



GROWING DIFFERENT TYPES OF BEANS AND COMPARING THEIR PROTEIN CONTENT

Name: _____

Date: _____

Age: _____

In this experiment, you will grow different types of beans, observe their growth, and compare their protein content.

OBJECTIVES

- Grow different types of beans under the same conditions.
- Observe and compare their growth.
- Measure and compare the protein content of each type of bean.

HYPOTHESIS

If different types of beans are grown under the same conditions, then they will have different protein content.

I think _____
_____.

MATERIALS

- 3 types of dried beans (e.g., black beans, pinto beans, kidney beans)
- 9 small pots or clear cups
- Potting soil
- Water
- Ruler
- Labels or marker
- Blender or food processor
- Measuring spoons
- Small bowl
- (Optional) Digital scale
- Protein test kit (e.g., Biuret Protein Test Kit)
- Notebook



VARIABLES

Independent Variable:

Type of bean

Dependent Variable:

Protein content

Controlled Variables:

Soil type, pot size, amount of water, sunlight, temperature, time grown

PROCEDURE

1. Label 3 pots for each type of bean (3 types = 9 pots total).
2. Plant 3–5 beans in each pot, about 1 inch deep. Add the same amount of soil to each pot.
3. Water each pot with the same amount of water.
4. Place all pots in the same location with the same sunlight.
5. Water daily with the same amount of water.
6. Observe and measure plant height every 3–4 days. Record your data.
7. After 4 weeks (or when plants are mature), harvest the beans.
8. Dry the beans (air dry for several days).
9. Test the protein content using a protein test kit:
 - a. Grind the dried beans into a fine powder.
 - b. Follow the instructions in your protein test kit to test each bean sample.
 - c. Record your results.

SAFETY REMINDERS

- Ask an adult for help when using a blender.
- Do not eat the beans after testing.
- Wash hands after handling soil and chemicals.



DATA TABLE

Type of Bean	Plant Height (cm)					Average Height (cm)	Protein Test Result (Color/Reading)	Protein Content (Relative Rank) 1 = Highest
	Day 0	Day 7	Day 14	Day 21	Day 28			
Black Beans								
Pinto Beans								
Kidney Beans								

ANALYSIS QUESTIONS

1. Which type of bean grew the tallest? _____
2. Which type of bean had the highest protein content? _____
3. Was your hypothesis correct? Why or why not? _____

4. What factors might affect the protein content of beans? _____

5. How could you improve this experiment? _____

CONCLUSION

Write a short conclusion summarizing what you learned.

