

IS THERE A SAFE ALTERNATIVE TO ROUNDUP?

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You may have seen the TV commercials for lawsuits against Monsanto for the connection between non-Hodgkin's Lymphoma and glyphosate-based herbicides such as Roundup and Ranger Pro. Monsanto recently lost their third appeal has been ordered to pay out over \$258 million dollars to four plaintiffs. Over 125,000 others have pending cases. Even as more people continue to learn about the dangers of Roundup—Monsanto's best selling weed killer—the herbicide remains in heavy use in the U.S. and around the world. Many people are still unacquainted with the serious health issues posed by glyphosate, the key ingredient in Roundup, which was classified as a probable human carcinogen by the World Health Organization (WHO) in March, 2015.

The rise in sustainable, organic farming, coupled with the reported health risks associated with glyphosate exposure has prompted farmers, groundskeepers and gardeners to ask: is there a safe alternative to Roundup? The answer is yes, and employing an alternative to Roundup in gardening or agriculture is more important than ever.

WHY YOU SHOULD USE AN ALTERNATIVE TO ROUNDUP

Glyphosate is so widely used in the U.S. and around the world that traces of the chemical have been found in breast milk, cotton products, beer, wine (even when made with organic grapes), eggs, oatmeal and non-dairy coffee creamer, among other products. According to Beyond Pesticides, between 180 and 185 million pounds of Roundup products are applied and sprayed every year in the U.S., making it the most commonly used agriculture chemical in the country.



The herbicide has also given rise to genetically modified food, which has been linked to health issues such as infertility, immune problems, faulty insulin regulation, accelerated aging and changes in major organs and the gastrointestinal system.

If the health risks are not enough to convince you to consider an alternative to Roundup, maybe the environmental impact will change your mind...

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A recent U.S. Geological Survey study sampled waterways in 38 states and found glyphosate in the majority of rivers, streams, ditches and wastewater treatment plants that were tested. Glyphosate also was found in roughly 70 percent of rainfall samples.

TEN TYPES OF ALTERNATIVES TO ROUNDUP

1. Contact Organics Weed Terminator



2. Mulch and permaculture landscaping



3. No till cover crops work on organic farms



4. Natural solutions with high percentage vinegar



5. Safe, saturated steam weed control



6. Weed wacking and electric weed control



Most of the other alternative herbicides used by farmers or gardeners fall into the following categories:

7. Herbicidal Soaps



8. Iron-Based Herbicides



9. Salt-Based Herbicides



10. Phytotoxic Oils (Essential oils such as clove, peppermint, pine or citronella.)



USING AN ALTERNATIVE TO ROUNDUP

In order to get the best results from a Roundup alternative, it is best to use in conjunction with other helpful practices, like working to improve soil health, plant nutrition and irrigation. Remember, an alternative to Roundup is generally going to be a contact herbicide (except for electric shock), not asystemic herbicide, such as Roundup which kills the entire plant by entering the vascular system.

Contact herbicides generally work by burning plant foliage that comes into contact with the product. They are only capable of killing weeds that have emerged—they have no residual activity on weeds that emerge after application.

WHAT YOU'LL NEED FOR ALTERNATIVE HERBICIDE

Acetic Acid – Commonly known as vinegar, [acetic acid affects the cell membranes of a plant](#) and causes rapid breakdown of foliage tissue on contact. Vinegar used for herbicidal purposes can be organichousehold vinegar, which is roughly five percent acetic acid or agricultural vinegar, which has an acetic acid concentration of roughly 20 percent. In sufficient quantities, agricultural vinegar by itself will quickly burn down a weed.

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There is much debate on the efficacy of household vinegar versus agricultural vinegar in alternative herbicides. Research has found that acetic acid concentrations between 5 and 10 percent can provide viable control of very small, young weeds that have one or two leaves (or are within two weeks of germination). Larger weeds with three or four leaves more are likely to survive this concentration. Using higher agricultural vinegar with higher concentration of acetic acid and increasing the application volume can improve weed control.

Salt – Some choose to combine vinegar with salt to make their Roundup alternative more potent. Like vinegar, salt is a desiccant, so it dries out leaves and stems. Combining salt with vinegar will make your alternative to Roundup “extra strength.”

Oil or Soap – Oil will break down any coating or other natural barriers that many weeds produce to protect their leaves. By using oil or soap in your mixture, you give the vinegar and salt a greater chance to penetrate the weed. Additionally, oils and soaps break the tension water on weed surfaces, which keeps the mixture from running off.

If you would like more information on ingredient concentration levels for your alternative herbicide, check out this article from [Garden Councilor](#).

TIPS FOR APPLICATION OF YOUR ALTERNATIVE TO ROUNDUP

- Alternative herbicides work best when applied on a hot day. If possible, wait until humidity is low and morning dew has burned off. This will allow the mixture to stay in contact with weeds.
- Be careful not to spray the mixture on plants you do not wish to kill. You can do damage to the plants you are trying to protect if you aren't careful.
- Use gloves and protective eyewear, as the mixture can damage your skin, especially if you are using agricultural vinegar with higher concentration of acetic acid.
- Larger weeds and perennial weeds may wilt or discolor after application, but in some cases, they will regrow a few days or weeks later. These weeds will require multiple applications to be controlled.

ARE ALTERNATIVE HERBICIDES EFFECTIVE?

A University of Maryland study found that properly applied acetic acid-based alternative herbicides have promising results controlling the following weeds:

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| • Broadleaf Plantain | • Lambs Quarters |
| • Carpetweed | • Oriental Mustard |
| • Common Chickweed | • Pale Smartweed |
| • Crabgrass | • Spiny Amaranth |
| • Cutleaf Evening Primrose | • Tumble Pigweed |
| • Ground Ivy | • Velvetle |
| • Ladysthumb | |

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THE BENEFITS OF USING ALTERNATIVES TO ROUNDUP

- Public health safety
- Avoidance of lawsuits
- Improved soil and water retention
- Improved water quality
- Improved longevity of landscaping