

A Different Approach to Managing Annual Grass Weeds

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Editor's Note: Some food for thought over the upcoming winter!

Generally, at this point in the year you may have time to strategize for next year regarding plans for managing warm-season annual grasses such as crabgrass, goosegrass or yellow foxtail. A number of excellent pre-emergence herbicides are available to the turf manager to prevent the development of these persistent weeds. Usually one application of any of the herbicides prior to weed emergence, at the labeled rate, is adequate for six to eight weeks of control. Better yet, with a follow-up application at a reduced rate, season-long control can often be obtained.

For many high-quality turfs, it is not necessary to initially apply a pre-emergence annual grass herbicide each spring. Once the turf density is sufficiently thick, most annual grasses will not compete well except in areas of injury or thinning. The dilemma presented to the turf manager is, how often should you apply a pre-emergence annual grass herbicide? Is every other year appropriate or should you apply each year just to be safe?

Reducing the number of pre-emergence grass weed applications to a turf would not only save your budget, but also would help to reduce the total load of herbicide introduced into the turf environment. While these are both desirable goals, your main objective is high-quality turf that provides the best playing surface.

Waiting for them to appear

There is another approach to managing annual grass weeds in turf. In an IPM philosophy, it would be better to manage the weeds only when they appear. Postemergence annual grass herbicides are readily available for most turf species. While fewer herbicides are available for post-emergence application than for

Since the germination of annual grasses such as crabgrass is continuous throughout the season, there generally isn't a "best time" to spray. In almost any turf, you can find examples of newly germinated crabgrass along with relatively mature crabgrass plants.

pre-emergence control, several excellent herbicides for cool season turfs exist. The organic arsenicals (MSMA, DSMA, etc.), Acclaim and Dimension all work well when applied at the appropriate rate and time.

There have been several concerns with the use of these materials on fine turf. First, the most effective application window is generally fairly short, oftentimes

only a few days after the weeds first emerge. Since the germination of annual grasses such as crabgrass is continuous throughout the season, there generally isn't a "best time" to spray. In almost any turf, you can find examples of newly germinated crabgrass along with relatively mature crabgrass plants.

In irrigated turf, crabgrass germination can occur after each irrigation cycle. This presents a considerable problem using a postemergence herbicide control strategy. Repeated use of any of the postemergence grass herbicides can create short-term injury or quality reduction to the turf. If you wait to apply the herbicide, some of the crabgrass or other annual grasses can grow to a point where they resist control. Using higher rates increases the possibility of turf injury. It is the possibility of turf injury that often limits the use of postemergence herbicides. As the summer heats up, the possibility of injury can increase.

One postemergence annual grass control strategy has been evaluated for a number of years. In this strategy, the initial application of any chosen grass herbicide is only made after the first germination of any targeted weeds is detected. In this initial application, a postemergence grass herbicide is only applied to turf to control any visible annual grass weeds. A pre-emergence herbicide is also applied to the same turf, either in a mixture or in a second follow-up application to provide extended control of annual grasses in the same area. The idea is that if some annual grasses are germi-

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nating in an area, the likelihood exists that more will germinate throughout the season each time the surface becomes moist.

With this strategy, to maximize the persistence of the preemergence herbicide, it would be helpful to delay the initial application as long as possible to reduce the period of time remaining in the season during which the preemergence herbicide needs to provide effective control. Generally, a postemergence grass herbicide should be applied before any crabgrass plants began to tiller. Even at the four- to six-leaf stage of growth, control of crabgrass is only partially effective.

Drive—a new post-emergence herbicide

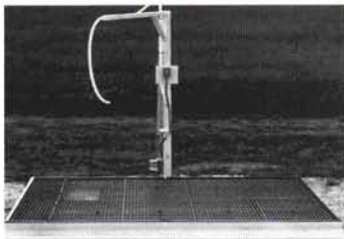
The EPA has registered a new herbicide for use as a postemergence annual grass control in turf.

Drive 75 DF provides the turfgrass manager with a new option for managing both annual grass and broadleaf weeds after they appear. Since most cool-season turfgrass species have good-to-excellent tolerance of this herbicide, it can be used later in the season than many other existing herbicides.

