Optimizing the Use of Basamid for *Poa annua* Control in Fairway Renovation – 2001 Results

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Introduction

Basamid is a soil fumigant that is a potential replacement for methyl bromide after it is phased out in 2005. Basamid has been on the market for many years and is used in greenhouse, nursery, and vegetable production. Basamid is a granular product that is normally incorporated through tillage. Upon contact with moist soil, Basamid turns into a gas and diffuses upward through the soil killing living organisms it contacts. However, tillage is rarely a viable option when renovating turf areas, so a non-disruptive method of incorporation of Basamid into turf areas must be found. Additionally, determining the optimum rate of Basamid and the delay for seeding after application are critical in optimizing the use of Basamid.

Experiments were performed at Purdue University and University of Illinois beginning in May and August of 2000 and again in May and August of 2001. The objectives of these studies were:

1. Determine the optimum rate for using Basamid to control *Poa annua* in a fairway renovation project.
2. Determine the optimum soil preparation method for using Basamid to control *Poa annua* in a fairway renovation project.
3. Determine the delay after application that is needed to safely seed creeping bentgrass.

How It Was Done

Virtually identical experiments were run at University of Illinois and Purdue University. Two experiments were initiated in mid-May (17-21) at each University and then repeated in mid-August (15-22) in the year 2001. Experiments were located at the University of Illinois Turfgrass Research Center and the Ackerman Golf Course at Purdue, both areas had high populations of *Poa annua* present. All experiments were in split block designs with Basamid and Roundup treatments as main plots and seeding treatments as subplots.

May Experiments

Basamid Rate Experiment. Plots were aerified with a Ryan Greensaire with 1/2" diam. hollow tines on 2" x 2" spacings. Plugs were broken up with one pass of a power rake. Basamid was applied at 150, 250, 300, 375, and 455 lbs/A with drop spreaders and handheld shaker bottles. Roundup was used as a standard treatment and was also applied at 2 qts/A in 2 gals H_20/1000 ft^2immediately after breaking up the plugs. The area was watered according to label instructions for seven days.

Soil Preparation Experiment. Eight treatments were used in this study including:

1. Roundup applied with no aerification
2. Basamid applied at 300 lbs/A with no aerification
3. Basamid applied at 300 lbs/A after aerification 1X and leaving plugs

4. Basamid applied at 300 lbs/A after aerification 3X and leaving plugs
5. Basamid applied at 300 lbs/A before aerification 1X and leaving plugs
6. Basamid applied at 300 lbs/A before aerification 3X and leaving plugs
7. Basamid applied at 300 lbs/A after aerification 1X and remove plugs
8. Basamid applied at 300 lbs/A after aerification 3X and remove plugs

Zero, 1,3, 5,7, and 9 days after application, 'Providence" creeping bentgrass was seeded by hand into subplots at 1.0 lb/1000 ft^2. Data recorded included phytotoxicity, % cover of bentgrass and % cover of the original turf. Additionally, cup cutter sized plugs were harvested, separated into 3 depths (0-0.4", 0.4"-0.8", and 0.8-1.2"). These plugs were air-dried and broken up with gentle grinding. Subsamples were then spread in flats on a mist bench in greenhouses at the Univ. of Illinois, and allowed to germinate. Counts on *Poa annua* seedlings were recorded.

Summary of Results to Date

A tremendous amount of data has been recorded to date and following is a summary of our results. However, some of the specifics of these results may change slightly after these data are fully analyzed. Measuring viable *Poa annua* seed in the soil is an inherently variable process. Despite the variability, we can offer some initial insights that are subject to change pending a more thorough examination of the data.

Application Date

It appears that Basamid is more effective in controlling both the *Poa annua* seedbank and achieving creeping bentgrass cover when applied in August compared to May applications. Additionally, treatments were more consistent when applied in August compared to May.

Rate

Though 300 lbs/A provides adequate control in terms of achieving bentgrass cover after application, best control of the *Poa annua* seedbank was seen with a rate of 375 lbs/A (Figs. 1 and 2). This rate seems to be consistently better than 300 lbs/A, while the 450 lbs/A rate offers little improvement in *Poa annua* control.

Soil preparation

There appears to be no little difference among the soil preparation treatments based upon the *Poa annua* seed bank data and ensuing creeping bentgrass cover (Figs. 3 and 4). The treatments receiving coring have a tendency to show better control at the 1-2 and 2-3 cm soil depths while the non-cored treatment appears to provide slightly higher levels of control at the 0-1 cm sampling depth.

