on 08/2015

THE MIDWEST ASSOCIATION OF GOLF COURSE SUPERINTENDENTS

ON COURSE

THE FLOOD DROUGHT PENDULUM

ETHANOL AND SMALL ENGINES

THE WOES OF WOTUS

Tony Kalina

Prairie Landing Golf Club

toc

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front cover

The 8th Hole at Prairie Landing Golf Club, host of the 2015 Midwest Championship. It is one of the shorter par 4s at 386 yards, some might be tempted to hit driver off the tee but the best play is a 220 straight tee ball avoiding bunkers, and water right.

Dr. Ed Nangle discusses the turf problems instigated and caused by droughts and floods. Page 4.

DEPARTMENTS

DATES

2015-16 MIDWEST EVENTS

8/25 Midwest Golf Championship, Prairie Landing GC
10/8 Midwest October Meeting, Wilmette Golf Club
12/9 Midwest Turf Clinic, Medinah Country Club
1/28/16 Midwest January Meeting & Wee One Fundraiser, Seven Bridges Golf Club
2/10/16 Midwest Hospitality Reception, Henry's Pub SD, CA

Midwest Association of Golf Course Superintendents (MAGCS) exists to promote professionalism and integrity, to provide networking, education and career enhancement opportunities to all members who facilitate the growth and enjoyment of golf.

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Righty Tighty - Lefty Loosey

Matt Harstad
Calumet Country Club

It is well known in this business how valuable a skilled equipment technician is to the grounds operation, and starting two months ago we began to find out first-hand just how true this is.

Our technician sustained an injury that required surgery and was required to sit out of work while it healed. Being without a tech mid-season is not something that I've experienced before, nor something that I would like to go through again. The extra responsibilities of checking quality of cut and making minor repairs, on top of our normal golf course tasks has been a huge strain on myself and my assistant, Bret, and may or may not have been the cause of some cursing and random objects being hurled across the shop. It has also worn a path in the road from here to Ravisloe as we shuffle machines to their shop for the more major repairs.

While I have learned the great importance of having a qualified tech, (and a generous and helpful tech at a neighboring course) the bigger lesson that I've learned is the value of MY limited mechanical abilities, and the importance of having a working knowledge of our equipment. During my first few years as an assistant superintendent, I wasn't exposed to very much of the offseason equipment work or grinding, but during my last few years as an assistant at Butterfield Country Club I had the privilege of working with a technician, Rick Flanders, that was not only very skilled at his trade, but a great teacher. I was involved with every part of the offseason process from tear down, to bearing replacement, to grinding, even getting to the point where when he was on vacation I comfortably continued the process of getting ready for the next season.

As I'm working on repairs now, I can't tell you how many times I've thought to myself, "it's all coming back to me now," and am reminded of just how valuable that education is, and how that knowledge and education needs to be instilled in our assistants as part of their learning process in case they are ever in a situation where they are without a technician or move on to a course that might not have the resources for a full-time tech. With my past assistants, I've always had them help out with the winter overhauls, but more as just a helper, not necessarily someone that's integral in the process. After this experience, this is going to change.

Assistants, and superintendents for that matter, should be directly involved with the repair and maintenance of equipment, even at times during the season. You never know when an illness could cause your tech to miss a week of work right after a heavy topdress that destroys the quality of cut or something as simple as needing to replace a tire with a hole in the sidewall on his day off. Having basic mechanical skills could end up saving Member Guest day, and sometimes is as simple as having the confidence to take something apart to find the problem and feeling comfortable with the fact that you can get it back together, even if you end up with a few extra parts.

Along with the satisfaction of being able to save the day when something breaks, being able to diagnose a problem and repair it is very rewarding, similar to looking back on a fairway that you just cut with laser straight lines. So every once in a while when you have a spare moment, head out into the shop and give your tech a hand and get a little education or a refresher course . It's great knowledge to have, and you never know when you might need it.

The Flood Drought Pendulum

Dr. Ed Nangle, CDGA

Water issues are a two way street. There's not enough or too darn much. This year started as one of the latter, but both affect turf managers and their water management regimes. When we think about water management, either too much or too little, we should first understand how the plant responds to these polar conditions before we implement our own response.

Drought

Thoughts of night watering and roller based sprinklers may come to mind for our older generation of superintendent. Deciding when to water was and still is a combination of factors; rolling soil from a probe to feel the moisture in it, seeing foot printing on turf, the color purple (not the book) and of most notably, experience. The young whippersnappers have opted out on some of this and have gone to using soil moisture meters to aid in their decision to water. A general sentiment is that a mix of both styles may be best.

Footprints on turf are a telltale sign of drought stress.

As California and the Pacific Northwest swelter in hot and dry conditions we should give some consideration to turfgrass under these conditions (remember 2012 wasn't too long ago). Unlike a flood, drought slowly creeps in and changes in turf may do the same. There are symptoms that we should pay attention to, as we judge our turf health. The plant reacts in a variety of ways, some of them we can actually see, others are impossible to detect with a naked eye, however each change plays an important role in how the plant responds to a drought.

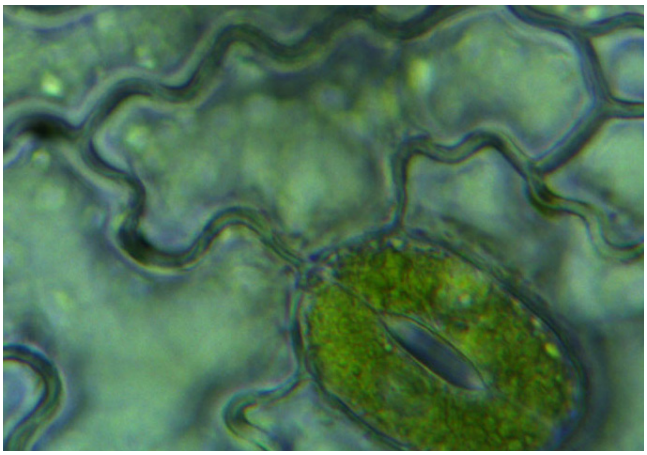
Drought Triggers

Of course the lack of rain is the main cause for drought. Ultimately, the availability of water in the soil profile plays an important part to drought stress. In the case of no natural precipitation, available soil water is supplemented by irrigation as we aim to replace what is lost from the previous day from the plant and environment, called evapotranspiration (ET). Available soil water is strongly affected by the soil type (water adsorbs to clay much more strongly than sand), soil structure (micropores will hold water much tighter than macropores) and rooting architecture of the plant (larger root mass and deeper roots will have an advantage). There are several ways to calculate and measure ET but most of them depend on the Penman-Montieth Equation. It is the preferred method of the Food and Agriculture Organization of the United Nations. It takes into account components such as humidity, air movement, temperature and a specific number associated with each crop called a crop coefficient. The turfgrass coefficient has never been perfected because of the diversity within plant canopy and the many different turf types. However, it is accepted as being functional and is used in irrigation systems on golf courses with a lot of success.

Leaf Morphology

As turfgrass plants dry out the initial effort of water conservation starts with the closing of the stomates to slow transpiration. This is when we start to notice turfgrass plants leaf surfaces getting noticeably 'narrower'. This is not the leaf thinning out but is actually the blade folding over on itself to reduce exposed surface area to the atmosphere to slow transpiration further. The loss of turgor due to internal osmotic adjustment in the plant cells is

usually the physical driver for the process. Plants that are oriented vertically tend to lose water more rapidly as they mix with passing air much more rapidly than plants that are lying down or horizontal – this may be a combination of canopy effect where the turfgrass canopy creates a thin layer of air that is unstirred as well as the leaves being more buffered from the passing air due to its orientation. Overall this helps to reduce the loss of the protective boundary layer which we really feel around us on very humid days. We also notice how little water is needed for turfgrass on humid days compared to a breezy drier day and this effect goes all the way down to a single leaf on the turfgrass plant.



