**Hypothesis:** Based upon research from Masarirambi et al. and Citak & Sonmez (2010), I predict that the plants fertilized with chicken manure will produce the largest plants with blood meal producing the second largest and the control producing the smallest plants.

The application of organic fertilizers promotes soil health, which over time, produces higher yielding crops with lower inputs. The fertilizers used for this project, blood meal and chicken manure, are derived from waste products of animals raised for consumption (eggs and meat). Blood meal is dried blood, typically from cattle and hogs. The control group of lettuce will serve as the base of growth using only topsoil without any added nutrients. The variety of Lettuce seed is Ferry-Morse Black seeded Simpson.

This research is significant because soils fertilized with organic fertilizers have improved features including: porosity, bulk density, and organic matter (Subhan, A., Khan, Q. U., Mansoor, M., & Khan, M. J., 2017). Improving soil health can lead to enriched crop outputs, lowering input costs overtime.

**Introduction**

Blood Meal: dried blood. A waste product of slaughtering animals, typically cows and pigs combined.

Nutrient: Macronutrients in plants; Phosphorous: Nitrogen, and Potassium.

Organic: containing carbon molecules

**Methods**

To complete this trial experiment, 6 Black Seeded Simpson Lettuce sprouts were each planted in their own 0.5 L pot with 500 grams of top soil. The fertilizer sources, Jobe’s Organic Blood Meal and chicken manure, from my laying hens, were incorporated by hand with GardenScape Top Soil.

Plants received approximately 12 hours of direct light per day using a grow lamp. Every other day, the lettuce was watered with ¼ cup of water using a measuring cup.

**Fertilizer Variety**

<table>
<thead>
<tr>
<th>Blood Meal</th>
<th>Chicken Manure</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 sprouts</td>
<td>6 sprouts</td>
<td>6 sprouts</td>
</tr>
<tr>
<td>5 grams</td>
<td>25 grams</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Results of this experiment gave limited insight to the effectiveness of chicken manure and blood meal. Several factors limited growth of plants, causing poor growth.

**Conclusion**

In continuous research, several factors should be considered to prevent poor plant growth. Too much water applied too frequently kept soil conditions anaerobic, restricting plant growth. Too much fertilizer additives also contributed to poor plant growth results. Fertilizer inputs were too strong for the chicken manure lettuce, causing the roots to burn, and the plants to perish.

Results from Smith and Slater (2010) indicate that chicken litter as a fertilizer additive produced the largest mean dry weight of Miscanthus and Phalaris plants in 2005 and 2006. With adequate proportions of fertilizers, future research will indicate how well lettuce plants grow and yield when fertilized with blood meal and chicken manure.

**Works Cited**


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