Drive 75 DF is now available from the BASF Corporation and its common name is quinclorac. Since 1988, quinclorac has been evaluated as a turf herbicide at many university research centers. My initial experience with the compound was an evaluation of its preemergence capabilities in a field trial conducted in 1989. BASF quickly realized its greatest potential was as a postemergence herbicide.

Quinclorac has been evaluated under several experimental names and can be found in the results of many universities' annual research summaries as BAS 514, BAS 090, Impact or Drive. The results of the studies can be found in two distinct time periods. Much of the initial work was done between 1989 and 1993 and might be referred to as the early work. BASF discovered some limitations with the surfactant that was used in the initial formulation.

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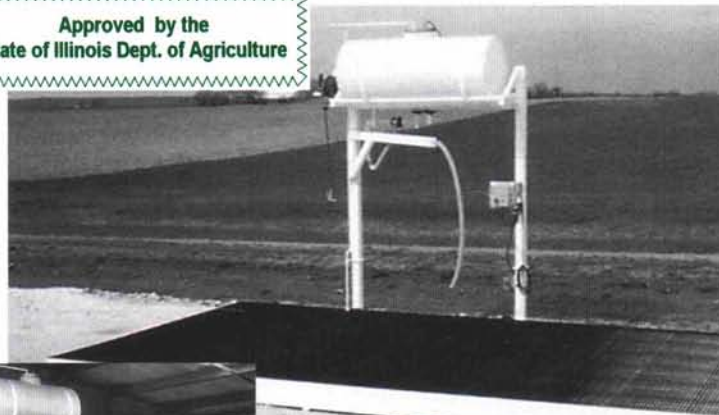
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These limitations prevented quinclorac from receiving EPA registration. Through additional internal field trials, BASF discovered that the substituted surfactants decreased the effectiveness of quinclorac; a brief period ensued when university researchers did not evaluate the compound. In 1997, a new formulation of Drive was made available to university researchers and trials have been conducted over the past two years. I'll refer to this as the current evaluations.

Early evaluations

From 1989 to 1992, quinclorac was evaluated at many university research sites. Annual research summaries from each of the institutions contain the results of the studies. I will present only the results of studies conducted at the University of Illinois field research facility in Urbana to

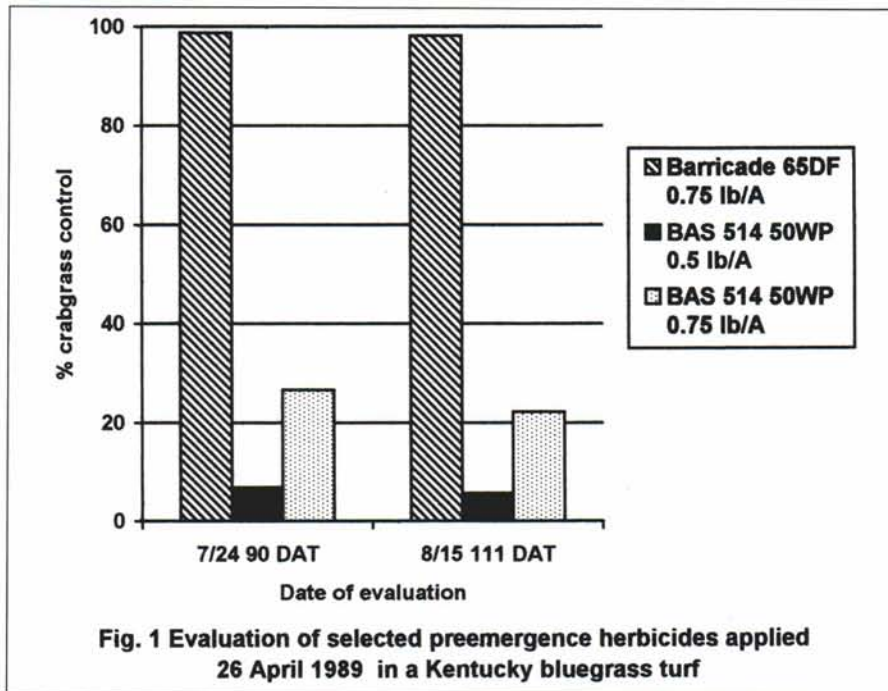


Fig. 1 Evaluation of selected preemergence herbicides applied 26 April 1989 in a Kentucky bluegrass turf

illustrate the general performance of quinclorac on common turfgrass weeds.