Seeding delay

Seeding as early as 1 day after application of Basamid yields excellent establishment of creeping bentgrass (Fig. 5). Additionally, seeding the day of application resulted only in a slight reduction in the bentgrass establishment rate.

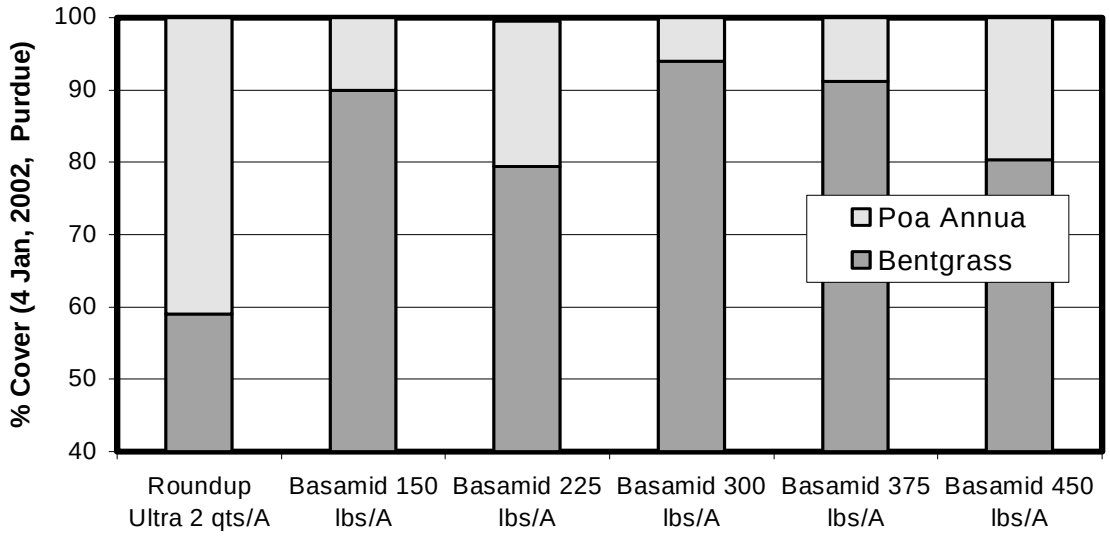

Figure 1. Effect of Roundup and various rates of Basamid on creeping bentgrass and *Poa annua* cover (averaged over 0,1,3,5,7,9 DAT seeding treatments).

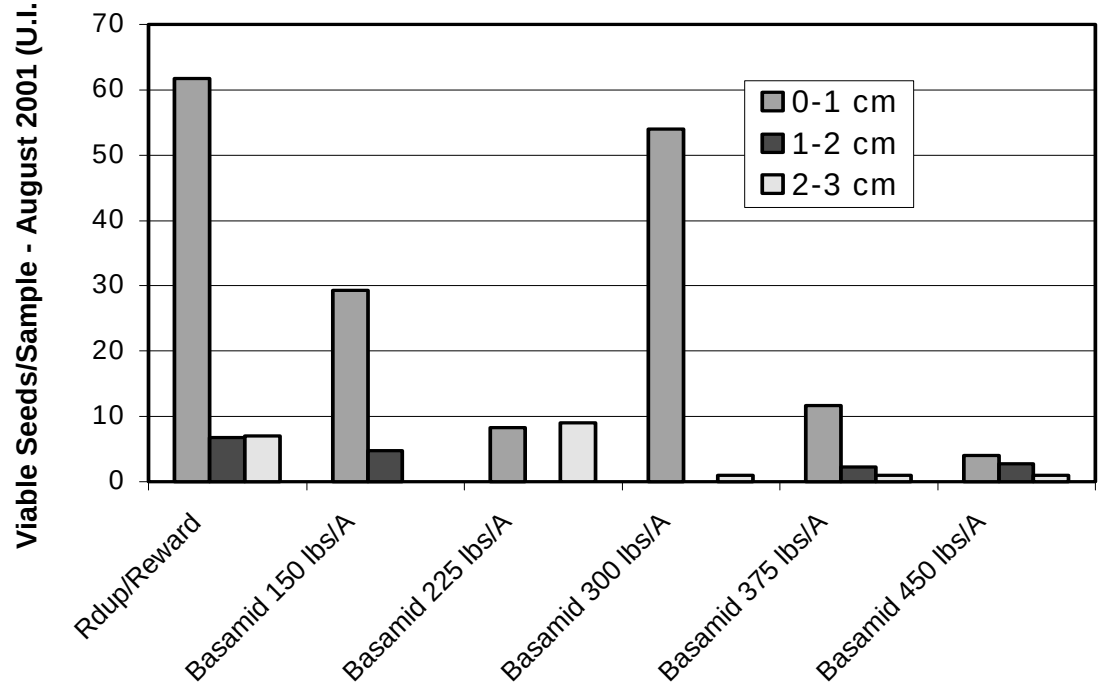

Figure 2. Effect of Roundup and various rates of Basamid on *Poa annua* seed viability

