



Annual bluegrass (*Poa annua*) control in non-overseeded bermudagrass and winter overseeded turfgrasses in low desert Arizona

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Annual bluegrass (*Poa annua*) is a cosmopolitan weed in most turfgrasses. In Arizona, the vast majority of the annual bluegrass is a true winter annual weed (*Poa annua* var. *annua* L. Timm.) that germinates in the fall, grows throughout the winter season, flowers profusely in the spring, and then dies as the summer temperatures rise. The weed seed remains in the soil all summer and then germinates during the next fall. The annual form var. *annua* is more upright in growth habit and prolifically produces stemmy seedheads that often grow in a circular pattern around the leaves, especially when the turf is mowed regularly (Figure 1).

A perennial form of “annual” bluegrass, *Poa annua* var. *reptans* (Hauskn) Timm., is much less prevalent in the low desert. The perennial form var. *reptans* essentially survives mainly in very short height-of-cut turfs like golf course greens with its more prostrate growth habit and fewer seedheads. They are found more often on bentgrass greens. Since *Poa* and bentgrass are cool-season grasses, both respond to weather and seasonal stresses in the same way and at the same time. Bentgrass greens are usually first infested with the var. *annua*

and then the perennial form will encroach and eventually become the dominant weed in a period of 5 to 10 years. In higher-cut turfs on tees, fairways, and roughs, the annual type will be the more common weed. In bermudagrass greens, both annual and perennial forms of *Poa* are squeezed out as the hot weather stress is not conducive for *Poa* growth during the summer when bermudagrass grows vigorously and is manicured regularly.

Poa control programs in turfgrasses generally are targeted against the annual form and strategies should consider the type of herbicides to apply for optimal efficacy and turfgrass safety. Selective control using preemergence and/or postemergence herbicides must consider the safety of the foundation bermudagrass turf; the winter overseeded grass, typically perennial ryegrass; or a creeping bentgrass golf green. The foundation bermudagrass on a fairway or rough area may not be overseeded in the winter and a broader array of options are available.

Non-overseeded bermudagrass *Poa* control option

Typically, the var. *annua* emerges in mid- to late October when cooler temperatures in the fall are conducive for growth while the bermudagrass slows and prepares for winter dormancy. In late September or early October, a preemergence (PRE) herbicide application of a dinitroaniline (DNA) chemistry (i.e. prodiamine [Barricade] or pendimethalin [Pendulum]) and related dithiopyr (Dimension) usually provide effective control of the flush of weeds that germinate in the early fall (Table). A repeated application in December will provide season-long control into the spring. Other PRE herbicides that are labeled for *Poa* control are pronamide (Kerb) and bensulide (Bensumec) that may be more effective when *Poa* populations are not severe. A bit more forgiving to allow later application in early November when the emerging *Poa* is exhibiting its first true leaf are dithiopyr, indaziflam



Figure 1. Annual bluegrass (*Poa annua*) mature plant.

(Specticle), flumioxazin (Sureguard), and simazine (Princep and other brands) that give very early stage POST control and additional PRE control into the spring. The DNA's and dithiopyr are safe to be applied on the tolerant bermudagrass. Indaziflam, flumioxazin, and simazine can be phytotoxic when applied to actively growing bermudagrass too early in the fall. If applied too late in the winter or early spring, bermudagrass greenup and spring transition can be delayed.

Nonselective POST control of *Poa* can be achieved with a variety of effective herbicides including, glyphosate, diquat, glufosinate, and some of the acetolactate synthase (ALS) enzyme inhibiting herbicides such as foramsulfuron and flazasulfuron. Glyphosate can be injurious to bermudagrass if applied when there is any green tissue and if it is not totally dormant.

Table. Preemergence and postemergence herbicide timing of application for *Poa annua* control in turfgrasses.

		Seasonal Timing						
		Aug	Sep	Oct	Nov	Dec	Jan	Feb
		<i>P. annua</i> germination and emergence						
Non-overseeded bermudagrass								
Preemergence herbicides	Rate (lb a.i./A)							
proflamifos	0.65 – 1.5							
pendimethalin	1.5 – 2.0							
dithiopyr	0.38 – 0.5							
pronamide	0.5 – 1.5							
bensulide	12.5							
Preemergence plus early postemergence								
dithiopyr	0.38 – 0.5							
indaziflam	0.03 – 0.05							
flumioxazin	0.25 – 0.38							
simazine	1.0							
pronamide	0.5 – 1.5							
Postemergence herbicides								
glyphosate	0.21 – 2.0 (0.18 – 1.5 a.e.)							
diquat	0.47 – 0.93							
glufosinate	0.75 – 1.5							
ammonium nonanoate	6 – 15%							
pelargonic acid	5 – 10%							
foramsulfuron	0.013 – 0.026							
flazasulfuron	0.039 – 0.047							
Winter overseeded bermudagrass turf								
Preemergence herbicides	Rate (lb a.i./A)							
proflamifos	0.75 – 2.0							
dithiopyr	0.38 – 0.5							
Postemergence herbicides								
foramsulfuron	0.013 – 0.026							
trifloxysulfuron	0.01 – 0.024							
metsulfuron-methyl + rimsulfuron	0.019 + 0.015							
ethofumesate	0.75 – 2.0							
amicarbazone	0.094 – 0.17							
methiozolin	0.5							

