

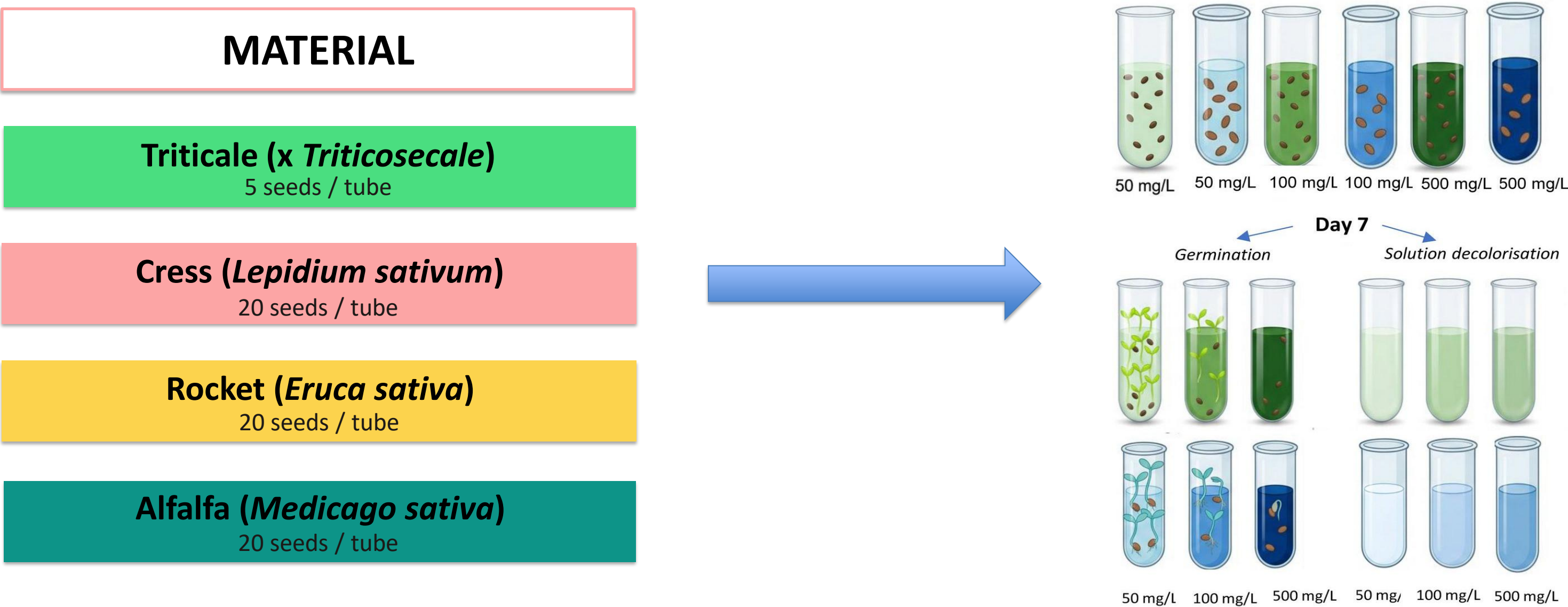
PHYTOACCUMULATIVE POTENTIAL OF MICROGREEN AND CROP SPECIES FOR THE SYNTETIC DYES REMOVAL

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INTRODUCTION & STUDY DESIGN

Phytoremediation is a low-cost, eco-friendly strategy for removing dyes from soil or water using plants (Ranucci et al., 2024). Two cationic dyes (malachite green and methylene blue) were used. Aim of the study was to compare their effect on seed germination and to test dye removal capacity of seeds (Mendes et al., 2021).



