

Germnation Rates Effected by Alleopathic Plants

How *Dioscorea bulbifera* Effects Radish Seedling Growth



Background

Dioscorea bulbifera is an extremely aggressive invasive plant located in Florida, commonly classified as a category 1 noxious weed. Overall it distracts ecosystems by displacing native growth through its rapid development and the release of allelochemicals, secondary metabolites that stop the survival of native plants. Within this radish seeds will serve as an ideal bio indicator due to your overall rapid growth, easy measurable root systems, and sensitive germination.

Objective

This study aims to quantify the concentration dependent alleopathic effects of *Dioscorea bulbifera* line extract on the overall germination percentage and mean loot length of a blank blank to better understand and invasive species chemical competition and how invasive species affect native plants.

Methods

During the project a controlled indoor laboratory experiment will be conducted to measure the effects of five concentrations of *Dioscorea bulbifera* vine extract on radish germination and seedling development.

Extract preparation - and 100% stock concentration was created by soaking 40 G of chopped *D. bulbifera* vine into 200 mL of distilled water. This mixture was set at room temperature for 24 hours and then followed by filtration

Experimental design - five concentrations (0%, 25%, 50%, 75%, and 100%) were utilized and prepared as distilled water dilutions.

Set up - 250 radishes were distributed evenly across 25 Petri dishes, with each dish having 10 seeds making five replications per concentration, lined with filter paper.

Monitoring - each disc received 5 ml of the assigned solution, over a period of 10 days visual observations were made and water was added periodically to ensure none of the dishes dried out. On the final day root length measurements and germination counts were counted.

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Discussion

Overall as the concentration of the *Dioscorea bulbifera* increased there was a significant decrease in not only the radish root length but also the overall germination right. The 100% concentration of *Dioscorea Bulbifera* acted as an almost complete inhibitor showcasing how allopathic plants affect native wildlife.

There is a clear downward trend in the germination rates as the concentrations of the *Dioscorea Bulbifera* increases. The control group (0%) had a 98% germination rate which can be seen plummeting to only 12% at the highest concentration (100%).

The overall root length was proven to be sensitive to the higher concentrations mean root length falling from 17.6 mm within the control (0%) to 0.9 in the highest concentration (100%).

