

Figure 1. The effect of Primo Maxx re-application frequency on the relative yield of a creeping bentgrass putting green. Stars indicate days clipping yield was less than the non-treated control (dashed line) and arrows indicated Primo Maxx applications. Primo Maxx was applied at the labeled rate for golf course putting greens of 0.125 fl oz/M. Values below the 1.0 reference line indicate yield suppression while values above the line indicate the rebound phase.

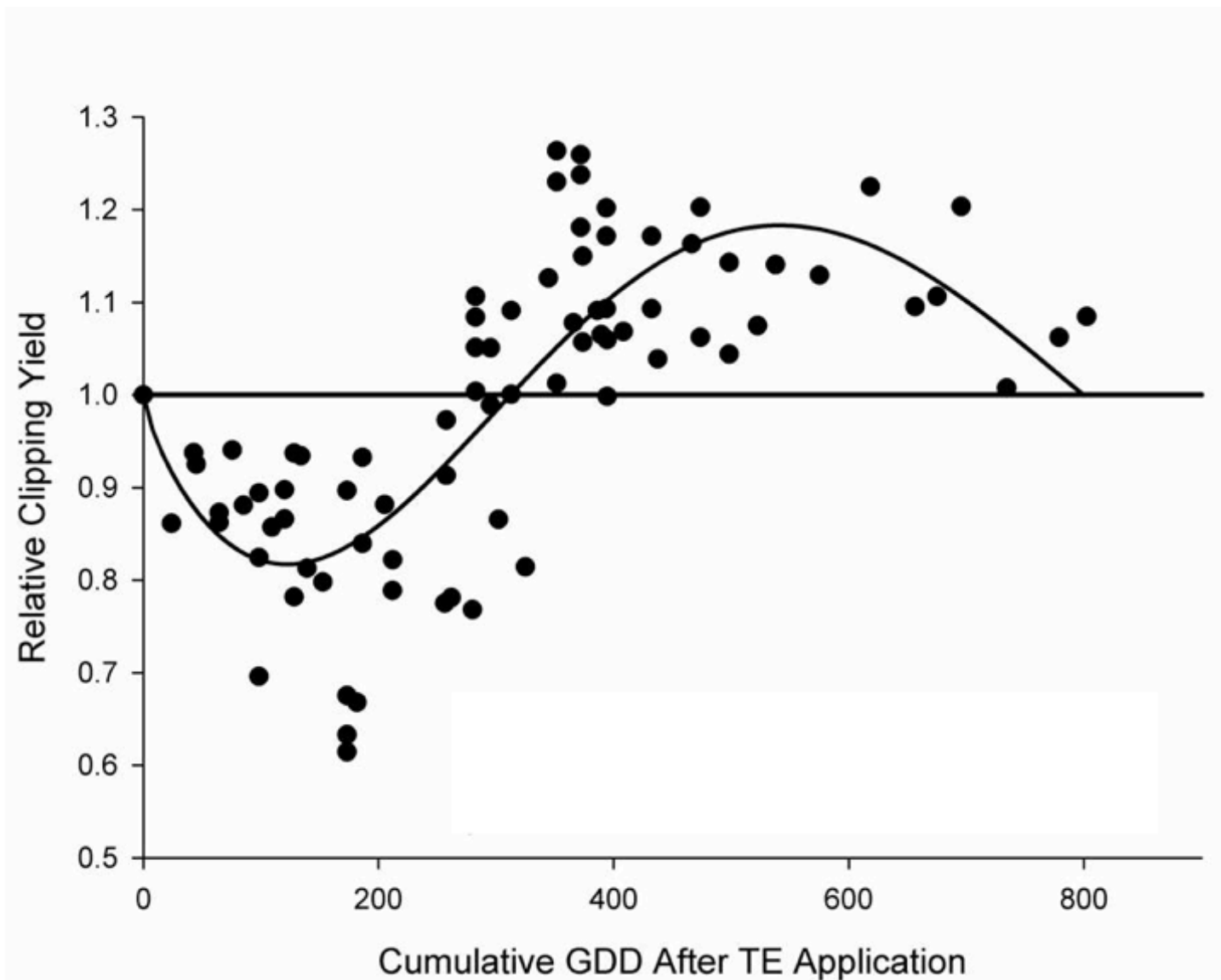


Figure 2. Relative clipping yield of a creeping bentgrass golf putting green at various growing degree days after Primo Maxx application. Cumulative GDD was calculated in degrees Celsius with a base temperature of 0°C from the time the previous Primo Maxx application. Primo Maxx was applied at the labeled rate for golf course putting greens of 0.125 fl oz/M. Values below the 1.0 reference line indicate yield suppression while values above the line indicate the rebound phase.



