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Tim Moraghan, Principal, ASPIRE Golf [tmoraghan@aspire-golf.com]. Follow Tim's blog, Golf Course Confidential at <http://www.aspire-golf.com/buzz.html> or on Twitter @TimMoraghan

WHAT TO LIKE ABOUT AUGUSTA NATIONAL

Augusta National gets a bad rap. Not from the general public, which would give its right golf ball to play there or just walk its hallowed ground for a day, and not from most of the pros, who fall over themselves to praise the club and course for their history and tradition.

But among superintendents and others in the maintenance profession, Augusta is held up as the ultimate bad guy for its dedication to creating deep-green carpets of fairway, super-slick greens, ornately flowering surroundings, and other intentions to perfection. I've had numerous people in our industry come up to me and start bad-mouthing Augusta.

Well, I've got news for you. I'm an Augusta fan. I drink the green Kool-Aid – which isn't to say that I don't note some shortcomings. And I sympathize with my brethren who have to answer the same question from their members every spring: "Why can't we be like Augusta?" It's unrealistic for almost any other course in the world to aspire to that look, and certainly not if the members aren't willing to invest millions of dollars.

So what do I love about Augusta National and The Masters? Let me count the ways...

Among its general qualities: The tournament is held at the perfect time of year; it's an invitational that requires exceptional play (usually including a victory) to get in; the club gives a lot of money to charity; the par-3 tournament is not only fun but shows that short courses still have a purpose and that when all is said and done, there is no doubt that the tournament will have identified the best player that week.

But let's dig a little deeper, delving into the agronomic aspects of Augusta National, things that most golfers – and even many people in the industry – don't know and therefore don't appreciate.

Yes, we can all see that Augusta National is an agronomic Disneyland, with no stone left unturned in pursuit of creating the perfect playing field for golf. The staff's attention to detail is unprecedented, which not only results in the beautiful course we see but continually raises the bar for all involved.

I think the course set-up is second to none, and remains that way year after year. Can you think of another course that has been so flexible about changing to match the evolving level of players' abilities? You might not agree with all of the alterations, but how many other courses have even tried

to accommodate the new equipment and fitness standards of the world's finest golfers?

Changes aren't only made to fit the players. Also taken into consideration are the "patrons," keeping in mind that they, and the millions of viewers, want to see every inch of the course.

The club keeps reams of information on the course from year to year, assuring that hole locations are nearly identical to where they were in the past, which adds to everyone's enjoyment. They're just as meticulous about maintaining green speeds -- and by not making those speed ratings public, they perform a real service to course superintendents everywhere. Another point about Augusta's greens: The speeds are allowed to vary green to green based on surface slope and incoming shot values and other options: Nothing is cookie-cutter at Augusta.

**Well, I've got news for you.
I'm an Augusta fan.**

The course also has been something of a living laboratory for turf grass research over the years, aiding breeding efforts of Penn A & G by Dr. Joe Duich of Penn State. Augusta was also one of the first to install internal drainage and water-removal systems as well as sub-surface heating and cooling devices. Plus, the club has been at the forefront in energy savings, GPS-controlled pesticide application, turf grass internship programs and proper pesticide storage and removal practices.

Furthermore, I can't think of another club that has done as much to advance both the image and the profession of the superintendent, building a maintenance facility with all the bells and whistles of agronomics, ergonomics and environmental safety. How many maintenance buildings do you know of with a real reception area? The club understands and appreciates what its maintenance staff does. And they also support it with a healthy budget.

What I love most about Augusta is how all of these actions, when taken together, create an atmosphere of respect and proper behavior that extends to everyone: patrons, players, the media, club members and employees.

And by limiting commercials, I get to see more golf – and usually better golf – than at any other event during the year. **GCI**



CREATURE FEATURE

A mild winter over much of the U.S. has superintendents concerned about turfgrass pests. Experts say their concern may be justified – depending on the region and the specific pest.

