

TALK TURF

Official publication of the Wisconsin Sports Turf Managers Association

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THE LATEST ON THE RISING FERTILIZER MARKET

Reprint from Lebanon Turf

Back in June I provided some specific context on what factors were driving the increased prices of fertilizer being seen in our industry. Now it's November and we're still seeing prices remain high and steadily climbing. So, what's the latest on the fertilizer market?

Let's first dive into how the current market compares to last year to get some historical framework on just how different the world of commodity raw materials

really is. We'll stick to the big three...nitrogen (urea), potassium (DAP/MAP) and phosphorus (MOP/SOP). Each of these raw materials is bought and sold as an FOB, ton price and is reported in weekly intervals. There are multiple ports in the US that import these raw materials, but for simplicity's sake, I'm going to use the popular ones, realizing that the port of entry does have an impact on the offered price. Keep in mind that by the time you read this, the prices have likely changed.

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PRESIDENT'S MESSAGE



It's that time of year where outdoor sports seasons have come to an end. Now that winter is here it's time to start regearing into a whole new mind set, preparing for spring! As we have all been experiencing a high increase in cost of goods, budgeting will be at the top of the priority list, I'm sure. Be sure to read this article from SportsField Management called Sports Field Management Trends: Part 2 (sportsfieldmanagementonline.com) about Controlled Release Fertilizers and how they can help manage our tight budgets.

I would like to thank all the members of WSTMA for continuing your membership through 2021 and onto 2022. We have several great things happening this year with a new location of the Winter Conference at the Kalahari Resort in Wisconsin Dells. There is a great lineup of speakers including Wayne Larrivee, "The voice of the Packers."

There will also be many great topics pertaining directly to turfgrass management. There have been several entries for the new "Fields of Excellence" program. I'd like to thank Tyler Tschetter, Eric Ogden, and Ryan Woodley for volunteering to be judges of the event. I would also like to thank Board Member Ryan Rusch for reintroducing and spear heading the new program.

Again, I'd like to say thank you to all our sponsors who make the organization what it is today. They provide us all great support and educational opportunities with their great knowledge of the Sports Turf Industry. Any chance you have to support them in return, please don't hesitate.

Finally, I'd like to thank you all for being a part of the WSTMA. We look forward to the 2022 season and all the opportunities it brings. Please check the website and emails for updates on upcoming events. You can also follow us on Twitter and Facebook.

Take Care,

Josh Viet

WSTMA President

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MEMBER SPOTLIGHT: FOR YOU, BY YOU

We want to give you some opportunities to share your talents with us and the rest of the WSTMA Membership. As a reminder, we are offering 3 such opportunities. One is to show off your field management prowess and the other two are to share your stories and successes.

First, the “Field of Excellence” Award program is returning this year. This gives you the opportunity to show off your field managing expertise and win prizes and recognition from your peers and those you serve. You may submit multiple fields such as a baseball field AND a football field.

Winners will have their field recognized in WSTMA publications and social media. Also, press releases will be sent to your local newspapers and TV stations. Information on criteria and application information are available in the newsletter, and on our website.

Next, we have an opportunity to share stories and articles YOU write. First, we would like you to submit articles for the newsletter written by YOU pertaining to Sports Turf Management. It may be a process you did on your field or one you are familiar with, that would be informational to the rest of sports turf management world.

Once they are submitted to the Board, they will be judged, and the winner will be published in the newsletter and links will be available on the website. Winning article authors will also win their choice of our new WSTMA apparel.

Finally, we want to have some fun with the newsletter. I am sure we all have a story about something humorous, goofy, odd, weird, good, and bad done in relation to managing sports turf. Whether this involves yourself, an employee, a field user, or the general public, I know we all have them. Seriously, the hardest I have ever laughed was when I was a golf course superintendent, and I was sitting one night with a group of other Superintendents telling stories (for hours) about things that had happened on the golf course. That evening I swore I wanted to write a book with humorous stories collected from my peers (I have not) in relation to our jobs.