of yield suppression is to re-apply more frequently than 200 GDD (i.e. 100 GDD). The only benefit of the high application rate is that the bentgrass visual quality was greater compared to the labeled application rate of 0.125 fl oz/M.

It needs to be very clear that 200 GDD re-application interval is only meant for Primo Maxx applications to creeping bentgrass golf putting greens. Bermudagrass greens and taller mowed turfgrass such as Kentucky bluegrass athletic fields are more sensitive to Primo Maxx and would have a different Primo GDD threshold. Some preliminary research on *Poa annua* putting greens found that the 200 GDD re-application interval is effective at maintaining yield suppression of *Poa*. We also have found that 200 GDD applications to mixed bent/*Poa* green decreased the *Poa annua* population from 23% to 16% of the surface. However, golf course superintendents visually estimated that there was more *Poa* invasion on those same plots. This occurred because the bentgrass and *Poa annua* populations began to segregate as the grass density increased with repeat Primo Maxx applications. This gave the illusion of more *Poa* invasion while the actual amount of was diminished (verified with a grid count).

We also wanted to determine the GDD threshold for Trimmit application to creeping bentgrass and *Poa annua* golf putting greens. We used the same methods described above to determine Primo Maxx GDD. Trimmit was applied at the rate of 0.25 fl oz/M (11 fl oz/A) and was lightly watered in after application. We found that 300 GDD re-applications (base °C) maintained yield suppression during the growing season for both grass species. After approximately 350 GDD the turf entered the rebound phase (Fig 4). A word of caution however, the 300 GDD Trimmit treatment contributed to the collapse of the *Poa annua* stand during 2010 and was described in more detail in Dr. Soldat's January/February 2011 Grass Roots article (<http://www.lib.msu.edu/cgi-bin/flink.pl?recno=175732>). In conclusion, the use a GDD model to estimate

