

Seed Germination and Reseeding Interval of Cool-Season Turfgrasses Following Methiozolin Application

INTRODUCTION

The persistence of the isoxazoline herbicide, methiozolin ('PoaCure'), in turf following application has had limited research (2). Our preliminary observations indicate that PoaCure may inhibit the establishment of cool-season turfgrasses for several months following application (1). The effect of herbicide rate and species on germination and reseeding interval needs to be determined to best use this potentially new product.

METHODS

Two studies were conducted at Pullman, WA. A laboratory AOSA protocol germination was done with *Poa annua* (annual bluegrass) and *Agrostis stolonifera* (creeping bentgrass) with PoaCure at 0, 0.125, 0.25, 0.5, 1, and 4 L product ha⁻¹. A greenhouse reseeding interval following PoaCure application study was also conducted. A 90% sand:10% peat moss mix was used as the soil medium. PoaCure was sprayed onto the soil at 0, 4 L product ha⁻¹, 4 L ha⁻¹ + 4 L ha⁻¹ (2 wk interval), or 4 L ha⁻¹ + 4 L ha⁻¹ + 4 L ha⁻¹ (2 wk intervals). Seed [annual bluegrass, Kentucky bluegrass (*Poa pratensis* L.), perennial ryegrass (*Lolium perenne* L.), or creeping bentgrass] were planted 4, 8, 12, 16, or 20 wk after last treatment (WALT) and seedling emergence counts were made 1, 2, 3, and 4 wk after each planting (4 wk counts converted to seedling emergence as percentage of check are presented). Creeping bentgrass was also seeded in soil treated with 0, 2 L product ha⁻¹, 2 L ha⁻¹ + 2 L ha⁻¹ (2 wk intervals), or 2 L ha⁻¹ + 2 L ha⁻¹ + 2 L ha⁻¹ (2 wk intervals). The experimental design in both studies was a randomized complete block with 4 replicates.

RESULTS AND DISCUSSION

In the germination study, annual bluegrass and creeping bentgrass germination (% of control) at 21 d was 0% at 4 L ha⁻¹, <5% at 1 and 0.5 L ha⁻¹, and <20% at 0.25 L ha⁻¹. At 0.125 L ha⁻¹ creeping bentgrass was 45% and annual bluegrass was 70%. In the greenhouse emergence study, a single PoaCure application inhibited emergence of annual bluegrass for 12 WALT; 16 WALT with multiple 4 L ha⁻¹ applications (Fig. 1). Creeping bentgrass, perennial ryegrass, and Kentucky bluegrass were showing some emergence at 8 WALT (Fig. 2-4). Although there was emergence at 16 WALT, the seedlings were quite stunted, which was also indicated by the dry weights (data not presented) and many of these seedlings probably would not survive. Approximately 20 WALT was required for the single application of 4 L ha⁻¹ to provide consistent (>95%) emergence (Fig. 1-4). Creeping bentgrass seedling emergence was greater at 2 L ha⁻¹ than at 4 L ha⁻¹ (Fig. 2 and 5).

CONCLUSIONS

- PoaCure at rates >0.5 L product ha⁻¹ severely inhibited the germination of annual bluegrass and creeping bentgrass.
 - Single and multiple application of 4 L ha⁻¹ of PoaCure, in greenhouse research, reduced emergence for 12 WALT.
 - Multiple applications continued to reduce emergence 20 WALT, except perennial ryegrass at 4 L ha⁻¹ + 4 L ha⁻¹.
 - In general, perennial ryegrass > Kentucky bluegrass > creeping bentgrass > annual bluegrass in seedling emergence following PoaCure applications.
 - Creeping bentgrass emergence was greater at 2 L ha⁻¹ than at 4 L ha⁻¹.
- These reseeding intervals are longer than those previously reported for bentgrass and perennial ryegrass (2) and additional field work is needed to verify these results. Turf managers need to be mindful that reseeding may not be an option for some time following PoaCure application.

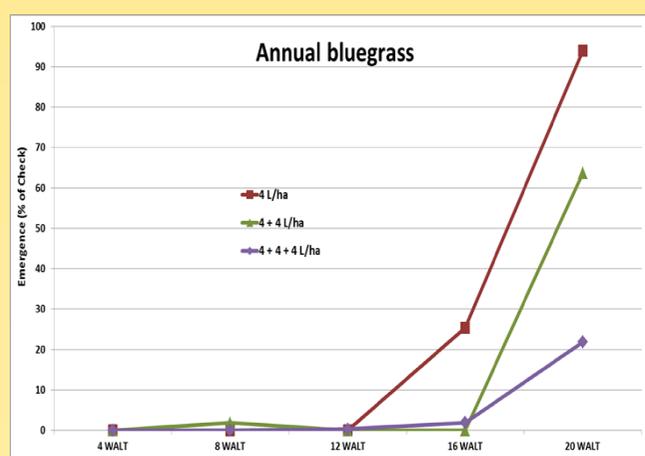


Fig. 1. Seedling emergence of annual bluegrass (weeks following last treatment) for single and multiple 4 L ha⁻¹ applications of PoaCure.

