

Avoiding Herbicide Resistance in Weeds (A3615)

The key to minimizing herbicide-resistant weed problems in your fields is to avoid continual use of herbicides with the same *mode of action* (way of killing weeds). Strategies for controlling weeds while avoiding the development of herbicide resistance are listed below. These strategies should be used in combinations appropriate to the situation as one alone may not be totally effective.

- **Use herbicides only when necessary to prevent economic loss.** Base herbicide use on the species present or expected, and their density.
- **Rotate herbicides.** Make no more than two consecutive applications of herbicides with the same mode of action against the same weeds...even if the crop has been rotated...even if growing a herbicide-resistant crop.

After using herbicides in the high risk category once, rotate to a herbicide with a different mode of action before using the high risk herbicide again. (See chart.)

Make sure that herbicides applied in tank-mixed, prepackaged or sequential mixtures have more than one mode of action.

- **Rotate crops.** Where possible use crops with different life cycles. For example, rotate corn or soybeans (summer annuals) with winter wheat (a winter annual) or alfalfa (a perennial).
- **Use mechanical weed control methods.** Rotary hoe and cultivate to complement herbicide treatments.
- **Scout fields regularly for weeds.** Respond quickly to increases in weeds with suspected herbicide resistance to avoid their spread.

Before using a herbicide, check to make sure that the previous two herbicide applications on that field did not include a herbicide in the same mode of action group directed at the same weeds.

Risk of Resistance	<i>Mode of Herbicide Action</i>	<i>Herbicides with this Mode of Action</i>
High	Amino Acid Synthesis Inhibitors (ALS Inhibitors)	Accent, Arsenal, Battalion, Beacon, Broadstrike, Classic, Escort, Express, Harmony, Oust, Permit, Pinnacle, Pursuit, Telar
	Lipid Synthesis Inhibitors	Assure, Fusilade, Option, Poast, Select
	Cell Membrane Disrupters	Blazer, Cobra, Gramoxone Extra, Reflex
Medium	Contact Photosynthesis Inhibitors	Basagran, Buctril
	Pigment Inhibitors	Command
	Root Growth Inhibitors	Balan, Prowl, Sonalan, Trifluralin (Treflan, etc.)
	Systemic Photosynthesis Inhibitors	Atrazine, Bladex, Evik, Lexone/Sencor, Linuron, Simazine, Sinbar, Velpar
Low	Amino Acid Derivatives	Roundup, Touchdown
	Growth Regulators	Banvel, Clarity, Crossbow, MCPA, MCPB, Stinger, Tordon, 2,4-D, 2,4-DB
	Shoot Growth Inhibitors	Alachlor (Lasso, Partner, etc.), Dual, Eradicane, Frontier, Harness, Ramrod, Ro-Neet, Surpass, Sutan+