So, we would love to include any offbeat stories related to managing sports fields or things that have happened during events you have in our newsletter every month. We can make it anonymous if need be as we know some of these stories may include someone screwing up or screwing around. We are confident you have shared these stories, please share them with us!

Please submit materials by email to mkrupke.wstma@gmail.com or send by mail to WSTMA Michael Krupke N4222 Pandow Dr., Brodhead, WI 53520.

Looking forward to hearing from you! Michael Krupke, Chapter Manager

WTA Fall Golf Classic 2021

at Nakoma Golf Club Bruce Schweiger, Superintendent O.J.Noer Turfgrass Facility

The WSTMA had Board Members and Members attending the WTA Fall Golf Classic. It was a great day of golf, comraderie and Turf Networking. We encourage WSTMA members to attend next year. The WSTMA sponsors a team every year and would love to sponsor more as the proceeds go to great cause...turf research in Wisconsin. - Michael Krupke

On Monday, October 4th 2021, ninety-eight golfers took over Nakoma Golf Club in Madison. The activity is the largest fundraising event for the WTA every year. The WTA has been hosting the Fall Golf Classic since 1982. The WTA has only had two rain outs, 2018 and 2019. Over the years my predecessor, Tom Schwab, has made this an entertaining event, with the focus on fun, not just a skills challenge. The festivities at Nakoma Golf Club continued this mission.

The event was attended by 98 golfers of all skill levels. The laughter and fun was abundant all around the course and clubhouse the entire day. The first few holes began with a very light mist but I did not see any umbrellas being used. It lasted for a hole for two then the day was pleasant. Overcast and warm but not hot until the very end of the day when the mist returned. The mist was not enough to dampen any fun.

Superintendent, Mike Lemke, had the course in great shape. When I visited with Mike the Friday before, the greens were slick. Sunday afternoon Nakoma Golf Club received one inch of rain. When Mike told me this Monday morning I was concerned, you see in my much younger days after one inch of rain, the course would be playable but very wet. Mike told me not to worry as there is now an interstate system of tile throughout the property. He was right, the course handled the water well. The only casualty was the green speed. As we all know green speed takes a pounding after heavy rains, but it might have been a blessing in disguise because I heard many people had problems putting. The slower speed might have contributed to a more enjoyable day. Thank you, Mike and your staff for all you did to make the day happen, you made my job much easier.

When it comes to making my job easier the

entire staff at Nakoma Golf Club must have had that as a goal. The pro shop communicated theirs needs and helped me with a few issues. They were super easy to work with. Event manager, Brianna, understood what we needed and was wonderful. The kitchen staff was very helpful with a few concerns of mine and the food was great.



Lastly, I want to thank the Nakoma Golf Club Board of Directors for allowing us to hold our Fall Classic at such an enjoyable course.

This event would not be possible without the sponsorship of our members and vendor partners.

Please remember those that sponsored this event as you move through early order season and next year's growing season. In alphabetical order:

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Maple Bluff C C
Midwest Turf Products
National Golf Graphics

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Pendelton Turf Supply
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SiteOne Landscape Supply
Soldat Family
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The Andersons
Waupaca Sand & Solutions
Wausau C C
WSTMA

The day ended with a few heartfelt good-byes and an idea-sharing session around the bar. On behalf of the entire WTA Board, I would like to thank everyone that participated and helped make this year's Fall Golf Classic a huge success.

Hope to see everyone next year at the 2022 event at Oneida Golf and Riding Club!

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2022 WSTMA Winter Education Conference

Friday, February 17-18th, 2022

Kalahari Resort, Wisconsin Dells

Thursday, February 17th 6:00 p.m.–10:00 p.m. Networking Event

There will be food and refreshments and plenty of networking and fun.

