HOMESCHOOL SCIENCE EXPERIMENT

Testing the Effect of Different Fertilizers on Bean Plant Yield

Name: _____ **Date:** _____

QUESTION

How do different fertilizers affect the yield of bean plants?

HYPOTHESIS

If bean plants are given different fertilizers, then the plants given _____ will produce the greatest yield because _____.

VARIABLES

- **Independent Variable:** Type of fertilizer
- **Dependent Variable:** Bean plant yield (total dry mass of beans per plant)
- **Controlled Variables:** Type of bean seed, amount of water, pot size, soil type, sunlight exposure, planting depth, temperature

MATERIALS

- Bean seeds (same variety)
- 4–5 identical pots
- Potting soil (same brand)
- Watering can or cup
- Fertilizers to test (e.g., no fertilizer, compost, fish emulsion, all-purpose fertilizer)
- Measuring spoons
- Plant labels or tape
- Ruler
- Scale (for weighing yield)
- Notebook or data sheet
- Sunlight (same location for all plants)

PROCEDURE

1. Label each pot with the name of the fertilizer it will receive. Include one "No Fertilizer" pot as the control.
2. Plant the same number of bean seeds (e.g., 3 seeds) in each pot at the same depth.
3. Keep all pots in the same location with equal sunlight.
4. Water each pot with the same amount of water at the same time each day.
5. Apply each fertilizer according to the package directions. Use the same amount for each application.
6. Observe and record plant growth weekly.
7. When the plants have finished producing beans and the pods are dry, harvest all beans from each plant.
8. Weigh the dry beans from each plant and record the total yield.

DATA TABLE

Pot / Treatment	Type of Fertilizer	Plant Height (cm) Week 4	Number of Pods per Plant	Total Dry Mass of Beans (g)	Notes / Observations
1 (Control)					
2					
3					
4					
5					

*Add more rows if testing more treatments.

GRAPH

Create a bar graph of the Total Dry Mass of Beans (g) for each treatment.

ANALYSIS QUESTIONS

1. Which fertilizer produced the greatest yield?
2. How did the control (no fertilizer) compare to the other treatments?
3. Were there any other differences in plant growth you noticed?
4. What might be some reasons for your results?
5. If you repeated this experiment, what would you do the same or differently?

CONCLUSION

Write 2–3 sentences answering the question and stating whether your hypothesis was supported.

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TIP: Be patient and consistent! Good experiments take time and careful observations.