By Jason Stahl

A warmer than normal winter in many parts of the U.S. has been welcomed by most people, especially those who usually get socked with sub-zero temperatures and piles of snow. Most golf courses have embraced it heartily, hearing the cash registers ringing more often and much earlier than normal. But from a turfgrass health perspective, the mild winter has caused a bit of worry to superintendents who fear larger pest populations and earlier activity.

Depending on whom you talk to, a mild winter leading to more insects can be called one of two things: a myth or a scientific fact. Some describe it as Doomsday, while others plead with people to not ring the panic bell but be mildly concerned with it.

According to Rick Brandenburg, professor of entomology

at North Carolina State University, it's far from an old wives' tale. The one thing he cautions against, however, is making a broad, sweeping statement about the phenomenon.

"One size doesn't fit all. A mild winter in one part of the country with one particular insect may have one effect, whereas a mild winter in another part of the country with a different insect may have a completely different impact," says Brandenburg. "The one thing we cannot do is to just make this generalized statement of, 'Oh, this is what's going to happen because we had a mild winter,' because that would be very inaccurate."

The reason most people think that a mild winter will lead to more pest problems, says Brandenburg, is because a hard winter kills many of them off.

But that, he says, is a bit of a misstatement as well. Again, one has to take into account the region they're in. Brandenburg compared North Carolina to New York.

"If we had Japanese beetle grubs in the soil in North Carolina, those would survive the winter," he says. "But if we had a cold winter, then some of them would probably be killed. But look at these same grubs in the soil in New York. I assure you our worst winter wouldn't be anywhere near the worst by New York standards."

Brandenburg also used the mole cricket to illustrate why people err when they make generalized statements about mild winters and insects. He called them a tropical insect, and thus when they're subjected to a warm up of 5 degrees in winter in North



Carolina, they'll still think it's really cold.

"Even though it was warm, we saw no surface activity from mole crickets in winter because it still was too cold for them to get active, so I really don't think the mild winter will affect the abundance of insects in much of anyway," says Brandenburg.

He also mentioned that a lot of turfgrass pests have a pretty wide range of temperatures to which they're resilient.

North Carolina, Brandenburg says, had a somewhat milder winter than normal this year, with January temperatures in the 60s as opposed to the 50s. But that difference, he says, isn't enough to push insects' activity up weeks upon weeks in advance of when they would normally appear.

"The January and February temperatures, even during a warm winter, are still typically



Teeing off on Emerald Ash Borer

Ash trees are an abundant, environmentally important and aesthetically pleasing component of many golf courses in the Midwestern and Eastern U.S. But in many areas, ash trees are under attack by the Emerald Ash Borer (EAB) – a devastating invasive pest that has killed tens of millions of ash trees in 15 states over the past decade and threatens to kill untold millions more. EAB is expected to cause \$10-\$20 billion in damage to urban landscapes in the next decade and will impact courses throughout ash's native range.

Until recently, preemptive tree removal has been the primary tactic employed to combat EAB. However, experts now recommend an integrated approach to EAB management that combines conservation of healthy ash trees via treatment and removal of unhealthy ash trees. This integrated approach is supported by university scientists, commercial arborists, municipal foresters, public works officials and non-governmental organizations (NGOs). There are several facts that golf course superintendents should know about EAB:

- EAB will eventually find and kill your ash trees if they are not treated with an insecticide. Tree mortality rises slowly at first after EAB moves into a new area, but once 20 percent of ash trees in a given area have died, the remaining 80 percent of trees typically dies over a 3-to-5-year period - unless they have been treated with an effective product. On courses where ash trees are abundant, rapid tree death will result in high tree removal costs over a short period of time.
- There are three systemic insecticides registered by the Environmental Protection Agency to control EAB—dinotefuran, emamectin benzoate and imidacloprid. Each has proven effective against EAB in university research trials.
- If EAB has been detected within 15 miles of your golf course, you should start treating.
- Insecticide treatment is most reliable when applied before ash trees exhibit significant symptoms of EAB infestation (i.e., less than 30-to-40-percent canopy thinning).
- In most cases, treatment of healthy ash trees is less costly than their removal when all of the economic, aesthetic and environmental costs associated with removal are considered. Also, treatment can spread out management costs over a longer period of time relative to tree removal.
- Some EAB treatment methods (e.g., basal trunk spray, soil drench) are easy, fast and require minimal training—and do not require expensive application equipment or hiring an outside contractor. Imidacloprid and dinotefuran can be applied as a soil drench and dinotefuran can also be applied as a basal trunk spray (lower five feet of trunk) using a backpack sprayer. Both treatments can be applied in-house using existing equipment and maintenance personnel. Other treatments, such as trunk injection with emamectin benzoate, require specialized application equipment and are best applied by professional arborists.