When stomata start to close, many plant functions start to react.
Photo: Joëlle Vidal, www2.ac-lyon.fr 2010

Leaf Physiology

Absisic acid is thought to be the main controller for the stomatal response to a drying situation – with the acid triggering a buildup in cystolic free calcium in the guard cells – leading to the closure of stomata. There is a constant changing of information on this as previously it had been thought that potassium also had a similar effect and it may still play a role but internally there are a huge variety of pathways that have not been clearly elucidated regarding all of the mechanisms that the plants contain when dealing with drought. Further to this, the shutting of the stomata results in a decline in cumulative photosynthesis, as well as interruptions in respiration and transpiration. In addition, the integrity of cell walls may be affected as leakage of electrolytes is enhanced when drought stress is combined with heat stress on cool season grasses in particular. All of this, combined with golfer wear and tear, can lead to some very unhappy looking turf.

What Can We Do?

Irrigation Charge and Audit

All managers begin the season by checking the irrigation system for leaks and ensuring that the system is pressurizing correctly. The next question that may not get answered until dry conditions prevail is – how many managers run an irrigation audit to make sure that irrigation heads are meeting the correct requirements for output as well as location of throw? Getting this correct early in the year can save trouble later on in the drier months.

Flooding of turf inhibits the plants exchange of gases.

Wetting Agents

After the inevitable downpour that is also known as spring – wetting agents are soon put down. They are block polymers that break down organic acids which form on the soil particles during the decomposition of organic matter. Some of these organic acids that coat the soil particles are very hydrophobic and can quickly lead to the problem of localized dry spot. Use of wetting agents allows for even distribution of water movement through the soil profile and if we remember that organic matter break down is active along the same lines as soil temperatures then use of wetting agents should be regular and often.

Turf Types and Prestress

Grass type becomes important – of course Poa annua is shallow rooted and can't handle the dry conditions – or can it? Prior to the heat of the summer and if the opportunity arises (not this year) attempting to dry down a surface when temperatures are in the 70's for 7-10 days may allow for hardening off of the turfgrass plants ahead of the summer stress period. Once we get to the stress period remember that over watering creates potential for three issues – wet wilt, disease problems and spongy greens that will draw the ire of the 19th hole.

Other

Addition of silica based products has shown potential to help alleviate some stress though not always consistent. The use of anti-transpirants has gained some interest but again results are inconsistent and/or issues have arisen with a phytotoxic response following the application. The irrigation technique that I have touched upon is use of the ET system – while turfgrass canopies may lose anywhere between 0.1 and 0.4" per day replacing 100% of the water lost is not the perfect response. In an area like the Midwest with more than enough supplemental rainfall – replacing 60% of the daily ET will be more than enough to provide healthy turf and firm fast conditions throughout the summer season.

Flooding

This year has been a prime example of what too much rain can do. While we have certainly gained some benefit from cooler temperatures, all courses have seen standing water even if for only a brief period of time (Picture). From the standpoint of the plant, inundation by water has several layers that influence survival. The turfgrass species vary in their tolerance with creeping bentgrass considered excellent while red fescue is considered poor. The time that turfgrasses are covered in water is detrimental and the longer the time period the worse it gets. Clubs in the region have recently suffered from this and if temperatures rise into the 90°F range then damage may occur within 24 hours. Degradation of chlorophyll will occur in

addition to mitochondrial swelling. This impacts the physiological functions of turf once the water has dissipated. There is also cultivar variation within grasses in regards to turf quality and root dry weight production during this period. This can be expected as you have never heard of NTEP trials looking at flooding tolerance – somewhat by design. The development of the sand based rootzone has been one reason why breeding for this problem is not a focus as well as the fact you can't walk on water while playing golf. The depth of submersion is equally important, if the mere tips of the turfgrass are above the water line it will make a difference – however once everything is covered this again means time to avoid serious damage is shortened.

Flooding Triggers

An inability to move water away from the soil surface and down through the profile is a large contributing factor to anaerobic soil conditions anoxia or choking of the turf foliage from a lack of oxygen. The saturation of the soil, which we call waterlogging, also cuts oxygen to the roots by blocking the transfer of oxygen from the atmosphere to the roots. Following is the effect of the slowing uptake of nutrients and hormone synthesis. Root growth will subside as many of us have seen this year and in certain situations a very wet soil can lead to wilting turf which is mistakenly irrigated which then leads to wet wilt and more death and destruction.

The black roots of bentgrass: flooding followed by a week of heat is not good for turf.

Physiological Effects

Similar to a drought, flooding intolerant plants will close stomata. It seems until root production or growth returns, they remain closed. In a similar pattern to drought the rates of photosynthesis then drop following this closure as CO2 levels drop internally. The plants also turn from aerobic respiration to anaerobic respiration which depletes sugars in the roots in particular. Following this we see yellowing of turf and a degradation of chlorophyll, which then becomes a cost in the recovery process. Enzymes associated with chlorophyll may see a slowdown in their activity also. During the inundation event this may not be a huge issue but the problem for us is during recovery. Carbohydrate translocation to the roots is also curtailed which further limits potential for root production. The roots will also show increased electrolyte leakage as time under water logging progresses. There are also variations in tolerance to the problem within cultivars and so if you are working with a wet site it may help later on to research the best cultivar that is able to tolerate some flooding.

Plant Morphology

One thing we don't see in turfgrasses in response to flooding is alterations in morphology. That probably would be unfavorable – we like our grass growing straight up and with high density. Changing the architecture or orientation of the plant requires time and when flooding occurs that's one thing that we don't have.

What Can We Do?

Aerate, aerate, aerate. Though not necessarily the fix-all in every situation, aeration is one of the best methods we can use to dry the soil and add oxygen to the root area. Judicious topdressing has proved a huge improvement of quality in turfgrass surfaces all over the world – however that lip that builds up on the greens collar – has not! Ensuring the sloping of greens surfaces and the appropriate areas for surface run off are free and unimpeded is a very important start – especially when rain fall comes down on those 90°F days. Cleaning out basins and drain covers are crucial to preventing scald in low spots. Ensuring that drains empty to somewhere is equally important; cleaning roots out of drain tile on an annual basis is equally crucial to prevent the sudden appearance of a pool on the middle of 18 fairway in July. Wetting agents will prove useful to ensure that if you are in a dry situation and do encounter a deluge that the water moves evenly through the profile as much as possible to prevent accumulation in some areas versus others. Having an architect take a look at greens drainage may also provide some

relief and in heavily shaded areas, enhancing air movement by any means possible is crucial to retaining a turf canopy. Ideally everyone would have a sand based rootzone which can percolate water at 20" per hour – however that's not the case and so consideration for extra types of surface drainage should be given. All of the ideas you have ever had to move water when needed may be worth a look at some stage – but most important of all is – get it moving as soon as you can!

Conclusion

While some similarities certainly exist in how plants react, our responses are very different when managing water or a lack of it. Staying focused ensures you know what your grass is capable of during these stresses. Tools such as moisture meters and firmness meters can give you some baseline numbers which may result in enhanced playability down the road. Like most they take time and practice but it allows for consistency across your crew and ensures that there is accountability when times get tough.

