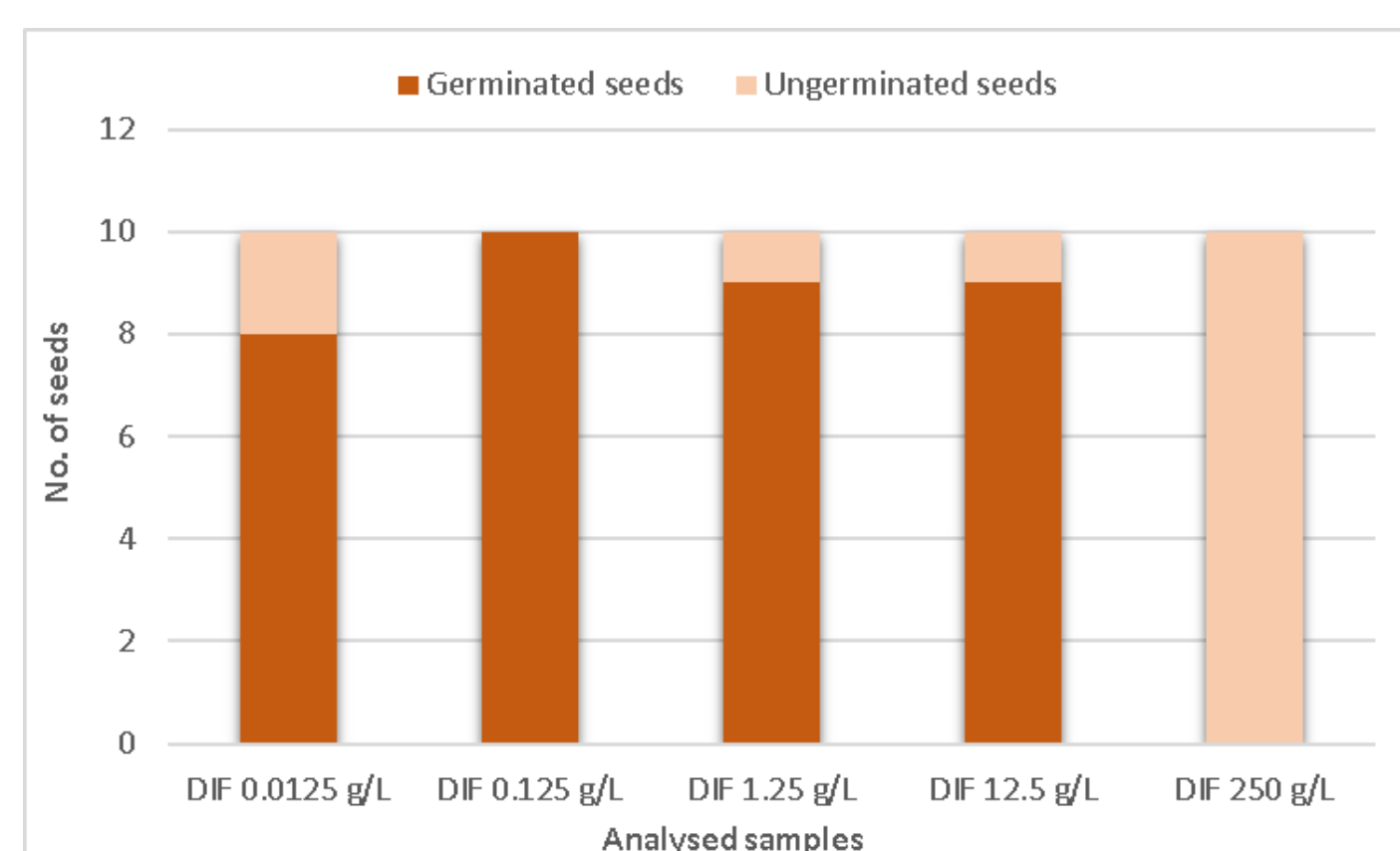


FIG. 1-The number of germinated and ungerminated *R. sativus* (radish) seeds for each difenoconazole concentration tested

