

Banish The Weeds



Big Question



- What products kill weeds and not harm our environment? Which will be the most effective from everyday products that we have in our home?
- Everyday items are boiling water, seltzer water, vinegar, baking soda, antibacterial soap, Dawn dishwashing liquid, and pine sol.
- With so much rain that fell in Tucson this past year, we want to find a product that can kill weeds better than harmful chemicals such as roundup (which can cause cancer).



Research



- **Dawn Dishwashing soap/Antibacterial soap (both)**

Dish soap acts as a surfactant, which is an agent that will reduce the surface tension that can cause the weed-killing concoction to bead on the leaves instead of being absorbed by the plant. On a warm, sunny day, the results of this homemade spray will be obvious in a matter of hours as weeds turn brown and wither.

– [Make Your Own Natural Weed Killer – HGTV.com](#)

- **Seltzer Water**

Unflavored soda water is good for plants and helps them grow faster. The benefits of the carbonation and minerals in soda water may be negated by the presence of sugar. Flavored soda can damage plant roots and render them vulnerable to disease, thus killing weeds and plants.

- [Findanyanswer.com](#)

- **Vinegar**

Vinegar may control very young, non-vigorous weeds. Vinegar's modest efficacy is due to the fact that it's a contact herbicide. Acetic acid only affects the parts of the plant that it contacts, so the weed's roots might remain untouched. But vinegar can kill weeds permanently! Using vinegar to kill weeds is a natural and effective way to get rid of weeds from your lawn or garden without so much manual labor or the use of weed-pulling tools.

-<https://bovees.com>

Research

- **Baking soda**

Baking soda kills weeds by drawing water from the plant cells, forcing the foliage to dry off. The sodium bicarbonate is phytotoxic to plants and can control any type of weeds in lawns and gardens.

-<https://gardenine.com>

- **Pine Sol**

Pine-Sol® Multi-Surface Cleaner is an **EPA-registered broad-spectrum disinfectant**. It kills household bacteria, on hard, nonporous surfaces when used as directed. Turns out that Pine Sol is not environmentally friendly because it contains petroleum. But it does kill the Coronavirus.

-<https://www.bhg.com/homekeeping/house-cleaning/surface/pine-sol-kills-coronavirus/>

- **Boiling Water**

The heat will collapse the plant's cell structure and kill it. Some hardy weeds may need more than one boiling water treatment. Using this method makes weeds easier to pull and remove from your beds and borders. ... Boiling water can also be used for disinfecting soil.

-<https://www.gardeningknowhow.com/plant-problems/weeds/boiling-water-and-plants.htm>

Hypothesis

- My hypothesis is that Dawn dish soap will kill and make the weeds stay away.
- I think it will be the best of the seven products because it will bind to the weed and not allow it to breathe causing surface tension and cause the weeds to dry out and die.



The Procedure



1. Using stakes, we will label and use our materials on an 8 1/2 by 11 (paper) size plot of weeds.

2. We will use measure and mix our materials and pour onto the weeds. Each amount will be 1 cup. (seltzer 1 cup, vinegar 1 cup, baking soda 1/4 cup + 3/4 water, Dawn/antibacterial soap 1 tablespoon soap = water to 1 cup, pine sol 1/4 cup + 3/4 cup)

3. We will dump it on Buffelgrass then leave it alone to see if it kills the weeds.

4. We will gather our research from our tests and review to see which turned the weed more yellow, dried out, dead, and which was easier to pull from the ground (mechanical control). We used a scoring method 1 point for each category.

5. Determine which is the best at killing weeds.

Scoring Procedure

For evaluating the weed:

- ❖ Yellow but still flexible, 1 point
- ❖ Dried out, crunchy still upright, 1 point
- ❖ Dead, fallen over, 1 point
- ❖ Easy to pull out, 1 point

Maximum is 4 points, for the most effective way to killing grass

The Tools

- We will make a template that is paper size to use as a guide 8 ½ x 11
- Stakes
- Sharpie to label the stakes
- Dawn dish soap/Antibacterial soap
- Vinegar
- Baking soda
- Seltzer water
- Tap water
- Pine Sol
- Camera to record and show progress



Results



We scored each result on a level of 1-4. With 4 being the best result in that it killed the weed, and the weed was easy to pull out.

(Score 3) Vinegar- it killed the weed but took a long time to turn yellow, remained flexible though, meaning it may not have destroyed the root.