References:

Beard, J.B. 1973. Turfgrass: Science and Culture. Englewood Cliffs, N.J.: Prentice-Hall

McAinsh, M. R. C. Brownlee A. M. Hetherington. 1990. Abscisic acid-induced elevation of guard cell cytosolic Ca2+ precedes stomatal closure. Nature. 343, 186-188

Frank, K.W. Flooding of Turf http://msue.anr.msu.edu/resources/flooding-of-turf

Saud, S. X. Li, Y. Chen, L. Zhang, S. Fahad, S. Hussain, A. Sadiq and Y. Chen Silicon Application Increases Drought Tolerance of Kentucky Bluegrass by Improving Plant Water Relations and Morphophysiological Functions. The Scientific World Journal. 2014

Carrow, R. N. 1994. Potassium and Plant Stress in Turf. Better Crops. 78, 3

K. Wang and Y. Jiang. 2007. Waterlogging Tolerance of Kentucky Bluegrass Cultivars. HortScience. 42, 386-390

Jiang, Y. and K. Wang. 2006. Growth, Physiological, and Anatomical Responses of Creeping Bentgrass Cultivars to Different Depths of Waterlogging. Crop Science 46, 2420-2426.

Liao, C.–Ta and Lin C. – Ho. 2001. (Invited Review Paper) Physiological Adaptation of Crop Plants to Flooding Stress. Proc. Natl. Sci. Counc. 25, 148-157

SUPER-N-site

Tony Kalina

Prairie Landing Golf Club

Michael Miracle, Exmoor Country Cub

Photo Credits: Luke Cella

In August, MAGCS heads west to tried and true Prairie Landing Golf Club (PLGC). Under the supervision of MAGCS Past President Tony Kalina, PLGC has hosted MAGCS for golf four times since PLGC's creation in 1992. Much has changed from the original design but one thing has not, the golf course superintendent.

PLGC was designed by Bruce Charlton of Robert Trent Jones, II Golf Course Architects in 1992. The golf course is an eighteen-hole, rolling, links-style course with two additional full, regulation-length, practice holes as part of PLGC's practice and instruction amenities. It is owned and operated by the DuPage Airport Authority. A unique characteristic of the course is its proximity to the DuPage Airport. "We're known as the 'little bumpy grass door mat at the foot of the both runaways," say Tony. In fact, during the design-construction phase of the course, the Federal Aviation Administration denied the third practice hole (Hole #21) because it deemed that 'golf balls (at the apex of the ball flight trajectory) would intrude into restricted airspace and create risk to approaching planes in their final approach'. The frequent flyovers certainly add to the feel and intrigue of this property.

Melora, Tony and Andy Kalina.

Tony grew up in Omaha, Nebraska and is a graduate of the University of Nebraska-Lincoln. He has four distinguished Certified Golf Course Superintendents to recognize and thank for their impact in his career as laborer, foreman, intern and assistant. They are; Bob Randquist (formerly at Southern Hills CC, Tulsa, OK), Oscar Miles (formerly at Merit Club, Libertyville, IL), Scott Nissley (former PLGC's Director of Golf who recruited Tony in 1992), and most importantly, Charlie Kalina, (Tony's older brother). "For some reason, things continued to fall into place, and I'm forever grateful. I've been blessed to have worked with these superb superintendents. They are all industry stalwarts who offered me the opportunity to be mentored and guided – the same mentoring and guidance which I try to emulate and affect my personal and professional life to this day. As for his older brother, Charlie, I love him, too! I've had more than my fair share of good in my professional development years", Tony says.

While touring PLGC, large greens and vast fairways will be observed. Putting surfaces average 8,200 square feet per green. The flat, surrounding land in addition to the fashioned, rolling terrain of the course creates a unique golf course experience. Playing a par 72, 7,050 yards from the championship tees - and in any wind - this course is intimidating. It is difficult to imagine the degree of the difficulty in the course's original 1992 design with 109 bunkers and 5.1 acres of sand bunkering. During Tony's tenure as superintendent, bunker management has been a constant tussle. From 1994 – 2014, Tony and his team reduced bunkering to 3.1 acres while increasing the number of bunkers to 130. "We broke large sprawling bunkers into ever-smaller fragments of bunkers. That is why their numbers increased while the acreage decreased", he said.

Ultimately, in the fall of 2014, using a re-design concept for PLGC that was a collaborative effort between Tony and Bruce Charleton, a bunker design refinement project was completed that reduced the number of bunker and acreage of sand bunkering to 69 and 1.45 acres, respectively. With these considerable decreases, the crew of 16 is now freed to devote labor resources around the golf course more efficiently and properly, again. "To say that our bunker conditioning, pre-project, was having a negative impact our business, our patron experience or the financial interests of the DuPage Airport Authority, was a gross understatement. Our bunkers were a mess', says Tony. The reduction of sand bunkering and the increased fairway expansion areas have created an architecturally simple test and fun layout. In his words, "I just love the refined design with its new fairway expansions and the new shotmaking strategies we uncovered and enhanced. Golf is a ground game and 'recovery-shot' game. So, for every bunker removed, every fairway expansion gradient

created, the golf course and the execution of shots, seemed to become more innate, healthy, attractive, and more skillful, again. "It just feels better around there, post-project", Tony says.

Tony gives much of the success of PLGC to his long-serving assistant, Eric Mundt. Eric graduated from Joliet Junior College, and worked previously at Medinah and Rich Harvest Farms before joining the PLGC team in 2007. Eric a meticulous, self-driven, leader and has gained Tony's full respect and trust. "He is my left and right arm, and my left and right foot. Without him, I have no posture", stated Tony. "Eric is a talented superintendent in his own right. I'm pleased and proud to call him my friend. I continue to learn from him, and he from me. It's a good thing. It's like we have two superintendents here at PLGC. The place would be a shadow of itself without Eric's input and talent," Tony says. Those are strong words from a 38-year tradesman of many golf course industry livelihoods.

Tony attributes the rest of PLGC's success to the devoted members of his team; Josh Zartmann, PLGC's Equipment Technician, Benjamin Montoya, the Crew Foreman, and the rest of the staff personnel who call PLGC, special. "It's as close to family as the Turfcare Center can get. I've found myself surrounded by quality, dedicated staffers who work the trenches with me. My colleagues in the similar trenches will know exactly what that means". My boys are top-notch!", Tony added.

Personally, Tony and his wife of 22 years, Melora, reside in Winfield. They were high school classmates and reacquainted during their 10-year class reunion, and found themselves living and working in Chicago's north suburbs not far from each other. Tony welcomed his greatest fortune in life when he and Melora married soon after. "It's cats and dogs some days, but I can't envision a life without her", says Tony. Their son, Andy, is a 19-yr-old engineering sophomore at Bradley University. A strong believer and family man, Tony enjoys donating his time to their church and anyone in need. He enjoys the spirited bantering that his alma mater (the Big Red - Cornhuskers) produces while they compete in the Big Ten Conference. "I especially enjoy my friends from Madison, East Lansing and Columbus, although they haven't been very friendly in return recently on the football field", Tony added. To settle any wagers you may have with Tony, bring bourbon. He enjoys a 'finger or two', neat, in a short glass, every now and then, just enough to sip for an hour or so. Quail hunting, golf and golf course architecture are passions he spends his sliver of spare time on. "Faith, spouse, father, family, friend – in that order for me", says Tony.

"We hope the weather is great for the MAGCS Championships and that everyone who can make the event does so. Eric and I are excited to be hosting, and we are eager to accompany our friends and colleagues around the refined PLGC. MAGCS is a great professional brotherhood. It will be a blast", Tony says.

