

Velvetleaf problems made worse by warm spring in '85

CHICAGO - The warm, dry weather experienced across the Corn Belt last spring was a mixed blessing for farmers in the area. It allowed an early start on planting, always a good sign.

But the lack of rainfall also prevented activation of some pre-emergence herbicides, such as atrazine and Bladex, resulting in increased problems with large-seeded annual broadleaf weeds—especially velvetleaf.

Robert Hartzler, Extension associate weed scientist at Iowa State University, Ames, says, "Pre-emergence herbicides at rates normally suitable for broadleaf control didn't work. We had more velvetleaf escapes than usual." As a result, farmers once again had to turn to early postemergence herbicides to attain velvetleaf control.

While conditions in 1985 emphasized the velvetleaf problem, weed specialists and crop consultants point out that this weed, also known as buttonweed or butterprint, has always been tough to control. And now, recent research indicates that the velvetleaf problem is apparently much more severe than most farmers perceive.

According to a recent Doane-Western, Inc., survey, velvetleaf infests nearly 25 million acres of cropland in the United States. Twenty-four percent of the farmers surveyed feel that velvetleaf reduces corn yields by one to five bushels per acre, and an additional 3 percent place yield reductions as high as 10 bushels per acre. Unfortunately, this figure may be even higher.

Extensive research by the University of Kentucky indicates that corn yields are reduced by 31 percent where velvetleaf is not controlled. Thus, the yield loss in a velvetleaf-infested field with the potential to yield 150 bushels per acre could be as great as 46 bushels per acre. Simple arithmetic based on current corn prices quickly establishes the dollar losses resulting from inadequate velvetleaf control.

The physiology of velvetleaf makes it tough to control. Its large seeds store abundant supplies of nutrients, and it can germinate from much deeper in the ground

than small-seeded annuals, such as pigweed. As a result, velvetleaf can escape pre-emergence herbicides contained in the top few inches of soil.

Some pre-emergence herbicides are successful against small-seeded annuals. Most, however, either miss weeds germinating from deeper in the soil, or don't offer adequate residual control of large-seeded annuals to canopy.

Dry spring weather increases velvetleaf's chances of escaping pre-emergence herbicides. Lack of moisture allows velvetleaf seedlings to emerge through dry top soil without absorbing the chemicals. And even if some pre-emergence herbicide is absorbed, the weed's large seed may still provide sufficient nutrients to give a chance to escape, says Dr. Wayne Olson, Velsicol Chemical Corporation Product Development field manager in Indianapolis.

"With small-seeded annuals," Olson explains, "there won't be enough energy to bring the plant back if it's damaged by herbicides—there's not enough reserve carbohydrate to fight the damage. Velvetleaf's large seed allows it to withstand a number of chemical and environmental stresses."

Iowa's Hartzler recommends that, for effective velvetleaf control, farmers follow their pre-emergence herbicides with an early postemergence herbicide or a pass with the cultivator. He says velvetleaf problems were not as bad this year where it was dry enough to cultivate or where

farmers applied postemergence herbicides. Post treatments, according to Hartzler, usually provide more consistent control than pre-emergence herbicides, although a certain amount of velvetleaf escaped some postemergence herbicides this year.

There are two more important reasons to treat early.

"Weeds are easiest to control in the seedling stage," Hartzler says. "Also, early control eliminates competition between weeds and corn for nutrients and moisture. The real competition occurs long after the time it's practical and effective to control velvetleaf."

The major University of Ken-

tucky experiments during 1983 and 1984 demonstrated that corn was most sensitive to stress from just prior to tasseling, until three weeks after brown silk. Velvetleaf growing with corn after tasseling causes significant yield reductions due to competition for light and soil moisture. "Weeds controlled before corn reaches the five-leaf stage will not affect yields," adds Dr. Olson.

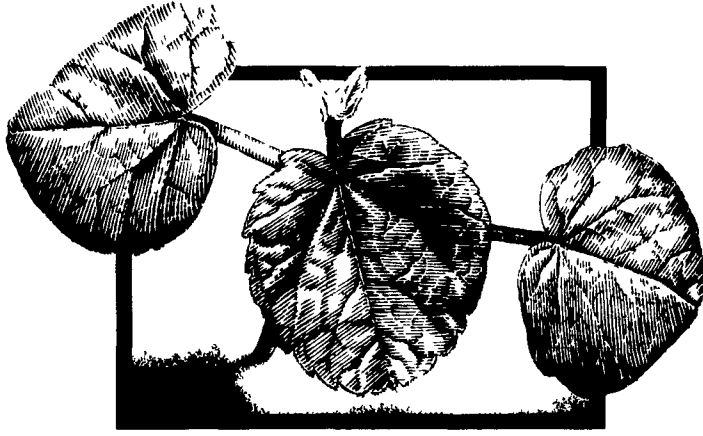
"The other value in early post treatment is preventing seed production," says Hartzler. "Some farmers go in with a highboy and spray 2,4-D after corn is in the brown silk stage. That prevents seed production in cocklebur. But by that time, 50 to 75 percent of the

velvetleaf seeds are developed and on the ground. If you let it get that far, you're going to have problems later."

Velvetleaf seeds can remain viable in the soil for 50 years or longer. If a significant number of weeds are allowed to go to seed, weed seed numbers in the top soil layers will increase and problems will intensify.

If weeds are controlled to prevent seed production, the number of seeds in the surface soil will decline. An extensive six-year University of Illinois study documented a 70 percent decrease in weed seeds in soil where there was effective annual broadleaf control.

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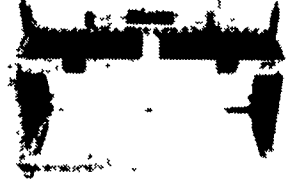
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