

A milder and drier-than-normal winter is forcing superintendents to evaluate their soil moisture levels to make sure they're where they need to be heading into the growing season.

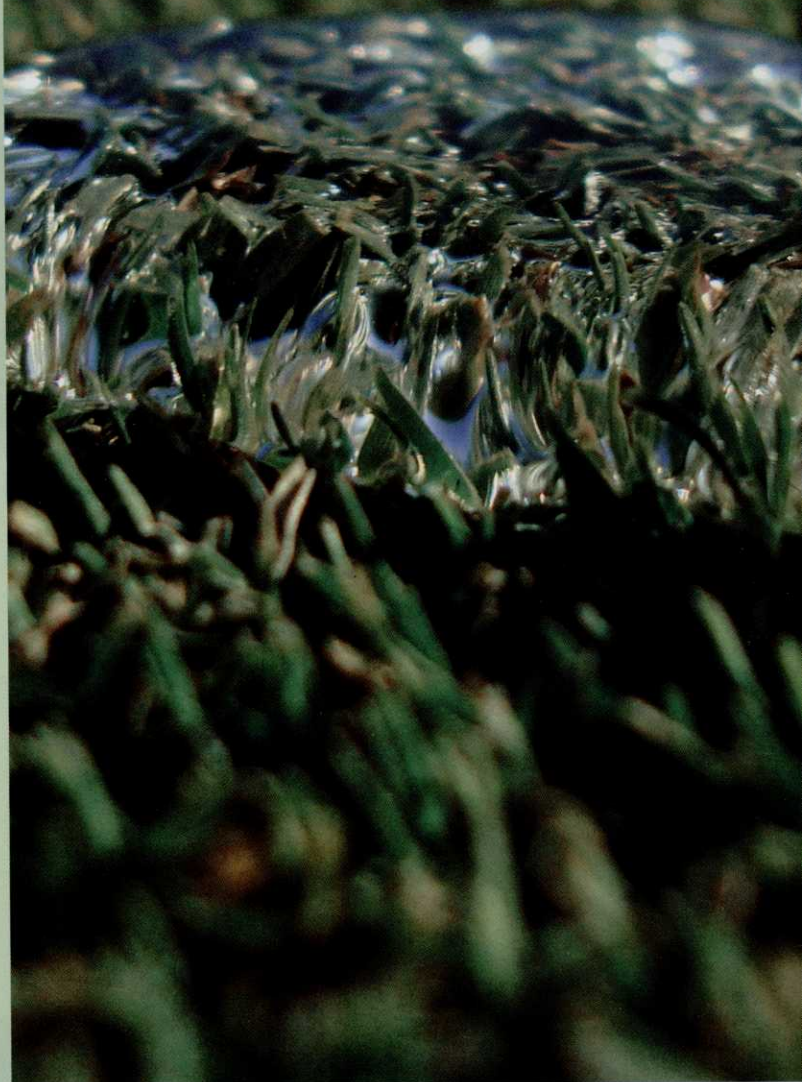
By Carmen Magro

Soil water content affects everything. Neglect it for a moment in time and you will pay the price in reduced turf performance, poor course conditioning and member dissatisfaction. The winter's warm weather and dry conditions in many parts of the country should be important to you. The clock is ticking early for many courses and operations. It is hard, however, to only focus on water without understanding that turf is dynamically adapting and responding to its surrounding conditions.

One of the most common mistakes in turfgrass and course management is the failure to remember that turfgrass is a living, breathing entity. It is prompted to change just as you and I are, as we are subjected to changes and responses every minute of every day. In other words, if nature starts the clock early, your course can't wait until the calendar says it's time to get moving. This includes time to fertilize, time to groom, time to irrigate and time to do whatever it takes to meet the needs of the system. For those in regions of high disease incidence in the summer months, this winter's lack of knock-down of pathogenic fungi due to warmer-than-normal conditions may lead to a very long season of stress. If water management is not optimal, things can get exponentially worse as the season matures. Nature's way of curbing many ailments in our pest management programs is not to be taken for granted, and for the most part it has been absent in recent months for many.