Friday February 18th

6:30 a.m. Vendor Setup

7:00 a.m.- 8:00 a.m. Registration

8:00 a.m.-8:15 a.m. Welcome and Announcements...Josh Viet WSTMA President

8:15 a.m. Dr. Doug Soldat University of Wisconsin
Developing a NR151 Report for your Facility

9:15 a.m. Dr. Adam Thoms - Iowa State University
Lowering inputs, while maintaining a safe and playable surface

10:15 a.m. Break and time with Vendors

11:00 a.m. Vendor Recognition and WSTMA Business

11:30 a.m. Lunch

12:30 p.m. Keynote Speaker and Meet and Greet: Wayne Larrivee
The voice of the Green Bay Packers

2:00 p.m. Michael Krupke WSTMA
Best Management Practices Initiative from the STMA

Our Commercial Partners will be there to highlight their products and services!

Reinders, Midwest Athletic Fields, Turfix, Insight FS, Advanced Turf, DHD Turf and Tree, Traqology, Site One Landscape Supply, Cover Master, Jasperson Sod, Kafka Granite, JW Turf, Ball Diamond Fine Sports Turf, Beacon Products, Hunter Industries, Waupaca Sand and Solutions, Milwaukee Lawn Sprinklers, Horst Distributing, Central Wisconsin Sod Farms

Registration is OPEN! Please go to our website to register for this great event!

<https://www.wstma.org/event-4593864>

A block of hotel rooms is available at a reduced rate for the event. To book your room, use this link:

<https://book.passkey.com/e/50244902>

This is also a family event! Our rationale for having it on a Friday at the Kalahari was to give you an opportunity to stay an extra night and bring the family if you choose. We have a limited number of rooms made available at a special WSTMA rate for Friday Night. You can book those extra night rooms from the same link.

Join us for a magnificent event full of Networking, Education & just plain fun!

Go to [wstma.org](https://www.wstma.org) for more information and to register.

For questions contact:

Michael Krupke | mkrupke.wstma@gmail.com

ABOUT OUR SPONSORS



Doug Soldat, Ph.D., is a professor in the Soil Science department at the University of Wisconsin Madison. He earned both his bachelor's and master's degrees in Soil Science at the University of Wisconsin and Ph.D. in Horticulture at Cornell University. He focuses on turfgrass, urban soils, nutrient management water resources, soil testing and landscape irrigation.



Adam Thoms is an Assistant Professor of Commercial Turfgrass in the Department of Horticulture at Iowa State University, where he started in 2016. He oversees the sports turf research at Iowa State, and is the Turfgrass Extension Specialist for Iowa. In addition to research and Extension activities, Adam teaches two classes (Turfgrass Irrigation and Sports Turf Management), as well as serving as an advisor to the Iowa State Turf Club. Adam is in charge of planning education for the Iowa State Turfgrass Field Day, and helps with planning education for the Iowa Turfgrass Conference. Before coming to Iowa State University, Adam was the Research Leader for the Center for Athletic Field Safety at the University of Tennessee. Adam received his Ph.D. and M.S. degrees from the University of Tennessee working on sports turf related projects. He completed his B.S. degree from Iowa State University. Adam is active in the Iowa STMA Chapter, serving on the Board of Directors as an Educational Advisor. Outside of work he enjoys time with his family, wife (Rachel) and two children (George and Greta).



Wayne Larrivee has been the play-by-play radio voice of the Green Bay Packers since 1999, working alongside partner Larry McCarren on the Packers Radio Network. He also works for the Big Ten Network on its coverage of conference football and basketball games and Westwood One's coverage of the NCAA Basketball Tournament. Prior to Green Bay, Larrivee's voice was synonymous with Chicago professional sports. He spent 17 years as the television play-by-play voice of the Chicago Bulls on WGN-TV and over 10 years calling Chicago Bears games. He also spent time in a similar capacity for baseball's Chicago Cubs.

Larrivee got his start in broadcasting while attending Emerson College. He got his first full-time job at KGRO Radio in Texas in 1975 before moving to KSTT Radio in Iowa, where he worked various sporting events, including University of Iowa football and Quad City Angels baseball. From 1978-1984, he called Kansas Chiefs games for KCMO Radio before being hired as the voice of the Bears in 1985, a job he held until being hired to call Packers' games in 1999. In recognition of his exemplary broadcast work, Larrivee was four times named the recipient of the Midwest Emmy for his coverage of the Bulls. In 1998, he was named Illinois Sportscaster of the Year. He also won the 2004 Edward R. Murrow Award and three times was the recipient of the AIRY Award for his Packers work.

