

Evaluating Methods Sections: Directions

1. You have a methods section (there are four different versions). Read and evaluate it using what we've learned about writing methods. What's good? What needs to be changed? Why?
2. Find the other students who have the same version as you and discuss your comments. Do you all agree?
3. Be ready to share out to the rest of the class what you thought about your version, being as specific as possible about the good aspects as well as the problems and how to fix them.

Version 1

We grew Speedway radish (Idaho, USA) plants in the Knox College greenhouse for sixteen days. Twenty-four seeds were chosen randomly and placed directly into 4 petri dishes, 6 per dish, to germinate, with no imbibing treatment. Each dish contained 3 layers of paper towel under the seeds and 2 layers over them. We added 7 ml of water to each dish on the first day, and 3 ml on the third day. After 4 days we transplanted twenty germinated seeds into 3" pots filled with potting soil, with one plant per pot. Each plant was given 10 ml of moisture every other day for the rest of the experiment. Plants were kept in the ambient greenhouse temperature and were exposed to natural sunlight, with automatic supplemental lighting when necessary.

We used 4 treatments, with 5 plants in each treatment. Plants were watered with either distilled water or fertilizer, which had been diluted to 10% with distilled water. Plants in the Control treatment received only distilled water. We gave plants in the Early treatment fertilizer for days 5-10, after which they received only water. Plants in the Late treatment received water for days 5-10, and fertilizer for days 11-16. Plants in the Complete treatment received fertilizer for days 5-16. Pots were arranged in randomized order on the greenhouse bench.

On days 10 and 16, we counted leaf number and measured height in centimeters. On the twelfth day after transplanting, after measuring height, plants were gently removed from their pots and we measured root length in centimeters as well.

Version 2

Gardeners know that fertilizer increases plant growth, but questions remain about the best time to apply it. We wanted to look at how the timing of fertilizer application affected plant growth, so we compared the growth of plants that were fertilized early, late, or for the entire time. We grew our plants in the Knox College greenhouse for sixteen days. We were originally going to grow them in the lab under grow lights, but decided that the light in the greenhouse would be better, plus the temperature would be higher.

We used twenty plants in four treatments. In the control treatment, we watered them with only distilled water. The Early treatment got fertilizer for the first half of the experiment, the Late treatment got fertilizer for the second half, and the Complete treatment got fertilizer the entire time. We measured height in using a ruler, and counted the leaves. At the end of the experiment, plants were gently removed from their pots and we measured root length using the ruler as well.

We germinated the seeds in petri dishes lined with paper towels. Each dish was labelled with student initials before we put it in the greenhouse. The dishes had paper towels, and we added tap water. After four days we transplanted the seeds into the pots, which were filled with potting soil. We had thought about just starting the seeds in the pots, but we found out they wouldn't germinate as quickly on soil, so we started them in the dishes instead. We put the pots out on the bench in a random order.

We used four treatments, with 5 plants in each treatment. Plants were watered with either distilled water or fertilizer, which had been diluted to 10% with distilled water. Plants in the Control treatment received only distilled water. We gave plants in the Early treatment fertilizer for days 5-10, after which they received only water. Plants in the Late treatment received water for days 5-10, and fertilizer for days 11-16. Plants in the Complete treatment received fertilizer for days 5-16. Pots were arranged in random order on the greenhouse bench.

Version 3

We grew Speedway radish plants in the greenhouse.

Germination

1. We randomly took 24 seeds from the bag.
2. We put 6 per dish into 4 dishes, with wet paper towels.
3. We waited 4 days for them to germinate.

Growth

1. We planted them into pots and put them in the greenhouse to grow. They were in the middle of the bench, between two other experiments.
2. We watered them every other day.
3. On day 10, we measured height in centimeters, and we counted the leaves.
4. On day 16, we measured height again and counted the leaves.
5. Then we gently uprooted them and measured the length of the roots using the same ruler.

Treatments

1. The control: watered with distilled water from the tap.
2. The early treatment: for days 5-10, we watered it with fertilizer, diluted to 10%, and then watered it with just water.
3. The late treatment: for days 11-16, we watered with with fertilizer.
4. The complete treatment: we watered it with fertilizer the entire time.

Version 4

We grew plants in the greenhouse with no fertilizer, fertilizer when they were young, fertilizer when they were older, or no fertilizer. We measured the size when they were 16 days old, using a ruler. They were growing in black plastic pots with drainage holes on the bottom. We put them in the greenhouse to grow after we transplanted them from the dishes. We watered them with water or fertilizer, depending on the treatment, trading off days so that we both did the work. We had 20 plants total.