RESULTS

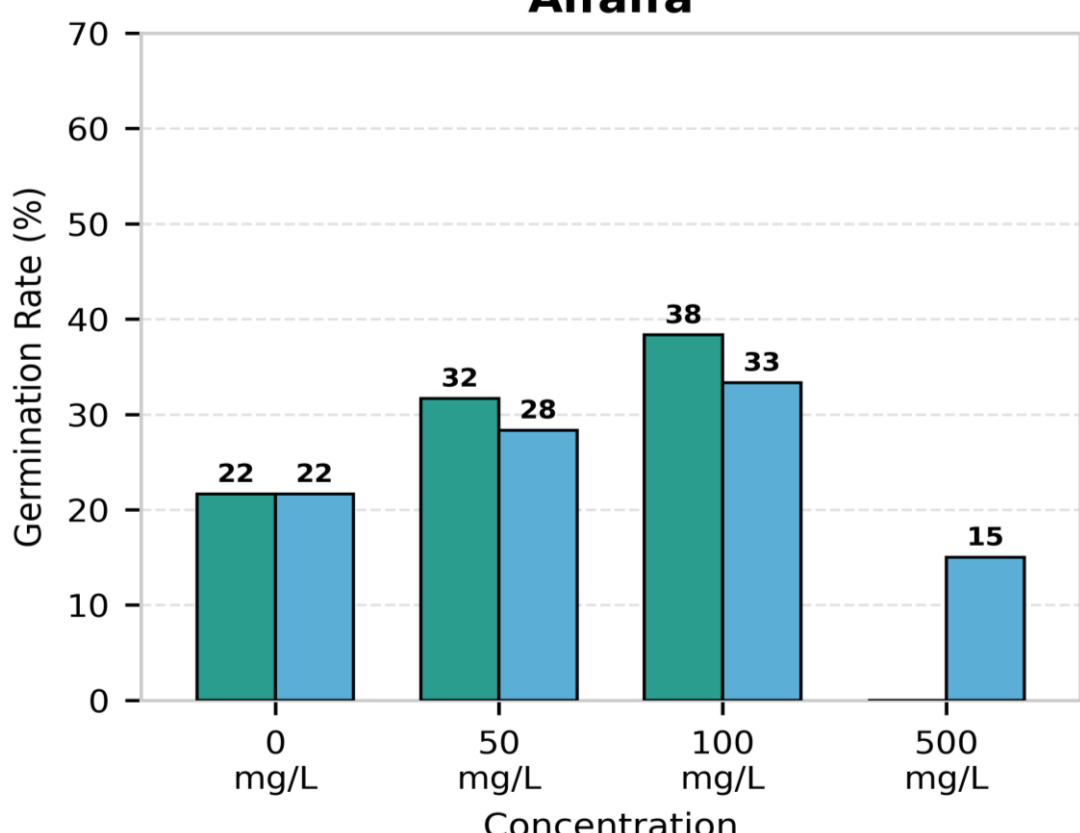
