Plants Battling Pests

Abstract

The purpose of this experiment was to test which pesticide removes bugs from plants most effectively. The scientific question is: Which pesticide is most effective on a plant? The hypothesis is: If a tomato plant is sprayed with Neem Oil, Fruit & Vegetable Solution, and Insecticidal Soap, then the plant with Neem Oil will have the least amount of bugs. To perform this experiment, you will first need to spray the tomato plants with the assigned spray and put one trap on each plant; after 24 hours check the traps and record data. Whichever trap has the least amount of bugs, then whichever pesticide that was sprayed on the plant is the best. The average number of bugs for the plant with Neem Oil is 19 bugs. For Fruit & Vegetable Solution there were 16 bugs. Insecticidal Soap had 8 bugs. For the control variable, it had 25 bugs. The hypothesis was not supported because the best pesticide was Insecticidal Soap, not Neem Oil like I predicted.

Introduction

Purpose

This experiment was done to test which pesticide removes bugs most effectively.

Problem

Which pesticide is most effective on a plant?

Background Research

A pesticide is a chemical that removes pests from plants. Pests are bad because they can cause damage to a plant in numerous ways. It is good to use pesticides to make sure your garden stays healthy and free of bug damage. The three pesticides that are being used in this experiment are Neem Oil, Fruit & Vegetable Solution, and Insecticidal Soap. All of these are safe to use on plants that produce food.

I am testing all these pesticides on tomatoes since they are one of the most common plants to put in a garden. Neem Oil will most likely be the best since it is extracted from neem tree seeds and it is organic. It doesn't harm the insects that are good for plants. It repels over 200 different kinds of insects that cause damage. This is why the hypothesis says Neem Oil will be the best pesticide.

Hypothesis

If a tomato plant is sprayed with Neem Oil, Fruit & Vegetable Solution, and Insecticidal Soap, then the plant with Neem Oil will have the least amount of bugs.

Methods

Subjects

- the amount of bugs on each trap after the plant is sprayed with the assigned pesticide

Variables

Independent: different types of pesticides

Dependent: amount of bugs on each trap

Controlled:

- Tomato plant
- Soil
- Amount of light
- Amount of water
- Location

Materials

- 4 tomato plants
- Expert Gardener Neem Oil
- BioAdvanced Fruit & Vegetable 3-in-1 Solution
- Captain Jack's Insecticidal Super Soap
- 20 small bug traps

Procedures

1. Gather the materials needed
2. Label the plants according to which pesticide will be sprayed on them
3. Read the directions on the back of the pesticide bottle
4. Spray the plants with the spray they are assigned with
5. Put one trap in the soil for each plant
6. Wait 24 hours
7. Check the traps and count the number of bugs on each trap
8. Document the results
9. Take note of any bug damage on the leaves of the plant
10. After a full week put new traps on the plants
11. Repeat steps 5-10 for a total of 5 trials

Results

Table(s)