During my visit to Prairie Landing and getting to know Tony, he continually requested for me to write about the golf course itself. He praised the others around him and spoke so highly of professional superintendents who made him who he is today. He is truly humble, hard-working guy with a few passions and some ideas. Prairie Landing Golf Club could sincerely never be described without 'TK'.

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The BullSheet

August 2015

Dates to Remember

August 3 – 5th Annual "World's Largest Golf Outing" from Billy Casper Golf benefitting the Wounded Warrior Project.

August 3-8 – 113th Western Amateur Championship at Rich Harvest Farms in Sugar Grove, IL, Jeff VerCautren host. By the way, Jeff would be more than happy to hear from you about volunteering to help out with the event.

August 12 – 9th Annual Sunshine Through Golf Foundation White Sox Fundraiser at U.S. Cellular Field in Chicago, IL. Contact Alex Nolly at anolly@cdga.org for info.

August 17-23 – U.S. Amateur Championship at Olympia Fields Country Club, Sam MacKenzie, CGCS host.

August 18 – Deadline for applications to attend the Syngenta Business Institute in North Carolina from December 7-10.

August 25 – MAGCS monthly meeting and Annual Golf Championship at Prairie Landing Golf Club in West Chicago, IL, Tony Kalina host.

September 10 – CDGA Turfgrass Field Day at Midwest Golf House in Lemont, IL, Dr. Ed Nangle, Ron Townsend, and Chris Painter hosts.

September 21 – 12th Annual Wee One Foundation Golf Outing at Pine Hills Country Club in Sheboygan, WI, Rod Johnson, CGCS host.

September 17-20 – BMW Championship at Conway Farms Golf Club in Lake Forest, IL, Connor Healy and Chad Ball hosts.

October 8 – MAGCS monthly meeting at Wilmette Golf Club, Mike Matchen host.

Happy first anniversary to the United States Footgolf Association! Who'da thunk it?

Doug Myslinski is now with XGD Systems and is helping them their uniforms, among other things.

Congratulations to **Doug Myslinski**, who is the new Vice President of Business Development for XGD Systems. Doug has been in his new position since June 29th, and we wish him all the best!

Hey, listen up! **Dave Schlagetter** at Indian Hill Club is looking for the Platform Tennis players amongst our ranks to participate in a weekly meet-up format. Kinda like golf league but much more fun (no prior experience necessary). If you're thinking "that doesn't sound fun at all," go to www.platformtennis.org first and see what it's all about. Give Dave a call at 847-528-6656 or shoot him an email at dbgetter@gmail.com.

More good news about our industry emerged from the American Society of Golf Course Architects recently. Continued record-low interest rates and evidence of strong returns from investments in recently completed projects are maintaining a "very busy" period for golf course architects and related businesses. In other words, architects are seeing increased work coming their way in the form of renovations at both public and private golf facilities across the country. This is pretty evident in our area, as two courses that have been closed for the past year—Mt. Prospect (**Darin Douglas**) and Glenview Park District (**Rick Wilson**)—have recently reopened for the golfing world to experience the benefits of their renovations.

Need MORE proof that the renovation business is booming? Len Ziehm, in his Len Ziehm on Golf column recently detailed the improvements that Conway Farms Golf Club unveiled with its renovation after the 2013 BMW Championship for this year's rendition of the PGA Tour's Fed Ex Cup Playoff event in September. Among the improvements will be an improved experience for spectators in the form of better foot traffic availability and better seating and viewing, with expanded views for patrons at many of the greens. Also new for this year's tournament are a major enhancement of the practice facilities, regrassed greens, and some new back tees for more length. Good luck to **Connor Healy** and **Chad Ball** as they host this momentous event.

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NELS JOHNSON

TREE EXPERTS

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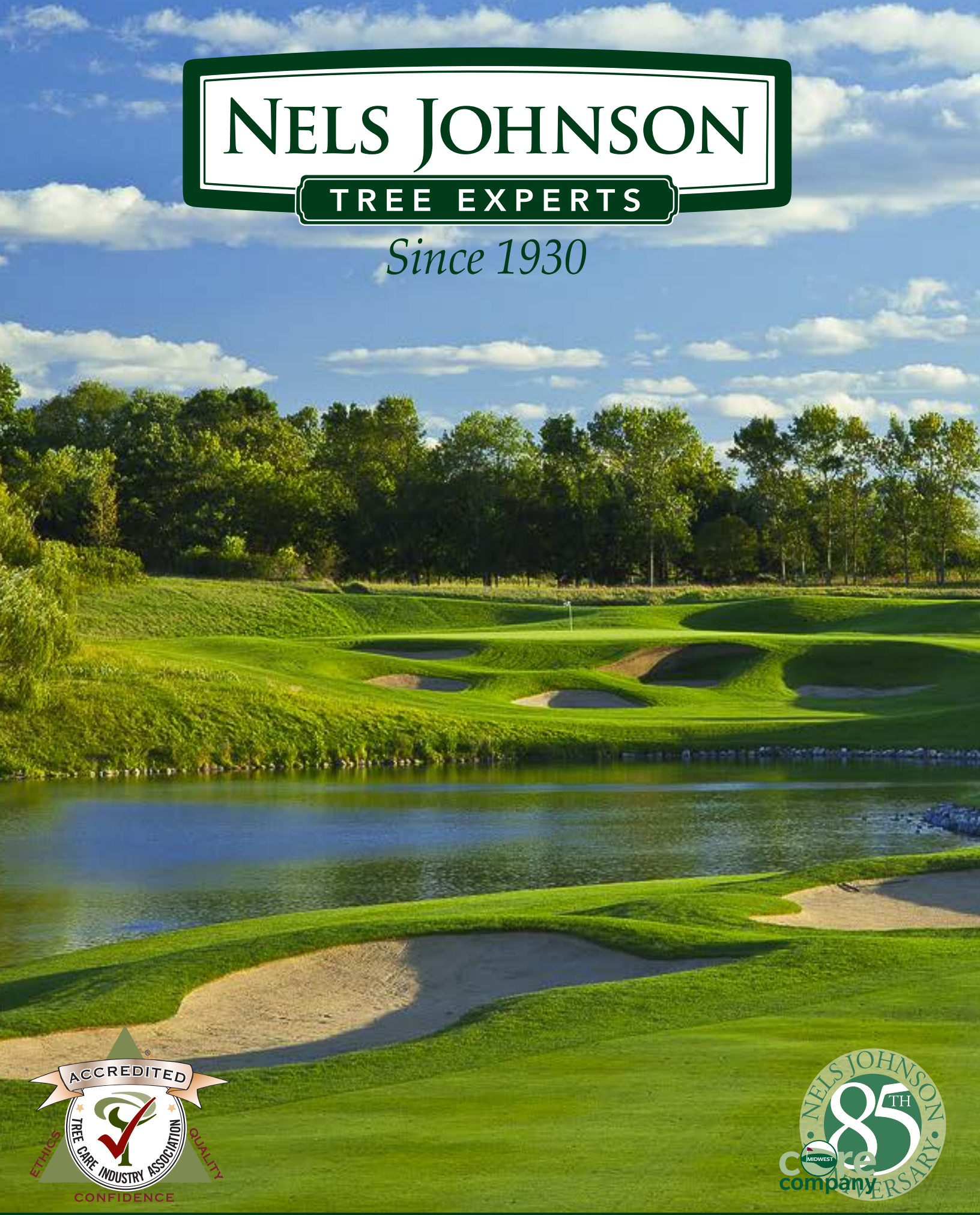

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Bull Sheet from page 13

Still not convinced? How about this—Oak Meadows Golf Course, formerly Elmhurst Country Club where Ben Hogan won the 1941 Chicago Open, held its Final Round extravaganza on July 7th to usher in the MAJOR renovation by architect **Greg Martin** with assistance from Art Schaupeter. The day included 18 holes of golf for the last time on the venerated course, followed by a groundbreaking ceremony with officials from the Forest Preserve District of DuPage County and a barbecue dinner. The course is slated to reopen mid to late spring of 2017.