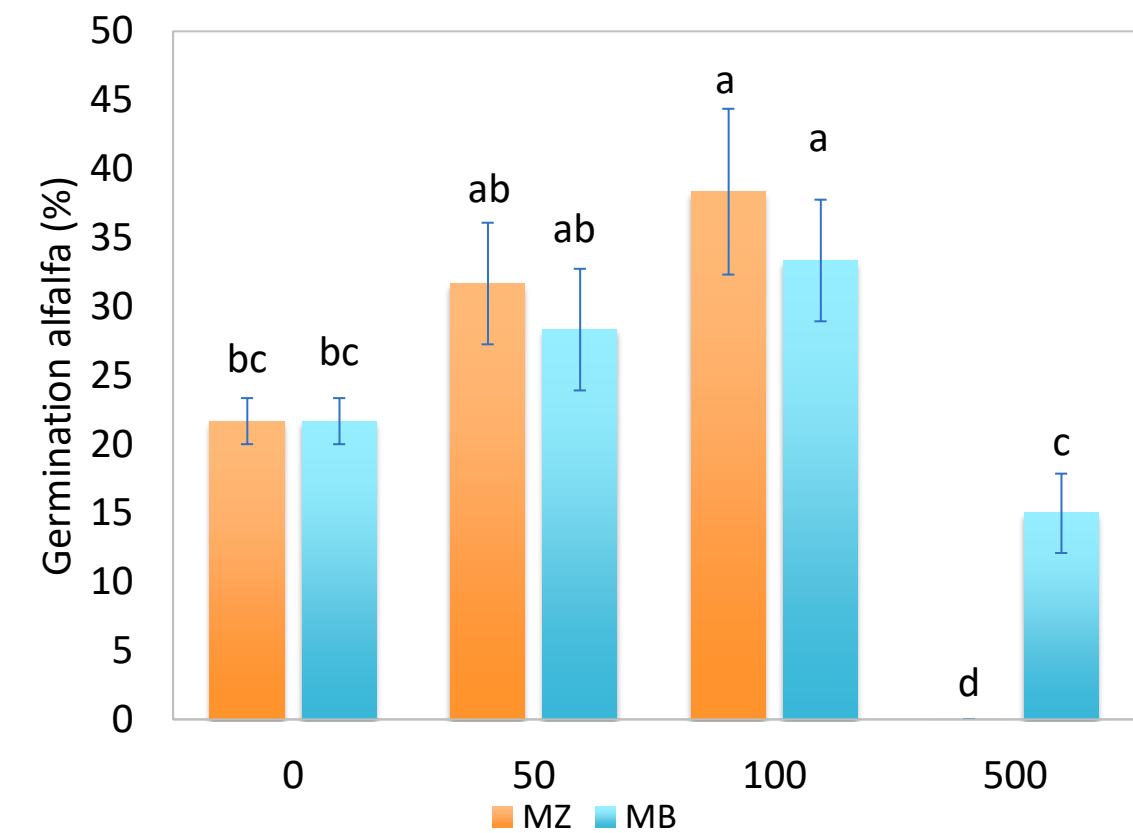
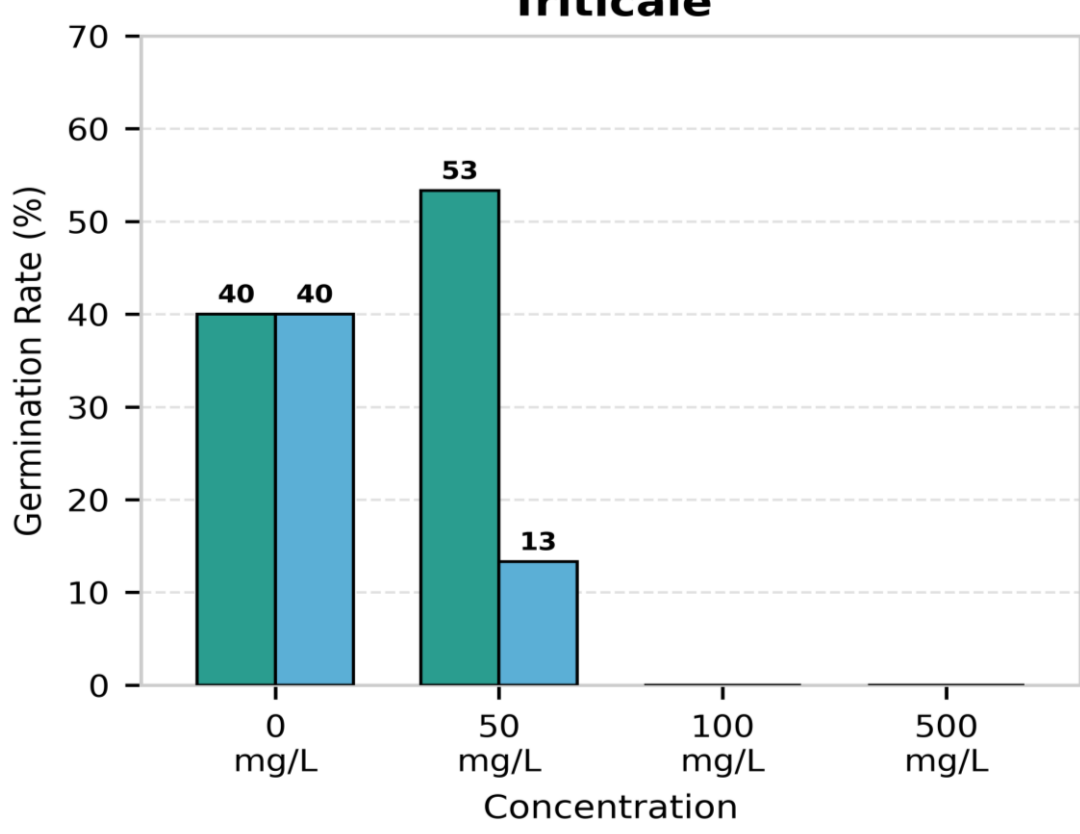
