

INTEGRATED CROP MANAGEMENT

Acetic acid (vinegar) for weed control revisited

An article [1] in the June 3, 2002, *Integrated Crop Management* newsletter, page 91, described the use of acetic acid (vinegar) as a tool for controlling weeds. This article prompted a number of questions from growers and agribusiness personnel in Iowa. As a result of these questions, I contacted the USDA researchers that conducted the work and also checked a number of sites on the Web for information. The information below is from discussions with the researchers Dr. John Teasdale and Dr. Jay Radhakrishnan, and publicist Don Comis, and it is reported at several Web sites, including The "Vinegar as an Herbicide" Information Page [2] and Spray Weeds with Vinegar? [3]

It is important to recognize that the use of acetic acid, unless the material is specifically labeled as a herbicide, is illegal and a violation of FIFRA. Several companies have registrations for acetic acid to be used as a herbicide. This information can be accessed at <http://www.garden-ville.com>, <http://www.greensense.net>, <http://www.bradfieldind.com> and <http://www.biconet.com>

Various lawn and garden stores may carry these products. Like any herbicide, it is important to follow all directions and safety procedures. The USDA issued a warning in their research report stating **"WARNING: Note that vinegar with acetic acid concentrations greater than 5% may be hazardous and should be handled with appropriate precautions."** However, acetic acid is not reported to accumulate in the environment and readily breaks down into water. Interestingly, 24 percent acetic acid apparently can temporarily decrease soil pH.

Acetic acid is not a selective herbicide. Dr. Teasdale suggested that the mechanism of action of acetic acid is similar to that of paraquat in that acetic acid causes the rapid dissolution of cell membrane integrity, resulting in the desiccation of foliar tissues, and ultimately plant death. Acetic acid is nonselective and may damage any plant part contacted by the material.

Although acetic acid may burn off the tops of Canada thistle and other perennials, it does not control the root system responsible for regeneration of plants. Furthermore, acetic acid may not control larger weeds, as indicated by a recent demonstration at the Nashua Research Farm.

Directed applications to weeds (thereby keeping the vinegar away from the crop plant) are necessary to use acetic acid in crop fields. Acetic acid concentrations from 10 to 20 percent controlled 80 to 100 percent of the smaller weeds, as reported in the USDA release. Typical concentrations of acetic acid in most commercially available vinegars are 5 percent and were reported to provide variable control of small weeds.

The USDA researchers suggested the spot spraying at the base of corn might be the most effective manner to use acetic acid as a herbicide. Broadcast applications of 20 and 30 percent acetic acid solutions would cost approximately \$66 to \$99 per acre, respectively. Banded applications could reduce that cost to one-third of the broadcast rate.

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Source URL:

<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/2002/7-15-2002/vinegar.html>

Links:

[1] <http://www.ipm.iastate.edu/ipm/icm/2002/6-3-2002/orgmanage.html>

[2] <http://www.barc.usda.gov/anri/sasl/vinegar.html>

[3] <http://www.ars.usda.gov/is/pr/2002/020515.htm>

IOWA STATE UNIVERSITY
University Extension