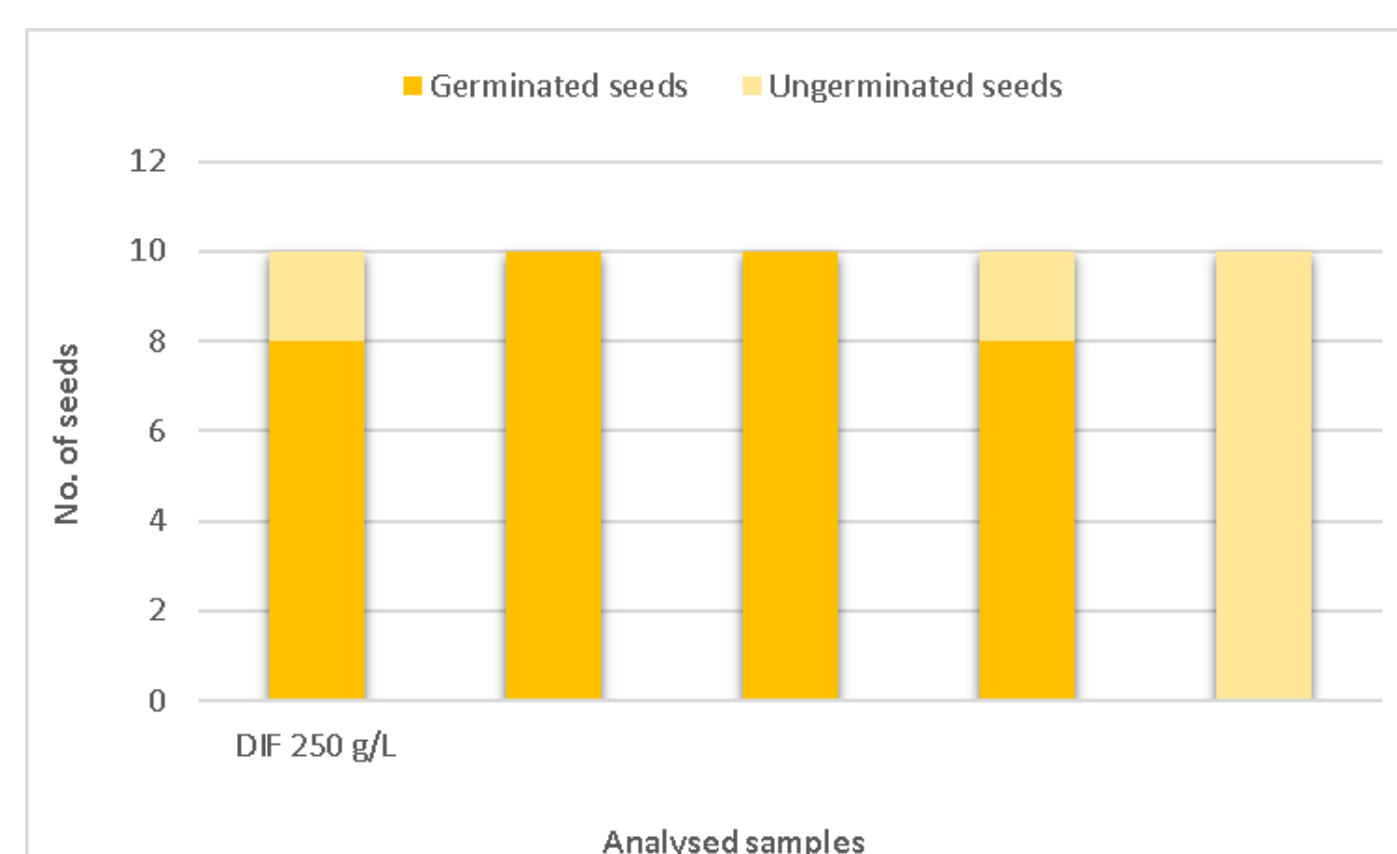


FIG. 2-The number of germinated and ungerminated *Z. mays* (maize) seeds for each difenoconazole concentration tested