Q: What product does **Jeremy Turton** use at his course to fertilize, stop crabgrass from germinating AND prevent grub damage?
A: George One-n-Dunne National.

Before the start of the 2015 John Deere Classic at TPC Deere Run in Silvis, IL, Deere & Company announced it has extended its relationship with the PGA Tour through 2023. Which is nice, but the finish was REALLY nice, with Jordan Speith winning the tournament in dramatic playoff fashion. He's very good at golf.

Great job as usual from **Dan Dinelli**, **CGCS Jerry Dinelli**, and the staff at North Shore Country Club on their outstanding work

Dan seizes an opportunity to talk a little turf with PGA Professional Tom Pernice, Jr. as he was warming up on the putting green.

in preparing the course for the 2015 Encompass Championship last month. As is his nature, Dan deflected all praise to the many volunteers who dedicate their time and talent to make the event such a success. In character, Dan took the opportunity to share with many volunteers some of the research that is taking place at North Shore Country Club. He invited **Drs. Branham** and **Voigt** from the U of I to talk about their research that is taking place at NSCC. Some of the work that has been done on the facilities practice putting green with Poa Cure is jawdropping.

Nikki Bowen from Westmoreland CC, dedicated volunteer at the Encompass Championship for three years shows off the EIFG logo.

It happens all the time. You have an assistant who reminds you of SOMEONE, but you just can't quite put two and two together and figure out who it is. Until you log onto Facebook and see one of your old college friends and BAM! There it is—your assistant and your dear old college friend (with benefits, making it really creepy) are …..

MIDWEST Doppelgänger

Virgil Range or a dear old college friend?

Big congrats to the 2015 MAGCS Scholarship winners, who are: Aaron Altman, son of **Don Altman** of Forest Hills Country Club, attending Southern Illinois University; Kelsey Chamberlin, daughter of **Russ Chamberlin** of Countryside Golf Club, attending Illinois State University; and Emma West, daughter of **Kevin West** of Rain Bird Services, attending Northern Illinois University in the fall. Nice work guys!

While on the subject of scholarships, the 15th Annual John Buck Memorial Golf Outing and Scholarship Fundraiser took place on the 29th of July at beautiful Marengo Ridge Golf Course in Marengo, IL. It was a great event as always, for a great cause, in honor of a great guy—John Buck, and on a great day for golf. The dinner afterward was, well, great—strip steaks hot off the grill were incredible, and all the fixins made it something

continued on next page

Bull Sheet from page 15

really special. Topping it off was the money that was raised for the MAGCS Scholarship fund, the Kane County Farm Bureau Foundation, and the Northwest Illinois GCSA Scholarship Fund. To celebrate the 15th year, JW Turf listed those who had attended all 15. While no MAGCS member has made to every one (except for the JW turf crew), **Dave Kohley** and **Rick Wilson** have made 14. Other notables include: 13 years - **Jeff Rehberg, Mark Gilmour, Rick Uthe** and yours truly, 12 years - **Dave Blomquist, Greg Johnson, Kevin DeRoo** and **Luke Cella**. Many thanks to everyone who made the day possible, including all the nice ladies on the course taking our money, the super staff at Marengo Ridge including superintendent Hector Garcia and his grounds crew, and those who attended and contributed.

Troy Tietjens chats with Andy Perry of Blackstone GC.

Keith Krause, Hector Garcia (Marengo Ridge Supt) and Jason Funderburg

Don Ferreri greets retired MAGCS member Gil Velazquez at the John Buck Outing.

Another retired MAGCS members, Gary Hearn and the still working Larry Flament share a laugh prior to play.

If you've been wondering whether donating a foursome to Rounds 4 Research will make a difference, here's proof it will—the 2015 Rounds 4 Research fundraising program to support turfgrass studies, managed by the Environmental Institute for Golf, sold more than 670 rounds and yielded more than $112,500 in its June online auction. Since its inception, the campaign has raised more than $400,000 for turfgrass research. It makes a difference.

The July issue of GCM featured an excellent feel-good story involving one of MAGCS' very own. The article, called "United We Stand," shared the story of Custer Greens Golf Course, a nine-hole public facility on the grounds of the Veterans Affairs Medical Center in Battle Creek, MI. Long story short, the place had lost its funding to stay in business until New Level Sports, a non-profit student-athlete support service, decided to oversee operations, but it was so overgrown that it was nearly too late. That's when MAGCS member and GCSAA board member **John Fulling**, CGCS of Kalamazoo Country Club stepped in with a bunch of other folks including superintendents and their crews and vendors alike and got to work bringing the course back. Now the course is open for play, and there are plans for a 2016 grand opening celebration. Wonderful story that isn't over yet—they still need help. If you have equipment you can donate to the cause, or any other assistance you may be able to offer, contact Chris McCoy of New Level Sports at 269-209-0273.

On the 14th of last month, the newest MAGCS event format—the Nine Holer—was held at Flagg Creek Golf Course in Countryside, where **Doug Davis** hangs his hat. The golf event was a four-person high ball-low ball format that was a bunch of fun, and took only two hours and change to complete, allowing for participants to get a half day's work in before it. Great job by Doug and his staff on preparing a fun golf course, and also by the inside staff on preparing a great post-game meal. Special congratulations to Fred Behnke, CGCS semi-retired (Growing Solutions) who had an ace that day and bought a round for all. Thanks to them, and to the day's sponsors who were **Burris Equipment Company, Healthy Grow, Nels J. Johnson Tree Experts, Reinders, Inc.,** and **Syngenta Professional Products**. (Photos Opposite)














PLEASE PARK
ALL 4 TIRES
ON PATH
THANK YOU


Ethanol and Small Engines Don't Play Nice

Luke Cella, MAGCS

Knowing how finicky some two cycle engine carburetion systems can be, I've always taken the time to measure accurately when mixing fuel and oil. However, in the past two years I've successfully killed a blower, a hedge trimmer and a line trimmer.

Eventually I deduced that I got some bad fuel. Well it turns out a lot of the fuel that we have is bad – especially for the small engines – and the culprit is ethanol. What has happened to our fuel?

Ethanol has been part of our fuel stream since the Energy Independence and Security Act of December 2007. Actually, it has been in our fuel much earlier than that, (some of you may know the term "gasohol") but the 2007 ruling gave the EPA the statutory authority to mandate it. Energy independence was the driving force behind the legislation. The amount of ethanol in our fuel has averaged around a 10% blend since then, though ethanol producers have tried to increase the amount and the petroleum industry has done its best to lower it. The fuel industry refers to the amount of ethanol in our fuel as a "blend wall" or saturation point. Some thought the EPA would change the amount allowable this spring however the EPA proposed this wall will stay around 10% for the next two years. This will require refiners to break through the blend wall in 2016 (the comment period is still open, and a final decision is supposed to be completed by Nov 30).