Dr. Joe Chamberlin is a regional field development manager for Valent Professional Products.



FIRE ANTS

It will be business as usual for fire ants.

Bud White, USGA Mid-Continent Region, says entomologists are saying that if his region gets rain this spring, the fire ant mounds will be popping up like crazy and superintendents will have to be on guard to make treatments. "Research shows that fire ant control done in March will just about give you year-long control," says White.

North Carolina State's Rick Brandenburg says fire ant activity in his state has been fairly normal, too.

"It was just warm enough that we had very few periods where mounds were inactive, so you literally could have treated for fire ants in much of January and February," he reports," Brandenburg says.



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Nematodes

For the most part, nematode activity is predicted to be worse in 2012.

Bud White, whose Mid-Continent Region has been devastated by drought, says the nematodes will be just as bad as they were in 2011 unless they have a mild summer.

"If we have a mild summer, it will be easier for the turf to grow and fight against nematode damage," he says.

John Foy, USGA's Florida Region, nematodes are already a problem in the Sunshine State.

"On the last four site visits I've been on, nematodes were definitely a problem," Foy says. "They're starting to become more active and haven't slowed down. They're worse because of a lack of cool weather. You typically get a slowdown in nematode activity in December, January, February and March because of cooler temperatures, but it just hasn't happened this year."

Adam Miller, USGA's Northeast Region, is less certain on what will happen with nematodes this year.

"Nematode populations increase with a warm summer, so with the past two warm summers and with the winters not being all that damaging, populations could be higher," Miller says. "But I think it's so challenging to predict what nematodes are going to do, and summer really dictates that more than anything else."

Last year, Bayer Environmental Science launched Nortica for managing nematodes, which Product Development Manager Richard Rees says is heavily dependent on timing for its action. "It has to be applied during the root initiation of warm season turfgrasses, and at the same time we have to do it before the hatch index of the eggs has reached a tenfold increase," says Rees. "These increases are exponential with temperature increase, and the temperature for triggering nematode hatch lies 5 to 10 degrees above that fall root initiation, so the nematodes have the advantage. That's why timing is so critical."

below the threshold for which insects would develop and show up early," says Brandenburg.

An exception, he says, is in the Northeast concerning the annual bluegrass weevil. He says superintendents in that region are already catching them in traps, but it's an insect that's well adapted to cold temperatures and will come out very early if given a warming period.

Even though Brandenburg believes the quantity of insects won't go up, he does think as a general rule that they'll probably show up sooner, up to two to three weeks sooner this year. The March temperatures, he says, will be a big predictor of that.

"In my experience, January and February don't have much of an impact on when insects show up," he says. "March is when we really can get warm temperatures that affect insects. In a lot of areas in the East, it will be in the 70s and, in some places, the 80s, whereas the average temperature might normally be 55. Insects take note of that and start developing and moving forward."

Like Brandenburg, Richard Rees, product development manager for Bayer Environmental Science, doesn't expect to see vast changes in the insect population in 2012. But next year could be a different story.

"The net potential for early insect activity in 2012 is high, but increased populations would likely not be seen till 2013 when things begin to wake up in spring," says Rees. "For species that have multiple generations per year, the early start could mean that the normal path of generation growth in late summer and fall will be completed, which could lead to carryover populations in 2013, leading to substantially higher populations than normal."

Brandenburg's bottom-line advice to superintendents is to look at the key pests in their areas, what the weather was like and what that weather means to those key pests. He also encourages superintendents to analyze degree-days and compare them to last year and the 30-year average.

