**How can you test the value of cross-pollination in plants?**

The best way to test the value of cross-pollination in plants is through a controlled experiment: allow two groups of plants to grow under the exact same conditions except cross-pollinate one group, the experimental group, and not cross-pollinate the other group, the control group. If cross-pollinating has any value, we would expect the experimental group to produce more seeds, flowers, or grow more than the control group.

**What is the value of genetic diversity?**

Genetic diversity is valuable because it helps keep species from dying out from incest, dying out from extinction events, and allows the species to better adapt to its environment. Incest increases the chances that organisms will have genetic defects and be infertile because incest makes recessive traits dominant. Certain genes make people immune to certain diseases. If a plague comes and a species is genetically similar, they are more likely to die from extinction events. Genetic diversity allowing a species to evolve is just one of the basics of Evolution.

**Discuss the symbiotic relationship of pollinators and plants.**

Pollinators and plants have a symbiotic relationship: they both benefit from their interactions with one another. Plants are better able to spread their pollen to members of their species that are genetically different than them, and pollinators, such as butterflies, feed off the nectar that plants produce.

**How would agriculture be affected if we had no natural pollinators?
Engage:**

Agriculture would become much more expensive and we would not be able to produce the same amount of food as we do today. Pollinators don’t just help flowers, they also help pollinate the grains and vegetables that we eat. This helps plants grow larger and produce more seeds. Without the benefits of pollinators, we would probably need to focus more effort on creating GMOs that can compensate for their loss.

**Check your mentor's comments and answer the questions on Planting Science.
Explain:**

*What happens if cross-pollinating does not increase the number of seeds? Can you think of reasons why this might happen?*

It could be that how many seeds a plant produces is not determined by genetics and rather by things like how much sunlight and water the plant gets. There is also one potential, odd, confounding variable in our experiment: our plants being genetically identical. That would stop cross-pollinating from increasing the number of seeds, assuming that cross-pollination does affect the amount of seeds a plant produces.

*What about if there is not a difference between the two? What then?*

We will conclude that cross-pollination does not affect how many seeds the *Brassica rapa* produces. The soil for our pots were slightly different, so that might act as a confounding variable; however, our class is doing several experiments, so that variable should be ironed out.

**Discuss your questions and hypothesis with your group.
Explore:**

We’re curious how plants are able to self-pollinate and how plants actually produce seeds. We’re confident that our hypothesis is correct.

**Research pollination experiments--how can you model pollination of plants in a classroom without pollinators?**

I think the easiest way to model the pollination of plants in a classroom without pollinators is to use a q tip to pollinate the plants. Its fluffy cotton is somewhat similar to the hairs on a bee which pick up a plant’s pollen. It also doesn’t cost anything.

**What could mimic a pollinator like a bee--brainstorm ideas
Elaborate:**

A couple ideas for mimicking a pollinator like a bee is to use a q tip and cross pollinate the plants, just using our hands, or towels to pick up the plant’s pollen.

**Set up you procedure, make all measurements of your plants, how many leaves, true leaves? how much water any hairs on plants?
Evaluate:**

I don’t think any of our plants have any true leaves – though I could be wrong – because we couldn’t get any of our plants to grow for the first couple of weeks in our experiment. I don’t understand the second question.

**Make presentation of the experiment that you designed \_\_we will need to have this finished except the last 3 slides with the data analysis, conclusion & future**