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Homemade Squirrel Repellent Effectively Alters Natural Foraging Behaviors

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Abstract:

From doing this experiment I wanted to discover if a homemade squirrel repellent does alter squirrels natural foraging behaviors, causing them to avoid the pallet, as shown in previous experiments. To conduct the experiment I had two pallets with 150 grams of black oil sunflower seeds on each, and put homemade squirrel repellent on one, then placed them 15 feet away from each other and took data points from both every 2-3 days. After collecting 9 data points I found that the plate with squirrel repellent on it had less seeds eaten 100% of the time, and the average of the seeds left on the plate after doing the experiment was higher for the plate with homemade repellent on it. These findings confirmed that using a homemade repellent does effectively alter squirrels natural foraging behaviors, making them avoid the seed surrounded by repellent.

Introduction:

Squirrel repellents are common household items, that many people use to keep squirrels away from their birdseed, but do they really work, are they worth the money? Or can you make a more effective, less expensive homemade repellent? This problem affects many people, because they struggle with keeping squirrels away from things like, they're crops, birdseed, etc.

Many People rely on commercial repellents to keep their crops and birdseed safe, but what if you could make a homemade repellent with common household items, that is effective at keeping squirrels away from crops.

Previous studies have shown that using repellents does decrease squirrels natural foraging behaviors:

<https://patents.google.com/patent/US20050274314A1/en> In this article they say that using the repellent will change the squirrels natural foraging behavior, and keep them away from the area where the repellent is applied. But I want to find out if I will find the same results using a repellent that I made, by gathering data against a platform with nothing on it.

So from researching the issues, I decided that my essential question for this experiments will be: Is a homemade squirrel repellent effective then at keeping squirrels away from seeds? Using my previous research of this topic I decided that my hypothesis would be that, yes, a homemade squirrel repellent will work, because when you make it you can include effective ingredients, that have been proven to work in the past, whereas when you have a store-bought repellent you can't modify it, so your stuck with just the included ingredients, which might not be as effective.

To study my essential question and gather accurate data, I will set out two squirrel bate plates, ten feet away from each other, in covered places, with a dried corn cob in the center of the plate, then surround one plate with the homemade repellent, and one plate without repellent, then I will leave each plate for 24 to 72hours and go out and collect them the next day. To collect them I will gather the cob and weigh it, to see how much is left for each plate and record the data in a table. After 10 days of recording data, I will put my data in a bar graph to

compare the data. Then I will find the average amount of corn eaten each day and see which plate had a higher average. The one with the higher average was the least effective.

Methods:

During the weeks of *insert date here*, I set out two bait plates every Tuesday and Friday from 8-9 am to 12:30 to 1:30, gathering data every time I collect it.

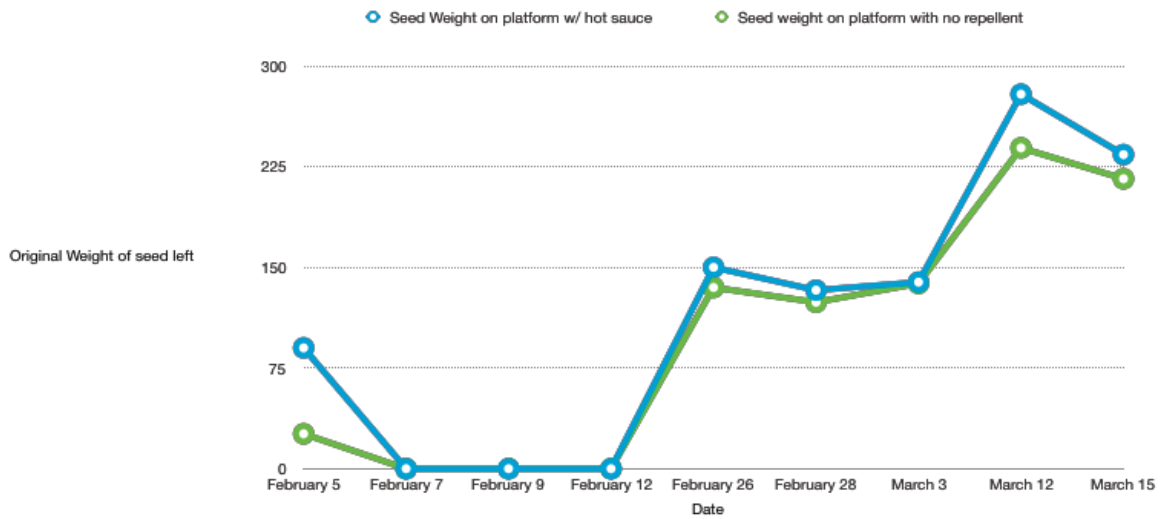
To set up the experiment, you will need to have: Hot sauce, water, Aspirin, apple cider vinegar, dried corncobs, black oil and commercial squirrel repellent, and a two foot by two foot piece of wood with borders. To make the squirrel repellent you combine a half a cup of water, with two cups of apple cider vinegar, and one and a half cups of hot sauce, I used the Hannaford brand. Blend well and pour into an empty plastic container.