"If it says you're three weeks ahead of schedule in degree-days, then you need to go out and scout three weeks ahead of normal, which helps prevent you from getting caught off guard," he says. "A winter this mild really gets the guys on the firing line thinking about insect development and how to monitor it, so it could be a good educational moment for them."

Of course, all bets are off if another freeze comes through, says Rees.

"If some of the early insects have emerged, they'll be taken out before the first generation egg-laying hatch, and that could mean populations would start to decline," he says. "But from all accounts, it appears the warm-up we're experiencing, particularly in the Southeast, is here to stay, and there is no indication that there will be any deep changes." **GCI**

Jason Stahl is a Cleveland-based freelance writer and frequent GCI contributor.

Regional bug breakdown

GCI checks in with the USGA's regional directors on the effect the mild winter is having on insects.

Northwest Region

It's business as usual, says Director Larry Gilhuly, with his region having gotten its normal mild winter.

"I don't expect any major insect population issues," says Gilhuly. "And we don't have a lot of activity where guys go out in advance to spray because we just don't have those problems."

Gilhuly used one of his region's pests, the European crane fly, as an example of one you don't necessarily treat for in advance.

"It's not that you spray that much unless you see the activity, and it doesn't always happen in the same place all the time."



Northeast Region

The Northeast Region is seeing earlier activity of annual bluegrass weevils, which is the No. 1 pest in that region, says USGA Turf Advisor Adam Miller.

"Because of a lack of a true winter and a warmer spring, they're moving a little more than normal," says Miller. "That kind of has a lot of people wondering if they're going to be more problematic than usual – and they're usually challenging enough."

Miller is advising superintendents to mix application timing. Also, to monitor their activity with pitfall traps and Lemon Joy soap flushes to get the best gauge on activity. Superintendents also need to rotate insecticide applications so as to avoid creating potential resistance issues.

Miller says his region is also seeing increased populations of crane flies, particularly in parts of New England and New York, which can be traced back to a wet fall that increased the survivability of the eggs that were laid. But it's only a problem for a small percentage of the Northeast.

Miller says he doesn't anticipate problems with white grubs because he says their mortality isn't dependent on winter since they simply move deeper in the soil as it gets colder.



North-Central Region

Director Robert Brame says he hasn't seen real concern from superintendents on insects gone wild.

"Right now, guys are more worried about *Poa annua* seedheads," says Brame. "That's getting more attention than insects. But certainly guys are watching all of the above."

Brame admits grubs could be an issue since their survival is based on soil temperature, but he says most superintendents in his region haven't had an issue with them over the last several years.

"They'll follow their standard protocol for treatment. It's just a matter of timing," he says. "And obviously, they'll keep a close eye on things and do scouting. That's a key component of any pest management program."



Florida Region

Director John Foy says superintendents in his region started seeing mole crickets in mid-March, which he says are always his region's main concern. The adult activity, he says, appears to be a little heavier than normal so far, but he can't say whether populations will be higher.

"We're not really advising superintendents to do anything different other than their normal program," says Foy. "These are overwintering adults, so they're kind of difficult to kill. Superintendents are starting to do spot treatments with a contact-type insecticide, so it's kind of a standard mode of operation."

As far as grubs are concerned, several species are becoming more of a concern in Florida, and Foy expects activity to begin even earlier.



Mid-Continent Region

Due to the drought, Director Charles "Bud" White is expecting a little less insect activity in early summer. Fall armyworm and nematodes were really bad last year, he says, and with the conditions the region will experience, he expects them to be a problem once again.

"There may not be tons, but with the conditions the way they are, what is there will be active earlier," says White. "Some of them may get another life cycle the next year, but that doesn't mean they'll start out to be a lot more necessarily."

Grubs could come out sooner, White says, due to warmer soil temperatures from 70-degree days in early March.

White's advice to superintendents is to monitor life cycles and make earlier applications for grubs this year.



Mid-Atlantic Region

Director Stanley J. Zontek says his region's main concern is the annual bluegrass weevil, which being out earlier makes the timing of insecticide applications more challenging.

"Some females can overwinter with sperm from the fall, so they can actually start laying eggs

pretty quickly," says Zontek.

