

Couch and Kikuyu Control in Bentgrass

Introduction

The encroachment of warm season turf species such as couch grasses (*Cynodon spp.*) and kikuyu (*Pennisetum clandestinum*) into creeping bentgrass (*Agrostis stolonifera*) putting greens is a management problem facing most golf course superintendents around Australia. Creeping bentgrass is the most widely used, and one of the most desirable surfaces of putting greens in Australia, and due to the nature of our climate, clubs in many parts of the country also possess warm season surrounds.

Most plants including grasses fall into one of two different categories based on their method of carbon fixation and metabolism during photosynthesis (a third, less common category called the CAM pathway also exists but is not present in grasses). The two different categories are the C3 and C4 pathways, these names refer to the production of either a 3 carbon or 4 carbon molecules during the early stages of photosynthesis. In the turfgrass industry these differing metabolic processes are commonly associated with the plants season of growth; i.e. warm season (C4) or cool season (C3). The difference between the two allows warm season grasses to photosynthesize more efficiently under higher temperatures, in conditions that could potentially cause dehydration of cool season varieties.

Cool Season Turfgrass Species (C3)	Warm Season Turfgrass Species (C4)
Browntop Bentgrass	Zoysia Grass
Creeping Bentgrass	Kikuyu
Fine Fescue	Carpet Grass
Kentucky Bluegrass	Hybrid Couch
Ryegrass	Centipede Grass
Tall Fescue	Common Couch
Wintergrass	Buffalo Grass

In many parts of Australia the nature of our seasons tends to benefit the warm season species more so than the cool season. This combined with the differing heights of cut and increased traffic concentrations on putting greens in comparison with surrounds results in a major advantage for the warm season species.

Right from the beginning of summer, bentgrass putting greens often begin a steady decline in vigour, leaving greens surfaces open to weed germination and encroachment. Increased irrigation and nutrition around the greens will further boost the growth of the surrounding warm season grass, causing problems as runners creep in towards the green.



Chemical Control Options

Tupersan, containing the active ingredient Siduron, is recognised as the only herbicide that will selectively control couch, kikuyu and summergrass in bentgrass greens and collars. When applied in autumn or spring, Tupersan causes a gradual decline in the warm-season turf over a period of 6-8 weeks.

This is ideal because it allows the bentgrass to gradually fill in these areas at a time of year when it is growing most vigorously. Importantly, as well as affecting emerged weeds, studies have indicated that Tupersan also provides excellent pre-emergent control, with a residual effect against susceptible weeds of up to 9 months following an autumn application.

Key benefits of Tupersan are:

- High degree of safety to cool season grasses
- Only turf registered option in removing Couch, Kikuyu & Summergrass out of bentgrass golf & bowling greens
- Flexibility around seeding - Maybe applied prior to, at the time of, or after seeding of most cool season grasses
- Slow acting herbicide – allows for gradual transition of bentgrass over a 6-8 week period
- Low poison scheduling – S5
- Offers both Pre and Post emergent control on summergrass
- Good residual pre-emergent properties (up to 9 months).



Correct application is vital to achieve superior results from Tupersan. It should be applied for post-emergent control of couch, kikuyu and summergrass at a rate of 1kg/100m².

Tupersan can be applied either by boom or a hand sprayer, providing the chemical is then moved to the appropriate target. A water rate of 10-20 L / 100m² should be used, followed by at least 15mm of rainfall or irrigation.

This should occur within three days of application as Tupersan is a predominantly root absorbed herbicide, and must therefore be carried to the root-zone for optimum activity.

Incorporating Tupersan application with a wetting agent program is recommended as it will increase the uniformity and penetration of Tupersan into the root-zone.

Research has shown that due to the excellent residual activity, a program of autumn and spring applications assists in maintaining a uniform stand of high quality bentgrass.



An Integrated Approach

Depending on the severity of the infestation cultural control methods can offer effective relief from couch grass and kikuyu encroachment. The physical removal of weeds is often the most effective; however the rhizomatous nature of many warm season species can make it difficult to successfully remove all plant parts from under the greens surface, resulting in the re-emergence of weeds from vegetative parts.

Weeding can also lead to a disrupted playing surface as runners are pulled up through the existing bentgrass sward. The use of root barriers can help to reduce sub-surface encroachment; however this does not do much to prevent stolons running along the surface.

The use of an appropriate variety of creeping bentgrass may also help to reduce the incidence of encroachment issues. Many varieties of creeping bentgrass are currently available, and much has changed in the past few decades with more varieties being developed with specific traits that may give them an edge over weeds. Authority Bentgrass from Heritage Seeds is an example of a bentgrass variety that has been developed with increased vigour and density, and an aggressive growth habit to help in deterring weed development.

The prevention and management of all weeds in turfgrass situations is down to competition between the weed and the host turfgrass plant. As the two species tussle for dominance in the availability of light, water and nutrients, just small differences in plant morphology or management practices can lead to an advantage to either the weed or the host.

By maintaining the health and density of the bentgrass at an optimum level, and by implementing a well-timed and consistent Tupersan programme throughout the year it should be possible to eliminate couch grass and kikuyu from your bentgrass putting surfaces.

Application Timing:

Month	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
Summergrass (Pre Emergent)	Single Application- 1kg/100m ²											
Summergrass (Post Emergent)				Single Application should be all that's required – 1kg/100m ²								
Kikuyu							Multiple Applications – 1kg/100m ²					
Couch							Multiple Applications – 1kg/100m ²					

Spot Treatment (Knapsack) Application Guide:

Water Volume	TUPERSAN Required (g)	TURF MARK Required (mls)	Penetrant (STAMINA Express) Required (mls)
2.5L	500	2.5	25
5.0L	1,000	5	50
10.0L	2,000	10	100
15.0L	3,000	15	150