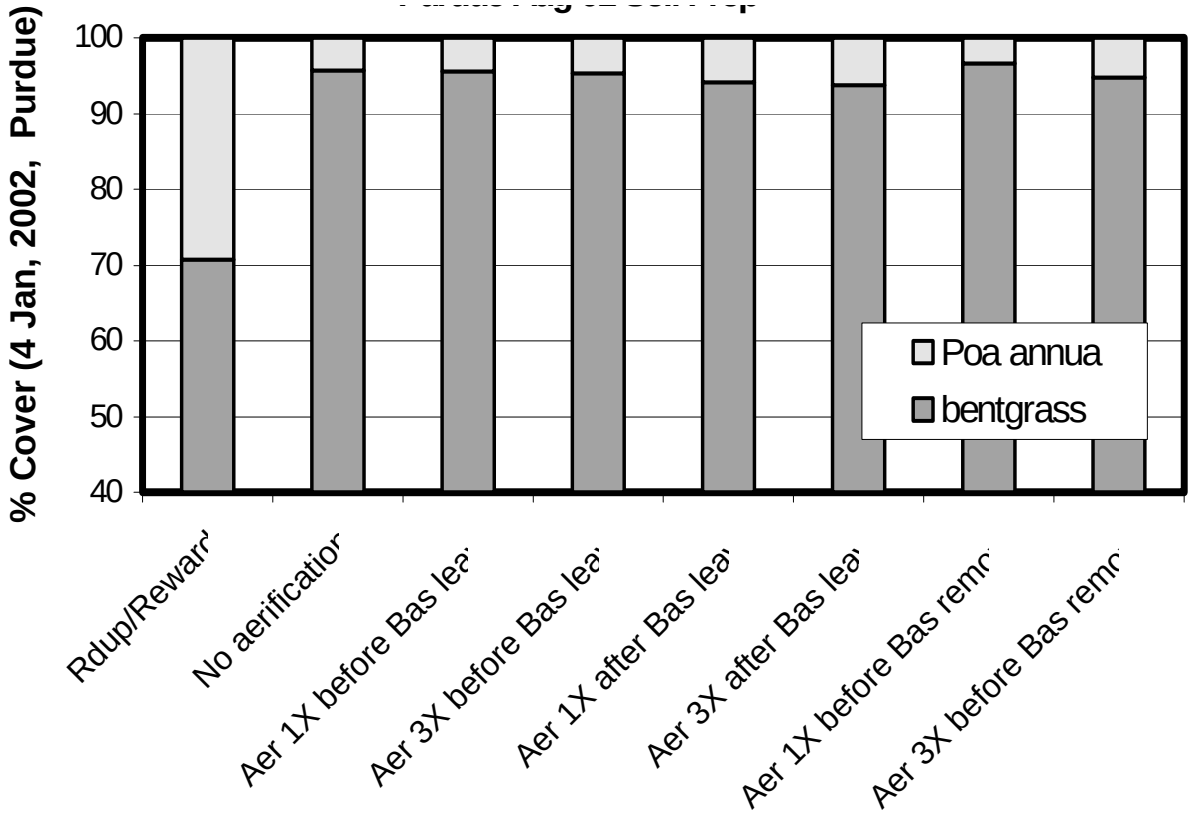

Figure 3. Effect of soil preparation methods on creeping bentgrass and *Poa annua* cover. (averaged over 0,1,3,5,7,9 DAT seeding treatments).