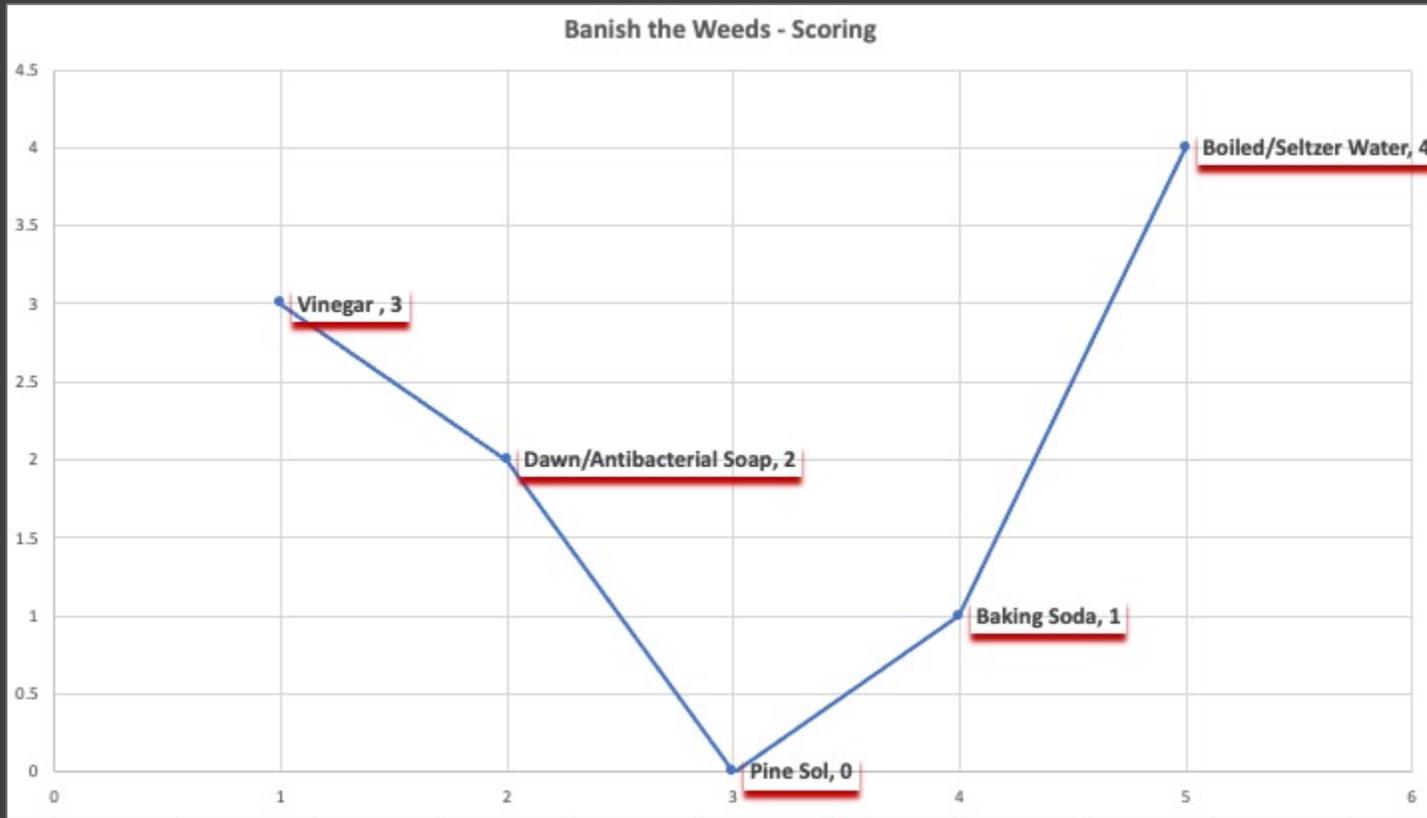
(Score 2) Dawn Soap/antibacterial – it seemed to need more volume to be effective. One cup was not enough to make a major difference. It was yellow and seemed dead but still upright. I think it only killed the surface and was not effective on the roots.

(Score 0) Pine Sol- it smelled good, but I don't think this had any impact other than I polluted the soil.

(Score 1) Baking soda – This seemed like water and didn't appear to have much effect on the weed. It was yellow but seemed like could be back to green in no time.

(Score 4) Boiled Water & Seltzer Water – the boiled water seemed to release the weed from the ground and made it easy to pick up and dispose of. This was by far the fastest and easiest method. It killed the plant and released it from the soil. It was yellow, dead and easy clean up.

Data



Boiling water or seltzer water gave more mechanical control (using hands) to pull weeds

Conclusion

- In the end, basic water and flooding the weeds made them the easiest to pull and removed. It was fast and efficient and did not add any toxic chemicals to the soil.
- The other bonus is if the weed is pulled, there is no further spread of the grass or weeds. Simply getting the ground wet allowed the weeds to simply pull right out of the ground.
- So, our hypothesis was incorrect. I thought the Dawn liquid or soap would smother the weed and dry it out and kill it. But simple water flooded it and made it easier to pull. It killed the weed almost instantly and it was uprooted by the water.

Future ideas



- In front of our house, on the street, the Buffelgrass grows everywhere. With as much rain as we had last year it took over the front of our house. With rain, I believe much of the grass will have seeded it for the next seasons. Instead of adding pre-emergent or other toxins, it would be great if we could pull it after it rains or use a rake to pull it out when the ground is wet. I wondered how this would work and if over time the grass would stop populating in the same area.
- Also, it is so dangerous because it could start fires. And it seems to be everywhere on the streets.
- Future thoughts:
 - We should try using more volume of water
 - We could use heat from sun to heat water
 - Try more mix and matching of household products