

ALTERNATIVES TO GLYPHOSATE-BASED HERBICIDES

Yes, glyphosate is cheaper and easier to use, but *is not* healthier; with successful non-toxic alternative interventions no life form gets acutely or chronically poisoned in the process.

August 10, 2018 marked the turning point for cancer causing weed killers; this was when the first court case was won against Monsanto in a non-Hodgkin's lymphoma case attributed to glyphosate exposure. Since weed killers are not adequately labeled to detail risks, some people using it only a few times have gotten cancer. In March 2015, an agency within the World Health Organization (WHO), the International Agency for Research on Cancer (IARC), determined glyphosate is a probable carcinogen to humans, and there was a positive association between glyphosate exposures and non-Hodgkin's lymphoma (NHL). It is also linked to diabetes, Alzheimer's disease, Parkinson's, liver disease, kidney disease, other forms of cancer, and birth defects at extremely low doses. On top of that, it's helping to kill off the world's pollinators that are vital to the human food chain.

Glyphosate-containing herbicides are still widely available to be purchased thanks to corruptive policies and procedures within the Environmental Protection Agency (EPA), so it is up to people and towns to do the right thing for those whose health and welfare they oversee. We all can volunteer to not use it since it is in the best interest of public health and for the betterment of our environment.

Below is a list of alternative interventions to replace products containing glyphosate, the active ingredient in herbicides that kills plants on land, and in fresh and salt waters. To make clear, glyphosate is an herbicides, and herbicides are just one type of pesticide. Glyphosate is the active ingredient in Roundup and Rodeo XLT and thousands of other herbicides available worldwide, and it is the most used.

It is up to us to bridge traditional knowledge and western science approaches in invasive species mitigation, to look through the lens of plants for knowledge to heal situations.

What is the cost difference? When you understand that glyphosate lasts longer than just killing a targeted plant, that it is continuing harm as it goes 'downstream', the cost is unmeasurable for the health of our environment and for developing children. The monetary cost should not be the reason why we cannot shift off of glyphosate products, the cost for health should always come first. Upfront costs of glyphosate products versus consideration of habitat, direct damage to pollinators, destruction of soil microbiota, contribution to the climate crisis, reduction in plant nutrient density, human morbidity and mortality and settlement of lawsuits. Understanding this, there can be no reason to use glyphosate again.

Instead, how about a new 'outlook' on invasive plants? It is our responsibility to figure out how to maintain and/or build a relationship with them without harming beneficial insects, nutrients in soil, or our future children. We are a part of a broad kinship network that includes not just humans, but plants and animals as well. For example, one idea would be to take cattails that are pond-side stalks and use them as a fuel source to help heat your home. This may be a bit premature, but people already do use it in food recipes. Dandelions and plantains are foods or medicines that have been used for centuries, now we see them as weeds without appreciating that they are some of the first food sources for pollinators in the spring.

It is time to develop a new strategy for weed control! A management strategy should be set up for unwanted vegetation specific to the site and to the plant species; thus, no one set approach can be applied to all situations.

Some top alternatives or best practice suggestions for unwanted and invasive plant species include (but are not limited to):

