

PACE Turfgrass Research Institute 1999 Research Results

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The PACE Turfgrass Research Institute (PTRI) completed 16 research projects (see page 4 for listing) in 1999. Funded by a combination of grants from industry, superintendent's associations and individual golf courses, these research studies were designed to provide superintendents with practical solutions to turf management problems in disease, weed, insect and cultural management. In this issue of *PACE Insights*, we will summarize some of the key findings of our 1999 research program that we think you will find both interesting and useful.

Poa seed-head suppression with Proxy

The effect of ethephon (Proxy) on growth regulation and *Poa* seedhead inhibition was evaluated on bermudagrass fairways that were overseeded with perennial ryegrass (Admiral Baker Golf Course, Alan Andreasen, superintendent and The Country Club of Rancho Bernardo, Sandy Clark, superintendent). Results of the trials include:

- A significant reduction in *Poa annua* seedheads (50 – 100%), was observed at both test locations (Table 1, Figure 1). This effect was observed for as long as seven weeks after a single application of Proxy.
- When used as a growth regulator to reduce clipping weights, Proxy applications performed inconsistently. The 10-oz rate of Proxy resulted in significant increases in turf growth on several evaluation dates. This unexpected result was observed at both test locations.

Figure 1. The 10-oz/1000 sq ft rate of Proxy (plot on left) provided good control of poa seedheads compared to the non-treated check (plot on right). Admiral Baker Golf Course, March 10, 1999.



Bottom line: The lack of any damage to bermudagrass or ryegrass caused by Proxy, in combination with its ability to reduce poa seedhead densities, may make it a valuable tool in golf course poa management on fairways and greens.

Primo for improved ryegrass quality on overseeded fairways

To determine which rate and application timing of Primo L resulted in the best ryegrass quality, three years of replicated field trials were conducted on overseeded fairways at two Coachella Valley golf courses – Indian Wells Country Club (Tom Baty, superintendent) and The Springs Club (Mike Kocour, superintendent). Key results include:

- One Primo L application (0.5 oz/1000 sq ft) made to overseeded common bermudagrass fairways improved Fall transition from bermudagrass to ryegrass and produced significantly higher quality ryegrass during the winter and spring months (Table 2).
- The timing of this treatment was critical, with treatments made at the time of the first ryegrass mowing providing the best results. Primo applications made to bermudagrass, prior to renovation, had no impact on ryegrass quality. These results may not apply outside of Low Desert areas.

Bottom line: Application of Primo L (0.5 oz/1000 sq ft) results in significantly higher quality ryegrass when it is applied at the time of the first ryegrass mowing during the Fall.

Table 1. Percent Poa annua seedheads present, Admiral Baker Golf Course. Treatments with the lowest ($p < 0.05$) poa seedhead densities are highlighted in green. Treatments were made on 1/6/99 and 2/17/99. Percent poa seedhead data was transformed prior to statistical analysis using the arcsine (square root of the proportion). WAFT = weeks after first treatment.

Treatment (Rate/1000 sq ft)	1/28/99 3 WAFT	2/4/99 4 WAFT	2/17/99 6 WAFT	3/10/99 9 WAFT	4/16/99 14 WAFT
Control	15.0 b	83.3 c	98.3 d	100.0 c	73.3 b
Proxy (5 oz)	2.0 a	18.3 b	13.3 b	60.0 b	51.7 a
Proxy (10 oz)	2.0 a	6.7 a	1.7 a	20.0 a	48.3 a
Primo L (0.5 oz)	2.0 a	16.7 ab	58.3 c	100.0 c	66.7 ab