With 70-degree temperatures in March,

Zontek predicts that even if it gets cold again, it would have to be cold for a long time to have an effect on turf pests. "And what are the odds of that?" he says.

Zontek says an entomologist would probably say the insects showing up early are immature adults and haven't reached the

mating or egg-laying stage yet, therefore you can delay spraying. But the superintendents he has talked to have a more practical view on controlling them.

"They say, 'If I see them, I'm going to kill them. If that means I have to come back with another treatment, than you know what? We made so much money over the winter that we can pay for it, and I would rather try to kill the insect than worry about saving some money.' And it's hard to argue with them because they're responsible for the golf course."



Like soup or salad and paper or plastic, superintendents must wrestle with the flat-or-relief conundrum.

Answering the eternal QUESTION

By Dennis Lyon, CGCS

The questions are: soup or salad, paper or plastic, flat or relief? The answers are: salad if you're on a diet, paper if you're out to save the planet and for flat or relief – check with your equipment manager. Golf course equipment managers, formerly known as golf course mechanics, all have an opinion on how best to sharpen and maintain reel mowing equipment.

Flat or relief, which is better? I took this question to four equipment managers who work for the City of Aurora, Colorado Golf Division. After my interviews, I categorized their responses as, two relief and two flat. Bob, 29 years of experience, and Greg, 20 years of experience, are in the flat-grind camp. Ben, 15 years of experience, and Jarrett, 31 years of experience, are in the relief-grind camp. All four remember the old manual grinders when they stood for hours moving the stone one pass at a time back and forth over the reel or bedknife. Jarrett says the new automated spin grinding equipment has added 20 years' longevity to his knees and back. Jarrett, the most senior of the group, also recalls the old sharpening equipment and the "art" of setting it up. He says, back

then, to grind reels the equipment was so imprecise the set-up was about 80 percent feel and 20 percent technology. Today, with the new gauges and equipment, he says the set-up is almost 100 percent technology. He can now teach anyone to grind reels and bedknives.

When it comes to grinding, Ben uses a 35-degree relief grind on reels and an 8-degree relief grind on his bedknives. Jarrett says a relief grind at about 20 degrees on reels and 4 to 5 degrees on bedknives is his preference. Jarrett says his new Foley Grinder can put a flat or relief grind on reels. When he sharpens his units in the winter, he grinds the reels flat, and then puts on a relief grind. Jarrett likes the way his reels mow and says it is easier for him to keep the reels in adjustment with a relief grind.

Mowers, once sharpened, also have to be maintained. Jarrett still back-laps greens mower reels the old-fashioned way. That is, with the reels still attached to the mower on the floor spinning backwards. He also touch-ups greens mower reels on the spin grinder depending on what the issues are. The other three equipment managers feel their days of brushing back-lapping compound on the

The great debate

To subvert the simplicity gained from modern machines to enable technicians to perfect the grinding process efforts confusing the issues rage on. Following, is just a sampling of controversial issues relating to the art of sharpening mowers:

- Relief grinds on reels,
- Light contact vs. no contact,
- Pinch paper flat – cut paper perpendicular,
- Two pieces of paper, cut one pinch one,
- Back lap or no backlap,
- Light touch-ups of bedknife front face,
- Scissor cut vs. scythe cut,
- Hard back relief on bedknife top face.

There exist many ways to condition reel mowers to perform and accomplish an after-cut appearance the superintendent and, more importantly, the golfer desires. Only through a clear understanding of the theory of reel mower mechanics can a superintendent and turf technician decide on the best method of grinding and sharpening.



reels as they spin backwards are gone forever. Ben says back-lapping the old way was a way to true the reel to the bedknife. If the bedknife was out of shape, the reel became even more out of shape. Eventually, the mower would have to be broken down and the reel and bedknife would have to be re-ground. In maintaining his cutting units Ben feels the bedknife is key. With an 11-blade greens mower reel, the bedknife has metal to metal contact 11 times more often than a reel blade. Ben is always checking his bedknives and touching them up with a hand file to ensure the bedknife stays sharp.

