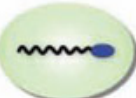



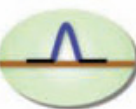
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Shared Visions and Leadership: Reflections on the Past and Future of the Golf Course Turf Industry

By Dr. John Stier, Dept. of Horticulture, University of Wisconsin-Madison

The 2010 Wisconsin Golf Symposium offered us all a chance to reflect on what we'd thought would be the future over the past 25 years. Some of the predictions came true, others didn't. Predictions and visions ranged from new technologies, including computers and equipment, to biology and environmental protection. Much of the time it was those efforts that had a shared vision, and were led by persons committed to accomplishing the task, that developed into products and methods we now take for granted. Other cases failed because they lacked a shared vision and/or leaders who were committed to success of the idea. Some of the ideas now seem whimsical, such as using hovercraft as golf carts, while other ideas were serious but derailed for the reasons given. Both the successes and failures of the past 25 years should serve to inform us of the actions we take now, and how our actions will position ourselves and our world 25 years from now.

One of the most insightful activities in the past 25 years for the golf course industry was the USGA/GCSAA visioning session in 1985. The group, with representation by many facets of the golf course turf industry, identified a number of items they felt would position the industry for better success. These included the development of new grasses that required less water and maintenance costs, research on water quality and quantity for turf maintenance, and the development of a computer-based system to search turfgrass-related information. Both organizations, often in concert with state associations such as the Wisconsin Golf Course Superintendents Association, supported research, outreach and teaching efforts associated with a shared vision.

Efforts to develop and have newer grasses adopted to reduce



Fig. 1. Loss of fungicides to protect against snow molds on golf course turf will require development of resistant grasses like fine fescues.

water use were largely successful. Numerous grass species were evaluated by university researchers for their ability to survive with less irrigation and/or irrigation with non-potable water. We now see grasses with low water use such as fine fescues and buffalo-grass being used in out-of-play areas. Research continues to focus on grasses for in-play areas that have reduced water and management requirements. Kentucky bluegrass and perennial ryegrass varieties have been developed that can maintain better turf quality under fairway conditions than in 1985. Certain bentgrass varieties have been bred with improved heat tolerance, improving putting green surfaces in the South by expanding the range of creeping bentgrass (Engelke et al., 1995). New velvet bentgrass varieties are showing potential to use less water and have better dollar spot resistance than creeping bentgrass (DaCosta and Huang, 2006 a,b; Koeritz and Stier, 2009).

Fine fescues are being developed that can provide acceptable fairway turf in some situations which will ultimately reduce irrigation and mowing costs. In our 12 years of evaluating fine fescues for fairway use at the OJ Noer Turfgrass Research and Educational Facility, we've gone from a few barely acceptable varieties to over one dozen varieties with good to excellent performance represented by at least three species (Horgan et al., 2007; Koeritz et al., 2005; Koeritz et al., 2003; Stier et al., 2002). As snow mold fungicides become less available, we're finding that fine fescues and colonial bentgrass have superior resistance to snow mold diseases compared to creeping bentgrass when maintained as fairway turf (Fig. 1; Gregos et al. 2000; Gregos et al., 20XX).



Fig. 2. Roundup Ready® creeping bentgrass was unharmed by applications of glyphosate that killed normal bentgrass (top and center grass plots).

GAZING IN THE GRASS

One of the other smashing successes developed from the USGA/GCSAA visioning committee was the Turfgrass Information File (TGIF)/Turfgrass Information Center (TIC; www.tic.msu.edu). In 1985, few people had even seen a personal computer, let alone used one. By the early 1990s, though, we were able to search library files for turfgrass information by plugging a phone line into a computer and using a DOS-based system to enter search terms. Of course, now the system is Windows-based, allowing much more powerful searches in a fraction of the time it took 20 years ago. Superintendents use TGIF to search for answers to problems such as minimizing the damage from hydraulic spills or other turf injuries.

Researchers use the system to develop new research ideas which develop information that can be relayed to superintendents. Students use TGIF to enhance their learning. Our college librarian once told me that the TGIF was the best database for a single topic which she'd ever experienced. Meanwhile, Peter Cookingham and his staff continue to improve the TIC while numerous industry partners contribute funds towards an endowment to make the TIC freely accessible to all. The WGCSA has done their part by contributing sufficient funds to purchase a lifetime subscription for UW-Madison students and researchers.


