INVESTIGATING THE POTENTIAL FOR USE OF THE ENDANGERED SPECIES, RUNNING BUFFALO CLOVER (**Trifolium stoloniferum**) ON RECLAIMED MINE LANDS.

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**INTRODUCTION**

Running buffalo clover (RBC) is native to Ohio, however, loss of prairie habitat has resulted in it becoming a federal endangered species [2]. Presumed extinct around 1940, researchers rediscovered small populations in the mid-1990s along the Ohio River corridor. Though the U.S. Fish and Wildlife Service implemented management plans and state agencies attempted reintroductions, the species remains in a perilous state in the wild [2].

**AIM**

The objective of this study is to determine the tolerance of RBC to acidic and sulfurous soil [1]. The hypothesis is that a commercial or private utility may encourage larger reintroductions and invigorate new interest in a deserving, endangered endemic species [2, 3, 4]. Previous research has identified the potential of RBC, however, it has failed to outperform white clover (**Trifolium repens**) [3].

**METHODS**

In this study, three strains of RBC were treated with nutrient solutions in a factorial arrangement of two pH (5.0 and 5.5) and two FeSO₄ levels (30 and 1000 mg/L) in the Kottman greenhouse [1]. The experimental design was a 4 x 2 factorial treatment structure, with a randomized complete block arrangement for the four replications (64 pots in total). Plants were established from seedlings in December 2016, and grow in vermiculite to facilitate measurements on roots. Intermediate shoot measurements were taken on 13 February 2017 and 12 March 2017. Final shoot measurements were taken on 28 March 2017.

**RESULTS**

When the nutrient solution treatments began on 20 January 2017, 0.549 g of shoot, and 0.481 g of root, whereas white clover averaged 0.0825 g of shoot, and 0.0694 g of root. The persistence of RBC in vermiculite medium—a first in its research history—allowed for data collection. After a few months, pH and sulfur treatments, root mass and aboveground growth were measured. After four weeks eight significant interactions came from statistical analysis. The most significant results from varietal responses to main effects and interactions are displayed here. After nine weeks of treatment, iron sulfate treatment effect was statistically significant on all dependent variables, though the acid treatment effect was not. Interactive effects between species, variety, and sulfate were documented as significant. Root and shoot masses suggested that varietal differences existed within RBC, though white clover produced more root mass compared to RBC. Root-to-shoot ratios were insignificant.

**CONCLUSIONS**

Should running buffalo clover have outperformed white clover, it might have recover introduced, reclamation populations serving to revitalize their endemic range on protected habitat. Specific accessions might be better suited for future commercial applications though further comparative studies would better evaluate the diversity of potential wild varietal candidates [6]. The genetic diversity of RBC offers a suite of potential sources for reclamation, and additional data suggests that accession 415 represents the most agronomically useful accession of this study. At present, white clover appears to best RBC.

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**BIBLIOGRAPHY**


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