In early turfgrass courses and plant biology classes we learned that there are life cycles of the turf, important ones that take place throughout the year. Whether we are working with cool or warm season grasses, it is important to remember these processes thoroughly. Cool season turf, which is tolerant of cool temperatures and continues to have

ALL DRIE





UP?

Watching your water

Ask any superintendent this year how their course held up over winter and they'll probably say, "What winter?" Warmer-than-normal temperatures and little snow has forced them to think a little harder about irrigation.

Charles "Bud" White, director of the USGA's drought-stricken Mid-Continent Region, says he has been encouraged by a few rains in the beginning of the year that brought lake levels up.

"We're suggesting that superintendents not scalp their fairways, which is the normal practice. That could be stressful on it, and if the turf is still in a drought situation, that could be very stressful."

White is also recommending doing some slicing or needle tining in fairways or tees so the water gets the maximum chance for absorption.

Soil moisture is going to be a real issue in the North, says irrigation consultant Brian Vinchesi, due to a very dry winter with hardly any snowfall.

"We didn't get any snow, but we didn't get any rain, either," says Vinchesi.

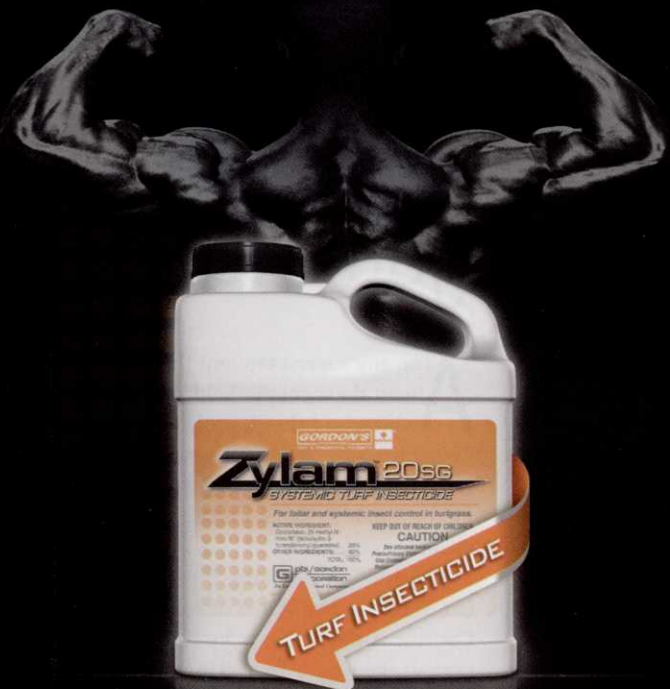
Vinchesi says superintendents should be concerned with shallow wells. He believes groundwater has taken a little bit of a hit this year.

"I think superintendents need to be a little more diligent about this, and certainly if it stays dry, they need to really pay attention to the water supply," he says.

Superintendents probably have a lot less moisture than they're used to at this time of year, says Vinchesi. They'll

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WATER MANAGEMENT

root stimulation even down to the freezing point in the soil is highly dependent on its ability to build storage carbohydrates and key proteins in the root system, some of which only develop in a true dormant season with the right nutrients in place. When the plant is growing, whether it is root stimulation, lateral growth or vertical stimulation, it needs a soil solution with key elements in balance designed to meet those needs in the turf. While some nutrients are not as efficient in cooler soils, the above-ground warm weather stimulation is agnostic to that fact, and we need to recognize those needs or it will lead to less than desirable conditions this season. We may forget about what's going to happen later by the superficial greening effect we see on the surface due to a lack of dormancy, the breaking of warm season dormancy earlier than expected or the desire to open courses early as a result of the higher-than-average temperatures many are receiving.

These internal compounds that the plant produces and depends upon are critical to helping the turf survive the stressful months ahead as the sun raises high in the sky and the weather extremes present havoc on our turf. In a world where efficiency is needed by everyone that irrigates, the fact that the turf needs water earlier this year does not mean we are inefficient or wasteful if we turn on the system days or weeks ahead of schedule. The economic downplay of a system that fails in a few months could lead to far worse results, increased pesticide or curative procedures and unhappy members and guests. The goal should always be to meet the needs of the turf by providing just enough soil solution and nutrient balance necessary so that we meet our desired conditions on the course. The latter is the factor for which you will be judged.