Believe it or not, these levels are still below the multi-year targets that Congress set in the Renewable Fuel Standards of 2007. But now the numbers are not working. The legislation was based on the assumption that gasoline consumption would rise, so the added amount of ethanol to the overall nationwide pool of gasoline would keep the blend wall below 10%. The legislation missed the mark and now the EPA wants to scale back the original ethanol mandate –for several reasons.

Vehicles have, almost magically, become more fuel-efficient. From 2007 to 2013, the average fuel efficiency for all cars has jumped more than 7 miles per gallon – not too bad considering the last 7 miles per gallon upward shift took started in 1980 took 17 years. If cars and light trucks are using less fuel, but driving more, actual consumption is almost a wash. In my research, I am not even sure all the hybrid and fully electric vehicles that are on the road were even figured into the projections made in 2007.

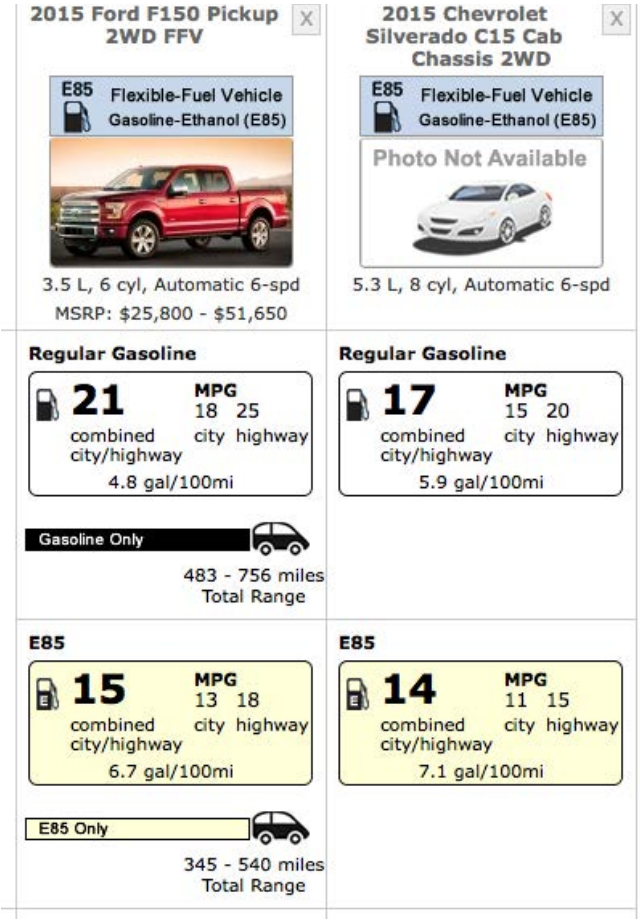
The fuel industry has been slow to update the infrastructure for ethanol. Ethanol is not transported through pipelines like gasoline so all of it is shipped over the road, so it can cost more (and use more diesel fuel). Ethanol has a tendency to absorb water from the atmosphere and is corrosive. Furthermore, the dispensing industry (gas stations) have not updated their pumps to the E85 (a blend of ethanol 51-83% and gasoline) blend like projected and it is tough to blame them because there aren't enough E85 or flex fuel vehicles on the road to support the installation of these systems. In an effort to change this, the EPA has made $100 million subsidy available for stations to upgrade/ change their pumps to handle E85.

Photo Credit: opei.org

As gas stations are taking advantage of tax rebates and subsidies, they are updating their infrastructure to dispense E85.

The other major drawbacks to ethanol include: Ethanol has about 70% the fuel value of gasoline. From an energy output standpoint, one gallon of gasoline provides a substantial amount

more and at current fuel prices E85 can be a tough sell. Doing a quick comparison on two popular pickup trucks on a website provided by the US Government for fuel economy information (fueleconomy.gov), ethanol is a tough choice to make. When delving deeper into the data, the tailpipe emissions do not significantly (gas vs. E85) differ. The only real difference provided by ethanol – at least through the fueleconomy.gov site is the reliance on imported oil – see Graphic 2. (Data provided with 50% of miles driven on highway, and 15,000 miles per year). At today's fuel prices (national averages of gasoline 2.73 and E85 2.10 per gallon respectively) it would cost $150 more to drive 15,000 miles using strictly E85.



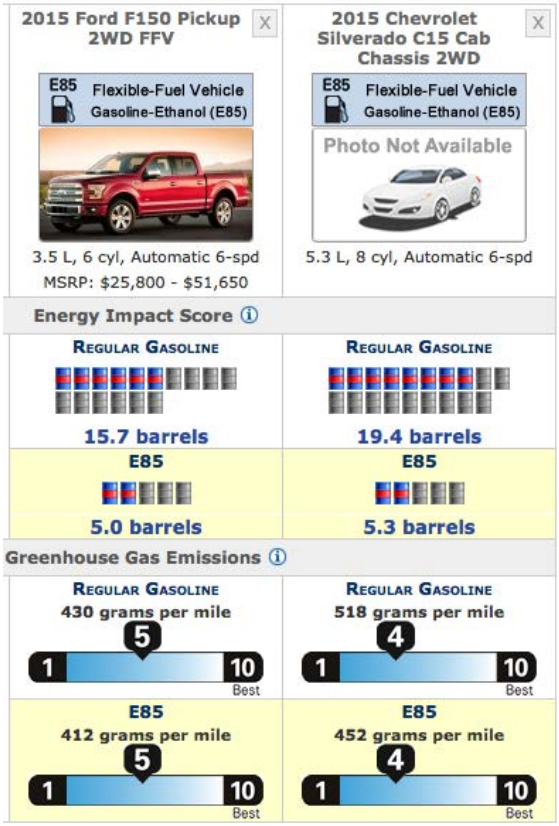
Graphic 1. Shows a comparison of two pickups and their respective MPG on E10 vs. E85.

Another major reason the blend wall is not higher is that some vehicle manufacturers will not cover or honor warranties on vehicles using ethanol in blends greater than 10%. The EPA approved the use of E15 in 2010 in cars newer than 2001, however the automobile industry has been slow to catch up. Furthermore, ethanol is corrosive, the leading factor that it can't be added or used as aviation fuel.

The ethanol debate is classic America. Big Oil vs. Agriculture – if only the Pharmaceuticals were thrown in there, it'd be the trifecta. Some environmental groups are in there as well, but they aren't sure which side to take because there are no real answers to how environmentally friendly ethanol truly is. Some believe the lower tailpipe emissions and the plants' use of CO_2 to grow corn ethanol are offset by the production and transport of ethanol (see chart). Others throw into the argument that valuable acreage is used to create fuel instead of food. Clearly, the environmentalists are stuck in the middle with ethanol.

The Flexible Fuel Vehicle Debate

FFVs are designed in the US to run optimally on E85, a gasoline ethanol blend containing 51 to 83% ethanol. They are able to combust varying amounts of ethanol gasoline mix because of sensors that are able to adjust and tune the system accordingly.



Graphic 2. Shows a comparison of two pickups and their respective energy impact score, clearly E85 vehicles save on regular gasoline, but their greenhouse gas emissions don't appear to be statistically different.

They physically differ in the elimination of bare magnesium, aluminum and rubber parts in the fuel system. Fuel pumps must be capable of operating with electrically conductive ethanol instead of non-conducting dielectric gasoline fuel. Stainless steel fuel tanks and stainless steel fuel lines (sometimes lined with plastic) are used.

In 2011, there were nearly 11 million alternative-fuel vehicles in the United States, 10 million of which were FFVs, according to the U.S. Energy Information Administration (EIA). However, the EIA estimates that only 1 million of those FFVs actually used E85, likely because most owners don't always know they have a choice of fuel and/or finding E85 stations. Now there are an estimated 17.4 million FFVs in the U.S., but the same problem still exists.