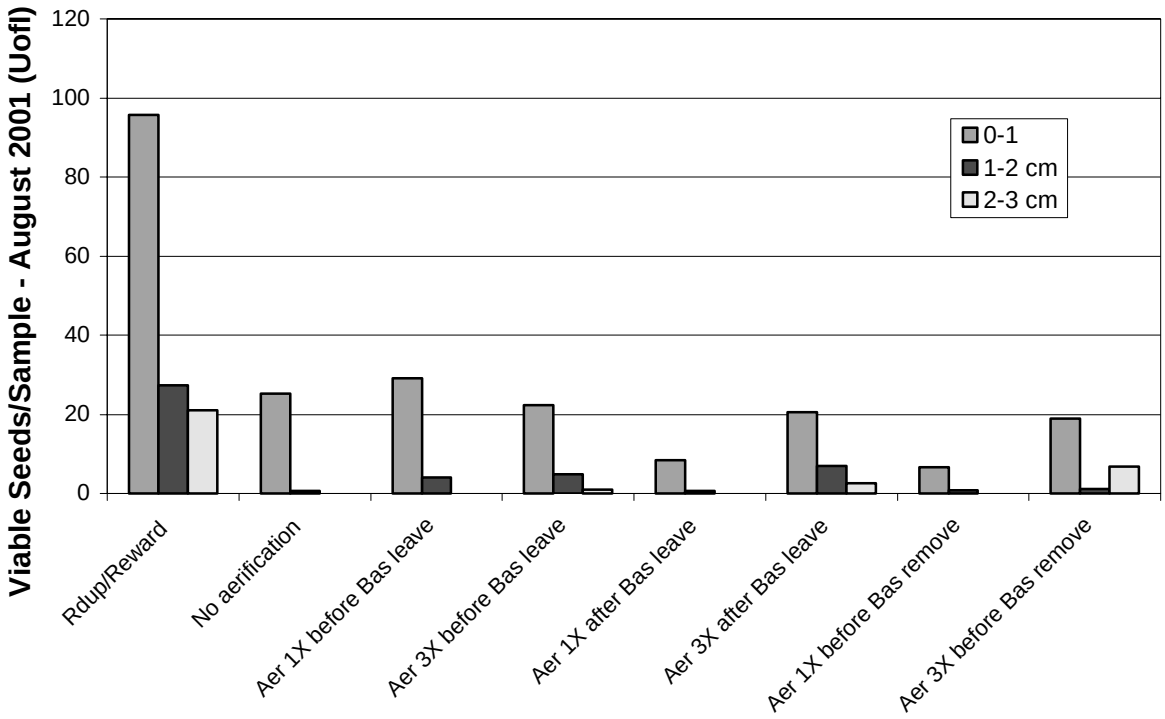

Figure 4. Effect of soil preparation methods on *Poa annua* seed viability

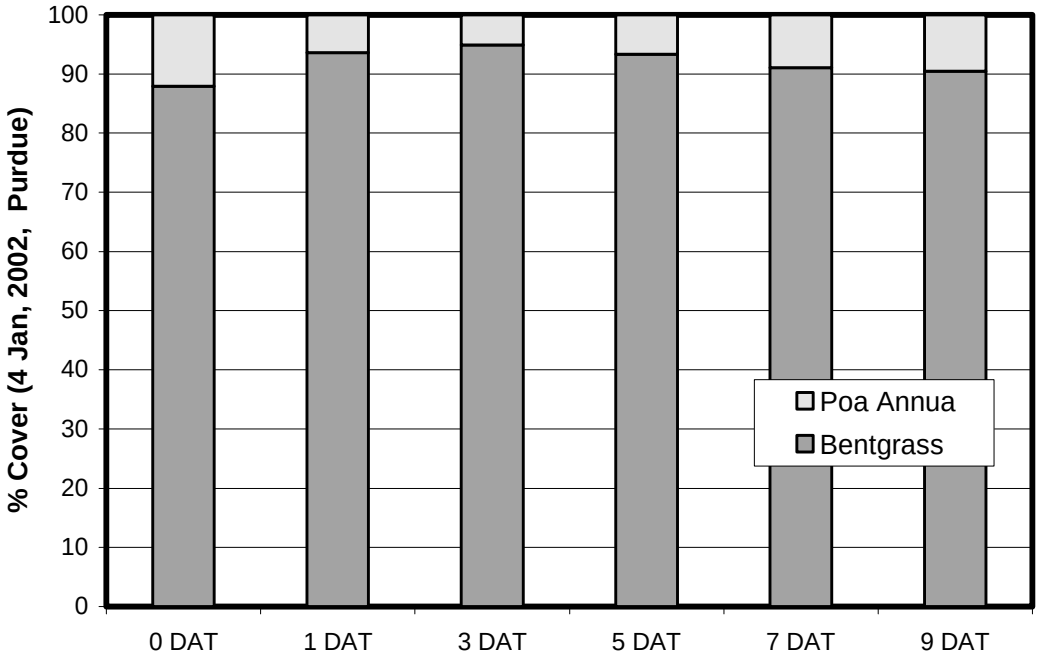

Figure 5. Affect of seeding delay after Basamid application on % cover of creeping bentgrass and Poa annua rated 4 January 2002 at Purdue. Means presented are averaged over all Basamid treatments in the soil preparation study.