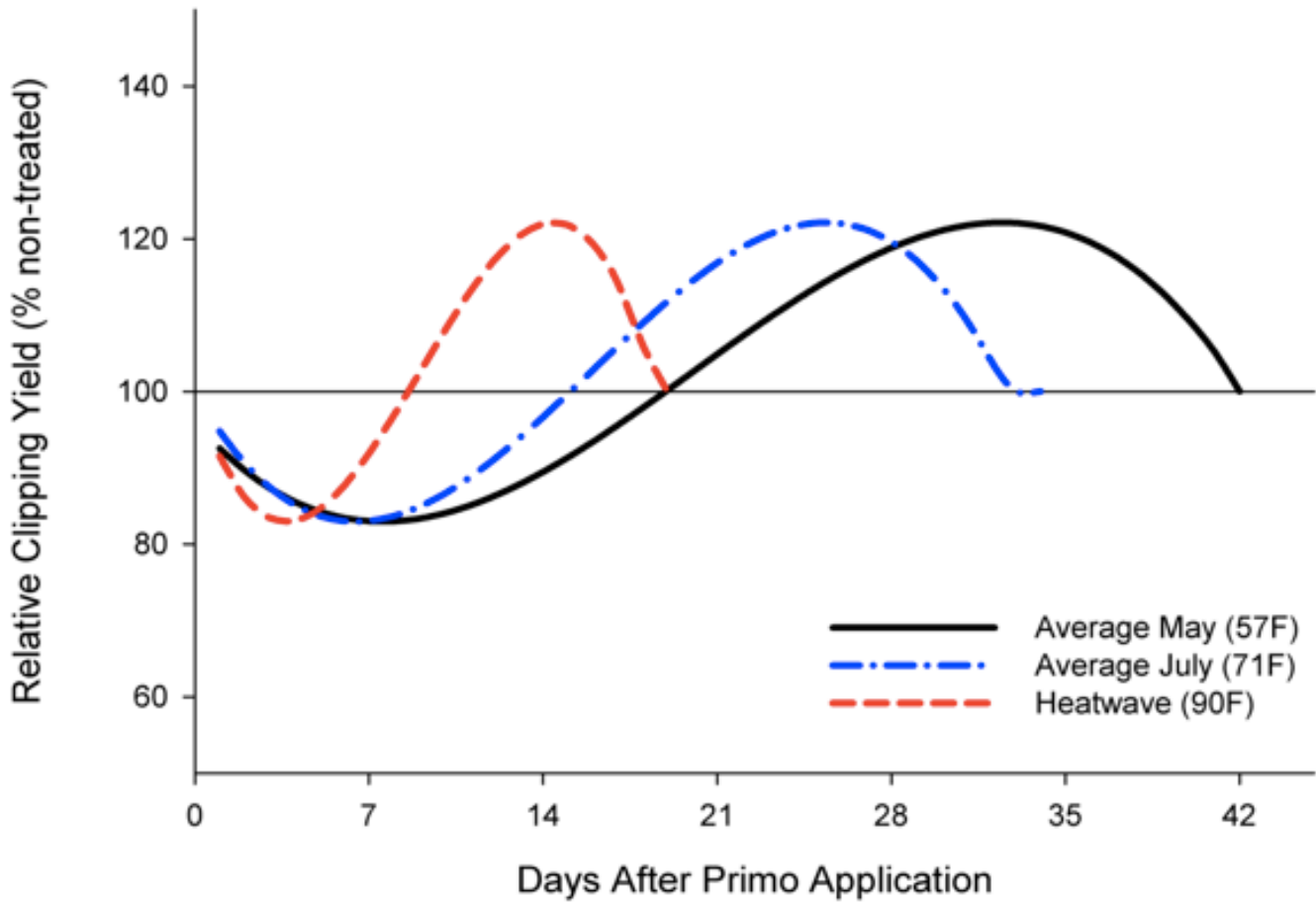


Figure 3. The influence of air temperature on the duration of the yield suppression and rebound phases in Madison, WI. Values below the 100% reference line indicate yield suppression while values above the line indicate the rebound phase.



