



Postemergence Control of Lesser Swinecress in Creeping Bentgrass Putting Greens



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Introduction

Lesser swinecress [*Coronopus didymus* (L.) Sm.] is a summer annual or biennial broadleaf weed that emerges from February to October (Henry et al. 2010). The pinnately-lobed leaves of lesser swinecress are alternately arranged as a basal rosette on an angular or grooved stem (McCarty et al. 2001) (Figure 1a). Although native to Europe, lesser swinecress is distributed throughout the east, southwest, and west coast of the United States (USDA). Tolerance to low mowing, heavy traffic, and prolific seed production has increased the prevalence of this weed in turfgrass environments (G. Henry, personal communication).

Infestations of Lesser swinecress have increased in west TX over the past ten years, especially in golf course roughs and fairways and most recently in creeping bentgrass (*Agrostis stolonifera* L.) putting greens (Figure 1b). Broadleaf weed infestations may reduce putting green aesthetics and disrupt uniformity leading to a decrease in playability. Due to the risk of phytotoxicity, there are a limited number of postemergence herbicides labeled for broadleaf weed control in creeping bentgrass greens. Therefore, postemergence control options for lesser swinecress in creeping bentgrass putting greens needs to be evaluated.

Figure 1a : Visual example of lesser swinecress plant. Figure 1b: Infestation of lesser swinecress in creeping bentgrass putting green.



Objective

To examine the postemergence control of lesser swinecress present in a creeping bentgrass putting green.

Materials and Methods

- Field experiments were conducted at the Pecos County Municipal Golf Course in Fort Stockton, TX in the summer of 2011 (Figure 2).
- Treatments were applied using a CO₂ backpack sprayer equipped with XR8004VS nozzle tips and calibrated to deliver 375L ha⁻¹ at 221 kPa (Figure 3).
- Treatments were initiated on May 31, 2011 and consisted of single or sequential applications of MCPP + 2,4-D + dicamba at 0.5 kg ai ha⁻¹, sulfentrazone at 0.14 kg ai ha⁻¹, and carfentrazone at 0.017 kg ai ha⁻¹.
- Sequential applications were made on July 5, 2011.
- Visual estimates of percent lesser swinecress control and creeping bentgrass phytotoxicity were recorded 1, 2, 4, 6, and 10 weeks after initial treatment (WAIT).
- Data were subjected to analysis of variance and means were separated using Fisher's Protected LSD test at 0.05 significance level.

Materials and Method

Figure 2 : Experimental layout on a creeping bentgrass putting green at the Pecos County Municipal Golf Course in Pecos, TX.



Figure 3 : Application of herbicide treatments to a creeping bentgrass putting green using CO₂ backpack sprayer.



Results

Table 1: Swinecress control in creeping bentgrass putting greens 4 and 10 WAIT.

Treatment	Rate	4 WAIT	10 WAIT
MCPP + 2,4-D + Dicamba	0.5 (kg ae ha ⁻¹)	88a	91b
MCPP + 2,4-D + Dicamba x 2	0.5 (kg ae ha ⁻¹)	85a	100a
Sulfentrazone	0.14 (kg ai ha ⁻¹)	19b	14d
Sulfentrazone x 2	0.14 (kg ai ha ⁻¹)	21b	41c
Carfentrazone	.017 (kg ai ha ⁻¹)	0c	0e
Carfentrazone x 2	.017 (kg ai ha ⁻¹)	0c	0e
Untreated Check	N/A	0c	0e

^a Means within a column followed by the same lower case letter are not significantly different at the P ≤ 0.05.

Results

- No creeping bentgrass phytotoxicity was observed throughout the length of the trial regardless of treatment or application timing (data not shown).
- Lesser swinecress exhibited 0% control throughout the length of the trial in response to carfentrazone treatments (Table 1, Figure 4b and 5b).
- Control was only 19% 4 WAIT in response to single applications of sulfentrazone (Table 1, Figure 4c), but 88% in response to MCPP + 2,4-D + dicamba (Table 1, Figure 4d).
- A single application of sulfentrazone only provided 14% lesser swinecress control 10 WAIT, while a sequential application increased control to 41% (Table 1, Figure 5c).
- Lesser swinecress exhibited 91% control in response to a single application of MCPP + 2,4-D + dicamba, while sequential applications increased control to 100% 10 WAIT (Table 1, Figure 5d).