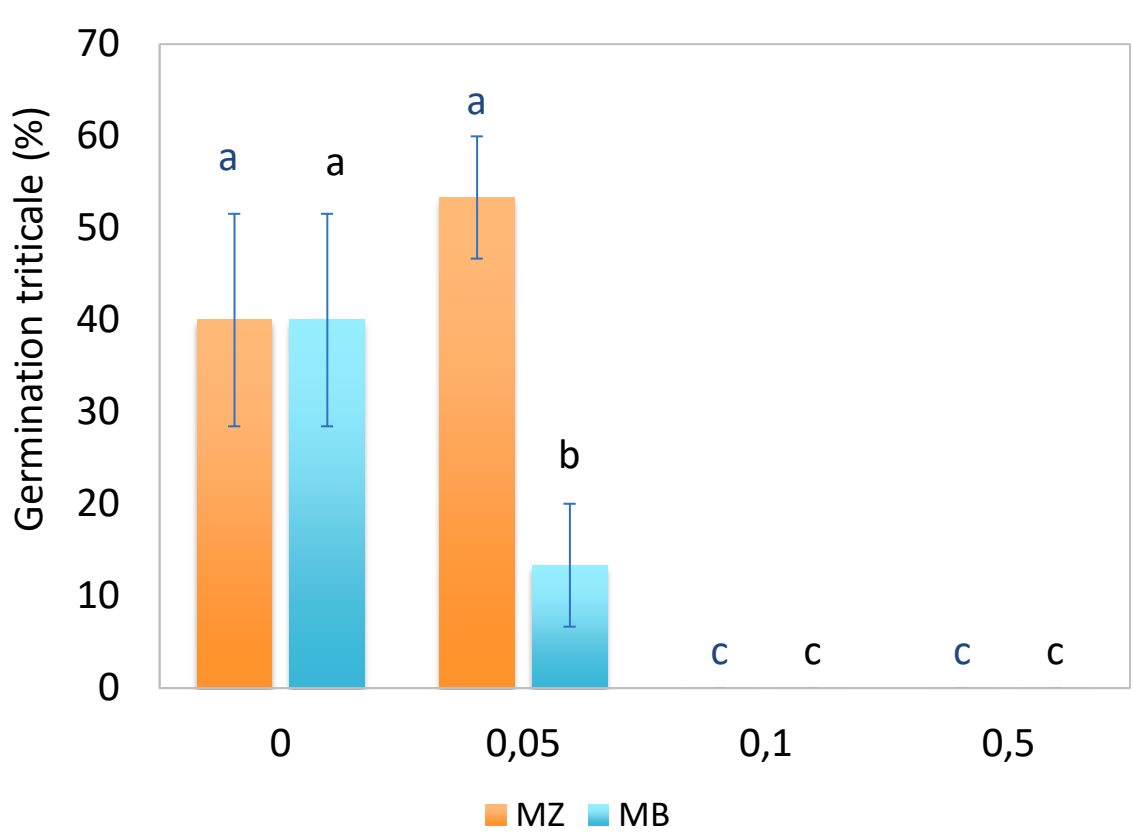