	Current Week	Last Week	Last Year
Urea Nitrogen – Import Prill U.S. Gulf NOLA	\$723	\$715	\$263
Diammonium Phosphate (DAP) U.S. Gulf NOLA	\$672	\$675	\$357
Monoammonium Phosphate (MAP) U.S. Gulf NOLA	\$757	\$763	\$383
Muriate of Potash (MOP) U.S. Gulf NOLA	\$678	\$668	\$205
Sulfate of Potash (SOP) Southeast	\$775	\$750	\$575

These numbers speak for themselves. You don't need to be a market expert to see that these prices are significantly higher than what they were only a year ago. This trend has been persistent throughout the year and, quite frankly, there's no indication of relief anytime soon.

But what precisely is driving these elevated prices? Let's breakdown each component with some updated context.

Urea Nitrogen

Urea nitrogen is still the overwhelming driver of the price you pay for a bag of turf fertilizer. As I mentioned last time, a sizeable part of the urea used in the U.S. are imported other countries and we are largely at the mercy of how much they will export. When the amount of available imports quickly evaporated, it was "supply vs. demand" that played a large part of the first wave of price increases in early 2021. Now there is a much more troublesome reason that the prices are pushing even higher...natural gas prices.

There is a global energy crisis gripping most countries right now. Natural gas prices in Europe have risen over 340% in 2021, with no signs of relenting any time soon. But why? The main reason natural gas prices have jumped is that demand for fuel has been artificially accelerated as economies have recovered from the damage caused by the pandemic.

Here's why that's important when it comes to urea nitrogen. Urea is a synthetically produced component and natural gas is the key ingredient in the process of making it. Natural gas accounts for 75% to 90% of all operating costs in the production of urea nitrogen. When European

natural gas prices started to skyrocket in early 2021, it quickly prompted the shutdown of countless fertilizer factories in several countries that could not justify the rapid manufacturing cost increase, which abruptly initiated a supply shortage of urea. With the anticipated supply levels not being there, the remaining amount of available urea started seeing near-record level pricing.

Unfortunately, the story doesn't end there; there's more to this jump in fertilizer prices than just natural gas.

In 2021, a record number of supply-related factors have also helped drive up the prices, including Mother Nature. In August, Hurricane Ida directly interfered with the normal shipments of commodities coming and going from the U.S., while simultaneously shutting down all the ammonia plants near the U.S. Gulf Coast. This significantly weakened the availability of urea nitrogen.



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As I mentioned last time, we in the turf industry are at the mercy of the agriculture market, more specifically the corn market.

These sharp increases in urea nitrogen prices will be a source of pain for farmers, but it's expected not to be large enough to get them to switch over to alternative crops, such as soybeans. Soybeans and other legumes form a symbiotic relationship with nitrogen-fixing bacteria, allowing them to meet much of their nitrogen needs by converting atmospheric nitrogen into ammonia. So, if the farmers did switch, that would, theoretically at least, allow more available urea nitrogen to filter down to us in the turf market.

However, while soybeans require significantly less nitrogen fertilizer than corn, they do require roughly the same amount of phosphorous and potassium as corn requires of nitrogen. With those market prices also seeing the same levels of increase, there's no logical business strategy that provides farmers any relief from the culmination of all fertilizer components going up in price. It would be a net zero game for them.

With all the nutrient factors being equivalent, it's safe to say that farmers will not switch from corn to soybeans due to the higher crop value per acre of corn over soybeans. In 2022, corn is projected to be valued at \$193 per acre while soybeans are valued at \$63 per acre, both well above their 20-year averages. Financially, even with increased fertilizer prices, there is not a sound reason for them to switch.