To set up the bait plate screw in an I-hook and attach a screw to it with a piece of metal wire, then I screw the corn-cobs base into the screw and then I bring both plates into the woods. Find a covered “safe” place and set the platforms 10 feet apart from each other. Pour a decent amount of repellent all the way around the corn and leave.

After running the experiment three times, and only managing to collect one set of data, I knew something needed change, so I changed to using black oil sunflower seeds instead of corn, so I tested seeds, and when I went out the next day they were also all gone, so I decided to change my location. I took my platforms out of the woods, and placed them in an open field approximately fifteen feet apart from each, and the next day I was able to collect data.

Results:

Day	Original weight of seed	Seed Weight on platform w/ hot sauce	Seed weight on platform with no repellent	Percent of seed left on repellent platform	percent left on no repellent platform
February 5	150	90	26	60	17
February 7	145	0	0	0	0
February 9	175	0	0	0	0
February 12	150	0	0	0	0
February 26	150	150	135	100	90
February 28	155	133	124	86	80
March 3	150	139	138	93	92
March 12	300	279	239	93	80
March 15	300	234	216	78	72



From February 7 to February 9 when there was no corn left, I was having issues with a raccoon coming and taking all the corn before I was able to take my measurements, so I had three days where I wasn't able to collect any data. To solve my raccoon problem I decided to switch to black oil sunflower seeds, but then I was having issues with all the seed being eaten so I moved my experiment out of the woods on February 12 and was able to gather data on February 26. For March 12 and March 15 I had decided to put on more sunflower seeds because I wouldn't be able to collect data as often, so when I went to compare my data I switched it into percent's, because all the original weights were different.

The mean percent of seed left on the platform with repellent on it was 56.67%. The mean percent of the seed left on the platform without repellent was 47.8%. This shows that the homemade squirrel did work because the mean for seed left was higher for the platform with repellent on it. If I find the mean percent of seed left, removing the outliers then I get 85% left on the platform with repellent and 71.83% on the platform with no repellent so this shows that my previous claim of the repellent working is still true, even when I remove the data outliers. I decided to drop the outliers because I had issues with both my platforms during the weeks when I was getting no data, so I figured the average would be more accurate.

Conclusion:

During the experiment I had trouble with gathering data in the beginning, so the next time I conducted this experiment I would start of using black oil sunflower seeds, instead of corn, and I would also recommend conducting the experiment in an open field, instead on in the dense woods. I found that when my experiment was in the woods, I was struggling with all my seed disappearing, and once I moved it out of the woods and to an open field, I gathered more accurate, better data.

After conducting my experiment I found that homemade squirrel repellent does work, and consistently keeps squirrels from eating the seed. This is shown in my results section, because the mean of seed left on the platform with repellent on it, even after removing outliers, was higher than the platform without repellent on it. Also looking at the table, I never collected data where the platform with repellent on it had more eaten than the platform with no repellent. These finding shows that this claim is true because if the mean is higher that tells me that more seed left on the platform, which means that less corn was eaten.

This data agrees with the background research that I gathered in my introduction because the article I gathered research from: <https://patents.google.com/patent/US20050274314A1/en> stated “When placed in an area, it convinces animals of a perceived threatening presence or a danger that self-motivates the animals to avoid the area and prevents thus the contamination, defacing, and/or damage to the area.” Both my experiment and this statement agrees with my findings, proving that homemade repellent effectively repels squirrels.

These findings are important because people can use this research to repel squirrels from their crops, and birdseed, while spending less money than if they bought commercial.