For warm season grasses in areas of higher-than-normal temperatures this year, you may have struggled with some cool season over-seeded areas as the warm season grasses have competed earlier than usual. For those of you that painted, you may or may not see a difference until the natural grass starts growing through. Either way, meeting those needs through careful irrigation applications and nutritional balancing will allow your turf to mature rapidly, reduce the incidence of dead spot and delayed turf development and enable you to perform operations getting things in high gear at no turf loss expense.

If on the other hand we don't identify these early needs and we only implement cultural practices to stimulate turf response while neglecting



Turfgrass won't wait for your schedule to start greening up, says Carmen Magro.

“Looking at the surface and subsurface conditions, it can sometimes be deceptive because you could have three to four inches of moist soil over dry soil. Growth starts out well, then depletes the soil moisture pretty quickly.” — Robert Carrow, University of Georgia

irrigation and nutritional needs, we will likely not be happy with our results.

Having measured soil and water relationships throughout the world in all kinds of climates, soils and water qualities, I can assure you that soil solution management means everything to your success. Some of you don't know it, some take it for granted and some simply ignore it particularly in regions of

high rainfall. There are correlations between plants that we can all learn from observing. For instance, working with farmers on the development of a program that allows for the most succulent, sugar-rich fruit is directly related to soil solution management. Force a soil to be just too wet and the plant goes into survival mode, reducing sugar production in the fruit and greatly reducing crop yield.



Soil can seem moist at the surface, but be dry just a few inches beneath.

Maintaining too much leaf wetness leads to diseases which again reduce crop quality and yield (sound familiar?). Maintain the soil too dry and the plant goes into survival mode, many times producing seed and many flowers at the expense of producing no fruit. In turf, particularly in regions where we manage mixed stands, seed heads are a nemesis. It is highly possible that this year, due to the early seasonal growth and lack of a true dormant season that we may see an abundance of seed development that not only comes earlier but lasts longer into the season. Reduce the growth stress on your turf by managing your soil solution and nutritional balancing optimally, and you will reduce the stresses that cause undesirable effects in your turf. In warm season grasses where we see a sudden drop in nutritional levels typically in mid to late spring, we may see this earlier this year. Turf does not care about a calendar, and if those desired levels drop or are negligent, our turf will decline, in many places earlier than usual. On the flipside, recognizing the needs of the turf earlier, managing our soil solution through irrigation and necessary cultural practices and beginning our fertility program, particularly our foliar and liquid program, can increase the growth vitality of our turf and take advantage of early growing conditions. Hopefully many have recognized this and got the ball moving early in preparation for the remainder of the year.

As a golf course superintendent, I remember training my irrigation crew in the art of syringing properly. Say what you want about whether it is beneficial or not, but the fact is that doing it correctly and knowing what your soil moisture levels are in the entire soil profile will be the difference between satisfactory and non-satisfactory results at

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also have to start up their irrigation systems sooner. To check soil moisture, he recommends investing in a permanent-type soil moisture sensor or, better yet, a portable one to spot-check certain areas.

"Unfortunately, superintendents probably don't have anything to compare [soil moisture] to right now," says Vinchesi.

Robert Carrow, professor at the College of Agriculture & Environmental Sciences at the University of Georgia, says superintendents will have to use a manual probe or auger to go down past the surface.

"Looking at the surface and subsurface conditions, it can sometimes be deceptive because you could have three to four inches of moist soil over dry soil,"

Drought Update

Even though some areas of the country had a mild winter, that doesn't necessarily mean they had a dry one. Unfortunately for much of Texas and the Southwest, the theme was mild and dry through winter, compounding the effects of the drought that began last year.

Texas is still suffering through the worst drought in its history, which began last year. However, a few rains in the early part of the year have been a cause for optimism for USGA North-Central Director Charles "Bud" White.

"It's still bad, no doubt, but we're encouraged that in Houston and Dallas we finally in the last two or three rains started to see the lakes fill up," says White. "In those first few rains we got in winter, the lakes didn't move because the ground sucked it all up. Hopefully in March and April we'll get more rain so that the reservoirs will have more water in them going into summer because all the forecasters are predicting a dry and hot year again this year. If we go into summer with low water reservoirs, that will really make for a tough summer."

