

# Marestail Menace: Glyphosate Resistance

by Matt Hagny

TECHNIQUE

Hagny is a consulting agronomist for no-till systems, based in Wichita, Kansas.

Marestail, a.k.a. horseweed or fleabane (*Conyza canadensis*), a very common weed across the U.S. and Canada, now has many localized populations that are resistant to glyphosate, including a number of locations in Nebraska, Kansas, Oklahoma, and Missouri. Marestail often produces 100,000 seeds per plant, which disperse in the wind as well as being carried on farm equipment. The seeds are very small and germinate readily when in contact with the soil surface and moisture is adequate. Marestail can act as a winter annual that germinates in the fall, or a summer annual that germinates in the spring or early summer. Dallas Peterson, KSU Extension Weed Specialist, indicates they typically have achieved nearly complete control of marestail with late fall treatments in research at Manhattan, KS—suggesting mainly fall germination—but they had a significant number of marestail emerge in the spring of 2007 in an experiment near Wellington, KS, despite good moisture in the fall. Research in Indiana and Ohio also indicates greater fall germination of marestail in the northern areas of these states with more spring germination in the southern parts of the states. Cropping systems and herbicide programs undoubtedly exert major selection pressures, perhaps accounting for some of the regional variation. Because of these factors, it can be quite a challenge to control this highly adaptive and prolific weed.

Several herbicide modes of action (MOAs) remain effective in Kansas and the nearby region, at least for now. One of the most important is the triazine/urea family of chemistries which includes atrazine, simazine, metribuzin (e.g., Sencor), and diuron (Karmex). Fall or winter applications of 1 – 1.3 lbs/a of atrazine (preferably tank-mixed with 2,4-D) are excellent for fields going to corn or milo, followed by appropriate use of atrazine in the springtime. In high-rainfall areas, simazine (corn only, not milo) may outperform atrazine. Similarly, Sencor is useful ahead of soybeans, while Karmex can be used ahead of cotton so long as soils aren't too sandy. These herbicides provide both foliar and residual activity, although including 2,4-D is wise to improve control of emerged marestail (and other species) and to provide a second MOA. The triazine/urea family can also be useful in 'burndown' applications after wheat harvest, although marestail are more difficult to control at this time. Try to include other MOAs whenever possible, since marestail in Michigan are already resistant to the triazines & ureas and we don't dare get overly reliant on a single chemistry.

Growth-regulators such as 2,4-D, MCPA, and Stinger will be extremely important in this fight. These chemistries are excellent for springtime applications in-crop for wheat, barley, and some millet types, as well as non-selective burndowns in non-crop intervals (preplant or post-harvest). In regions with sensitive crops such as cotton, summertime burndowns will have less trouble with volatile vapors from amines as opposed to ester formulations, although esters have in fact been used adjacent to cotton without problems—however, the utmost caution must be observed with *any* 2,4-D application if cotton or other sensitive plants are nearby. For both 2,4-D chemistries, fine droplet and vapor movement

**Dallas Peterson: "Once we start relying more on this chemical family for marestail control, it won't take long for the ALS resistance to appear."**



Photo by Dallas Peterson.

Marestail in cotton.