Why haven't FFVs taken off?

...continued on page 20

...ethanol fuel from page 19

I bet you can't stand the new fuel storage containers (left) with their self sealing spouts? No longer do they have vents like older containers (right) to keep out moisture from the air that is so readily attracted to ethanol. It is best to make sure your fuel containers are closed when stored, whether plastic or metal.

Here's the rub: Miles per Gallon (MPH) in a FFV can vary greatly. The ethanol content in E85 can vary from 51 to 83% depending on geography and season; summer blends have more ethanol. Ethanol's lower energy content gets 15-30% fewer miles per gallon than regular gasoline (E10). If you fuel up with a blend of 83% ethanol and 17% gasoline (still within the E85 guidelines) vs. one that has 49% gasoline and 51% ethanol there will be significant differences in your fuel mileage. So why so many FFV on the road – if their fuel mileage is actually worse? Legislation. Federal government fleets must comply with federal acquisition regulations and FFVs are considered alternative fuel vehicles. 75% of any new light duty vehicle acquired by a federal fleet must be an alternative fuel vehicle.

One of the problems: it is cheaper right now to drive a GAS car vs. E85. The problem lies in the price of gas and the poorer fuel mileage of the E85 cars.

Estimates show by automobile manufactures that roughly 70% of FFV owners aren't even aware they can use E85 and fewer than 10% did so.

As my research started out – looking at the state of fuel for small engines – here's the best advice that I can give. If you are able to avoid using any ethanol in your small engines – do it (good luck finding it in our metro area). All gasoline was and is designed for use in cars – refiners conform to the *Standard Specification for Automotive Spark Ignition Engine Fuel*. Small engine manufacturers do their best to design around the fuel made for automotive use. Make sure your fuel is fresh and does not contain above 10% ethanol. If you are not sure, measure it.

Because ethanol is attracted to water more so than gasoline, a simple test can be done. All you need is a graduated cylinder with a stopper and some simple math.

1. Take a representative sample of your gas
2. Measure 90 ml of fuel and pour into the cylinder. F= 75 ml.
3. Measure 10 ml of water and pour into cylinder. W= 25 ml.
4. Close the cylinder and shake it and allow it to settle.
5. The original volume of the bottom section (W) was 25 ml. Once the solution has settled, there will be an increase in the volume of W by an amount of ethanol (E). To determine the value of E, subtract 25 from the new level reading of W.
6. To determine the percentage of ethanol (E) in the sample, divide E by F (amount of original fuel sample) and multiply by 100.

Ethanol Pro's

- Burns cleaner than gasoline contributing less to greenhouse gases.
- Don't have to purchase as much foreign oil.
- Tax credits

Ethanol Cons (at least for now)

- Land for ethanol crops is not used for food production. (The diversion of 38% of the US corn crop for ethanol is hard to imagine not producing unintended consequences somewhere.
- Corrosion and damage to engines that are not designed to burn it.
- At present, not as economical as gasoline and does not provide same fuel efficiency. Poorer fuel mileage.
- People that drive cars that can burn it, don't even know about it.
- Infrastructure to deliver it is not in place yet.

Most small engines in the marketplace today (except marine engines) are ok with E10 gasoline blend. However, in 2010 the US EPA approved the use of E15 (15%) ethanol in 2001 vehicles and newer. However this approval to use E15 does not apply to non-automotive engines. So it might be beneficial to check your fuel and at the very least check with the manufacturer of the small engine in question.

In general, some of these practices will help extend the life of your small engine fleet:

- Drain or stabilize fuels when machines are stored (not used) for extended periods of time. There are many pieces of (small engine) equipment that are not regularly used in the golf maintenance industry.
- Stabilizers are only effective on fresh fuel, they don't rejuvenate old, stale fuel.
- Use modern self venting fuel storage containers with self

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sealing spouts - as soon as fuel is exposed to air it attracts moisture.

- Do not purchase more than a 30 to 60 day supply of fuel. Use clean, fresh fuel.
- Shake the fuel container before each use - this can help to suspend any small amounts of moisture into the mixture.
- Consult manufacturer and owner's manual.
- Consult with your fuel supplier to maker sure your tanks are clean and free of water (consider adding a water separator into your fuel lines if applicable).

Whatever happens with the blend wall this year and the future, ethanol will continue to be part of our fuel supply because it is mandated by law. No one disputes the fact that regular gasoline is almost always a better buy than ethanol. Ethanol has

Blender pumps can dispense various percentages of ethanol from the same nozzle making it easy to put the wrong fuel into a small engine operated machine. The EPA has stated that E15 and higher is not legal for use in off road engine products and most small engine manufacturers' warranties are voided if using ethanol blends greater than E10.

lower energy content, offers inferior fuel economy and in the end, a higher consumer cost than regular gasoline. It is tough to find a straight answer on the true environmental impact of using corn for ethanol. Other sources than corn ethanol (crop residue, switchgrass, and other cellulose feedstocks) will be more environmentally positive. What was once driven by National interest in improving domestic energy security and protecting the environment has given way to subsidies, rebates, and lobbyist driven legislation that keeps ethanol inching its way more and more into our fuel supply. We can't forget that the oil industry has been and continues to be subsidized. A century ago, drilling for oil was risky business and Congress at that time approved the writing off of most of the expenses of drilling and installing an oil well. Some of these tax breaks still survive today, so when the government helps to fund ethanol production plants or offer breaks to companies willing to take on this risk, the history of federal help is on their side.

The Renewable Fuels Association (RFA) states, "compared to the automobile, much of this type of equipment (lawn and garden power operated) is relatively inexpensive. Consequently consumers often do not exercise the same degree of care that they would with the family car." In the eyes of the RFA, my line trimmer, blower and hedge shear that no longer work are disposable and inconsequential causalities of the ethanol-blended fuel I unknowingly put into them. It might be time to look into some solid battery rechargeables for my home.

DOUBLE EAGLE

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Healthy Grow
Reinders, Inc.
Nels Johnson Tree Experts, Inc.
Syngenta

HOLE IN ONE

Pro Gro Solutions

EAGLE

Arthur Clesen, Inc.
JW Turf, Inc.
Rain Bird

BIRDIE

BASF
Bayer
Great Lake Turf
Harris Golf Cars
H & E Sod Nursery
Layne Christensen Company
Nadler Golf Car Sales
Pendelton Turf Supply
Precision Laboratories
Water Well Solutions

MIDWEST core company

The Midwest Association of Golf Course Superintendents exists to promote professionalism and integrity, to provide networking, education, and career advancement opportunities to all members who facilitate the growth and enjoyment ofgolf.

The Woes of WOTUS

Luke Cella, MAGCS

The Clean Water Rule: Definition of "Waters of the United States" (WOTUS) was not officially published in the Federal Register on Monday, June 29. The publication of the rule determined its effective date of August 28, 2015. Since then, many state attorneys (at least 27) have jointly filed four different lawsuits to block the rule in federal court.

The suits vary in their reasoning, some allege usurpation of state responsibility for management of certain waters, some contend the overly expansive nature of the definition of a tributary, another claims the violation of the Clean Water Act (CWA), and the Constitution.

The Clean Water Rule redefines WOTUS and establishes the water features over which the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (Corps) claim jurisdiction. There is a handy table the EPA has published showing what the Final Rule does (see oppisite page).

