COLORADO STATE UNIVERSITY EXTENSION

Natural Herbicides for Landscape Weed Management

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Increasing demand for alternatives to traditional, synthetic weed control products like glyphosate and 2,4-D has resulted in the development and sales of many "natural" or "organic" products for controlling lawn, garden and landscape weeds. Relatively little research has been conducted to evaluate their efficacy (compared to traditional herbicides), and how these new herbicide alternatives can be used most effectively. More and more shelf space is being dedicated by retailers to herbicides that are considered by some to be less-toxic alternatives.

The alternative weed-control products contain oils (clove oil, eugenol, and d-limonene), soaps (pelargonic acid), acids (acetic, citric) or iron compounds (chelates). All of them function in essentially the same way: they destroy the leaf cuticle and the integrity of leaf cells, causing cell leakage that can lead to rapid leaf death. These are often referred to as "burn-down) herbicides. While very fast-acting (symptoms often appear within a few hours of application), effectiveness is dependent on good coverage. All of these are contact herbicides that kill only green parts of the plant they contact. The lack of systemic activity limits their effectiveness for the control of weeds having extensive root systems or underground storage structures such as rhizomes, tubers, or bulbs; perennial broadleaf and grassy weeds like thistle, bindweed, quackgrass, and bermudagrass are not controlled easily using these products. These herbicides work most effectively on small weeds (seedlings) and annuals that haven't grown too large.

Users of these alternative herbicides should also be aware of the fact that many of these products have the potential to cause skin irritation, and eye or lung problems if not used with caution. Minimally, eye protection and gloves should be worn when using these natural herbicides, even if they are listed as exempt products. Horticultural vinegar (20% acetic acid) products can be quite hazardous to handle.

Effectiveness of the alternative, contact herbicides can be increased by:

- ensuring good spray coverage
- applying in warm/hot weather (at least 75° to 80°F), and with minimal cloud cover
- adding surfactants to improve coverage and to reduce "beading" of droplets on leaves
- treating when weeds are small/young
- repeating applications (especially important for larger and/or perennial weed20

Essential oil herbicides

WeedZap (45% clove oil + 45% cinnamon oil)
Bioganic Broadleaf Killer (2% clove and thyme oil; 1% sodium laurel sulfate; 10% acetic acid)
Burnout II (12% clove oil, 8% sodium laurel sulfate, vinegar, citric acid)
EcoSmart Weed and Grass Killer (sodium laurel sulfate and eugenol; 2-phenethyl propionate)
GreenMatch EX (50% lemon grass oil)
Repellex Weed-A-Tak (8% clove oil; 8% cinnamon oil; 4% citric acid)

Citrus oil-based herbicides

Avenger
GreenMatch (55% d-limonene)
Worry Free Weed and Grass Killer (70% citrus oil)

Acid-based herbicides

WeedPharm (20% acetic acid)
AllDown (23% acetic acid; 14% citric acid)
C-Cide (vitamin C-based product)
Natural Guard (citric acid and soybean oil)

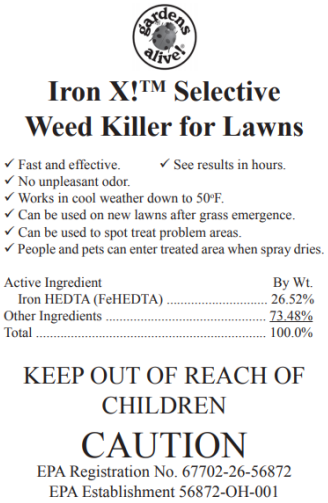
The acetic acid concentration for herbicidal use should be about 10 to 20%. Household/culinary vinegar is about 5% acetic acid and isn't effective for controlling most weeds.

Fatty acid-based herbicides (aka herbicidal soaps)

Scythe
Safer Moss and Algae Killer
Safer Fast Acting Weed and Grass Killer
Monterey Herbicidal Soap
Natria Weed and Grass Killer

Iron HEDTA herbicides

Bayer Advanced Natria Lawn Weed Control	26.5% (concentrate)
Fiesta Turf Weed Killer	26.5% (concentrate)
Iron-X Selective Weed Killer for Lawns	26.5% (ready to use)
Ortho Elementals Lawn Weed Killer	1.5% (ready to use)
Whitney Farms Lawn Weed Killer	1.5% (ready to use)



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