In 1989, we evaluated quinclorac (BAS 514) as a preemergence

herbicide for crabgrass control. The results of this study, shown in figure 1, indicate that this formulation of quinclorac was not an effective pre-emergence herbicide. Our

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evaluations of quinclorac continued in 1990 and 1992, however, now we studied it as a postemergence crabgrass herbicide. Applications were made in separate experiments to either young (1-3 leaves) crabgrass plants (figure 2) or mature (1-2 tillers) crabgrass plants (figure 3). This postemergence control strategy was relatively effective in comparison to a standard material such as Acclaim 1 EC, but crabgrass control with quinclorac was somewhat slower for young crabgrass seedlings (figure 2).

When applied to more mature plants (figure 3), quinclorac showed crabgrass control capability somewhat comparable to Acclaim 1 EC. What is not shown by the two figures is the tolerance that a Kentucky bluegrass turf has to an application of quinclorac. While a slight discoloration was observed for

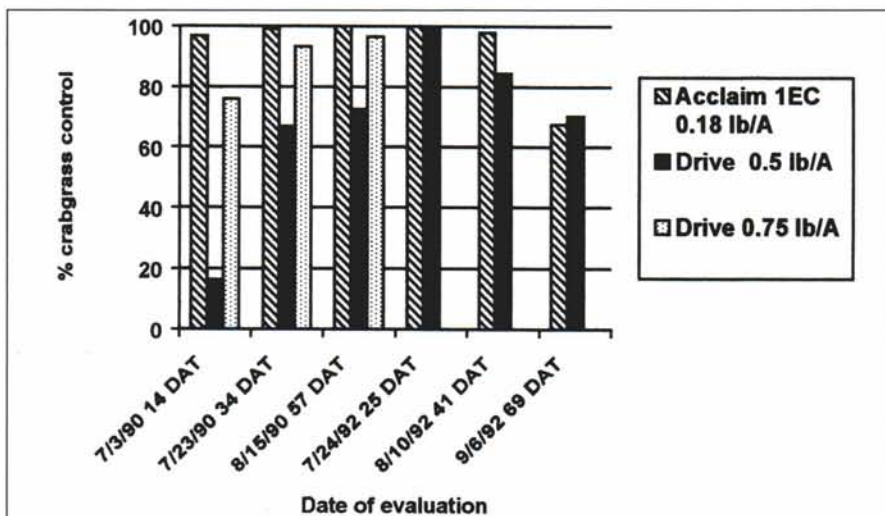


Fig. 2 Evaluation of selected postemergence herbicides applied to young crabgrass in a Kentucky bluegrass turf

Acclaim treatments in both experiments, no difference in quality appeared between the Drive-treated turf and untreated areas. This margin of safety appears to be one of the best attributes of this herbicide.

Current evaluations

In 1998, we evaluated a new formulation of Drive 75DF for both preemergence and postemergence activity on several selected turfgrass weeds. Unlike the 1989 experiment, Drive 75DF at 0.5 lb./A was quite successful as a

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preemergence crabgrass control in a Kentucky bluegrass turf for up to 17 weeks (figure 4). This is one of several indications of how important a surfactant or adjuvant was in enhancing quinclorac activity. Either the new Drive formulation or added surfactant has a dramatic effect on preemergence crabgrass control. Postemergence applications (data not shown) were also quite successful with no injury to the turf.

In our earlier experiments, we also noticed the ability of quinclorac to control a few common

broadleaf weeds in postemergence applications. White clover appeared to be very sensitive to applications of Drive. In 1998 postemergence broadleaf control experiments (figures 5 & 6), both dandelions and white clover were effectively controlled with Drive 75 DF at 0.5 lb./A. In these experiments, the Kentucky bluegrass turf again showed no sign of injury from the Drive applications. Creeping bentgrass, maintained at fairway heights, also has good tolerance for Drive applications. Drive, therefore, might be an excellent material for white clover control in bentgrass fairways.

Summary

Drive 75 DF provides the turfgrass manager with a new option for managing both annual grass and broadleaf weeds after they appear. Since most cool-season turfgrass species have good-to-excellent tolerance of this herbicide, it can be used later in the season than many other existing herbicides. As with any new herbicide, you should evaluate it in a few selected areas on your own site before adopting it for widespread use. I feel it will provide an excellent option for maintaining high-quality turf.

