Common Daisy *(Bellis perennis)*:

Effects of Sheep Manure on the Growth and Development of the Common Daisy

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Biology 1

**Background Research:**

For this experiment I will be using the Common Daisy, *Bellis perennis*. Daisies are white asters with a yellow center. Common Daisies. Seeds must be planted approximately 1/8-inch-deep, and it will take approximately eight to twelve days for the seeds to germinate. Most varieties of daisies grow well in the Summer months as they typically bloom from June to the first frost event in the Fall season. At full growth daisies can reach twelve to 18 inches in height. When you water daisies, allow the soil to dry somewhat between watering, then water well and repeat the process. Just like most plants daisies require good fertile soil with essential plant nutrients such as nitrogen, phosphorus, and calcium.

As an experimental variable I will be using sheep manure mixed with soil. Sheep manure is referred to as cold manure because of its low nitrogen content.  Nutrients in sheep manure fertilizer provide adequate nourishment for a garden. It is high in both phosphorus and potassium, essential elements for optimal plant growth. These nutrients help plants to establish strong roots, defend against pests and grow into vibrant and productive plants. The main advantage of sheep and goat manure is high quality organic matter it supplies, helping to feed the diverse community of beneficial soil organisms which are essential for healthy soil and plant growth.

**Purpose:**

The purpose of this experiment is to observe the effects of sheep manure on the growth and development of Common Daisies (*Bellis perennis*).

**Hypothesis:**

If Common Daisies are planted with sheep manure added to the soil then they will grow better than marigolds in plain top soil because sheep manure contains …., which are essential nutrients for plant growth.

**Materials:**

Soil Miracid® Liquid Fertilizer

Water  Plastic Potting Containers

*Bellis perennis* Seeds

**Methods and Procedure**: (Methods and Procedure should be much more detailed than the example here)

For this experiment will planted a total of four separate plants. Two of these plants were selected as controls which were planted in top soil with a small amount of compost. The other two plants were planted in the same kind of soil as the controls, but with the addition of 200 ml of sheep manure. My experiment began on Thursday April 11, 2019 and concluded on Monday May 20, 2019. I used the same amount of water for all plants for the duration of the experiment and kept them under the same artificial light conditions.

**Data:**

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| Germination Date → | | | | |  | | | |  | |  | | | |  | |
| Plant → | | | | | Control1 | | | | Control 2 | | Experimental 1 | | | | Experimental 2 | |
| Days from Germination | | | | | Height  (cm) | | Number of Leaves | | Height  (cm) | Number of Leaves | Height  (cm) | | Number of Leaves | | Height  (cm) | Number of Leaves |
| C1 | C2 | E1 | E2 | |
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**Figure 1: Plant Research Data**

**Figure 2: Plant Growth Graph**

**Analysis:** (Analysis should be much more detailed than the example here)

According to the data collected common daisies appear to respond well to the addition of sheep manure added to the soil. Observations of plant bushiness were inconclusive as experimental plant 1 outperformed all the other plants as it grew to a maximum leaf area of 10.5 cm2 and experimental plant 2 did not do as well as the other plants with a final leaf area of 8 cm2. Averaging out the leaf area for these two plants reveals that the experimental plants were .25 cm2 bushier than the control plants.

When I look at plant height there is a clear difference between control and experimental plants…

**Conclusion:**

In a five to six sentence paragraph include the following:

Answer the experimental question (purpose)

Explain whether the data supports or refutes your hypothesis.

Cite specific data to explain the reasoning for your conclusion.

Explain any factors that might have altered the results of your experiment