

Luca Coletta

## Natural Pesticide Experiment

Problem Statement- How does different natural pesticides such as Baking Soda and Dish Soap or Baking Soda and Canola oil protect against aphids?

Hypothesis- I think that the natural solution of the baking Soda and the Dish soap will be the most effective in killing the aphids because this solution will suffocate the aphids very effectively and better the baking soda and Canola oil combination.

I.V.- Type of Natural Solution

D.V.- The amount of surviving aphids

Control Variables:

- Size of mason jar
- Type of mason jar
- Amount of water given
- Temperature
- Amount of pests used
- Amount of soil
- Amount of natural pesticide
- Amount of Canola oil
- Amount of Baking Soda
- Amount of Dish Soap

Materials:

- 4 Mason Jars
- 60 Aphids
- Garden Soil (Miracle-Grow 0.75 cu. ft. All Purpose Garden Soil)
- Water
- Camera
- 4 tomato plants

- Arm & Hammer baking soda
- Crisco Pure Canola Oil
- Dawn dish soap
- 3 spray bottles
- Metal Netting
- Rubber Bands

Procedure:

1. Take the four mason jars and spray bottles label them 1 , 2, 3, and 4.
2. In each of the mason jar put one tomato plant and 25 oz of soil
3. In each of the mason jar also spread about 10 oz of water in them
4. Then place 15 aphids into the mason jar
5. Cut the metal netting enough so you can place it on top of the mason jar (Do not keep the lid on the mason jar.)
6. Curve the metal netting on the sides and secure sides by wrapping a rubber band around.
7. Take 20 oz of baking soda and 20 oz pure canola oil mix them together for about one minute
8. Put that into a spray bottle labeled 1
9. Then take 20 oz of baking soda and 20 oz of dawn dish soap and mix them together for about one minute
10. Put that into spray bottle 2
11. Take 40 oz of water and put that in spray bottle 3
12. Using spray bottle 1 spray the first solution 5 time spread around the jar
13. Repeat steps 12 with spray bottle 2 and 3 with their corresponding mason jar
14. Also spray jars 2 and 3 with water too with about 5 sprays
15. After every day from first spraying the jars record data
16. After 24 hours repeat steps 12 through 15 two times.

Table:

The effect pesticide have on the aphids and the plant environment

| The Amount of living Aphids in Jar | Jar 1 (Water) | Jar 2 (Baking Soda & Canola Oil) | Jar 3 (Baking Soda & Dish Soap ) | Jar 4 ( Nothing) |
|------------------------------------|---------------|----------------------------------|----------------------------------|------------------|
| Day 1                              | 15            | 15                               | 15                               | 15               |
| Day 2                              | 15            | 9                                | 13                               | 14               |

|       |    |   |   |    |
|-------|----|---|---|----|
| Day 3 | 15 | 2 | 7 | 12 |
|-------|----|---|---|----|

### Observations:

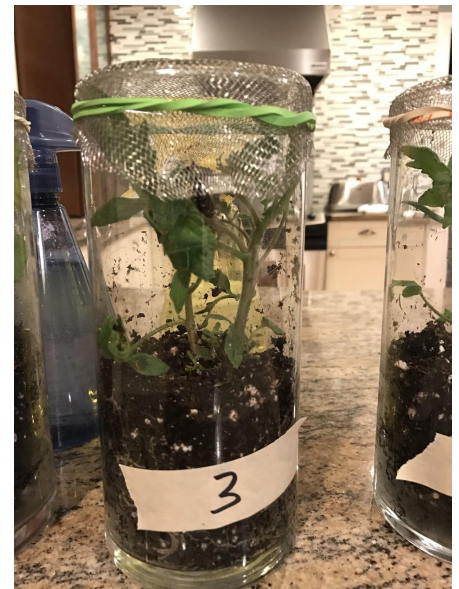
Day 1: After day one Jar 1, 2, 3, and 4 look normal with no damage to the tomato plant and all of the aphids are still living.

Day 2: After the second day jar 1 and 4 look the same as day one the tomato plant has no visible damage to it but in jar 4 one aphid died. In Jar 2 the plant looks very dead the leaves are drooping down and touching the soil. Also in the jar the about 6 aphids died. In Jar 3 the leaves on the plant are slightly drooping down but not as much as jar 2 and only 3 aphids died.

Day 3: In jar 1 there are a little bit of damage in the plant like small hole but nothing too big and still no aphids have died. In jar 4 the damage is still very minimal damage like holes and two aphids died. In Jar 2 the plant looks dead in that the plant is not standing up by itself and laying on top of the soil. Also 7 aphids died so only 2 aphids were still alive. In Jar 3 it looks dead also with most of the leave touching to soil and the stem also curving down with a discoloration in the plant. Also 6 more aphids died.

### Pictures

Day 1:

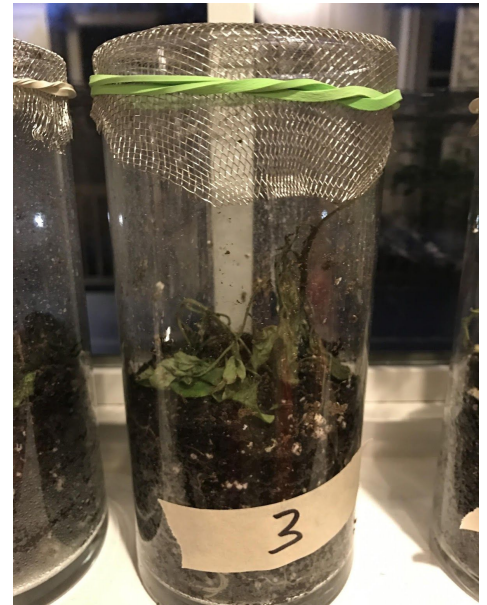
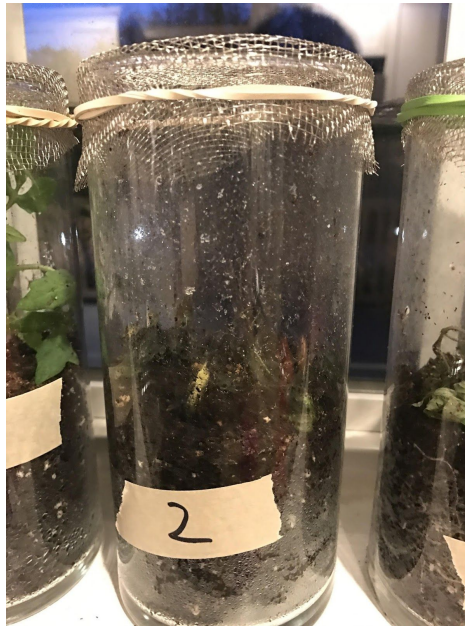


Day 2:





Day 3:



## Conclusion:

After finish the experiment I have found that the natural solution that is most effective for repelling aphids is a solution of baking soda & canola oil. This is because according to my data only 2 aphids were still alive when using the baking soda & canola oil solution, while 7 aphids were still alive using the baking soda & dish soap solution. With this conclusion my hypothesis is proven to be false and that the baking soda & canola oil is more effective in suffocating the aphids in order to kill them. However, both of the natural pesticides also killed the plants making the pesticide unusable because a pesticide main function to just kill the pest but these natural pesticide also killed the plants. So, according to my data also both of these natural solutions are not usable with tomato plants because the kill the plant.