New to the rule as noted in the table are tributaries and adjacent waters. Tributaries are waters that show physical features of flowing waters – a bed, a bank and an ordinary high water mark (OHMW) and contribute flow into one of the first four on the list: navigable waters, interstate waters, impoundments (the result of a dam, reservoir) or territorial seas. Tributaries include all perennial, intermittent and ephemeral (short-lived) streams, not taking into account the frequency and or/duration of flow. The rule provides protection for headwaters that have these features and science shows can have a significant connection to downstream waters.

Ditches may be considered a tributary if they are "constructed out of streams or function like streams and can carry pollution downstream." Ditches that are not constructed in streams and that flow only when it rains are not covered. Agencies can and will rely on historical ordinary high water mark (OHMW) indicators to help determine tributaries under the rule.

Waters are determined to be Adjacent as outlined below:

1. Waters located in whole or in part within 100 feet of the ordinary high water mark of a traditional navigable water, interstate water, the territorial seas, an impoundment of a jurisdictional water, or a tributary, as defined in the rule.
2. Waters located in whole or in part in the 100-year floodplain and that are within 1,500 feet of the ordinary high water mark of a traditional navigable water, interstate water, the territorial seas, an impoundment, or a tributary, as defined in the rule ("floodplain waters").
3. Waters located in whole or in part within 1,500 feet of the high tide line of a traditional navigable water or the territorial seas and waters located within 1,500 feet of the ordinary high water mark of the Great Lakes.

The agencies emphasize that the rule has defined as "adjacent waters" those waters that currently available science demonstrates possess the requisite connection to downstream waters and function as a system to protect the chemical, physical, or biological integrity of those waters.

The last two categories of the rule require case specific evaluations to determine if a significant nexus (not a Google phone) exists to determine if the water is a "water of the United States." Similar to "Adjacent" Waters, they should significantly affect the chemical, physical, or biological integrity of traditional navigable waters, interstate waters, or the territorial seas.

In this final rule, the agencies have identified by rule, five specific types of waters in specific regions that science demonstrates should be subject to a significant nexus analysis and are considered similarly situated by rule because they function alike and are sufficiently close to function together in affecting downstream waters. These five types of waters are Prairie potholes, Carolina and Delmarva bays, pocosins (evergreen shrub and tree dominated wetlands found predominantly along

the Central Atlantic coastal plain), western vernal pools in California, and Texas coastal prairie wetlands. The agencies determined that such waters should be analyzed "in combination" (as a group, rather than individually) in the watershed that drains to the nearest traditional navigable water, interstate water, or the territorial seas when making a case-specific analysis of whether these waters have a significant nexus to traditional navigable waters, interstate waters, or territorial seas.

Subject	Old Rule	Proposed Rule	Final Rule
Navigable Waters	Jurisdictional	Same	Same
Interstate Waters	Jurisdictional	Same	Same
Territorial Seas	Jurisdictional	Same	Same
Impoundments	Jurisdictional	Same	Same
Tributaries to the Traditionally Navigable Waters	Did not define tributary	Defined tributary for the first time as water features with bed, banks and ordinary high water mark, and flow downstream.	Same as proposal except wetlands and open waters without beds, banks and high water marks will be evaluated for adjacency.
Adjacent Wetlands/Waters	Included wetlands adjacent to traditional navigable waters, interstate waters, the territorial seas, impoundments or tributaries.	Included all waters adjacent to jurisdictional waters, including waters in riparian area or floodplain, or with surface or shallow subsurface connection to jurisdictional waters.	Includes waters adjacent to jurisdictional waters within a minimum of 100 feet and within the 100-year floodplain to a maximum of 1,500 feet of the ordinary high water mark.
Isolated or "Other" Waters	Included all other waters the use, degradation or destruction of which could affect interstate or foreign commerce.	Included "other waters" where there was a significant nexus to traditionally navigable water, interstate water or territorial sea.	Includes specific waters that are similarly situated: Prairie potholes, Carolina & Delmarva bays, pocosins, western vernal pools in California, & Texas coastal prairie wetlands when they have a significant nexus. Includes waters with a significant nexus within the 100-year floodplain of a traditional navigable water, interstate water, or the territorial seas, as well as waters with a significant nexus within 4,000 feet of jurisdictional waters.
Exclusions to the definition of "Waters of the U.S."	Excluded waste treatment systems and prior converted cropland.	Categorically excluded those in old rule and added two types of ditches, groundwater, gullies, rills and non-wetland swales.	Includes proposed rule exclusions, expands exclusion for ditches, and also excludes constructed components for MS4s and water delivery/reuse and erosional features.

Table provided by the EPA summarzies the changes to the defintion of the Waters of the Untied States (WOTUS).

The final rule also provides that waters within the 100-year floodplain of a traditional navigable water, interstate water, or the territorial seas and waters within 4,000 feet of the high tide line or the ordinary high water mark of a traditional navigable water, interstate water, the territorial seas, impoundments, or covered tributary are subject to case-specific significant nexus determination. The reasoning behind the significant nexus was "incorporate a broad, systemic view of the goal of maintaining and improving water quality…." This portion of the rule stemmed from a suit filed in Michigan in 1985 where adjacent wetlands to traditional navigable water were deemed "inseparably bound up" and now can define these areas as waters of the U.S. if a significant nexus occurs.

Ultimately, the crux of the new rule is determining where water ends and land begins. "The transition from water to solid ground is not necessarily or even typically an abrupt one. Rather, between open waters and dry land may lie shallows, marshes, mudflats, swamps, bogs—in short, a huge array of areas that are not wholly aquatic but nevertheless fall far short of being dry land." If any agency is going to regulate pollution in a body of water, the agency desires to have jurisdiction over the (pollutant) point of entry, - the ultimate goal of WOTUS rule. The rule is 75 pages long.

What does mean for golf? Permits, potential lawsuits and fines. Golf courses may be required to obtain federal permits for any water and land management activities near defined Waters of the United States. These may include the 402 NPDES Permit (National Pollution Discharge Elimination System), the permit program that controls water pollution by regulating point sources that discharge pollutants into waters of the US. In addition, golf courses may be required to apply for 404 Permits for dredge and fill activities. What's next? We are waiting for the EPA and Corp to put out general implementation guidance on the rule. GCSAA plans to meet with EPA to discuss specific implementation for golf courses.

In the meantime, you can view a recorded webcast that was aired by the GCSAA the last week of July. The highlights of the webcast include:

- If a water is outside the scope of "adjacent waters" distance thresholds, it can still be jurisdictional through a case by case significant nexus analysis.
- Waters within a 100- year floodplain or within 4,000 feet of a water of the US with a significant nexus are jurisdictional.
- Waters can be jurisdictional even if they are man made, even if there are breaks of any length in them (channels and tributaries).

Luke Stojny, CGCS
Prairie Bluff Golf Cousre

Luke doing his favorite job at the golf course, spraying fairways.

Where did you grow up?
West Chicago, Illinois

First golf course you where you worked?
St. Andrews (in West Chicago)

Do you have a prized possession?
A pair of jockey boots signed by the entire jockey colony at the Fairgrounds in New Orleans.

What do you like to drink? Coffee.

Favorite job task at the golf course?
Spraying fairways.

Dream car?
69 Ford 150 FWD Truck

Favorite pig out food?
Pizza

What is your favorite movie, book and actor?
Cool Hand Luke, Catcher in the Rye

What is your favorite restaurant to go to?
Pappa Dueax

What is your favorite sports team?
Blackhawks

What is your best vacation or favorite destination?
Anywhere next to water that is warm.

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