As of February, all of California was considered either in extreme drought or severe drought, as were parts of several Northeastern, Northwestern and Southeastern states, according to the National Oceanic and Atmospheric Administration. However, Pat Gross, director of the USGA's Southwest Region, reported that Northern California experienced its biggest rainstorm of the year in March, delivering 2 to 4 inches. But that area is still far behind the normal levels. All of New Mexico was considered to be in a moderate to severe drought.

Pat O'Brien, director of the Southeast Region, said conditions were variable in his area in March, with some places having abundant moisture while others were in extreme drought. The good news is most of the courses have the best drought-tolerant turfgrasses that do well under low water scheduling. Those experiencing drought are hoping for rain to recharge their ponds.

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says Carrow. "Growth starts out well, then depletes the soil moisture pretty quickly."

Vinchesi says most golf courses are running three weeks to one month ahead of schedule of their irrigation program, but cautions that timetable may be regional.

"If you have extensive experience with

your course, you'll know better than if you're new there," he says. "But just be aware that there isn't as much soil moisture as there normally is coming out of winter, and the groundwater may be lower than normal."

Carrow says if there is some dryness of the subsoil in areas that traditionally have spring

rains, superintendents could probably just irrigate the surface for awhile, then wait for rain. He advises superintendents to look at the monthly weather forecast to determine the likelihood of rain.

The other thing to be wary about, says Vinchesi, is salinity levels. Those courses with an effluent system that are used to having the winter flush out the salts from the soil may want to check to see if salt levels are where they need to be.

"For most guys, it's not an issue in the spring because they had the winter to flush the salt out, but they're going to have to think a little differently this year because it has certainly been different than a normal spring," Vinchesi says.

Pat Gross, director of the USGA's Southwest Region, has already seen some salinity issues on greens due to the lack of rainfall in his area. Rainfall is one-third the normal level, with snowpack in the Sierras about the same. This situation, he says, could negatively impact the water supply, especially in Southern California, for the rest of 2012.

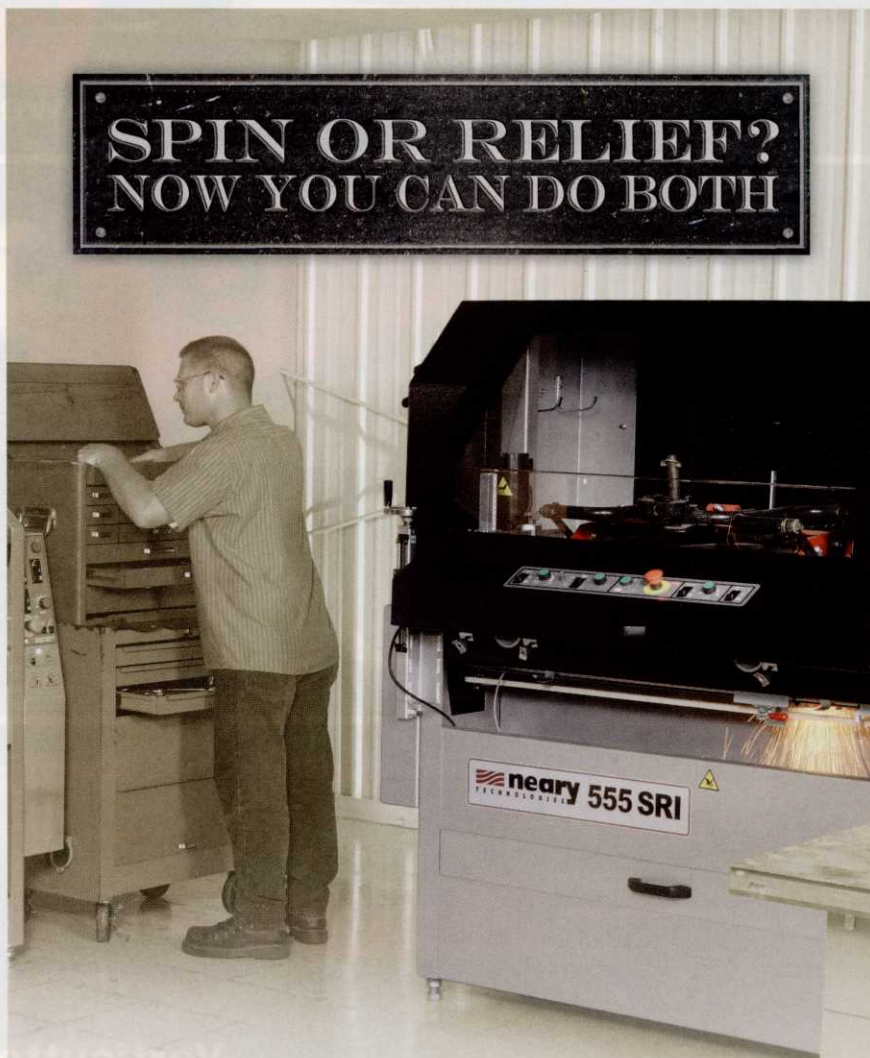
The report out of the North-Central Region, however, is a different story. Director Robert Brame says although the region didn't get much snow, it did get adequate rainfall.