Not all good ideas came to fruition as initially envisioned within the past 25 years. We still don't have laser-cutting units on mowers or self-guided mowers on our golf courses. The ideas and patents are there, though, and engineers are working on perfecting them. Other ideas may never see the light of day.

The efforts to develop *Poa annua* as a putting green turf have hit a perhaps insurmountable wall for several reasons. Biologically, the best varieties seem to have poor turf seed production. The genetics of *P. annua* may also control the ability to produce a useful grass, as more recent indications are that many *P. annua* ecotypes are capable of forming a higher quality putting green turf, but only after years of being maintained as a putting green turf. Further research into the biology of *P. annua* may be hampered by lack of committed researchers—there's only really ever been two breeders who worked on *P. annua* (Dr. Don White and Dr. Dave Huff). Economic and regulatory forces have also squelched development of *P. annua* as a putting green turf due to the lack of a shared vision. *Poa annua* has been listed as a noxious weed in some states and interstate transport is illegal.

The use of biotechnology to develop genetically-modified grasses for reduced maintenance and enhanced environmental benefits at first glance seems to have failed its goals. Roundup Resistant® creeping bentgrass was developed by the Scotts Co. in part as an environmentally beneficial solution to controlling *P. annua* encroachment in golf course turf (Fig. 2). The ultimate goal was to reduce irrigation and fungicide inputs by maintaining pure

stands of creeping bentgrass. Despite good research and development, legal challenges by advocacy groups and industry associations squelched the deregulation of all genetically modified grasses because of the lack of a shared vision.

However, breeders are starting to find grasses with naturally occurring glyphosate resistance, so one could argue the effort was not all in vain. In another case, Kentucky bluegrass varieties that were genetically modified to grow slowly so they would rarely need mowing were on track for commercialization. The environmental benefits were huge—less fossil fuel and water use, less chance of ever being invasive in natural environments, high potential desire by homeowners who didn't want to spend their Saturdays mowing their lawn. The project ended up dying largely in part because of the lack of a shared vision: members of our own Green Industry (landscape contractors) challenged the deregulation of the grass as they feared less demand for mowing jobs if the grass was ever utilized. Nonetheless, we know now what types of genetic activities are needed for slow-growing Kentucky bluegrass, and I expect breeders will slowly incorporate naturally occurring characteristics for slow-growing varieties in the future.



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In any large-scale effort, failures are par for the course and information learned from them often sets the stage for future successes. America is in the midst of tough times not experienced since the Great Depression. A famous quote “The measure of a man is not whether he falls down, but whether he gets up again” has meaning for our future.

We achieved economic success after the Great Depression, and the start of 50 years of growth and economic boom times in the golf industry, by emerging from World War II as the only developed country capable of producing items needed and desired by the rest of the world. Such a watershed event is unlikely to lift us out of the doldrums this time around, particularly as other nations like China, India and Brazil emerge as economic forces.

There are other ways for the golf course industry to revitalize. By and large the goals of the USGA/GCSAA met with success because of the development of a vision shared not only by the committee but by golf course superintendents, allied industries, regulatory agencies, and academia. In 2011, the economy is tough and the perception of golf courses as being elitist users of scarce resources (e.g., water, gasoline) while [potentially]

harming the environment is real and considerable. At the same time, the economic and environmental benefits of golf courses are known, just not widely (Beard, 2000; Beard and Green, 1994). One could argue we need a national visioning session for the golf course industry now even more than in 1985.

Where will the vision come from, and how will it be developed? The USGA has retrenched its research program in order to secure its core mission (not research) for the future. The GCSAA is floundering. Universities rely more than ever on grant and gift funds to operate and are less able to commit effort for unfunded activities. Of course, great visions tend to develop from the miasma of society through the focus of one or a few people who then spread the vision widescale—think of Martin Luther King, Mahatma Gandhi, George Washington and the Founding Fathers. Three of the four founding members of the national Sports Turf Managers Association, a turf association that continues to grow despite a tough economy, were from Wisconsin. Does Wisconsin need to lead again, this time for the golf course industry? Do we have the right people? Are you one?

