

Try prescription tillage for better herbicide results

LITITZ — Seldom does anything beat the time-tested, preplant incorporated herbicide treatment for selectively controlling yellow nutsedge or johnsongrass.

Besides making the herbicide virtually weatherproof, incorporation insures better control of these tough weeds by placing the herbicide in direct contact with sprouting rhizomes or tubers. Incorporated herbicides generally provide more consistent control of common annual grasses, too.

Some popular herbicides such as Sutan+ and Eradicane for corn, Eptam, Balan and Tolban for new alfalfa seedings, and Treflan and Vernam for soybeans, must be incorporated. Other herbicides, such as Dual and Lasso give farmers the option of incorporation or surface application, though a higher rate of these chemicals is usually needed when incorporating.

Nonetheless, it's important to pay close attention to the herbicide's label for specific application instructions and restrictions.

For years the tandem disk harrow has been the old standby for incorporation — and it still is. But more interest today is reduced tillage and fuel consumption, coupled by the introduction of new and improved tillage implements,

has encouraged farmers to tinker with other tillage systems for herbicide incorporation.

So what is the best tillage system today for herbicide incorporation? Research over the years at Penn State has shown that several intricate variables enter the picture when evaluating an incorporation method.

First, the weed spectrum in a field must be considered when selecting an incorporation tool and setting tillage depth. Most annual grasses, for instance germinate in the top two inches of soil, while nutsedge and johnsongrass emerge from their respective tubers and rhizomes from as deep as six inches.

Preplant herbicides must be positioned in the weeds' germinating zone to be effective.

For example, if the field is primarily infested with annual grasses, incorporating the herbicide to a shallow depth should do the trick. However, if deep-germinating weeds such as nutsedge are also a problem, it may be necessary to incorporate the herbicide deeper or a higher application rate may be needed to cover both shallow- and deep-germinating weeds.

Second, the performance of today's popular incorporation tools — the tandem disk, heavy disk,

cultimulcher and power-driven Lely Roterra — often hinges on whether a plow, chisel or heavy disk was used for primary tillage.

The number of tillages, if any before incorporation also affects the herbicide's placement.

By impregnating a fluorescent dye onto a clay bonding material incorporating it with different tillage tools, and observing the results with a black light Penn State agronomists have proven that herbicide distribution can vary significantly under various primary and secondary tillage systems.

In each test, and adjacent plot was treated with Sutan+ herbicide so actual weed control could also be monitored.

Listed below are some observations on the performance of each incorporation tool when used after a plow and one disking, chisel plow or heavy disk.

The plots were infested with both shallow-germinating annual grasses and deep-germinating yellow nutsedge.

These findings may serve as a guide to farmers when planning next season's weed control program.

After moldboard plowing and a

single tandem disking:

Cultimulcher: The cultimulcher was one of the best herbicide incorporation tools when controlling annual grasses and nutsedge. Although incorporation depth was consistently shallow — only one to two inches — the cultipacking action evidently helped Sutan+ control the deep-germinating nutsedge.

Lely Roterra: The Roterra which stirs soil horizontally, provided very even herbicide incorporation down to two inches.

This treatment was the second best for controlling annual grasses but among the worst for controlling nutsedge.

Tandem Disk: The tandem disk was equal to the cultimulcher and Roterra in controlling annual grasses. It was also equal to the cultimulcher for control of nutsedge.

However, the tandem disk placed the herbicide deeper in the soil than the cultimulcher and Roterra, which may have slightly reduced the herbicide's effectiveness on the shallow-germinating grasses.

After chisel plowing:
Lely Roterra: The Roterra in-

corporated Sutan+ evenly down to a three-inch depth.

Annual grass control was excellent, but yellow nutsedge control was not good. Apparently the incorporation was not deep enough or the Sutan+ was not sealed in for effective yellow nutsedge control.

Tandem Disk: Incorporation with a tandem disk following a chisel plow was to a depth of about four inches. This is an inch deeper than the tandem disk incorporated herbicide applied to a smoother surface such as after plowing and disking once.

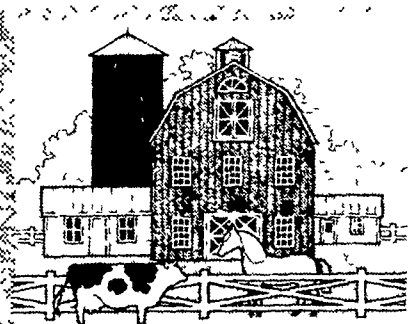
The resulting annual grass control and yellow nutsedge control were both excellent.

Heavy disk: The heavy disk did a very uneven job of herbicide incorporation, but this is not to say it shouldn't be used.

Unlike other grass herbicides, Sutan+ Eradicane, Eptam and Vernam vaporize in the soil and to some degree, even out a poor incorporation job.

The heavy disk incorporation Sutan+ deeper than any other tool though the herbicide was incorporated in a spiked pattern that appeared to correspond with the

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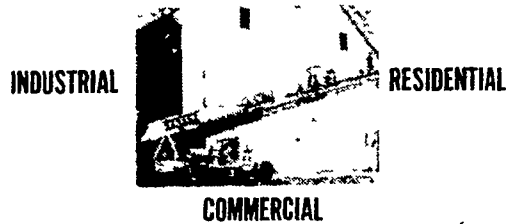
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