

The Preemergence Herbicide Barrier Myth

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A uniform application of the preemergence herbicide creates a herbicidal barrier that kills weeds during germination. If this barrier is disturbed there is a decrease in weed control. The question is, does turf aerification (i.e. coring, spiking) disturb this barrier sufficiently to cause a decrease in weed control?

Current information on this question is contradictory. B. E. Branham (1986) at the University of Michigan found no significant effects on preemergence herbicide control of crabgrass in annual bluegrass fairways from aerification. B. J. Johnson (1987) found similar results in common bermudagrass at the University of Georgia. In contrast many preemergence herbicide labels specifically direct the user not to perform soil disturbing practices (such as aerification) after herbicide application.

Research on the effects of aerification on the performance of preemergence herbicides began in the Spring of 1987 at the NCSU Turf Field Center. This research was for a Masters' Degree Thesis with Dr. W. M. Lewis and Dr. Joe M. DiPaola. Test plots were established in creeping bentgrass, Tifgreen hybrid bermuda and common bermudagrass (fairway conditions).

Preemergence herbicides were applied March 25 both years (1987 and 1988). Four weeks after herbicide application and plots were aerified using a Ryan Greensaire II with ½ inch diameter tines. Cores were removed or returned according to treatment designation.

Crabgrass counts were made at monthly intervals beginning in June. A one square meter frame was placed on each plot and the crabgrass plants in that area were counted.

In 1988 counts in bentgrass indicate no significant differences (for any herbicide) between non-aerified plots and plots that were aerified and the cores removed. Although aerifying disturbed the herbicide barrier, it did not create an environment favorable for crabgrass germination.

In contrast, however, when plots were aerified and the cores returned, there was a significant decrease in crabgrass control compared to aerifying and removing the cores. The process of returning cores diluted the herbicide with untreated soil from the bottom of the core. Ungerminated seed in the cores were able to germinate in the soil returned to the hole.

Turfgrass managers who return cores following aerification can expect an increase in crabgrass populations. Split applications of preemergence herbicides made after aerification improves crabgrass control. Since topdressing after aerification creates a situation similar to returning cores, an increase in crabgrass can be expected unless topdressing material is sterilized.

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