But back to the question: flat or relief? Jarrett is of the opinion with a relief grind there is less friction because when the mower is cutting turf as there is less metal to metal contact. This reduction in friction decreases drag on the engine and mower hydraulics. Less drag means a longer mower life and a more efficient engine, which can be particularly important for high-altitude courses in Colorado. Jarrett also asks those on the flat

grind side of the ledger, if flat grinding is preferable, why do new mower reels always come with a relief grind?

Greg and Bob believe the flat grind is the preferred method and use the Express Duel Anglemaster grinder. The Express Dual is considered a flat grind system. The manufacturer calls it a hammer grind. The stone and carrier actually move on contact with the reel blade and provide approximately 4-5 degrees of relief. With his automotive background Greg says it seems strange to see the spin grinder in action as the reel tends to vibrate as it goes over the grinding stone. But he says it works. Back before the days of spin grinders Bob would use the old relief-type grinders and get as close to a flat grind as possible. He feels a reel with a flat grind will stay sharp longer and will last longer. He says with the new grinding systems, rather than back-lapping he will replace the bedknife on greens mowers and touch up the reel about once per month. Bob's other cutting units are sharpened during the winter and on an

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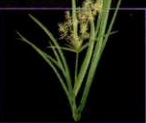
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EQUIPMENT

as-needed basis during the season.

Flat or relief, which is better? That decision is best left to the expert on staff responsible for ensuring the mowers are sharp and ready to mow each day. As for quality assurance, one of the things Ben likes best about his job is grabbing a cup of coffee in the mornings and driving the course to check his mowers. "In addition to the course being beautiful that time of day, it is very satisfying to see well-groomed turf with tiny, precisely cut blades of grass coming off the mowers," says Ben. **GCI**

Dennis Lyon, CGCS, is a former GCSAA president, managed the city of Aurora, Colo., golf program for 37 years and is a GCI columnist and frequent contributor.

WHAT WAS & WHAT IS

Superintendents should have a cursory knowledge of reel grinding and sharpening, including how it was done in the past.

WHAT WAS

Not too long ago it was a difficult proposition to grind a reel and bedknife to factory specifications. Some may recall names of grinders like Peerless and Ideal - in the late 1960s and early 1970s, courses used "hook grinders" named for the hook that guided the grinding stone along the reel blade, one laborious blade at a time. The process of was time-consuming and produced average results. These technicians often taught themselves how to grind by trial and error or by a superintendent that learned from another superintendent and pass the information along.

Backlapping was the final stage of this process and often needed to be conducted for an hour or more to mate the reel with the bedknife. In the 1970s, manufacturers of grinders with names like Neary, Foley and Atterton & Ellis raced to the industry with the spin grinder. Now a novice turf technician could produce a great grind in less time and be certain that the reel was close to a true cylinder.

During the rapid expansion of the golf industry of the late 1980s and 1990s turf mangers were lowered the height of cut on turfgrass areas in response to better turf varieties and better overall turf management. Superintendents and turf technicians were challenged to repair, maintain and keep sharp a new generation of turf equipment that delivered much lower and better quality of cut. Greens that were maintained at a height of cut of .316 inch in the 1970s were now maintained at .18 inch.

WHAT IS

Most every golf course maintenance shop is equipped with a measuring device known as an Accu-Gage. The Accu-Gage can measure height of cut on reel mowers to the ten thousandths of an inch. Terms that were being used to describe distances and spaces are now expressed routinely in thousandths of an inch. The Accu-Gage uses a machine-shop-type dial indicator to measure the distances between the bottom of the rollers and the top face of the bedknife.

Today's reel sharpener manufacturers responded with advances in technology, making it possible to return a reel to original equipment manufacturers (OEM) specifications with the "touch of a button."

Even though these high-tech machines that sharpen reels and bedknives are much less reliant on touch, the superintendent and equipment technician must have a thorough understanding of how the relationship between reel and bedknife work to keep turf healthy and maintained at desirable heights of cut.

Michael D. Vogt, CGCS, CGIA, is a consultant with the McMahon Group and a frequent contributor to GCI.