Winter cool-season overseeded turf *Poa* control strategies

One possible approach is to solely rely on applications of a PRE herbicide, prodiamine or dithiopyr at 6 to 8 weeks prior to overseeding plus a sequential application after overseeding is complete and assured (Figure 2). Prodiamine generally provides more effective *Poa* control with heavier populations and dithiopyr is effective with lower manageable populations. Both herbicides can be used in a range of rates (Table). Generally, the higher rates are most effective for a longer period of time and allow less chances of weeds to escape. The application of high rates at too close timing to overseeding may result in the inhibition of root growth by the overseeded seedling and root pruning may be observed. Lower rates may be more reassuring of overseeding safety. Prodiamine rates range from 0.375 to 0.65 lb a.i./A and dithiopyr ranges from 0.38 to 0.5 lb a.i./A only at the time prior to overseeding. The sequential prodiamine application could be made at 4 to 8 weeks after overseeding or when the overseeded ryegrass roots are well established into the second inch of soil.

For late season overseeding, a limited timing of a POST application of foramsulfuron (Revolver) can be done up to 1 week before dropping seed. Trifloxysulfuron (Monument) can be applied POST to emerging *Poa* at 3 weeks before seeding. A pre-mix herbicide, metsulfuron-methyl plus rimsulfuron (Negate) can be used 7 days prior to overseeding. This timing of the ALS-inhibiting herbicides must be applied on emerging *Poa* when fall temperatures and conditions are conducive for its germination and emergence.

Applying only POST herbicides or in tandem sequentially with PRE herbicide applications, the timing of POST applications should be when the *Poa* is as young as possible – December to February. Ethofumesate (Prograss) at 0.75 to 2.0 lb a.i./A is generally applied sequentially in December

followed by 3 weeks later. The second application must be applied before February 1. It must be applied when the overseeded bermudagrass is totally dormant after frost events and weeks before spring greenup begins. Ethofumesate can affect bermudagrass spring transition if applied when bermudagrass is not completely dormant.

Amicarbazone (Xonerate) is a more recent introduction to the POST market for *Poa* control in overseeded turfgrasses. A rate range of 0.094 to 0.17 lb a.i./A is labeled for amicarbazone and local experiments have demonstrated that sequential applications of 0.125 to 0.14 lb a.i./A initiated in mid-February followed by 2 weeks later were effective in reducing *Poa* populations (Figure 3). Amicarbazone has potential to injure cool-season ryegrass if excessive rates are applied or when spray boom overlapping occurs.

Poa control in bentgrass greens.

Bentgrass golf greens are common at the higher elevations in Arizona and few golf courses remain in Tucson and Scottsdale with bentgrass greens that are infested with *Poa*. Methiozolin (PoaCure) was registered for use in 2020 and there is promise for it to be effective in reducing *Poa* populations. Local experiments demonstrated that multiple applications in the late fall reduced populations in the following spring. Four applications of methiozolin at 0.5 lb a.i./A spaced at 10 days to 3 weeks apart with the final applications occurring at first frost demonstrated efficacy. Immediate and brief overhead irrigation assists with moving the herbicide to the root zone of the weed. PoaCure has only been investigated on bentgrass greens in Arizona and further evaluations are warranted for potential use on bermudagrass and other cool-season grasses as well as against other weeds.

Amicarbazone is labeled for use on bentgrass greens but local experiments have not demonstrated satisfactory safety with multiple applications.



Figure 2. Experimental preemergence-applied prodiamine controlled *P. annua* at 31 weeks after treatment in winter overseeded turf.



Figure 3. Experimental comparison of rates of postemergence applied amicarbazone controlled *P. annua* in winter overseeded turf.



Figure 4. Experimental applications of methiozolin controlling *P. annua* on a bentgrass golf green.

Resources

Annual bluegrass. May 2012. University of California Agriculture and Natural Resources, Statewide Integrated Pest Management Program, Pests in Gardens and Landscapes. Pest Notes. UC ANR Publication 7464. <http://ipm.ucanr.edu/PMG/PESTNOTES/pn7464.html>

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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jeffrey C. Silvertooth, Associate Dean & Director, Extension & Economic Development, College of Agriculture Life Sciences, The University of Arizona.

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