Figure 1: Inhibitory Effect of *D. bulbifera* on *R. sativus* Germination

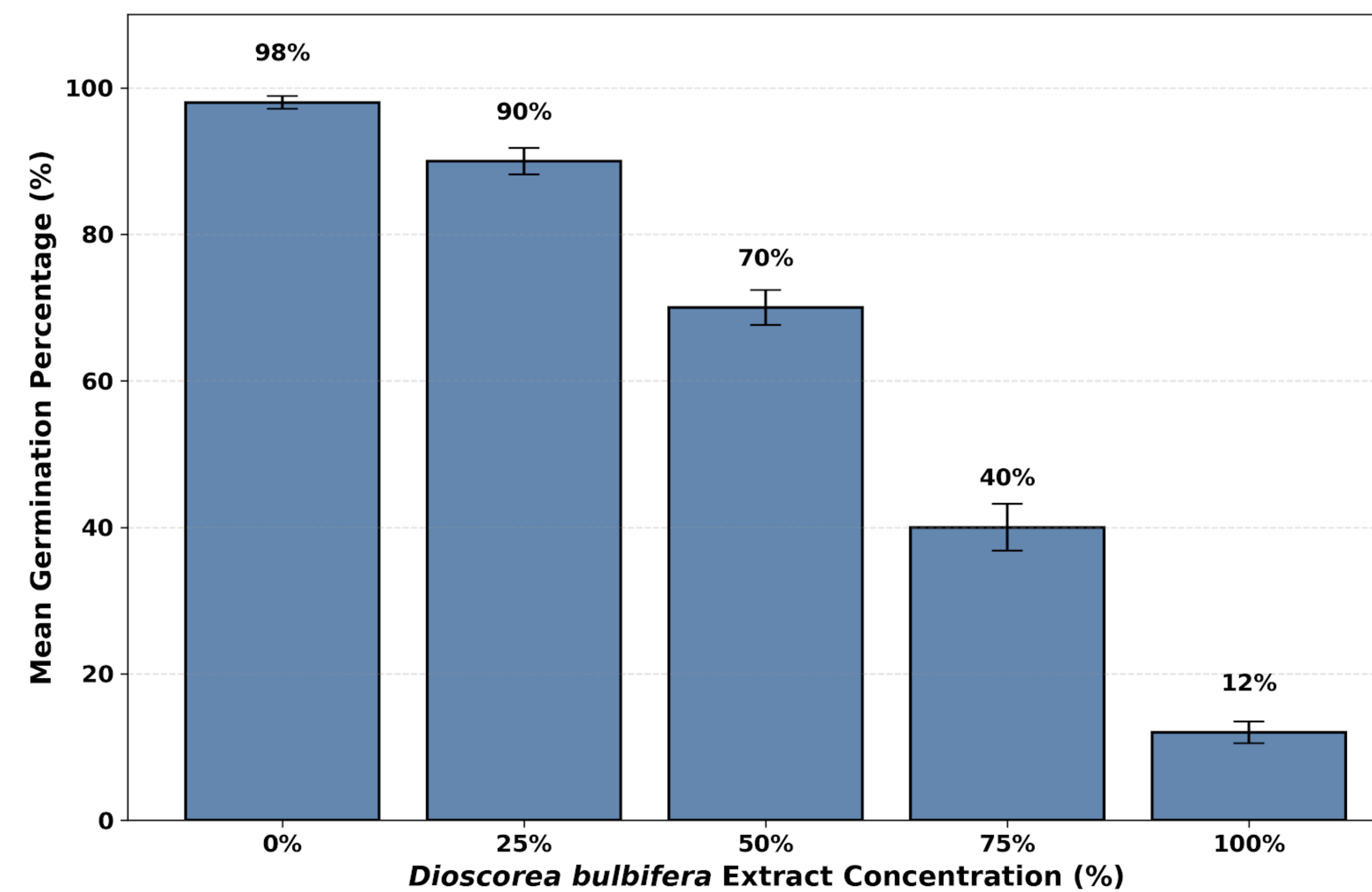
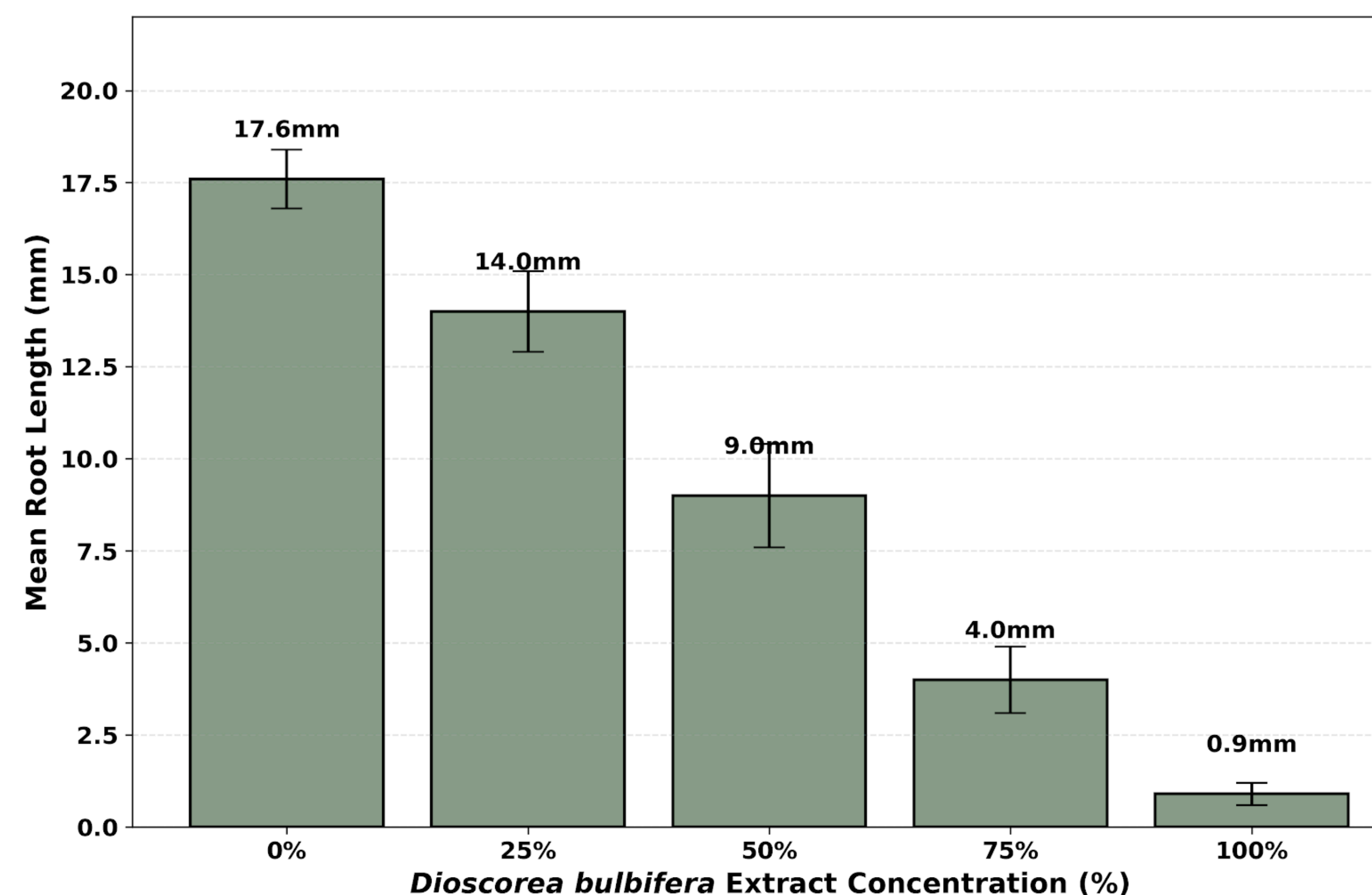


Figure 2: Dose-Response of *D. bulbifera* on *R. sativus* Root Growth



Key Sources & Acknowledgements

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