References

- Beard, J. B.** 2000. Turfgrass benefits and the golf environment. p. 36-44. In ACS Symposium No.743 : Fate and Management of Turfgrass Chemicals. Clark, J.M. and Kenna, M.P. eds. Published by American Chemical Society.
- Beard, J.B., and R.L. Green.** 1994. The role of turfgrasses in environmental protection and their benefits to humans. *J. Enviro. Qual.* 23:452-460.
- Blume, C., S. Fei, J. Stier, and N. Christians.** 2008. Competitiveness of genetically-modified Kentucky bluegrass in mowed turf. *Acta Hort* 783:357-370.
- DaCosta, M., and B. Huang.** 2006a. Minimum water requirements for creeping, colonial, and velvet bentgrasses under fairway conditions. *Crop Sci.* 46:81-89.
- DaCosta, M., and B. Huang.** 2006b. Deficit irrigation effects on water use characteristics of bentgrass species. *Crop Sci.* 46:1779-1786.
- Engelke, M.C., V.G. Lehman, W.R. Kneebone, P.F. Colbaugh, J.A. Reinert, and W.E. Knoop.** 1995. Registration of Crenshaw creeping bentgrass. *Crop Sci.* 35:589.
- Gregos, J.S., M.D. Casler, and J.C. Stier.** 2000. Snow mold tolerance of bentgrass and fine fescue fairway collections. p. 158. In *Agronomy abstracts*. ASA, Madison, WI.
- Gregos, J., M.D. Casler, and J.C. Stier.** 20XX. Resistance of closely-mown fine fescue and bentgrass species to snow mold pathogens. *Plant Dis.* (accepted, pending revision, Jan. 2011).
- Horgan, B., A. Hollman, E. Koeritz, and J. Stier.** 2007. Fine fescues and colonial bentgrasses for fairways. *Golf Course Mgt* 75(5):112-117.
- Koeritz, E.J., and J.C. Stier.** 2009. Nitrogen rate and mowing height effects on velvet and creeping bentgrasses for low-input putting greens. *Crop Sci.* 49:1463-1472.
- Koeritz, E., J. Stier, and J. Gregos.** 2003. Fine fescues and colonial bentgrasses for golf course fairways. *Wisc. Turf Res.* XX:182-189.
- Koeritz, E.J., J.C. Stier, B.P. Horgan, and T. Voigt.** 2005. Developing an environmentally sustainable golf course: fine fescue and colonial bentgrass fairways. *American Society of Agronomy abstracts*, ASA/CSSA/SSSA, Madison, WI.
- Stier, J.C., J.S. Gregos, and A.B. Hollman.** 2002. Impact of simulated golf cart traffic on fine fescue. In *Agronomy abstracts*.

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2010 Sports Report

By Jake Schneider, Assistant Superintendent, Blackhawk Country Club

Quite frankly, after the summer that we experienced in 2010, my interest level in penning an article about anything turf-related is as low as trice-retired Brett Favre's quarterback rating this year. So, let's talk sports instead. For a relatively small-market state, we sure are lucky to have a host of professional and collegiate teams that are consistently competitive and entertaining. And, because I'm a complete and total homer, my loyalties collapse as quickly as the Metrodome's roof at our state's boundaries. In no particular order, here are my Wisconsin sports thoughts and feeble audition for Rick Reilly's job. Enjoy.

Badger Football

For all of the great memories that the Badgers created on their run to the Rose Bowl, it's difficult for me to get past the missed opportunities in Pasadena. A missed field goal, a dropped pass, a questionable call, and an opposing linebacker wearing far more arm bands than necessary are some of the bitter memories of the game. Personally, I would've liked to have seen a steady dose of Montee Ball and John Clay running between the tackles instead of taking deep shots down the field. Sure, I understand that you have to pass occasionally to keep the defense honest, but TCU's speed was negated and their lack of size was accentuated when they followed the big eaters up the middle. Oh well, it was still a great season, and after the Michigan State game, who would've imagined that they would've been in the position that they finished. Looking ahead, I believe that they are returning enough talent next year to have a similar run, but it will largely depend on finding a capable replacement for Scott Tolzien and a defensive playmaker like J.J. Watt.