Which brings right back around to where we are today and most likely where will we be for most of 2022; with less available urea nitrogen at near-record level prices.

MAP/DAP

Phosphate prices have risen significantly throughout 2021, with the average ton price reaching a 10-year high. They are following the same trend as urea nitrogen for many of the same reasons; natural gas prices being the most impactful.

One of the world's leading suppliers of phosphates, Yara, announced in September that it is curtailing production at multiple European plants due to high natural gas prices that are negatively affecting

production margins. By the end of November, Yara will have shut down over 40% of its European phosphate production capacity.

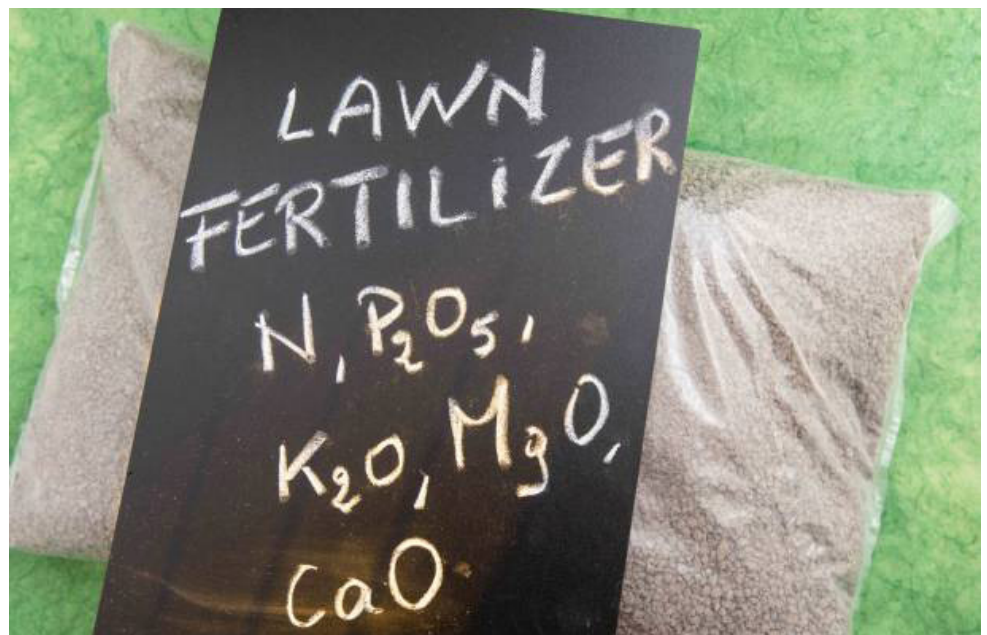
COVID-19 was also a significant factor in the supply shortage and increased prices of today's market. The world's top phosphate producer is China, where the pandemic first broke. As such, China was disproportionately affected by the virus because of large-scale, mandated lockdowns which ultimately led to supply challenges and increased prices early in the year. In July, China completely halted all exports of phosphates in an effort to ensure ample domestic supplies as all fertilizer prices continued to rise.

Other global phosphate producers, like Saudi Arabia, Russia and Morocco tried to increase their production to offset the tight availability, but continued shipment and transport disruptions continued to diminish the available supply here in the U.S. This state of sustained unavailability added to pushing phosphate prices to near-record levels that are expected to remain throughout 2022.

MOP/SOP

Early in the spring, potash was the only nutrient not already being in short supply or had irregular price increases. As the most affordable input for farmers, demand started to rapidly increase. With the sharp rise in domestic agriculture acres over 2020, this unexpected demand drove the potash prices up by early summer.

As previously mentioned in my last update, Mosaic Company is one of the world's leading producers of potash





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due to having one of the best ore deposits located in Esterhazy, Canada. In early June, Mosaic was abruptly forced to close their two primary mine shafts (K1 and K2) due to an unexpected acceleration of brine inflows, which is a mix of heavily saturated NaCl and water. These closures directly impacted the availability of MOP which sent the potash market pricing into overdrive. Mosaic is predicting a loss of approximately 1 million tons of potash that will not be produced during this unexpected shutdown.