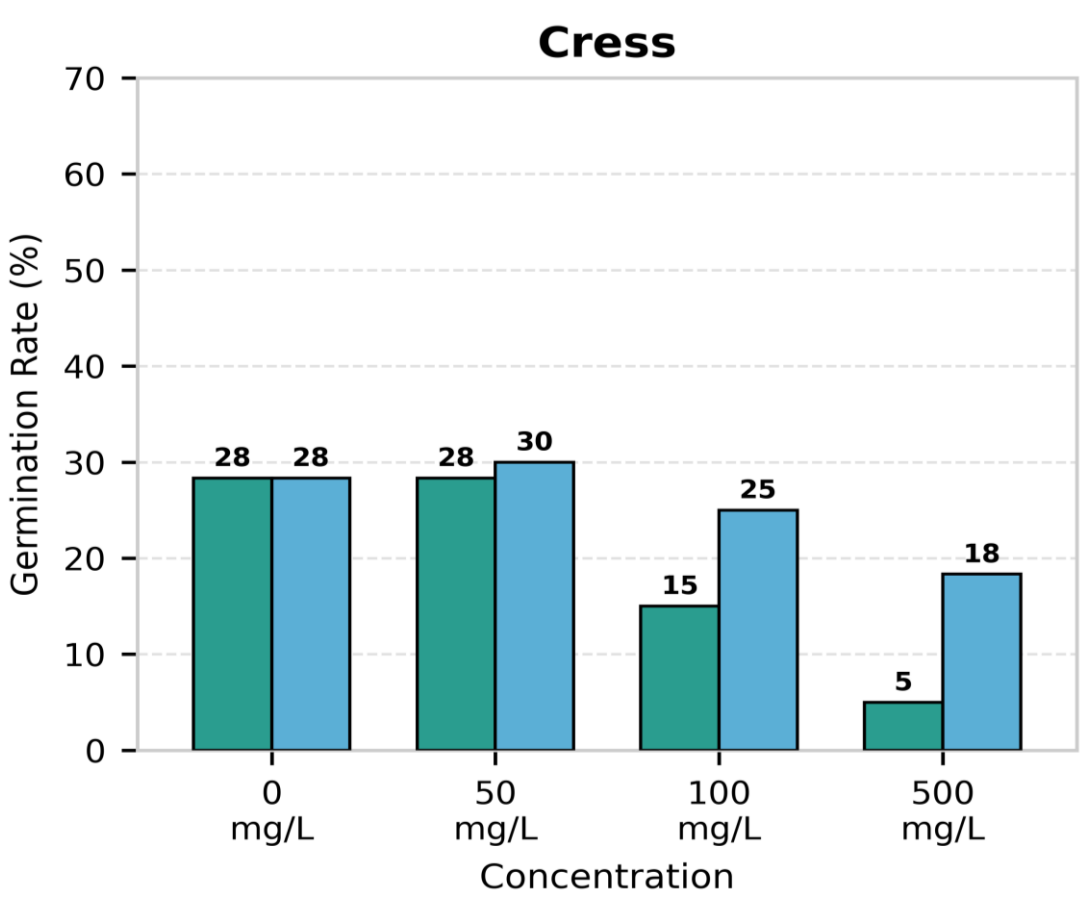
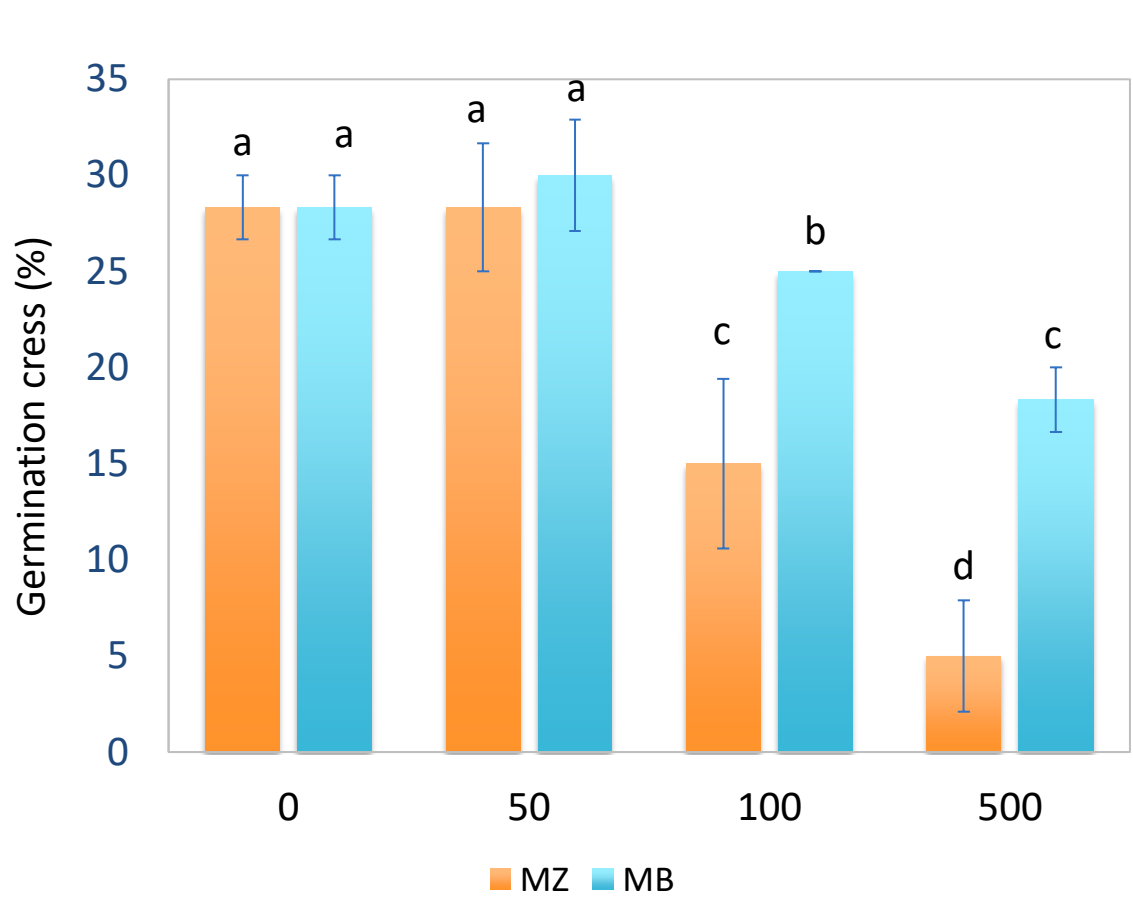