Da Packers

Clearly, the highlight of the year was the Sunday-night drubbing that the Packers handed the Cowboys. Chad and I attended this game with two of our employees, Reid and Omar (a Cowboys fan). It was particularly memorable because the walloping that Pack applied to the Cowgirls was equal only to the thrashing that Omar took from us before, during, and after the game. There were a significant amount of Spanish curse words directed at the field and at certain co-workers that night. As an aside, if there's a better setting to watch a game than Lambeau at night, I'd like to see it. Considering all of the season-ending injuries that the Packers sustained throughout the year, it's a minor miracle that they managed to reach the playoffs, and, as I write this (a day after they took down the Eagles), they have a chance to make some real noise. After this year, even the biggest haters of Mike McCarthy and Ted Thompson have to admit that they did one heck of a job keeping this team together.

The Brew Crew

If the Giants could win it all in 2010, who says that the Brewers can't this year. Sure, they didn't sign Cliff Lee or Carl Crawford, but the additions of Zack Greinke and Shaun Marcum give them a more-than-respectable starting rotation, at least on paper. Combine that with an offense with enough weapons to provide good run support, and there's potential for them to be contenders. It sure would be great to see playoff baseball return to Milwaukee.

Badger Basketball

As you probably know by now, the Badgers are my second true love (behind the future Mrs. Schneider). Accordingly, I'd be remiss if I neglected to mention Badger basketball. It doesn't seem to be a great year to be an average team in the Big Ten. However, by this point I should have learned not to doubt Bo and his boys. Although Michigan State doesn't seem to be living up to their preseason ranking, the conference has many teams capable of beating anyone on a given night. If the team stays healthy and shoots a high percentage beyond the arc, there's no reason that they can't be a factor in the Big Ten title race and win a few games in the tournament.

I hope that everyone is having a productive yet relaxing winter, that your greens are resting comfortably, that you have been able to take advantage of the many educational opportunities offered by our state's associations and vendors, and that Mother Nature is more friendly in 2011.



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2010: Another Busy Year for UW Turf Research

By Ben Pease, Graduate Student, Department of Horticulture

Three graduate students, the addition of a Ph. D. student, sixteen student or contract research projects, and five National Turfgrass Evaluation Program (NTEP) trials were the focus of the Horticulture department's efforts for 2010. It was a busy year, with record crowds at a successful Field Day, a prominent display of UW researchers at the annual international research convention and excellent speakers at the November Symposium. Today I'd like to look back on the year and update everyone on the research freight train of UW Horticulture.

Dr. Stier's other graduate students, Rebekah Verbeten and Sabrina Ruis, continued their field and greenhouse studies that began in late 2009. Sabrina's work on carbon dioxide fluxes of biosolids amended soils during turfgrass establishment found that high application rates of biosolids resulted in a statistically greater amount of CO₂ emission prior to turfgrass germination compared to two lower rates of biosolids and a no biosolid control.

The high application rate of biosolids did increase turf quality after germination so initial higher CO₂ emissions may be a worthy trade-off to creating a better end product. Sabrina presented a poster on this project at the national conference of the Crop Science Society of America this past November in Long Beach, CA. Rebekah's project on the effects of mycorrhizal inoculation and varying phosphorus fertilizer rates on creeping and velvet bentgrasses began its second year this summer/fall.

For those of you who attended Field Day, she presented her first year of data during the morning research tour. While the plots were still in an establishment phase, some new information on mycorrhizae interactions with bentgrass turf is emerging. The second year of this project established very well due to grow-in weather conditions in 2010 being much better than in 2009. Additional experiments fo-

cused on the interactions of soil pH and mycorrhizal colonization of creeping and velvet bentgrasses are being conducted in a campus greenhouse. Dr. Stier's previous graduate student, Mark Garrison, returned in 2010 to start his Environment and Resources Ph. D. Mark is Dr. Stier's first graduate student to be enrolled in the Nelson Institute for Environmental Studies program at UW-Madison. He is investigating carbon sequestration rates of turfgrass on subsoil and topsoil, and how varying irrigation and fertilization affects the rate of carbon accumulation in the root zone.

Mark is also investigating various fertilizer management strategies and nutrient leachate differences between seed versus sod site establishment. While it was a lot of work, preparing and establishing his plots was fun due to the use of some heavy equipment! Look forward to Mark updating us on his progress in future *The Grass Roots* articles.