Figure 4a-d : Lesser swinecress response to single applications of herbicide treatments 4 WAIT.

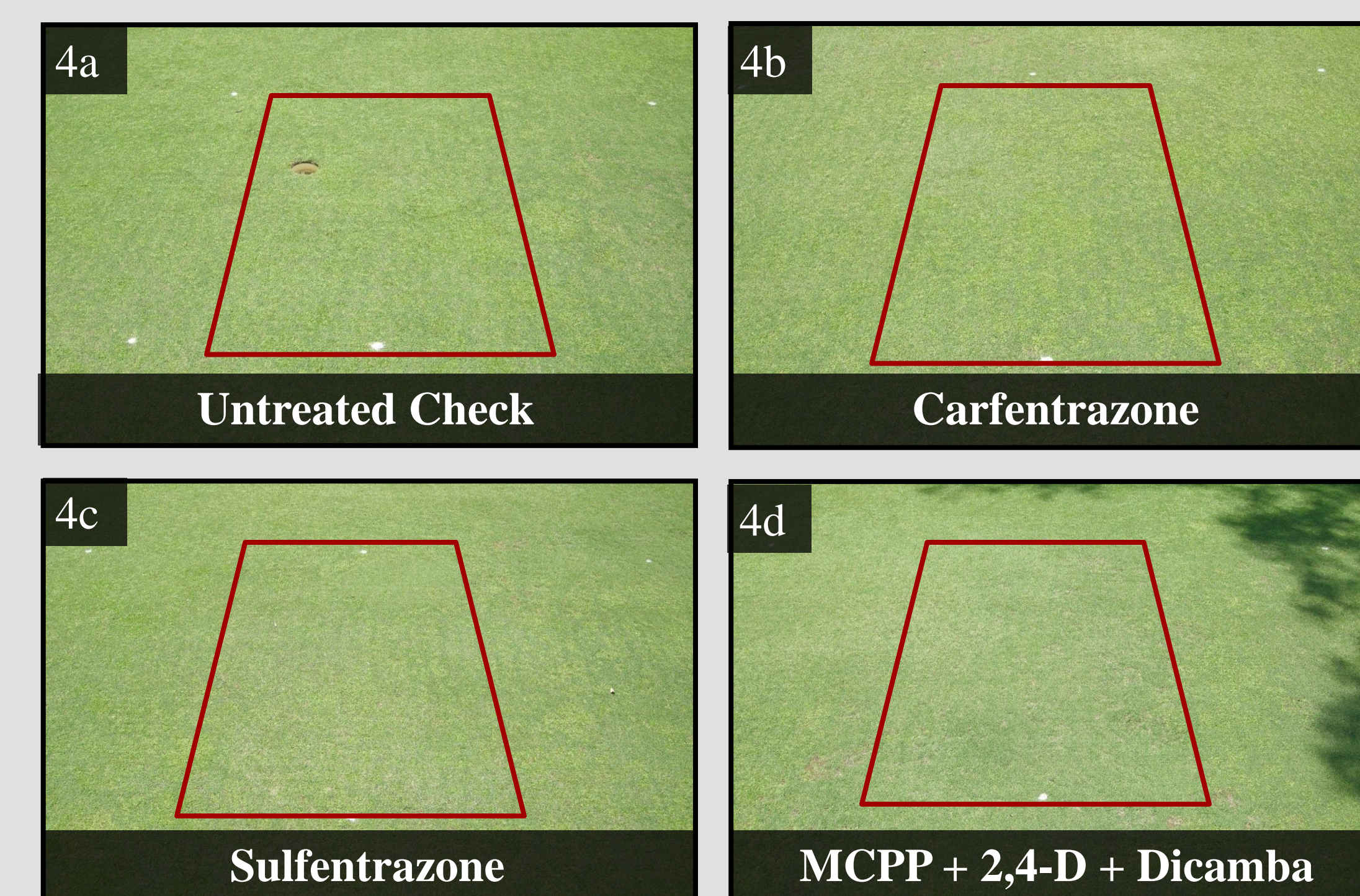
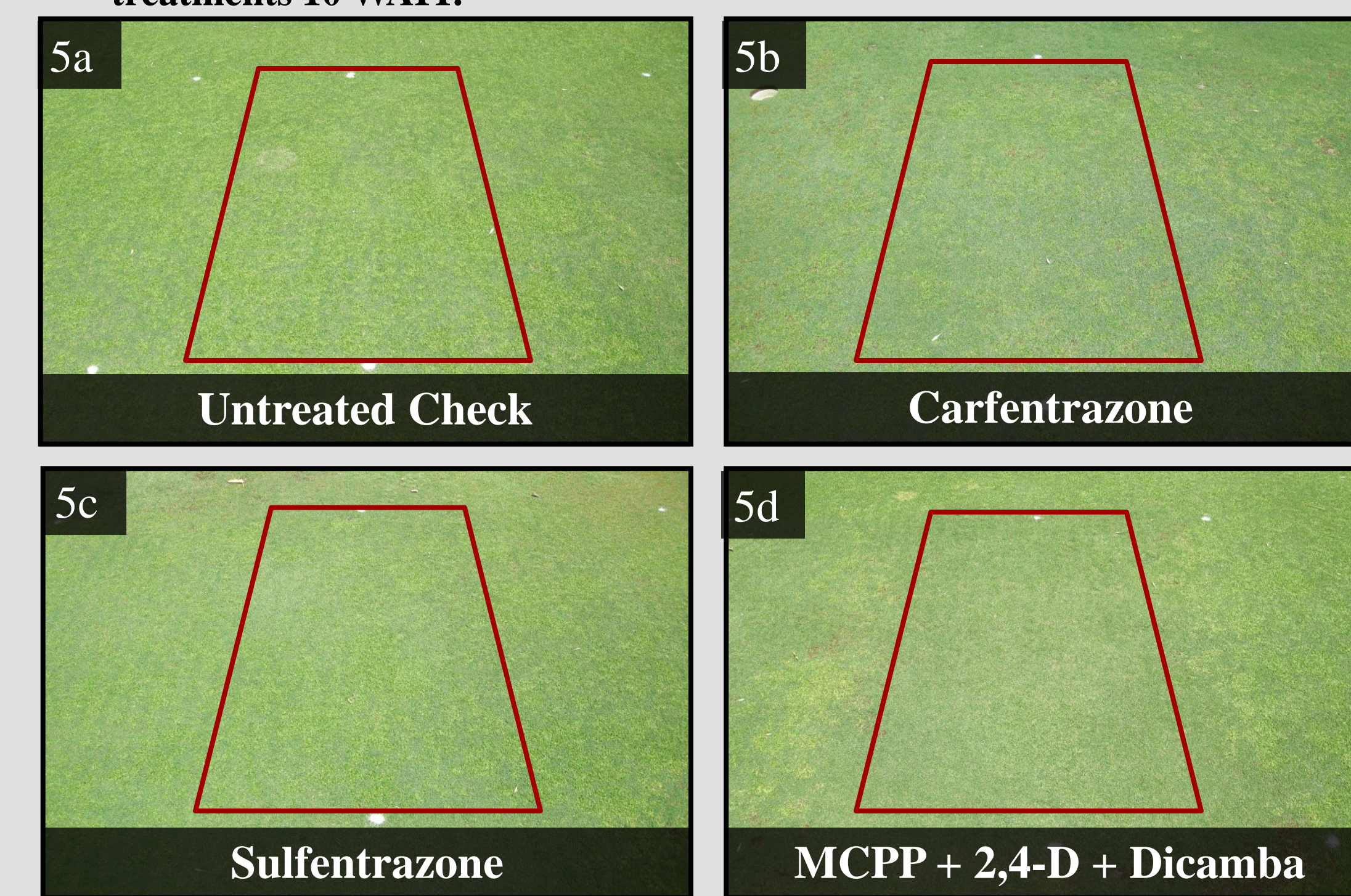


Figure 5a-d : Lesser swinecress response to sequential applications of herbicide treatments 10 WAIT.



Conclusions

Bentgrass phytotoxicity was not observed throughout the length of the trial regardless of treatment or application timing. Carfentrazone and sulfentrazone did not provide effective control of lesser swinecress. MCPP + 2,4-D + dicamba may provide postemergence lesser swinecress control in creeping bentgrass greens without phytotoxicity.

Literature Cited

Henry, G. M., T. Cooper, A. J. Hephner, and T. Williams. 2010. Swinecress Control in bentgrass Putting Greens. Southern Weed Science Society, Volume 63.
McCarty, L. B., J. W. Everest, D. W. Hall, T. R. Murphy, and F. Yelverton. 2001. Color Atlas of Turfgrass Weeds. Ann Arbor Press. Pp. 141.
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