

Eco Tip

Presented by

The Putnam Valley Commission for the Conservation of the Environment

Safer, Eco-Friendlier Herbicide Alternatives

Glyphosate, the active ingredient in Roundup®, has been classified as a probable carcinogen by the International Agency for Research on Cancer (an arm of the World Health Organization). Among sources reporting on this is the Green City Blue Lake Institute of the Cleveland Museum of Natural History. In addition, the institute states that when glyphosate reaches rivers and streams, it is very toxic to aquatic life. Glyphosate can travel to waterways if it falls on asphalt or blows away on the wind. Furthermore, glyphosate is not the only chemical in Roundup®, simply the only one considered “active” by the Environmental Protection Agency. The EPA only requires herbicide manufacturers to provide proof that the “active” ingredients are safe for the environment, not “inactive” or “other” ingredients. Herbicide manufacturers are not even required to list non-“active” ingredients on their packaging.

The institute points out that polyethoxylated amine (also referred to as POEA or polyethoxylated tallowamine) is one of those “other” ingredients. It is a surfactant, a chemical in Roundup® used to transport glyphosate from the leaves of a plant to the roots. POEA has been shown to be significantly more toxic to aquatic life—including algae, frogs, shrimp and fish—than glyphosate. POEA is not trapped by soil like glyphosate, and it stays in the environment longer before degrading, creating an environmental hazard. In addition, studies have indicated that the POEA in Roundup® may be toxic to human embryos.

The good news is that alternative products exist that play the same role as Roundup® in weed management, states the Green City Blue Lake Institute. Some even prevent the emergence of weeds. Acetic acid, fatty acids and essential oils can all act as herbicides. Here are alternatives offered by the institute:

Acetic acid, or vinegar, can be sprayed on weeds to “burn down” the plant. When sprayed on plants, it causes chemical burns, which eat away at the foliage until there are no leaves remaining. On the downside, any plant the vinegar touches will be affected, so if the spray blows into your garden, it will hurt your vegetables. Also, the vinegar only attacks the leaves, not the roots, so weeds may grow back within a couple weeks. On the upside, the vinegar will quickly break down in the soil and water, meaning it won’t contaminate your lawn long-term and is safe to use near water or pavement. Acetic acid may even be safe to use in lake sediments against invasive plants, although this application is still being tested.

Certain fatty acids, often in the form of soaps, are presented as safe alternatives to Roundup®. The solutions work like vinegar (and often contain vinegar as an additive) inasmuch as they burn the leaves of

the plant. Soon after the first application, the soap becomes inactive, so it only works for a very short amount of time, and the weeds may return. The most common fatty acid, pelargonic acid, is considered to have very low toxicity and to be environmentally friendly. However, the other ingredients in commercial herbicides are just as important as the active, so before buying any herbicide, make sure to look at the inert ingredients!

Essential oils—such as clove, peppermint, pine, and citronella oils—have been growing in popularity as herbicides over the last several years. They operate like vinegar and soaps, wherein they burn the foliage, but not the roots unless surfactants are added. Unlike the other two, essential oils often are not fully effective because of the way they are introduced to the plants. A portion of the oil will evaporate away or become inactive in the soil before it has interacted with the plants. Most essential oils are not known to have the severe effects of Roundup® in aquatic ecosystems, but each oil has its own potential harms and benefits, so care should be taken when applying it.

Corn gluten is a byproduct of producing corn starch. It comes as a dry powder and must be applied to the lawn at least twice a year to be most effective against weeds like dandelions. It does not kill mature plants but will hinder the growth of new ones, even preventing the emergence of such weeds. So it is safe for gardens and will even add nitrogen to the soil, fertilizing the established plants. Corn gluten is safe for people and pets; it is a common ingredient in dog food. So what's the downside? If you have hardy, well established weeds, corn gluten won't do you any good.

You can read the entire report published by the Green City Blue Lake Institute at [HTTPS://WWW.GCBL.ORG/LIVE/HOME/LANDSCAPING/IS-THERE-A-SAFE-ALTERNATIVE-TO-ROUNDUP](https://www.gcbl.org/live/home/landscaping/is-there-a-safe-alternative-to-roundup)

ALTERNATIVE HERBICIDE TIPS

- Alternative herbicides work best when applied on a hot day. If possible, wait until the 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 a 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.

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