In 2010, I was again privileged to travel overseas to disseminate the findings of UW-Madison turf research. I was invited, through Dr. Stier, to speak at the Scandinavian Turfgrass and Environmental Research Foundation's (STERF) first-ever velvet bentgrass (VBG) research seminar, held in Hyvinkaa, Finland. I shared the billing with Scandinavian superintendents, who presented their knowledge on VBG learned through practical experience, and with top North American professors, who presented their findings from years of university research. Drs. James Murphy (Rutgers Univ.), Katerina Jordan (Univ. of Guelph-Canada) and Michelle DaCosta (Univ. Massachusetts) all gave excellent presentations on their own VBG research programs.

I presented on Dr. Stier's previous work on VBG with graduate student Eric Koeritz, my current Masters Degree work with VBG, future research possibilities in Wisconsin, and gave the audience a

solid overview of UW-Madison and our turf program. It was a wonderful opportunity to showcase our university and Wisconsin, as the audience represented nine countries, including some members of the R&A! I can honestly say I felt that I learned more from the attendees than they did from me, but hopefully the feeling was mutual. This seminar was held after a playing quality seminar (also somewhat focused on VBG) put on by Norwegian research group Bioforsk at their research station in Landvik, Norway. Bioforsk has an intensive VBG research program, focused on cultivar selection and cultural practice management. The knowledge gained and the entire visit to Scandinavia was priceless, including a boat tour of southern Norway fjords, various golf course visits (Figure 1) and two wonderful golfing opportunities.

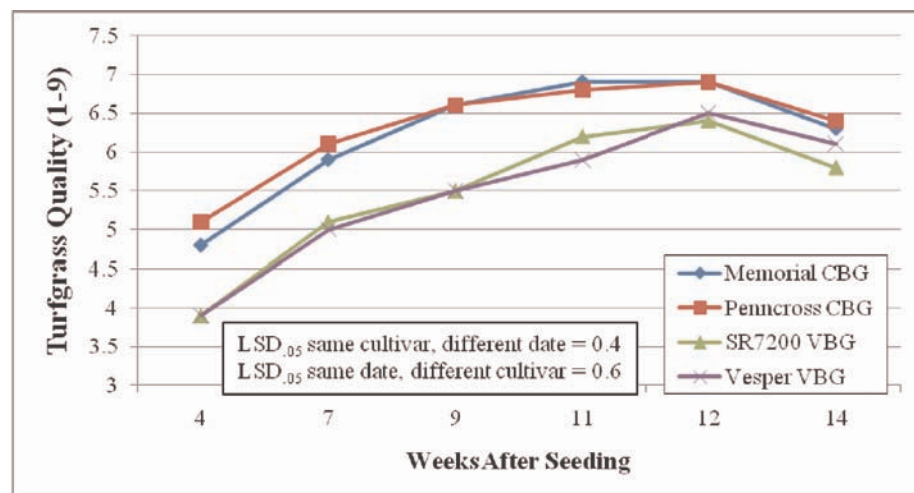


Figure 2. Quality of creeping and velvet bentgrass cultivars in Madison, WI, by date during establishment on a scale of 1-9, 6 = lowest acceptable value, 9 = ideal quality, 2009.

Back at the O.J. Noer, September was spent preparing for and establishing our new perennial ryegrass NTEP. This five-year trial will test the performance nearly 100 cultivars of perennial ryegrass, in both trafficked and non-trafficked conditions. This trial will be showcased at Field Day in years to come. Our Kentucky bluegrass NTEP has completed its run but our creeping bentgrass, fine fescue and tall fescue NTEPs are still going strong. As usual, if you would like to view any of these trials you are welcome to visit the O.J. Noer at any point during our growing season.

The University of Minnesota-Twin Cities and the University of Wisconsin-Madison joined forces last year to compare the nitrogen (N) requirements of creeping bentgrass (CBG) and VBG at establishment for fairways or tees. Velvet bentgrass is thought to be a low N turf but these claims all refer to established turf, not establishment. Our data indicate that N requirements for establishing VBG are similar to those for creeping bentgrass. The optimum cumulative N rate for the first 12-14 weeks after seeding is between 3 and 6 lbs N/M. While VBG cultivars initially established slower than CBG cultivars, both species had acceptable quality (Figure 2) and greater than 95% cover by trial end. I presented this study as a poster at our annual meeting in November and the full results will soon be published in *Applied Turfgrass Science*.

