

# Herbicide Resistance: A Challenge To Agriculture

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other members of the ALS class. However, it's like rolling dice — if you roll it long enough, it's simply a matter of time before you get "snake-eyes" or cross resistance develops.

Preventive programs require more management and possibly accepting some change in the way weed control programs are conducted. Programs for preventing herbicide resistance should address several areas:

- Rotate herbicide modes of action
- Use shorter residual products
- Use tank-mixtures or sequential mixes with different modes of action

- Use nonchemical methods of control such as cultivation. The emphasis or at least starting place for resistance management should be identification of herbicide class (Table 1). The annual rotation of these classes may be key to preventing resistance. Tank-mix partners from different classes that are effective on problem weeds will also help (see Table 2).

However, effective tank mixtures from more than one class are not available for all weeds and no resistance management strategy can stand alone.

Multiple tactics that include herbicide rotation, effective

tank mixtures, and nonchemical methods of weed management will be most successful.

Although many producers may select the "business as usual" philosophy and hope that technology keeps up, the discovery and development of effective new herbicide classes and families does not appear right around the corner, and some effective older products could face additional restrictions or even removal from certain markets.

Most weed scientists agree that if we don't plan and manage for resistance today, we will surely lose the value of some effective herbicide products or families and be faced with fewer more expensive options in the future.



## Don't Restrict Atrazine Use

GREENSBORO, N.C.—During the NCGA Leadership program, the 1994-1995 class participated in a comprehensive seminar on the future of the status of atrazine.

Since that time, the Environmental Protection Agency (EPA) has announced plans to conduct a special review of atrazine, simazine and cyanazine. In this review process, the EPA will review the information regarding the technical and scientific aspects of these products.

Corn growers have the opportunity to contribute to the review process by voluntarily commenting on the product use and economic impact on farmers. NCGA members who are interested in commenting may write the EPA before March 23.

If you write to the EPA, you may wish to include a description of how atrazine label changes and best management practices (BMPs) have impacted water quality in your farming operation. Other points which could be mentioned include:

- Economics and effective-

- ness
- Broad spectrum weed control
- Grass control
- Conservation tillage application
- A tank mix partner.

Further restrictions on atrazine would create a hardship on corn growers without safe, economically viable alternatives. Additional restrictions on atrazine could also have an impact on the use of more than 20 products currently on the market, including: Aatrex®, Extrazine®II, Sutazine®, Shotgun™, Bicep®, Marksman®, Surpass®100, Bullet®, Laddok®, Buctril®+Atrazine, Lariat®, Guardsman®, Harness®Xtra.

Letters to the EPA should be addressed as follows: Public Response and Program Resources Branch (OPP-30000-60), Field Operations Division (7506C), Office of Pesticide Programs, Environmental Protection Agency, 401 M. St. SW, Washington, DC 20460.

It is important to make sure OPP-30000-60 is written on both the letter and the envelope.

**Table 2. Plan Tank-mix Strategy.** This table provides examples of herbicide programs for corn and their potential for preventing resistance. For example program 1 (Bicep + Prowl) includes three different herbicides (atrazine, Dual and Prowl) with three different modes of action (PSI, Shoot and Root inhibitors). However for TR Lambsquarters only one of the three herbicides is effective (Prowl) for pigweed all three are effective and for giant foxtail two (Dual and Prowl) of the three are effective. Try to select programs where more than one herbicide class is effective especially for weeds like pigweed.

Weeds	Program 1	Program 2	Program 3
	Bicep + Prowl	Broadstrike+ Dual	Harness Xtra + Banvel post
TR Lambsquarters	0+0+1 = 1	1+0 = 1	0+0+1 = 1
Pigweed	1+1+1 = 3	1+1 = 2	1+1+1 = 3
Giant foxtail	0+1+1 = 2	0+1 = 1	1+0+0 = 1

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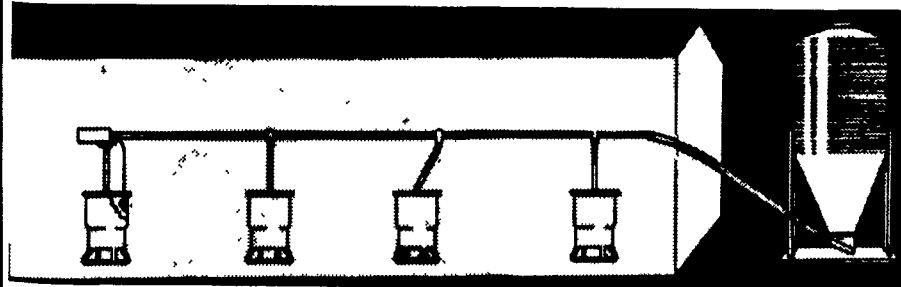
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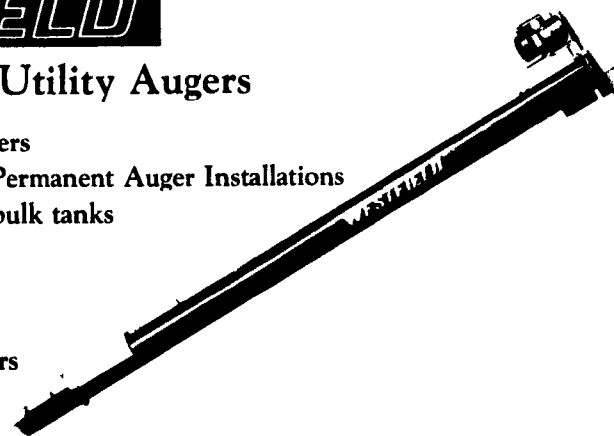


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