Table 2. Effect of Primo rates and timing strategies on turfgrass quality. The Springs Club, Rancho Mirage, CA. Treatments significantly better than the non-treated check are highlighted in green; treatments significantly worse than the check are highlighted in red (Fisher's LSD, $P < 0.10$). OS = overseed

oz Primo L per 1000 sq ft		Timing	Turf Quality				
Pre-OS	Post OS		10/28/98	11/4/98	11/24/98	12/8/98	1/8/99
none	none	Non-treated check	5.8ab	6.0a	5.5bcd	5.7d	5.7c
0.5	0.5	5 days before seeding, 9 days after 1 st mow	5.7ab	6.2a	5.2d	5.8cd	6.2ab
0.5	0.5	5 days before seeding, 2 days after 1 st mow	5.8ab	5.3b	5.8b	6.2abc	6.2ab
0.75	0.5	5 days before seeding, 9 days after 1 st mow)	5.5b	6.0a	5.3cd	5.8cd	6.0bc
0.75	0.5	5 days before seeding, 2 days after 1 st mow	5.5b	5.2b	5.8b	6.3ab	6.5a
0.5	none	5 days before seeding	5.8ab	6.0a	5.7bc	6.0bcd	6.0bc
0.75	none	5 days before seeding	6.0a	5.9a	5.7bc	5.8cd	6.0bc
None	0.5	9 days after 1 st mow	6.0a	5.9a	4.7e	5.8cd	6.2ab
None	0.5	2 days after first mow	6.0a	5.3b	5.7bc	6.0bcd	6.3ab

New fungicides for summer disease management on poa greens

Experimental fungicides including Compass (trifloxystrobin) and two numbered compounds from BASF (BAS 500 and BAS 505), as well as commercial standards such as Banner, Eagle and Heritage, were evaluated for control on poa greens, in cooperation with John Martinez, superintendent, SCGA Member's Club. Key results include:

- An unseasonably cool summer produced unusual disease patterns, with *Rhizoctonia* causing the most significant damage to turf,

and anthracnose causing only limited damage. Summer patch was observed, but caused insignificant damage to turf. Examination of Figure 3 illustrates the dramatically cooler soil temperatures seen in 1999, as compared to 1998.

- Symptoms caused by *Rhizoctonia* spp. were well controlled by several of the products tested, including BAS 500, BAS 505, Heritage and Eagle (Figure 2). A rotation of Banner (2.0 oz/1000 sq ft) followed by monthly applications of Compass at the high rate (0.4 oz/1000 sq ft) also provided excellent control.

Figure 2. Efficacy of Eagle (treatment 10: left side of photo) for control of *Rhizoctonia*. 7/2/99, SCGA Member's Course, Murietta, CA. The adjacent non-treated plot, which appears on the right side of this photo, sustained approximately 7% damage due to *Rhizoctonia*. The yellow rings that appear in this plot are typical of *Rhizoctonia* infections.



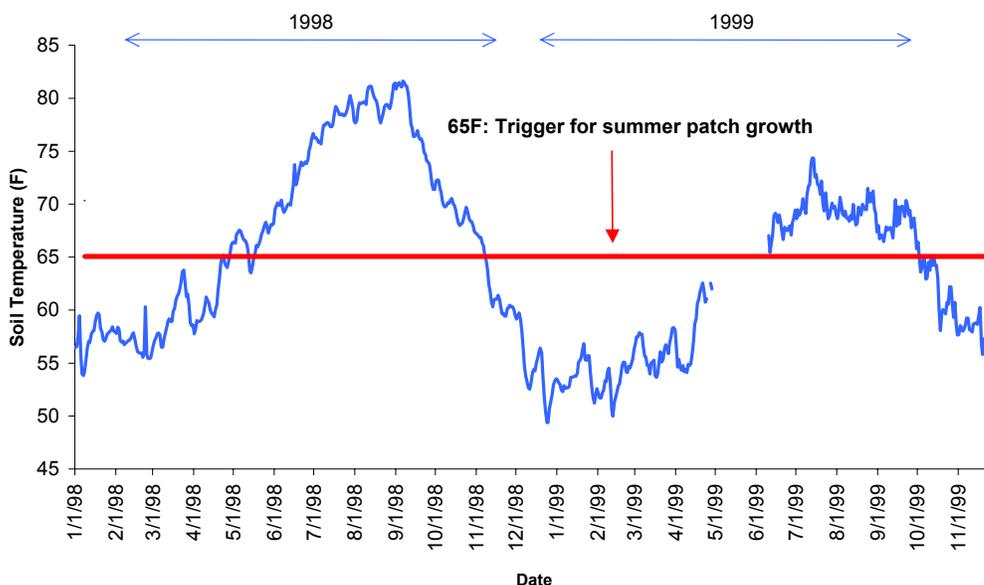
- When used alone, Compass (0.4 oz/1000 square feet) provided only mediocre control of *Rhizoctonia*. It is possible that the high application volumes used in the study (3.5 gallons/1000 square feet), in combination