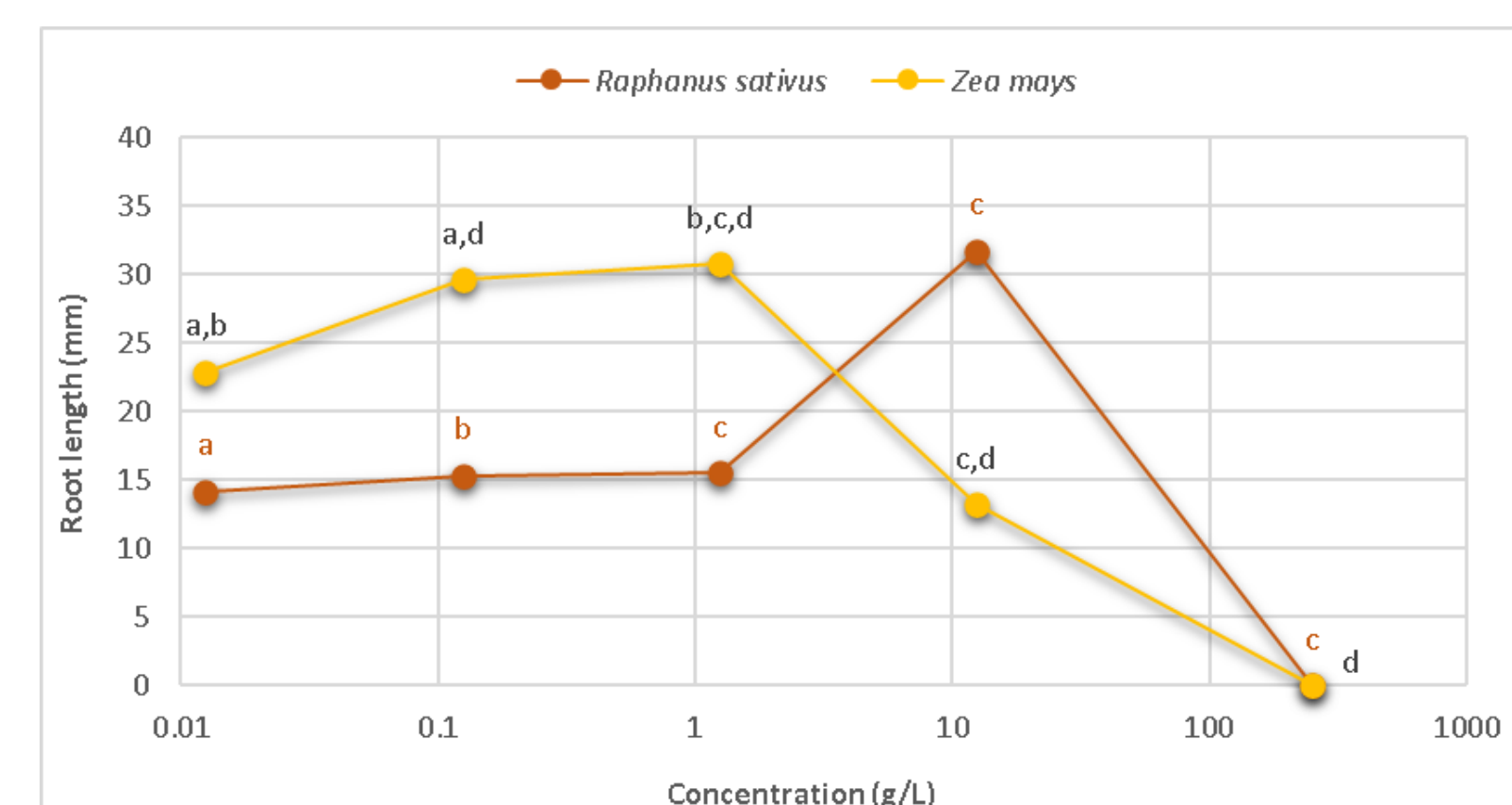


FIG. 3-Root length (in mm) for both species tested (radish and maize). Symbols with same letter do not present statistically significant differences as determined by ANOVA analysis

• Conclusions

These results suggest potentially species-specific sensitivity patterns and concentration-dependent phytotoxic effects of difenoconazole. To confirm these first results and get a better understanding of the mechanisms behind triazole-induced phytotoxicity in terrestrial plants, further research is needed.

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