Figure 1. Germination percentage of microgreens under malachite green (MG) and methylene blue (MB) at 0, 50, 100 and 500 mg/L.

Figure 2. Germination rate of microgreens under malachite green (MG) and methylene blue (MB) at 0, 50, 100 and 500 mg/L.

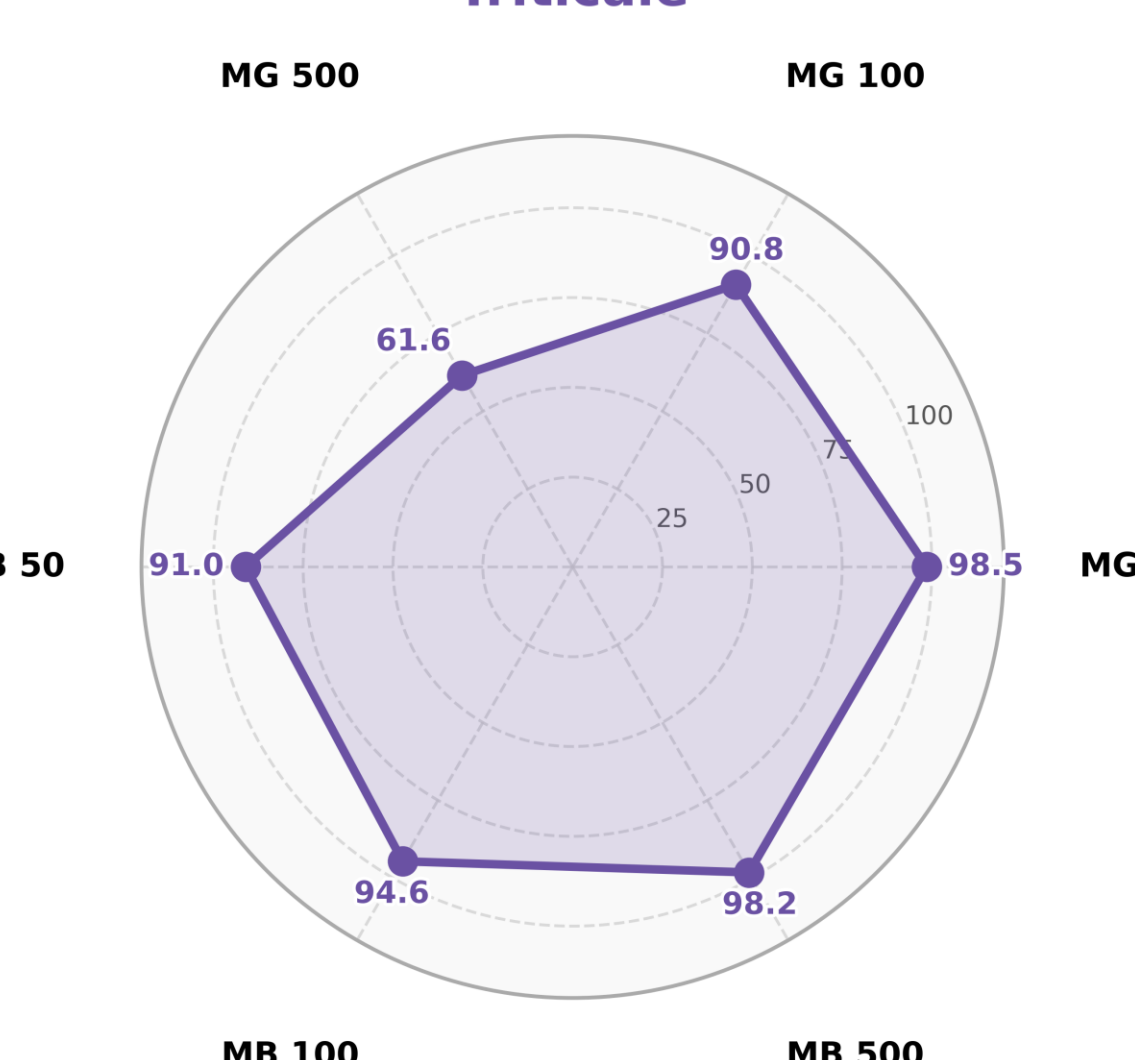
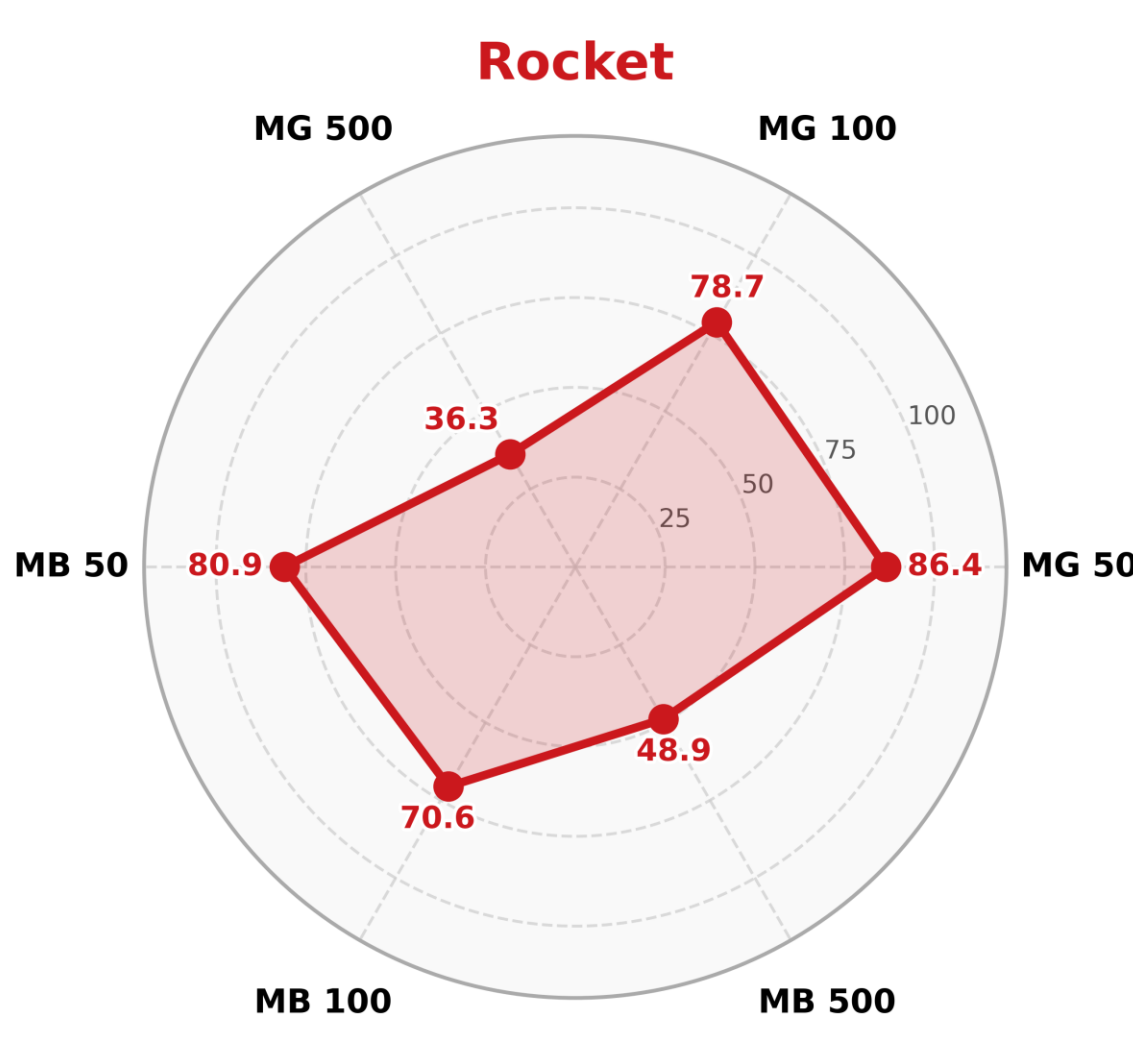
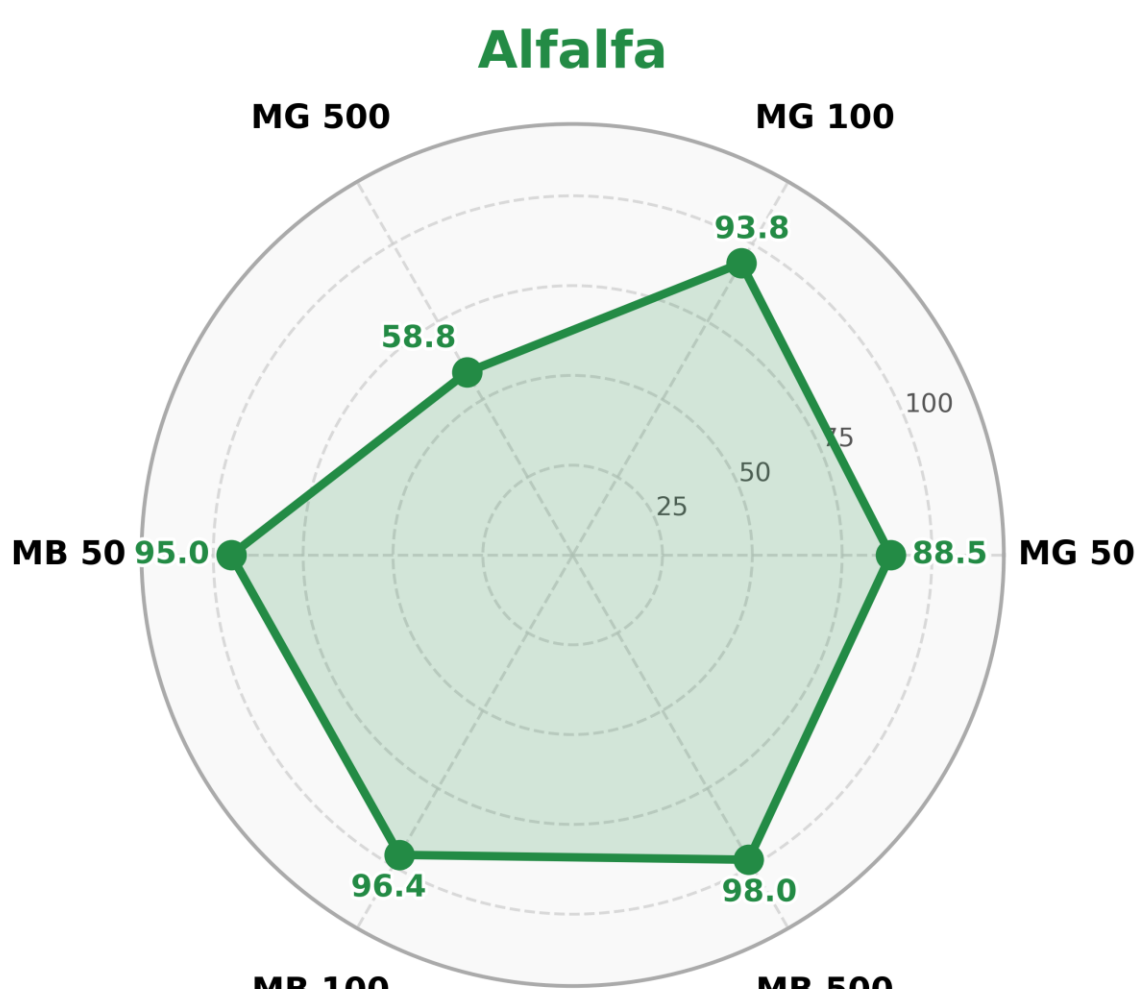
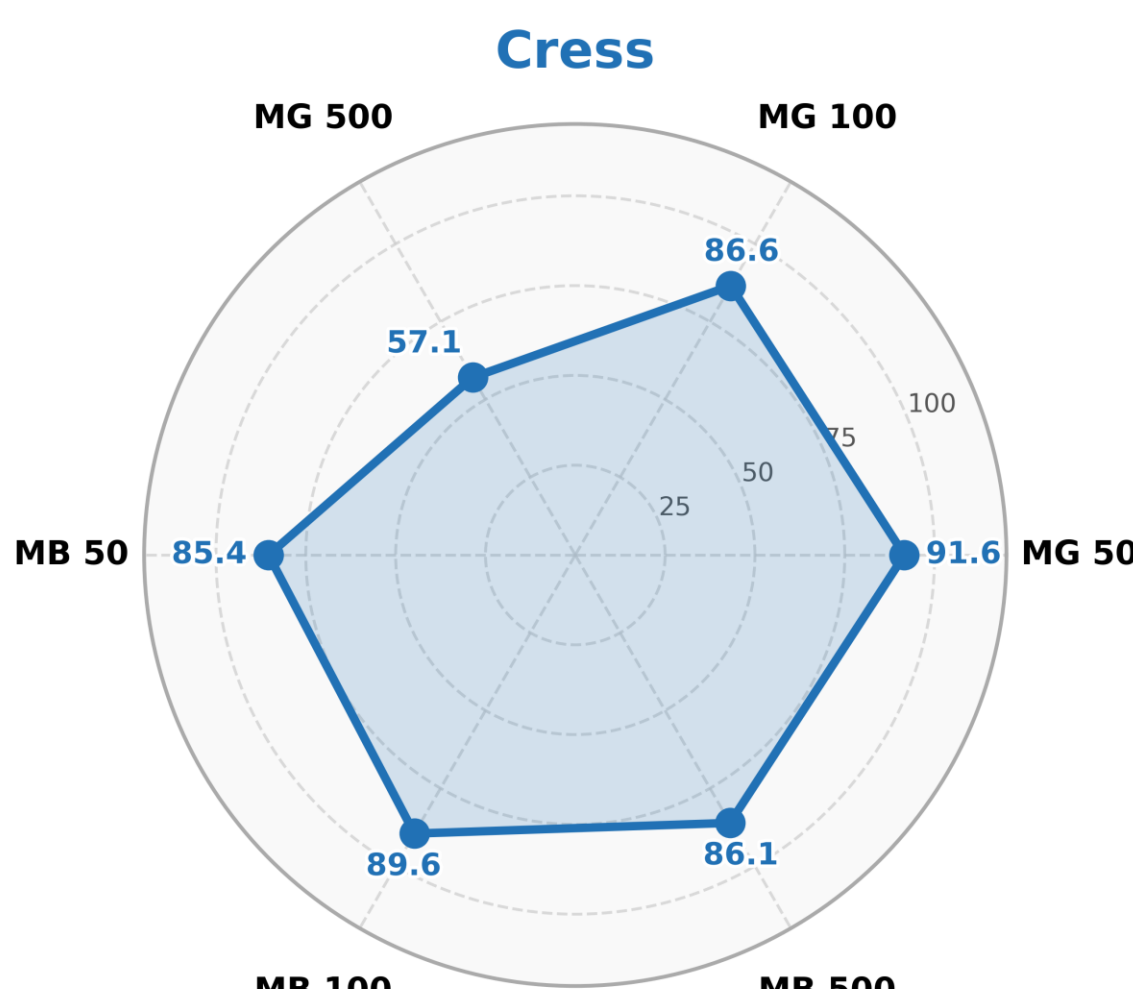


Figure 3. Decolorisation capacity of microgreens under malachite green (MG) and methylene blue (MB) at 0, 50, 100 and 500 mg/L.

NOTE: ROCKET DID NOT GERMINATE UNDER CONTROL OR DYE TREATMENTS.

CONCLUSIONS

- MG is significantly more harmful to seed germination than MB across all species.
- Alfalfa and triticale show the highest dye removal (91–98%) making them top candidates for phytoremediation.
- A direct correlation exists between germination rate and dye removal capacity.
- Rocket seeds failed to germinate under all conditions, limiting phytoremediation utility.
- MB adsorption was highly efficient in alfalfa (95–97%) and triticale (91–98%) across all concentrations.

REFERENCES

Mendes PM, Ribeiro JA, Martins GA, Lucia T, Araujo TR, Fuentes-Guevara MD, Corrêa LB, Corrêa EK (2021) Phytotoxicity test in check: Proposition of methodology for comparison of different method adaptations usually used worldwide. *J. Environ. Manage.*, 291: 112698.

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