Mosaic announced the reopening of a mine in Saskatchewan over the course of the next year or two, which would increase global potassium production capacity. However, it will likely do little to help pricing in the short-term but could provide some relief by the end of 2022 or early 2023, once the mine has been completely re-opened.

One more important thing...Freight

A quick side note that is important to be aware of is that all those raw material prices quoted in the previously references chart do not include any freight costs necessary to bring them to a manufacturing/blending plant. That's not even to mention all the freight charges to ship out the finished fertilizer bags to the distributors and then on to the end users.

Freight costs, like so many other areas, have risen substantially over the past couple years and now play a much heavier factor into the costs of producing turf fertilizer. These costs have risen due to two main factors: an overall driver shortage and a shift in the supply and demand model.

It's a simple fact that there are less truck drivers today than there were 5 years ago. The trucking industry is short approximately 80,000 drivers. That's a 30% increase from before the pandemic hit, when the industry already faced a labor shortage of 61,500 drivers. When COVID-19 hit, there was a sharp uptick in drivers retiring. Due to current driver training regulations, mostly a Department of Transportation age requirement of 21, the number of qualified replacement drivers simply are not there. Those drivers who continued to drive saw an immediate wage rate increase as companies began to fight in recruiting experienced drivers. Currently the average wage of driver is 75% higher than it was pre-COVID.

Keep in mind that when the pandemic hit, consumer demand for practically everything increased exponentially thanks to the ease of online shopping which immediately prompted a massive surge for the demand of more truck drivers to transport goods. This comes at a time when U.S. ports are severely backlogged primarily due to the lack of trucks and drivers available to pick up the cargo; all of which has caused a supply chain slowdown. President Biden directed the Ports of Los Angeles and Long Beach to move to 24/7 operations. However, these ports can't work round the clock because the importers don't have enough drivers to move their cargo at all hours.

In the simplest terms, the supply and demand quotient has shifted well in favor of the consumer world. This situation increased the freight rates for those drivers who are willing to continue to haul raw material components and finished products.

Outlook

With all the gloom and doom that's portrayed here; the takeaway message is that the price of fertilizer is not going down anytime soon. Once the market self corrects, I'm confident that prices will recede...to a point. I would not, however, expect it return to pre-pandemic levels. Everything costs more now. That same dollar you spent last year won't go as far this year. Unfortunately, the turf doesn't behave any differently when fertilizer prices rise.



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TURFGRASS RESPONSE TO WATER DEFICITS

Evapotranspiration (ET) is the sum total of water lost to the atmosphere due to evaporation from the soil surface and transpirational losses from leaf surfaces. If irrigation is withheld during periods when evapotranspiration rates (output) exceed the precipitation/irrigation rate (input), turfgrass shoot growth rates are reduced along with verdure (shoot biomass), shoot density, chlorophyll content (green color), and shoot moisture content.

Additional drought stress symptoms observed under progressive soil drying include leaf wilt (leaf fold and rolling), leaf firing (yellowing, tan/brown leaves), and leaf-to-air temperature differences. Leaf wilt is undesirable in heavily trafficked sites such as sports turf and golf greens where permanent injury and poor recovery can result. As soil water becomes limiting during drought, soil water available for transpirational cooling of leaf surfaces becomes limited, resulting in higher leaf surface temperatures relative to air temperature. The optimum shoot growth temperature for cool-season turfgrass is 60 to 75 °F.

Selecting turfgrass species and cultivars having superior drought avoidance characteristics (deep, viable root systems and inherently low ET) is critical for sustaining growth by transpirational cooling during summer months when air temperatures typically exceed this optimum temperature range. In addition, midday watering (around 2 p.m.) can help reduce heat stress by transpirational cooling on hot summer days particularly for grass species with poor drought avoidance, such as annual bluegrass.

Determining When to Water and How Much Using Indicators of Plant Moisture Stress

- Early symptoms: leaf folding, foot printing, uneven dew formation.
- Severe wilt: blue-gray discoloration, leaf roll.

