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Atypical Magnesium Requirements in a Phyllite Population of Rare Plant Species, *Pediomelum Piedmontatum*

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ABSTRACT

Pediomelum piedmontatum, Dixie Mt. Breadroot, is a rare legume species that was discovered in 2006. Currently, there are only three known populations, which are growing in either serpentine or phyllite soil. Both soil types contain extremely high concentrations of magnesium (Mg) as well as other heavy metals. Previous experiments have revealed that propagation of *P. piedmontatum* is unsuccessful in potting soil, with high levels of mortality approximately two months after germination. Since Mg is unusually high in both soil types, it was hypothesized that survivability and growth of seedlings would be greater with Mg-enriched soil than in potting soil. In order to test this hypothesis, seedlings from a phyllite population (7 plants/pot with 3 replicate pots/Mg group and 2 pots/control) were transplanted into one of the following potting soil enrichments: 50µM MgSO₄, 100µM MgSO₄, or controls with no Mg enrichment. During 12 weeks, seedlings in 100µM Mg displayed the greatest survivability and shoot growth, with the lowest survivability in control pots. Atypical Mg requirements have been noted in the literature for some plants adapted to serpentine soil, but this is a unique discovery for a population adapted to phyllite.

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