The shaded bentgrass study that I presented at 2009's Field Day was finished this fall. The objective of the study was to compare CBG and VBG in a shaded environment as affected by three N rates and two growth regulator rates. While much is known about CBG in relation to nitrogen and growth regulators (a small portion of it under shaded conditions), shade tolerance of VBG has never been quantified and the effects of growth regulators on VBG have not been investigated. Preliminary data analysis suggests that both species react similarly to N and growth regulator treatments, with low N rates and the use of a growth regulator resulting in the highest quality turf for the longest time period. With

conclusion of this study, we now have a few more pieces to the Midwest VBG management puzzle. I presented this study as an oral presentation at our annual meeting in November and the full results will soon be submitted for possible publication in *Crop Science*.

As I mentioned before, Horticulture conducted numerous contract and student research projects. I'd like to quickly highlight one that is applicable across many different turf management situations. The objective of this trial was to compare an experimental herbicide against a negative control (no products applied) and four positive controls (established, proven products) for pre-

emergent crabgrass control. This trial was conducted on a site with a history of crabgrass infestation. Management practices encouraged weed growth but did not inhibit turfgrass stand quality. Major turf species in the plot were Kentucky bluegrass and perennial ryegrass. The treatments were applied on 14 April 2010 when soil temperature reached 55F, the temperature at which crabgrass will begin to germinate. All treatments were applied using TeeJet XR8002VS nozzles at 40 psi delivering 52 gallons per acre. The trial was arranged in a randomized complete block design with four replications.

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Treatments are summarized in Table 1 (experimental herbicides removed).

Treatments were evaluated for crabgrass populations on seven dates between 6 weeks after treatment and 25 weeks after treatment. On all dates, all four industry standards had significantly lower crabgrass populations than the control and all four standards were statistically similar to each other (Figure 3). While this does not seem exciting, it brings forth a good integrated weed management concept. All four products have different modes of action and all had the same effect on weed populations. This shows, in a practical setting, that you can switch products from year to year without losing sleep over potential results. Changing modes of action is most important for avoiding pest resistance to insecticides but also applies to fungicides and herbicides. This trial also reminds us that preemergent crabgrass control is often a more effective and longer-lasting method than post-emergent control. There have been numerous trials at the O.J. Noer comparing pre- and post-emergent applications, including one from 2010 that will be published online in the *Wisconsin Turfgrass Research Reports*, showing that preemergent weed control results in lower weed populations by season end than postemergent weed control for some species. For further details, the full results from this trial will be published in the *Wisconsin Turfgrass Research Reports*.

As you can see from just a small sampling of our efforts, 2010 was a welcomingly busy year. I would like to thank you for your continued support of the UW turf team. Please do not hesitate to arrange a visit to the O.J. Noer to view any of our research trials. I hope to see you at the 2011 Field Day.



Ben Pease examining a velvet bentgrass green in Finland.

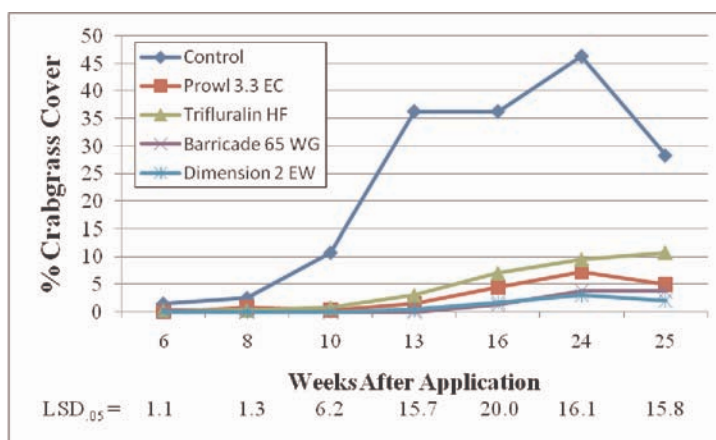


Figure 3. Percent crabgrass cover (0-100%) in Madison, WI, by treatment and weeks after application, 2010.

TABLE 1. Preemergent liquid formulations on crabgrass treatments, Madison, WI 2010

Trt#	Treatment Product	Active Substance Rate (lb AE/A)
1	Negative Control
2	Positive Control: Prowl 3.3 EC	1.5
3	Positive Control: Trifluralin HF	1.0
4	Positive Control: Barricade 65 WG	1.0
5	Positive Control: Dimension 2 EW	0.38