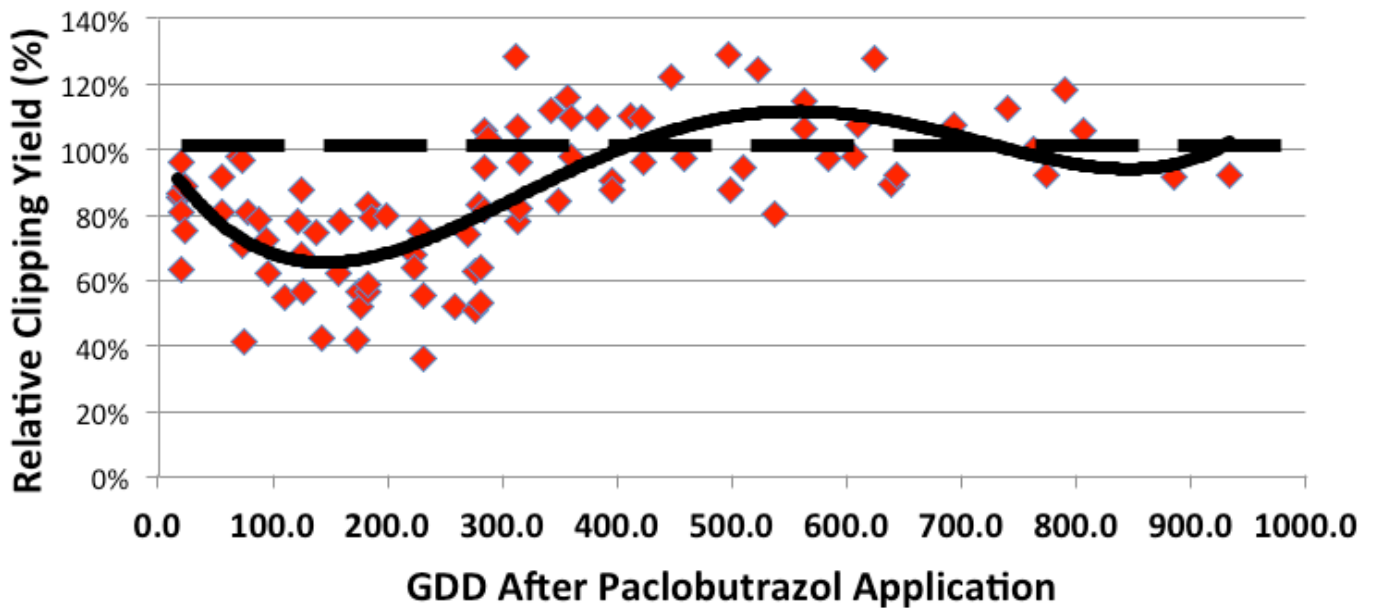


Figure 4. Relative clipping yield of a creeping bentgrass golf putting green at various growing degree days after Trimmit application. Cumulative GDD was calculated in degrees Celsius with a base temperature of 0°C from the time the previous Trimmit application. Trimmit was applied at the rate of 0.125 fl oz/M. Values below the 100% reference line indicate yield suppression while values above the line indicate the rebound phase.

PGR metabolism and schedule re-applications increases application precision and removes some of the mystery and misconceptions involved with these PGRs. If you have any questions or would like a copy of an Excel spreadsheet to track GDD accumulation please email me at wck38@cornell.edu or go to this link <http://www.hort.cornell.edu/turf/> for the actual spreadsheet.

Summary Points

PGRs reduce clipping yield for a duration dependent upon air temperature.

GDD systems can be used to estimate the duration of the suppression



growth phase.

Re-applying Primo Maxx to creeping bentgrass putting greens every 200 GDD (base 0°C) maintained season-long yield suppression regardless of season.

The 200 GDD re-application interval is specific only to creeping bentgrass (and likely *Poa annua*) golf putting greens. Other turf species have different GDD thresholds which need to be determined experimentally.

Increasing Primo Maxx application rate did not increase the level or duration of yield suppression, but the higher application rate resulted in greater visual quality enhancement.

Re-application of Trimmit to creeping bentgrass and *Poa annua* putting greens every 300 GDD (base 0°C) maintained yield suppression. However, that application frequency was stressful on the *Poa annua* and contributed to collapse of the turfgrass stand in 2010.

REFERENCES

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On Board

Q&A with Members of the Board of Directors

Considering the unusual spring weather...how will the delay in opening change your business management plan? Budget, staffing, strategies?

Jeff Girard, Superintendent at StoneRidge Golf Club



With the later than normal start to the season, we have tried to keep our start up of the staff somewhat the same. While we haven't brought back as many seasonal staff to this point, we have had 3-5 of our hourly guys return over the past 3 weeks. We realized that once it is finally time to open, we need to hit the ground running...fast. We probably won't have that nice extended period of time between snow melt and opening

to prep and ready the golf course for opening day.

In regards to our business management plan, we will hopefully try and keep things as usual, despite the late start. Our hope is that people will be flooding thru the door after being locked inside all winter and spring. So we want to make sure that things are 100% ready to go and presentable come opening day.



Jamie Bezanson, Superintendent at Oneka Ridge Course

Oneka Ridge Golf Course is a public golf course

that relies heavily on public play for revenue. With this spring being a delayed start we are predicting revenue shortages. To offset these shortages our proposed plans and budgets will have to be modified to maintain our

financial security.

Our largest areas where we can potentially realize savings and make changes will be in pesticide and fertilizer applications, and fuel and labor expenses. At Oneka Ridge Golf Course we have a lot of capital improvements planned for this coming season. To insure everything will be completed reducing labor costs will be limited or projects possibly put off to the following season.

Other reductions in costs that

will be noticed because of the late spring may include less fuel used because of less mowing. I will be able remove an application or 2 of pesticides and fertilizer and carry the inventory over to next year. There may be opportunities to skip a cultural practice such as verti-

cutting or topdressing this spring which will also save on labor and sand. By now we are all a little Vitamin D deprived and anxious to get the season going. On the positive side of things, my family gets to see a little more of my thick eyebrows.

