

## **Controlling Annual Bluegrass Seeds in Topsoil with a Granular Soil Sterilant.**

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Annual bluegrass (*Poa annua* L.) can infest a bentgrass green during establishment, and often is a major problem when superintendents attempt to renovate a green or fairway. Golf course superintendents expend much effort trying to remove *Poa annua* from established turf. This infestation can lead to increased pesticide applications and decreased turf quality. Destruction of annual bluegrass seed reserves from the topsoil would remove, at least temporarily annual bluegrass competition. Currently, methyl-bromide can be used to sterilize the soil of greens in new construction or during renovation prior to seeding bentgrass. Methyl-bromide is not being produced any longer and will be out of use by the year 2000. Sterilization can be done quickly and can control nematodes and disease pathogens as well as weed seeds. Additionally, it would be favorable if sterilization could be used to renovate greens without destroying the architectural integrity of the greens. With these advantages, an alternative soil sterilization method would be desirable.

A study was started at the Hancock Turfgrass Research Center in 1993 to evaluate dazomet (tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazin-2-thione) as a granular soil sterilant. Dazomet is produced by BASF under the trade name Basamid. The goal of this study was to assess the effectiveness of Basamid and to optimize the rate and application method to sterilize *Poa annua* seeds to a depth of two inches in topsoil. The label rate for Basamid (100 oz. M<sup>-1</sup>) will disinfect the soil to 8 in. when incorporated with a rototiller. However, all of the *Poa annua* that develops is from the top one or two inches of soil. Sterilization of this topsoil will effectively remove the *Poa annua* problem from the soil. An effective rate of Basamid for two inches, assuming linearity, should be near 25 oz per 1000 sq. Ft. (M<sup>-1</sup>).

In October of 1993 sod was stripped from an area infested with annual bluegrass and Basamid was applied to the soil surface at four rates (5, 25, 50, and 100 oz. M<sup>-1</sup>). Hand-raking or vertical mowing was used to incorporate the material to a depth of 0.25 in. After incorporation, 0.5 in. of water was applied to dissolve the granules. In the presence of water and soil the sterilant becomes activated and diffuses through the pores in the soil. In an effort to contain the vapors, tarps were placed on one-half of the plots for the remainder of the treatment period. In an attempt to contain the vapors on the remaining plots, irrigation was applied repeatedly to maintain soil moisture near saturation on the surface.

Seven days after application the tarps were removed, and the entire area was cultivated to 0.25 in. with a vertical tine mower. Soil cores were taken from each plot to evaluate *Poa annua* control. Each core was sectioned into 0-0.5, 0.5-1, and 1-2 in. intervals and the *Poa annua* seeds in the soils were allowed to germinate. These seedlings were then counted to determine the effectiveness of the Basamid.

The results pointed to a number of factors that influence the effectiveness of Basamid. Covering the plots with a tarp improved the level of control dramatically for plots treated with the same rate of Basamid. The 100 oz. M<sup>-1</sup> rate resulted in a 99% reduction of viable *Poa annua* seed. This level of control was achieved with or without the use of tarps. The sterilization enhancement observed from using a tarp was most dramatic at the 5 and 25 oz. M<sup>-1</sup> rates. The rate of Basamid can be significantly reduced if an impermeable cover is used (Figure 1). Another study is planned to refine the rates when using a tarp between 5 and 25 oz. M<sup>-1</sup>.

Figure 1 : Effect of Using a Tarp with Basamid®

