

Hoelon — A New Tool for Goosegrass Control

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GOOSEGRASS (*Eleusine indica*) is probably the worst summer annual grass weed found in golf greens. It is adaptable, in part, due to its abundant seed production, its prostrate growth habit which allows it to thrive under low mowing heights, and its tolerance to compacted, high-soil-moisture areas. Hoelon (common name: diclofop-methyl) is a new post-emergence herbicide that shows excellent potential for goosegrass control with little resulting phytotoxicity to bermudagrass. **Currently, Hoelon has a 24(c) label for turf use only in the state of Florida.** It is sold by the Hoechst-Roussel Agri-Vet Chemical Company, located in Somerville, N.J.

Diclofop Research

Diclofop-methyl is classified in the oxy-phenoxy-acid ester herbicide

family. Two other members of this herbicide family used on turf include Acclaim and Poast. Initial applications of these herbicides were in row crops where they were shown to control many annual grass weeds with little injury to broadleaf crops. Annual ryegrass (*Lolium multiflorum*) and wild oat (*Avena fatua*) control in wheat, barley, and soybeans are currently the primary uses of Hoelon. Reports from Hawaii were the first to reveal potential for Hoelon use in turf. Additional research at the University of Florida and Clemson University indicates that Tifway, Tifgreen, Tifdwarf, Ormond, and common bermudagrasses have excellent tolerance to Hoelon, and possibly other bermudagrass cultivars also would display good tolerance. Use rates range from 0.75 to 1.5 fl. oz. per 1,000 sq. ft. Research indicates that at least two-fold safety is anticipated on

healthy growing bermudagrass. This safety factor helps ensure that bermudagrass damage should be minimum in the event that excessive overlapping or miscalibration occurs. Two applications are allowed per year. Soil half-life for Hoelon ranges from 10 to 30 days, depending on soil type present.

Goosegrass is most susceptible to Hoelon when treated in the 2- to 4-leaf stage. Higher rates (1.5 fl. oz. per 1,000 sq. ft.) are necessary to control larger plants, and control diminishes when goosegrass begins to mature and produce seedheads. When small plants are treated, control is usually excellent (>95%). Experience indicates that goosegrass mowed one day prior to treatment is controlled better than those plants that are left unmowed. The treated areas should not be mowed within 48 hours after treatment to allow

Bermudagrass golf green that has unacceptable goosegrass infestation. Repeat application and/or excessive phytotoxicity would be expected with previously available herbicides.





Test areas showing bare ryegrass plots where Hoelon was applied within one month of overseeding (background) and when applied longer than one month prior to overseeding (foreground).



At this stage of growth (2- to 5-leaf stage), goosegrass is the most sensitive to Hoelon as well as to all other postemergence herbicides.

time for herbicide uptake and translocation.

Weaknesses and Precautions

Hoelon does have weaknesses as well as strengths. Excessive phytotoxicity to bermudagrass can occur if treatments are made when the grass is growing under environmental or physiological stresses. These stresses could include close mowing (scalping), cool temperatures, drought, nitrogen deficiency, excessive nematode pressure, and shade. As with most herbicides, only mature, actively growing turf should be treated. Although it is very active on goosegrass, control of other weeds with Hoelon appears to be limited. Crabgrass (*Digitaria spp.*) is only partially controlled (50 to 75%), while annual bluegrass (*Poa annua*) appears to be unaffected. Other annual grasses reported to be partially controlled include fall panicum (*Panicum dichotomiflorum*), foxtail (*Setaria spp.*), and itchgrass (*Rottobellia exaltata*). Perennial weeds, such as dallisgrass (*Paspalum dilatatum*) or torpedograss (*Panicum repens*), are not susceptible. An important characteristic of Hoelon is its slow rate of kill. Usually it takes two to three weeks for complete control to be achieved. Superintendents should

account for this delay when planning for club events and other important tournaments. Good soil moisture is also necessary for maximum activity.

Another concern with the use of Hoelon is its effects on germinating overseeded ryegrass. Frequently, goosegrass is most noticeable and therefore most often treated in late summer just prior to overseeding. Our research work indicates that a minimum of six weeks should be allowed between the last application of Hoelon and the anticipated date of overseeding with perennial ryegrass. Applications less than six weeks before overseeding may delay germination. Hoelon's effects on other grasses used for overseeding are not fully known.

Tank Mixing

Questions are often asked about tank mixes with Hoelon to increase efficacy. As a general rule, tank additives such as crop oils or adjuvants are not necessary with Hoelon. Additives are recommended only when large, mature goosegrass is present, but an increased burn potential to treated bermudagrass can be expected. Normally this burn is temporary (one to two weeks), but may cause concern if noticeable prior to

major golfing events. Research at the University of Florida indicates that tank-mixing with other goosegrass control materials such as the organic arsenicals (e.g., MSMA and DSMA) generally results in reduced control (approximately 10% to 25% less). This reduction in control possibly results from the contact mode of action of the organic arsenicals which may damage external plant cells that normally are ports of entry for Hoelon to be absorbed and translocated. Tank-mixing with metribuzin (Sencor) often causes unacceptable phytotoxicity to the bermudagrass, which requires one to three weeks to recover. Other research suggests that no currently labeled turf herbicides should be tank-mixed with Hoelon and that 2,4-D treatment should not follow Hoelon applications for at least one week.

Golf course superintendents in Florida are often amazed at the control of goosegrass following treatment. Hoelon can provide excellent control without repeat application, as required with other herbicides, and does not normally injure bermudagrass. This is especially encouraging for courses that have perpetual goosegrass problems. Hopefully, this material will become more widely available in other states in the near future.