A good visual indicator that turfgrass wilt is imminent is the length of time required for footprints to disappear after walking on the turf. In addition, some grasses such as bluegrasses (*Poa* species) in response to drought stress will fold their leaves to reduce transpirational water loss by reducing the amount of leaf surface area exposed to the atmosphere. These plant responses to moisture stress, however, depend on the current weather conditions and the time of day (early morning, mid-day, late afternoon). After prolonged moisture deficits and severe stress the death of some shoots (leaves) can be expected if irrigation is not applied. If water is provided at the first indication of wilt, no loss in turfgrass quality will result. However, if wilt is severe some loss in turfgrass quality can be expected. These drought stress symptoms indicate when to water, but tell you nothing about how much water to apply.

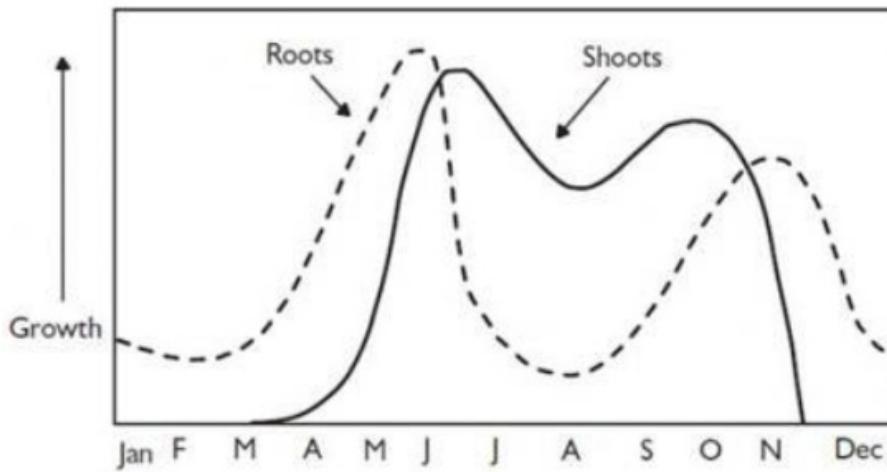
Using a Soil Probe to Monitor Soil Moisture, Texture, and Rooting Depth

- Use a soil probe to determine soil moisture to a 6-inch depth
- Use soil probe to examine for rooting depth and soil texture.

Soil texture and rooting depth are useful for determining how much water to apply. This fact sheet provides some guidelines of how much water to apply to recharge the rootzone when wilting is observed.

The cool-season turfgrass peak root growth period occurs in the early spring followed by a smaller peak during the early to mid fall period. Cool-season grass roots will continue to grow up to the time the soil freezes (although at a reduced level). The optimum soil temperature for cool-season root growth is 50 to 65 °F, which is 10 °F lower than the optimum air temperature for cool-season turfgrass shoots. Therefore cool-season grasses experience rapid root growth decline beginning in early summer (peaking by mid-summer) because of high soil temperature stress. As a result, drought avoidance characteristics of cool-season grasses decline during this period of accelerated root

Typical shoot and root growth patterns
of cool-season turfgrass species.



growth decline (and increasing evaporative demand). This root growth decline results in a more intense irrigation schedule (increased irrigation amounts and frequency) by mid-summer compared to early summer. Recent research has shown that irrigation frequency can affect turfgrass rooting and drought resistance. Specifically, deep, infrequent irrigation applied at the time of leaf roll (mild water stress) resulted in deeper rooting and higher turfgrass quality during drought compared to turf irrigated on a daily basis.

Reprint from The UMass Center for Agriculture, Food and the Environment is the home of UMass Extension and the Mass. Ag. Experiment Station.



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Craig Schlender - Manager

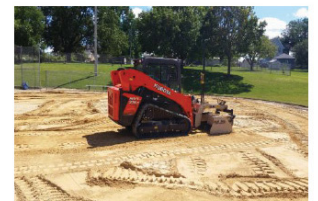
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