"In fact, I visited a club in Central Ohio in March and there were no moisture issues at all," Brame says. "It was normal for what you would expect this time of year. There will be isolated areas that will vary and not apply, but for the most part, even though snow hasn't been the issue, rainfall has been in a fairly good spread to keep things in order moisture-wise. However, that could change on a dime. We still have a ways to go before we get into the season itself."

Experts all agree that it's best not to just follow one general prescribed solution to the soil moisture issue.

"Don't take a global approach and assume everything needs water," advises Vinchesi. "Be diligent and check what needs water and what doesn't. Most superintendents are probably used to being really wet in the spring, but you just don't have that this year. I still think Mother Nature will pay us back somewhere, it's just a matter of when and where - whether it will be a wet spring, a wet summer or snow in April." GCI

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



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Know how water is moving in your soil to make the best irrigation plans.

some point in everyone's season or career. Having a large percentage of non-English speaking employees, I needed a way to train my staff in a way they would understand without butchering their native language in the process as I was unfortunately prone to do from time to time.

I grabbed a laser thermometer and a soil sensor. Showing the relationship of how too much soil moisture led to higher soil temperatures than surface temperatures was eye-opening to them. They learned the art of putting on the right moisture in the right place to achieve the desired goals. More importantly, they learned the duration of those effects knowing how much time they had before the practice was needed again. Even in warm-season environments where the grasses can tolerate high ambient conditions, the roots still cannot survive sweltering soil temperatures. So managing our soil moisture throughout the year is critical for achieving the finest conditions. Period.

We are all under the gun for irrigation conservation, as we should be. Those of you that drink bottled water pay more for that per gallon than we do for the highest gas prices – six times more. And those prices are translating onto golf courses more and more every day. Water regulators are learning from companies and individuals like me who have studied the relationship of soil and water to great depths. They are learning that we can manage our water better and the time was yesterday to do so.

We live in a world where the best irrigation managers can still do it better.

I'm happy that the technology of soil monitoring is advancing as we speak and becoming more affordable than ever. We are in a world now where we want solutions and guarantees.

While it is difficult to guarantee anyone's success or the outcome of any particular practice, one guarantee I can certainly make from experience is that the more you know about your soils and the presence of water in your profile, the more successful you will be at determining the best practices to meet the needs of the turf. Don't neglect to understand how water moves through your entire profile. A dry lower profile will lead to increased problems beneath the surface.

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“We didn't get any snow, but we didn't get any rain, either.” — Brian Vinchesi

type and the positioning of soil solution throughout the profile, I found statistical correlation between a high index (indicating soil moisture near the surface as compared to in the lower profile) and the incidence of root loss, turf thinning and disease outbreak.

Take the time to identify the conditions in your soil and the activity in your turf. Nobody knows your course better than you. Make the right decisions by understanding the needs. **GCI**

Carmen Magro, CGCS, MBA, is chief agronomist/proprietor of Agronomy Management Solutions and a frequent GCI contributor.