POA ANNUA UPDATE

By Dr. Wayne R. Kussow

Just in case you haven't heard, annual bluegrass has been renamed. The USGA Green Section now calls it *Poa annua foeva.* This was done so that professors can devote their entire research career to this grass without feeling guilty about not finding a way to eradicate the stuff.

I'm kidding, of course. *Poa annua* (hereafter referred to as PA) is a vexing problem that is not likely to be overcome soon. Two recent research reports bear this out.

The first report appeared in January in *Weed Science*[1]. This particular study had the objective of determining whether or not PA seed from roughs and fairways contributes significantly to PA infestations of golf greens. The research involved detailed study of the botanical characteristics of PA grown from seeds collected from a putting green and from adjacent fairway and rough areas of a 22-year-old Australian golf course.

The putting green PA was found to differ from the fairway and rough PA in several important aspects. Most striking was the difference in PA seed dormancy. The fairway and rough PA seed did not germinate until stored for several months at room temperature or until chilled at 40°F for two weeks. In contrast, PA seed from the green had a germination greater than 95% immediately after harvest. Other distinguishing characteristics of the putting green PA were lower, more horizontal leaf growth, much greater tillering, no stolon development, and delayed flowering.

Based on these observations, the author concluded that PA from the green consisted of few and distinctly different genotypes as compared to those in the fairway and rough. This, in turn, leads to the conclusion that PA in the fairways and roughs is not a source of seed for maintaining the PA populations golf greens.

This conclusion has some interesting implications for golf course superintendents. One is the idea that tracking of PA seed from fairways and roughs onto greens need not be of concern. Another is that practices adopted to reduce PA populations in fairways will not have an influence on PA populations in greens.

In my judgment, the conclusions of this study need verification or, at least, clarification. The fact that the research involved use of of PA seed from a 22-year-old golf course could be quite important. This is sufficient time for PA populations to segregate into the few genotypes apparently capable of thriving on golf greens. Until this segregation occurs, fairway and roughs may well be important seed sources for putting green PA populations.

The observation that fairway PA seed that is produced in May typically does not germinate until fall is not a new one. This dormancy characteristic has been observed on a number of occasions. However, I did not find this to be the case for PA seed collected in May of this year from an unused section of fairway at the Nakoma Golf Club. The seed readily germinated at room temperature, thereby casting some doubt on the suggestion that delayed germination is a characteristic common to all fairway or rough PA populations.

The second PA study of interest was recently published in *Crop Science*[2]. It is the result of research conducted at the Michigan State University Hancock Turfgrass Research Center. In this study, the effects of five management practices on PA populations in Penncross creeping bentgrass were followed over a three year period. The main observations at the end of this time were as follows:

Clipping removal reduced PA populations two years out of three for an average three year reduction of 12.1%. Clipping removal also reduced soil PA seed bank an average of 60%.

Nitrogen rate (2 vs 6 lbN/M) affected the PA population only one year out of three and had no effect on PA populations after three years.

Plant growth regulators alone did not change PA populations. Melfluidide reduced PA populations, but only at the 6 lb/M N rate and when clippings were not removed. Annual EL-500 applications reduced PA populations, but only when clippings were not removed and the plots were annually overseeded with 1 lb/M of Penncross seed.

Irrigation practices, by themselves, had no significant influences on PA populations.

Annual overseeding increased the creeping bentgrass populations by 8% over three years but only if daily irrigation at 75% of open pan evaporation rates was practiced. With less frequent irrigation (3x/week or at wilt), overseeding had no effect on PA or bentgrass populations.

The authors appropriately concluded that PA cannot be controlled with any single management practice. Rather, the outcome of any one practice depends on the overall cultural program. In other words, imposing a new management practice, such as PGR application, may or may not alter PA populations for you.

If one were to single out the one practice that seems to have the best potential for reducing PA populations on a reasonably competent basis, it is clipping removal. But don't expect miracles. In the MSU study, clipping removal for three years reduced PA populations by an average of 4% per year. Some plots started out with as much as 83% PA. Hence, after three years these plots averaged "only" 71% PA. This is not enough of a reduction for you or club members to see significantly less PA brownout when heat stress takes its toll.

One final note on *Poa annua.* The very popular concept that long-term use of Milorganite favors PA due to buildup of soil P has not been borne out in my research plots at the Maple Bluff Country Club. In May, 1988, counts of PA seedheads were unrelated to soil test P levels ranging from 86 to 280 lb/A. This is not to say that Milorganite did not appear to favor PA invasion of the plot area. Populations of PA in the Milorganite plots were more than twice those in the urea and IBDU plots.

So why does application of Milorgan-

ite favor PA? The answer seems to be earthworm activity. Counts of earthworm casts in the Milorganite plots have been found to be more than six times greater than in the urea and IBDU plots and when I examined the relationship between PA and earthworm populations, the latter accounted for nearly 88% of the plot-to-plot variation in PA populations. Perhaps this is not too surprising, considering that earthworm casts typically contain five times or more plant available N, P and K than does the surrounding soil.

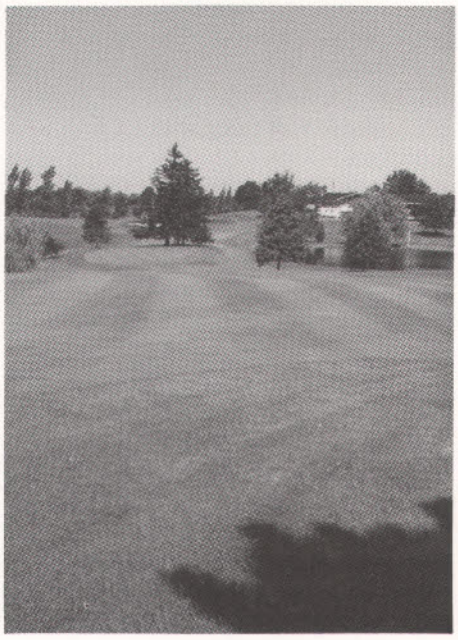
This brings us to one final thought. Assuming that earthworms are the link between Milorganite and PA, will application of Milorganite on sand-based putting greens favor PA?

References Cited

[1] Lush, W.M. 1989. Adaptation and differentiation of golf course populations of annual bluegrass *(Poa annua).* Weed Sci. 37:54-59.

[2] Gaussoin, R.E. and B.E. Branham. 1989. Influence of cultural factors on species dominance in a mixed stand of annual bluegrass/creeping bentgrass. Crop Sci. 29:480-484.

WORZELLA HOSTING 1989 WTA GOLF OUTING AT WEST BEND COUNTRY CLUB



WGCSA treasurer Bruce Worzella invited the 1989 Wisconsin Turfgrass Association golf outing to West Bend Country Club. The benefit is going to be held on September 25th.

Lunch will be served at 11:00 a.m. and the golf event begins at 12:30 with a shotgun start. Dinner will be served at 6:00 p.m. and preceded by hors d'oeuvres at 5:30. Prizes will be presented during and immediately after dinner so that everyone can get an early start home.

The cost for lunch, golf, golf cart, hors d'oeuvres, dinner and door prizes is $85. Dinner and hor d'oeuvres only cost $50 for those who do not wish to play golf.

Bruce is inviting corporations, manufacturers, distributors, sales representatives, golf clubs, golf courses and individuals to make a donation of $100. There will be a donor board on both the first and the tenth tees. Proceeds from this fundraiser will be donated to the O.J. NOER CENTER for TURFGRASS RESEARCH.