

Large Weeds May Warrant Alternative Control Methods

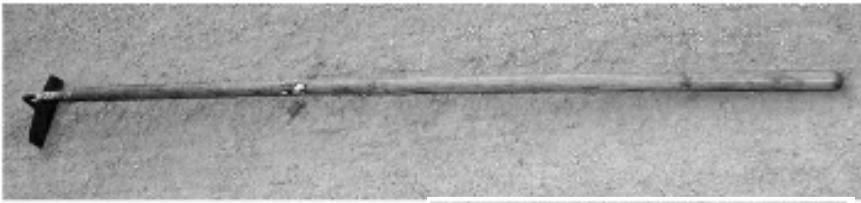
DR. AARON HAGER

URBANA, ILL.

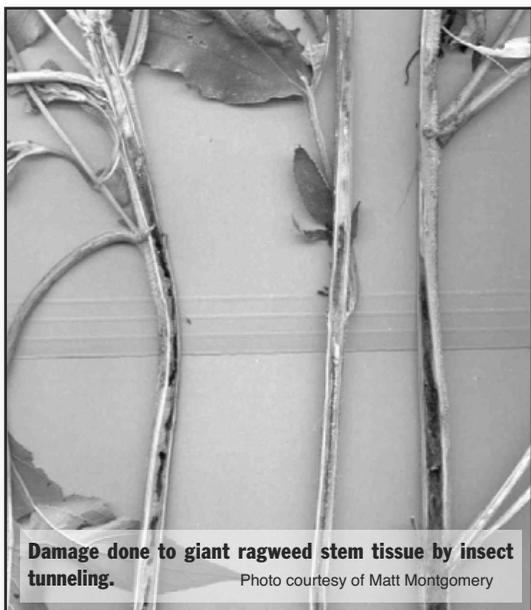
Windshield observations around Illinois have revealed large summer annual weeds – two to three feet tall – in many soybean fields. These large weeds might require nontraditional weed management tactics to achieve complete control. The photos here are a reminder of two such alternative, nontraditional tactics that can, when operated by either novice or veteran weed management practitioner, provide complete and consistent control of large weeds. We encourage veteran users of these implements to introduce them to and train the next generation of users.

Several summer annual weed species are present across many areas of the state, but the very large plants most commonly observed include horseweed/marestail, common lambsquarters, and waterhemp. Several reasons could explain their presence, but in many cases it appears that

trolled by foliar-applied PPO inhibitors (such as lactofen [Cobra], fomesafen [Flexstar], and acifluorfen [Ultra Blazer]) in conventional or glyphosate-resistant soybean varieties or by glufosinate (Liberty) in glufosinate-resistant (Liberty Link) soybean varieties. However, it is very important to remember that these herbicides do not extensively translocate within the weed following their absorption through the leaf surface,



A corn knife (right) or a hoe (above) can be used effectively to remove large weeds from soybean.



Damage done to giant ragweed stem tissue by insect tunneling.
Photo courtesy of Matt Montgomery

these large weeds either escaped preplant tillage operations, escaped preplant burndown herbicide applications, or emerged after the last preplant tillage operation and before planting.

Plants that escaped preplant tillage often have stems that are contorted (sometimes described as “C-shaped”) when, for example, the sweep from the field cultivator damaged but did not completely sever the stem. These plants can be very difficult to control with postemergence soybean herbicides, and supplemental mechanical tactics (see photos) sometimes represent the only reliable choice.

Escaping a preplant burndown application could have occurred for more than one reason. Populations of waterhemp and marestail resistant to glyphosate are known to have developed across much of Illinois, and some of the existing large plants of these species are undoubtedly resistant to glyphosate. Environmental conditions preceding and during the application of burndown herbicides were not always conducive to good herbicide performance, which could have reduced the activity of glyphosate tank-mix partners against glyphosate-resistant plants.

Glyphosate-resistant waterhemp can be con-

and control of large weeds is often less consistent than control of small ones (5 inches or less). Few herbicide options are available to control emerged glyphosate-resistant marestail in soybean; cloransulam (FirstRate) or chlorimuron (Classic) can be applied to conventional soybean varieties or tank-mixed with glyphosate in glyphosate-resistant soybean varieties, but control of marestail plants larger than 6 inches is often inconsistent. Hoes and corn knives often provide the best control of large marestail plants.

Another reason a weed might escape an application of burndown herbicide is damage to the internal stem tissue caused by insect tunneling or feeding. Weed species known to harbor stem-boring insects include waterhemp, giant ragweed, horseweed/marestail, annual smartweed species, common ragweed, and common lambsquarters. Researchers have identified insects from several orders present in these weed species as either larva or adults, including Lepidoptera (*Papaipema nebris*, *Ostrinia nubilalis*, *Epiblema* spp.) and Coleoptera (*Rhodibaenus tredecimpunctatus*, *Lixus* spp., *Dectus* spp., *Hippopsis lemniscata*).

This is not the first season in recent memory where insect tunneling appears to have reduced the effectiveness of translocated herbicide. Researchers at the University of Illinois previously have investigated the relationship between insects and weeds. One of the more interesting results was that most stem-boring insects prefer large-diameter stems to small diameters: it was much easier to find an insect tunneling in the stem of a giant ragweed 12 inches tall than in one 4 inches tall. This research, which illustrates the phenomenon of insect tunneling in weeds not confined to the modern agricultural era, was published in July 1976. If damaged stem tissue caused by insect tunneling was partly or entirely responsible for the plant's surviving following a herbicide application, it seems likely that a supplemental application would yield similar results. Alternative control options, such as the mechanical ones referenced earlier, will likely provide more consistent and complete control of weeds with stems damaged by insect tunneling or feeding. Δ

DR. AARON HAGER: Associate Professor, University of Illinois