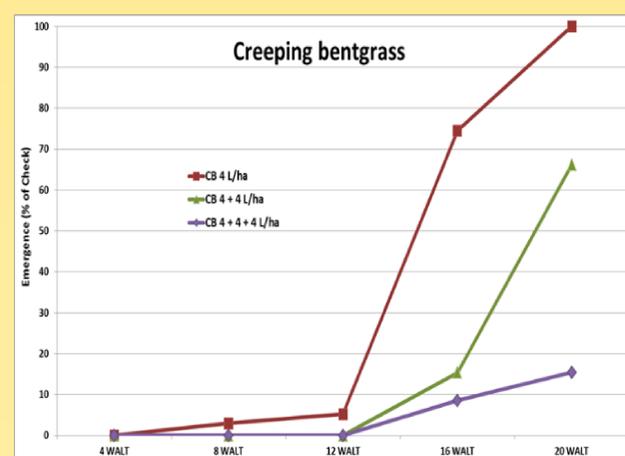


Fig. 2. Seedling emergence of creeping bentgrass (weeks following last treatment) for single and multiple 4 L ha⁻¹ applications of PoaCure.

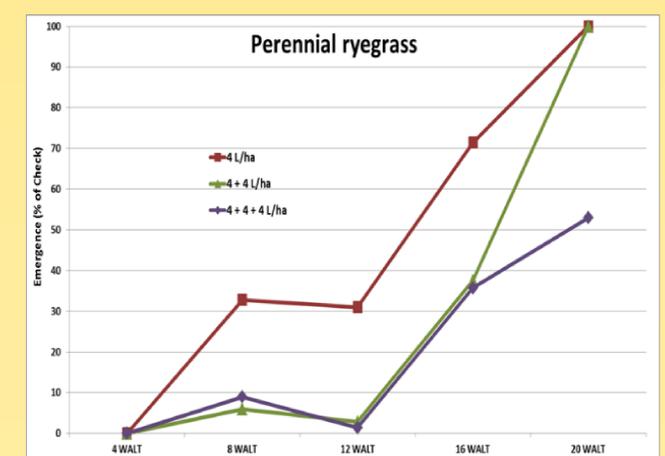


Fig. 3. Seedling emergence of perennial ryegrass (weeks following last treatment) for single and multiple 4 L ha⁻¹ applications of PoaCure.

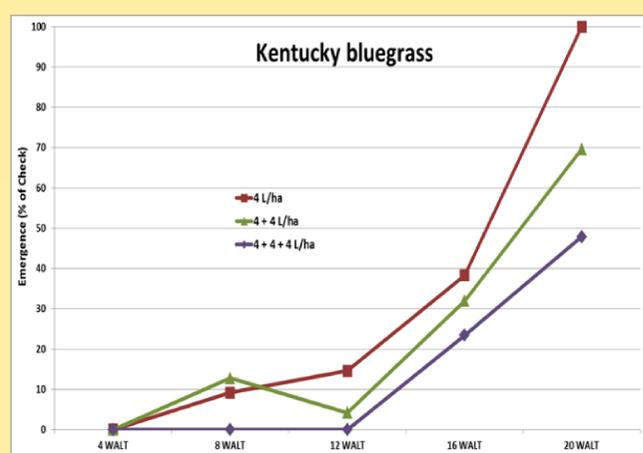


Fig. 4. Seedling emergence Kentucky bluegrass (weeks following last treatment) for single and multiple 4 L ha⁻¹ applications of PoaCure.

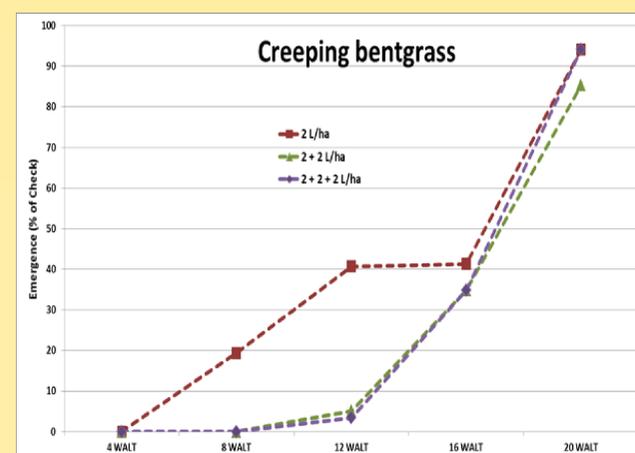


Fig. 5. Seedling emergence of creeping bentgrass (weeks following last treatment) for single and multiple 2 L ha⁻¹ applications of PoaCure.

REFERENCES

- Johnston, W.J., and C.T. Golob. 2013. Reseeding timing following methiozolin ('PoaCure') application. Northwest Turf. Assoc. Res. Rep. 8 p.
- McCullough, P.E., and D.G. de Barreda. 2012. Cool-season turfgrass reseeding intervals for methiozolin. Weed Technol. 26:789-792.