On Board

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Considering the unusual spring weather...how will the delay in opening change your business management plan? Budget, staffing, strategies?

Mike Kelly, Bayer Science and Environmental



This spring has been one of those seasons that makes me ask why I live in Minnesota? After pondering long and hard, it is because of the seasons, and most of all, the type of people that also choose to live here. Believe me, in all my travels, there is such a thing as “Minnesota Nice”.

From a Manufacturer Representative’s perspective, the unusual weather we are experiencing means that I will be able to complete a Business Plan this season. Typically, I am traveling from course to course and spend very little time in the office doing the tedious reports, expense accounts, etc. The phones have definitely been quiet, however it is a great opportunity to do some research on my own

regarding chemistries, new research at the University level, and the latest and greatest products and procedures for managing the golf course. Bayer is continually monitoring strategies in the turf industry and it seems that meetings have been on going at the company level, which means more travel within the US.

I am eager for the season to get underway just as most of you, and soon the courses will be full, and you will be complaining about cart traffic, unfilled divots, ball marks, un-raked bunkers and before you know it-geese. So when you’re given lemons, make lemonade and make the best of an uncontrollable situation.

Cheers to a great season.

*Casey Andrus, Assistant Superintendent Interlachen
Country Club*

The weather is what it is; allocating energy into why or when weather conducive to golf arrives is one headache I know to avoid. How does this delayed opening affect our budget? It doesn't; budgets had been approved months ago, back when snow was the norm. This year will not affect our decisions for next year. Rather than worry about weather, we focus on things within our control: equipment preparedness, staff in-line ready to go, projects planned, goals made and procedures in place to ensure another great season.

At the end of the day, we are at Mother Nature's whim; hopefully, the law of averages will come into play. In 2012 we saw a very early start with some long stints of hot dry weather. So far in 2013, we are seeing a later start with lots of precipitation; precipitation many of us would like to see recycled back into our lakes and ground water.

Staffing? That is hardest on the crew; they came in for two days before the early April snow. We looked at the long range forecast and made decisions accordingly. I am grateful that we have such an understanding staff; they are aware the current conditions are out of our control. Many of them also know that once this season does begin, it will be like a huge switch being flipped ON! Another certainty is that, they, and we,

are raring to go! Strategies? Our strategy is the same for any spring; once the course is ready

to handle our traffic we will be in full force clean-up. For the time being, we are walking out and doing chores by hand with ease of clean-up in mind, piling branches near trees or cart paths.

An interesting part of this job is that we are typically the "End of the Line." We are people who make things happen when others may balk. It is very exciting to see what a grounds crew can do to a property in a short time. I could tell you that this year players will be antsy to get down the fairway, but that is true every year. Minnesotans are known for our enjoyment of all four seasons, though we can be extremely anxious to begin each new season. We have sound practices and know what works, by following our plan we set ourselves up for another successful golf season. Here's wishing you all a wonderful season.



**June 3rd, Medina Golf and
Country Club
*THE SCRAMBLE
A Fundraiser Event***

Scottie Hines, CGCS, Golf Course Superintendent at Windsong Farm Golf Club in Independence, MN, traveled to Washington, D.C., April 16 with nine peer members of

taxation and environmental issues.

“Scottie’s participation in National Golf Day serves an important role for the association,”

Mr. President Returns to Washington

the Golf Course Superintendents Association of America Government Relations Committee to meet with members of Congress as part of National Golf Day.

The goal of the visits with lawmakers was to promote the true face of golf, one that better reflects the economic, human and environmental benefits of the industry across the nation. The Government Relations Committee also discussed with their federal elected officials immigration,



GCSAA Government Relations Committee Chairman Rafael Barajas, CGCS, said. “This important event allows our federally elected officials the opportunity to understand the golf industry’s concerns. It was truly an honor to work with Scottie, GCSAA’s

Government Relations Committee and the leaders of golf’s allied organizations to speak up as a unified voice to ensure lawmakers have an accurate perception of the golf industry.”