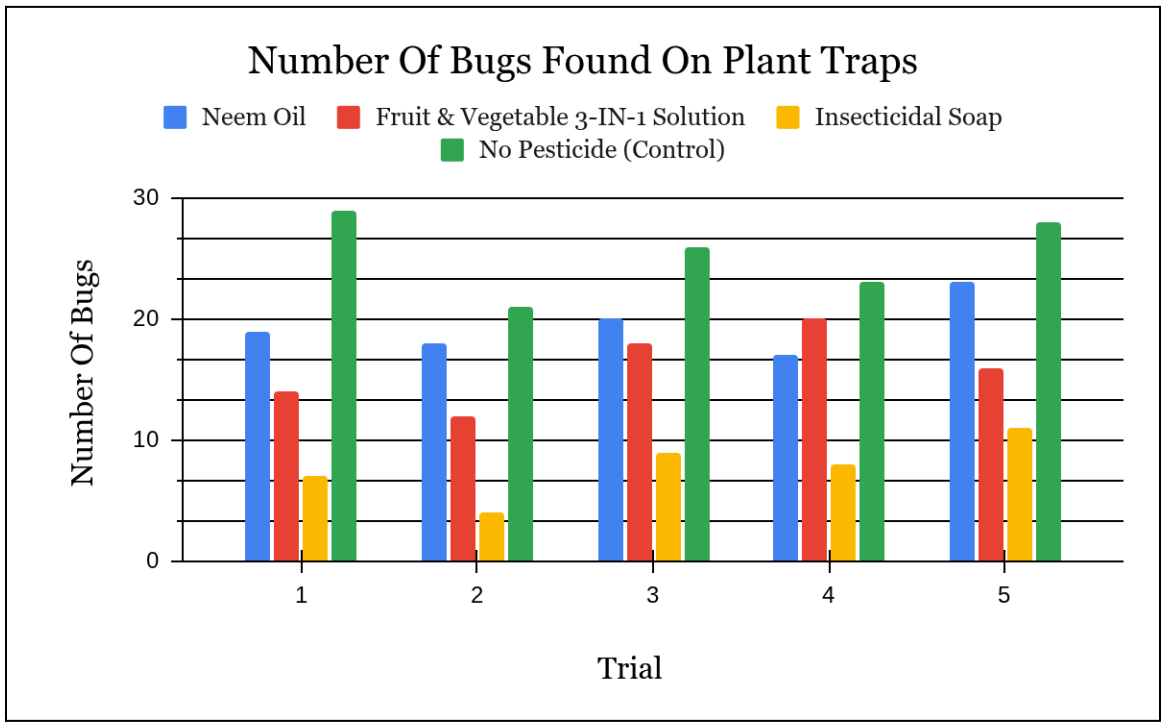
Number of Bugs Found On Plant Traps

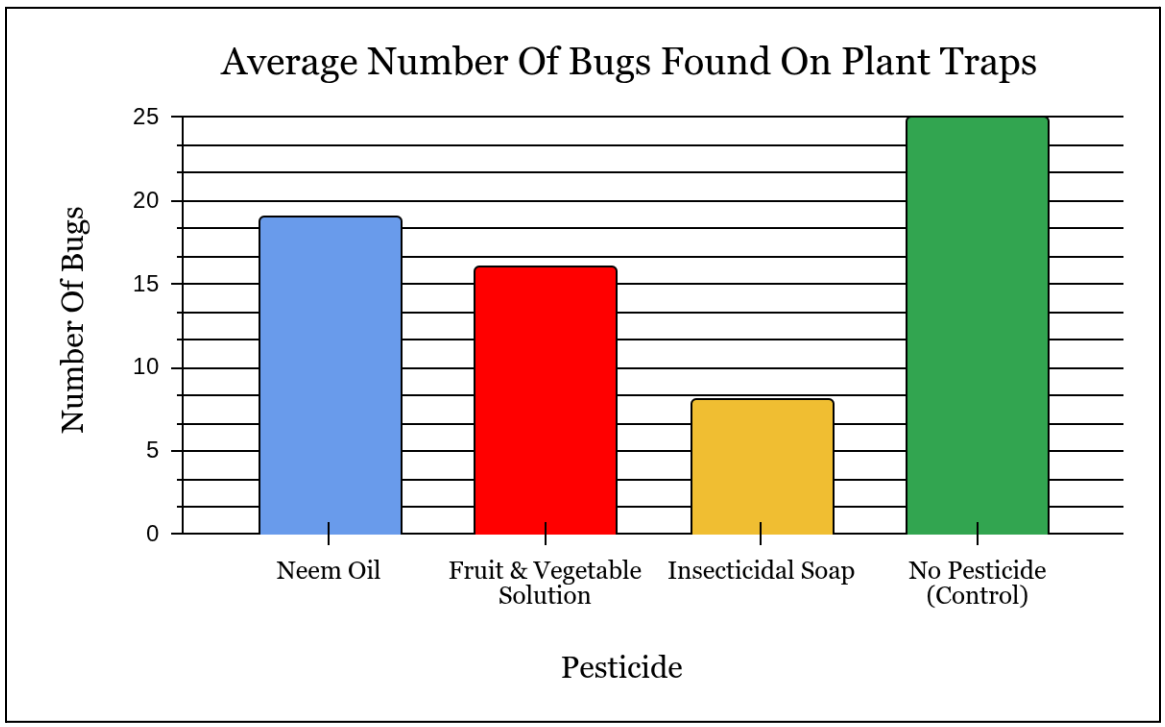
Trial	Neem Oil	Fruit & Vegetable 3-IN-1 Solution	Insecticidal Soap	No Pesticide (Control)
1	19	14	7	29
2	18	12	4	21
3	20	18	9	26
4	17	20	8	23
5	23	16	11	28

Average Number Of Bugs Found On Plant Traps

Neem Oil	Fruit & Vegetable Solution	Insecticidal Soap	No Pesticide (Control)
19	16	8	25

Graph(s)


Number Of Bugs Found On Plant Traps
Neem Oil
Fruit & Vegetable 3-IN-1 Solution
Insecticidal Soap
No Pesticide (Control)
Number Of Bugs
30
20
10
0
1
2
3
4
5
Trial


Average Number Of Bugs Found On Plant Traps
Number Of Bugs
25
20
15
10
5
0
Neem Oil
Fruit & Vegetable Solution
Insecticidal Soap
No Pesticide (Control)
Pesticide

Analysis

The results for this experiment varied quite a bit. Insecticidal soap had the least amount of bugs in all the trials. The plant with no pesticide had the most amount of bugs in all the trials. After Insecticidal Soap, Fruit & Vegetable Solution had the least amount of bugs in every trial. Neem Oil did slightly better than the control variable but worse than the other two pesticides. The hypothesis was not supported in this experiment.

Discussion

Conclusion

The results of this experiment did not support my hypothesis. Neem Oil is not the best pesticide to use in a garden. Insecticidal Soap removes pests the most effectively. Fruit & Vegetable Solution did better than Neem Oil, but not as good as Insecticidal Soap.

Application

This experiment relates to real world situations because many people have a garden in their backyard. Pests can become an issue especially if a person plans to eat the food the plant produces. In this case, it is important to know which pesticide will most effectively prevent bugs.

Recommendations

If I were to do this project again, I would've made sure I watered the plants everyday. I forgot to do it a few times. I don't think this affected the results of the project, but the tomato plants needed to be watered everyday. I could've solved this by setting a timer to help me remember. To extend the research, I could've tested the pesticides I used on a different type of plant.

References

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