with the fact that irrigation immediately followed fungicide applications may have interfered with the activity of Compass, whose mode of action is more like a foliar contact fungicide than a systemic fungicide.

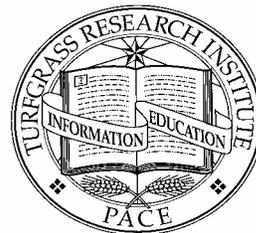
- Anthracnose, caused by *Colletotrichum graminicola* was well controlled by all of the treatments tested, with the exception of the low rate of BAS 505 (0.15 oz/1000 sq ft).

Bottom line: Several products, including Heritage, Eagle, a rotation of Banner and Compass, BAS 500 and BAS 505 provided excellent control of anthracnose and *Rhizoctonia*. For optimum performance of Compass against foliar diseases such as brown patch and anthracnose, it should be applied in low water volumes. This is because Compass essentially works on contact with the foliage; excessive water volumes and/or irrigation can therefore interfere with its activity by removing it from its site of action -- the foliage.

Figure 3. Soil temperatures (at a 6inch depth) from CIMIS station 62, Temecula, CA: 1998 vs. 1999. The low soil temperatures seen in 1999 were a dramatic departure from what is normally seen in California. This resulted in decreased incidence and severity of many summer diseases, including anthracnose and summer patch.



PACE Turfgrass Research Institute Research completed in 1999



PROJECT	SPONSORS	COOPERATOR
Cultural Practices		
Primo for improved transition on overseeded fairways	Hi-Lo GCSA, Novartis	Mike Kocour, The Springs Club
Proxy for use as a growth regulator and seedhead inhibitor on overseeded fairways	Rhone-Poulenc	Alan Andreasen, Admiral Baker; Sandy Clark, Rancho Bernardo GC
Proxy for kikuyugrass growth regulation	Rhone-Poulenc	Bruce Duenow, La Jolla CC
Green waste management on renovated fairways	PACE Consulting	Mike Kocour, The Springs Club
Evaluation of Invigorate for alleviation of soil compaction	Milliken	Candice Combs, Balboa Park
Bunker sand survey	PACE Consulting	PACE Program participants
Measurement of root zone carbon dioxide as a tool for effective timing of aeration	PTRI/ CAPCA meeting proceeds	
Irrigation distribution issues	PACE Consulting	
Trends in soil chemistry	PACE Consulting	PACE Program participants
Disease Management		
Summer patch, anthracnose and brown patch management	BASF, Novartis, Rohm & Haas, Zeneca	John Martinez, SCGA
Bermudagrass decline management	Bayer, Novartis, Rohm & Haas, Zeneca	Nancy Dickens, Sun City West
Non-characterized chytridiomycete on cool season greens	PACE Consulting	PACE laboratory study
Stem nematode control	PACE Consulting	N. California superintendents
Weed Management		
Poa control on overseeded fairways	Rohm and Haas	Nancy Dickens, Sun City
Poa control on bentgrass fairways	AgrEvo	David Major, Del Mar CC
Insect Management		
Mach 2 for black cutworm control: demonstration	Rohm & Haas	Bruce Duenow, La Jolla CC David Major, Del MarCC Troy Mullane, Stoneridge