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1. Harvesting - for food (cattails, Japanese knotweed) and for fuel (cattails) - uses for invasive species in your community
2. Manual uprooting/cultivation/pulling/cutting - (pruner, lopper, hoe, mattock, handsaw, shovel)
3. Mowing height — allow lawn areas to grow higher, preventing weeds from flourishing so grass outgrows weeds; cut at *no less than 3”* height and mow monthly
4. Lawn replacement — meadowscaping with “plant communities” - plants that grow together in nature; create three seasons of bloom to benefit native pollinators and wildlife species; no mowing; maintain once per year in spring to allow food/shelter resources over the winter
5. Competition planting/Smart design/Overseeding — plant grasses and flowers that are native to the area and are hardy; planting of grass seed directly into existing turf
6. Repeat cutting — plants’ photosynthesis will be disrupted; remove leaves and stems seasonally; plants are forced to burn up its nutritional reserves and dies off naturally
7. Goat grazing — tethered or temporarily fenced grazing services are available for residential, commercial or town properties; great for poison ivy areas, power lines, encroaching bushes & trees
8. Weed whacking — use metal blades for heavy-duty cutting (e.g., Phragmites, cattails and other tall-stalked plants)
9. Mowing — repeat cutting down of a plant will kill it; maybe weed whack then mow
10. Hot Water — pour directly onto plants; be careful to not harm non-target plants and soil organisms
11. Steam — uses only water; hand-held devices (for walkways, building entries, etc.) and large drivable machines (for roadsides, rail lines, golf courses, ball fields)
12. Infrared and flame weeding — with heat, weeds die; hand-held devices to large drivable machines; good for walkways, driveways, building entrances, parking lots, roadsides; electric or propane
13. Vinegar (20% acetic acid) — kill selected/targeted plants when young; use only on a dry hot day when weeds are thirsty
14. Essential oils — clove oil (eugenol) is a natural herbicide; deter insects with citrus oil that repels mosquitoes; peppermint oil repels mosquitoes and helps mold and mildew situations
15. Organic corn gluten — sprinkle on lawn areas in springtime to deter weeds
16. Mulching — covering with organic matter or stones, seashells or wood chips to prevent photosynthesis
17. Smothering — tarp an area for a few weeks to kill unwanted plant vegetation; helps worms
18. Solarizing — covering the ground with a tarp, usually a transparent polyethylene cover, to trap solar energy that heats the soil enough to kill weeds and weed seeds.
19. Tolerance — a plant will be found where overall conditions are suitable for its survival.
Changing times, human interference and the climate crisis all have impacts on what grows where. It’s important for us to think of these basic factors as we assess ecosystem balance and the growing habits of plants, whether desired or not. Clearly, some degree of human tolerance requires thinking and planning differently.

Non-toxic Integrated Pest Management (IPM) systems can be your town’s best management strategy. Use one or more alternative interventions in combination with each other for enhanced effect. Once alternatives are tested for a trial year perhaps, then you can establish a basic system your town can use for many years. Please take the time to discuss details with your town departments and create solutions appropriate for each town-owned property such as parks, school grounds, golf courses, etc. Through thoughtful consideration you will develop

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a strategy to maintain unwanted vegetation without harming developing children, beneficial insects or other non-target species in the process.

Remember, herbicides sprayed in the air or applied on the plant/ground can travel much greater distances than we might realize. Depending on a number of environmental and chemical factors, once a pesticide reaches the soil or the water supply, it could remain for generations. Researchers have found evidence of pesticides in water, rivers and soil decades after application. This can significantly damage the ecosystem of the area in ways that are unpredictable. For example, currently the Plymouth Harbor is being dredged and sediments are not allowed back into the ocean because of the amounts of DDT contamination that still exist (note: DDT was banned in the U.S. in 1972). In the future, it will likely become known that glyphosate residues in sediments are also far too toxic to put back into the ocean.

What are the effects on people, pets and the environment? Since it is difficult to draw concrete conclusions because there are so many moving parts, and the parts are always changing, then write a Board of Health (BOH) regulation so it lasts over time in every department in your town. How much glyphosate does your town departments use currently? That's the first question. Usually in early March, glyphosate is purchased for the coming year. Hence, the goal would be to stop that process in early 2020, and incorporate selected alternative interventions for certain areas and try it. Variances are always allowed, a town department can get on the agenda at a Board of Health meeting and request the use of glyphosate if all alternatives have been exhausted and it will be up to the BOH to determine what is best for the situation at that time. Also an ad hoc committee is suggested to conduct ongoing research on potentially harmful products (such as PFAS's) and give presentations to the BOH on a quarterly basis to keep everyone informed of new scientific studies and what neighboring towns are doing to protect themselves, aquifers and bodies of waters. Does your town have 'toxic waste days' where residents can bring paint cans, oils, pesticide containers (with or without liquid inside)? In some cases, a contracted organization/company removes such hazardous materials from your town and disposes of them properly. For example, Barnstable County has a group called, LoveYourLocalWater.Com; check into such organizations, it is a great opportunity to get toxic materials away from your lands, aquifers and all water bodies, fresh and salt.

How much land does your town own? All citizens and visitors have a right of protection from low dose exposure to hazardous chemicals. Town Boards need to adopt alternative non-toxic based practices and products in 2020 for all who roam on the land your town owns. Remember, we need not trade environmental and public health for convenience, there's always a better, safer way. Thank you for caring.

For additional information or concerns, please contact:

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