

SPRING 2017

ON THE TURF™

THE OFFICIAL PUBLICATION OF THE FLORIDA CHAPTERS OF THE STMA

pg. 8 **Welcome to**
Jaguar!
Country

TURFGRASS
NUTRIENT ANALYSIS *pg. 16*

pg. 20 **SOIL**
ORGANIC MATTER



ASK THE DOC *pg. 13*

with Jason Kruse, Ph.D.



**This issue is dedicated in memory of
Bruce H. Bates
1953 - 2016**



TABLE OF CONTENTS

FEATURES

- ▶ A Fond Farewell.....6
- ▶ Home of the Jaguars.....8
- ▶ Turfgrass Nutrients 16
- ▶ Soil Organic Matter.....20

DEPARTMENTS

- ▶ President's Message 2
- ▶ Chapter News..... 4
- ▶ Ask the Doc (**NEW**) 13
- ▶ On The Turf Tips from STMA 26
- ▶ Member Application 33

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PRESIDENT'S MESSAGE

CENTRAL FLORIDA SPORTS TURF MANAGERS ASSOCIATION

Hello Turfers,

We are well into 2017 and you know what that means don't you?

For those who don't know me, I am climbing on my soap box once again to promote "Join/Renew Membership" in one of three great Florida chapters – North Florida, Central Florida and South Florida. For those who have already taken the step(s), you get a free pass and can skip this article. I won't feel offended 😊.



Thank you to those who renewed through the National STMA Conference. Please reach out to your chapter board and let them know you paid your 2017 dues at the Conference. No offense against National but like all of us has a tremendous workload and it may take a while before the membership information is filtered back to the chapter.

Now you ask, why the big push right now? I will get to it soon. Well, here are a couple of reasons you might not have considered:

1. Renewing your dues early allows the chapters to plan the budget for the coming year
2. Some (like me) are procrastinators and like to wait until the last minute. It's time to process your membership!

Please take the time to renew or join one of the three fantastic Florida state chapters.



Now I have a special sisters in the Central



to my brothers and Florida Chapter. We

finished 2016 with 150 members. As of March 28, 2017, we are at 137 renewing or new members. The board has set a goal to reach 200 members in 2017. Yes, it is a rather large goal but we believe there are lots more people in the sports turf industry that will benefit by joining our chapter.

Please take a moment and visit CFSTMA.org. Click the membership tab and then click the “renew or join” link. Kindly fill out the application and submit. Let’s see our goal of 200 members come true this year.



I know some of you are laughing, but if you have been around for a while, you may remember when we were looking for 50, 100 and then 150. So is reaching and exceeding the goal for 200 members really that far-fetched?

Dale Croft

CFSTMA President





FLORIDA CHAPTER NEWS

CENTRAL FLORIDA STMA

DALE CROFT



We had another fantastic chapter meeting on December 7, 2016 at the Seminole County Sports Complex. I want to thank everyone at the Complex for their support, expertise, and the warm welcome to all.

As always, we had a full plate with not a dull moment. I hope all sixty-six attendees

had a good time and took home some informative information – especially the presentation given by **Dr. Jason Kruse** regarding “Over-Seeding Practices”. I could tell by the questions asked some of you put on your thinking caps.

Along with the great location and speaker, we had some Chapter business to complete. Part of the business was to say good-bye to **Mark Miller**, Chapter Secretary and **Bill Johnson**, Chapter Vice President for Commercial Members. Mark and Bill have worked very hard to help make CFSTMA all that it is today. With that said, we elected and welcomed **Chris Lessig**, our new Secretary and **Julie Adamski** as the new Vice President for Commercial Members.

I would like to especially thank **Joe Gasparini** – Vice President for Professional Members, **Rob Julian** – Treasurer, and **David Nowakowski** – Vice President of Education, for agreeing to stay on the Board for another term.



Now let's talk about me. I must say I am honored and very humbled to see everyone in the room agreeing to re-elect me as President for another term. It was quite an over-whelming moment for me and I hope I can live up to all of your expectations. Along with everyone's help, we can keep the chapter moving in a positive direction over the next two years.

Once again, it takes a few to get it started but it takes an army to keep moving forward. And speaking of an army, I want to encourage volunteers to come forward and help grow the chapter and keep it on a positive track. Two immediate volunteer opportunities come to mind. First, we need people to represent the chapter's exhibit table during events. Second, we need a couple of photographers to capture chapter events to include in our magazine and website. No professional "paparazzi" required just a few people to take photos.

Before closing, I need to thank two additional people. **Ray Loudis** of Pioneer Paints and **Dave Espey** of Trugreen for providing lunch for all who attended the chapter meeting. •



A FOND FAREWELL TO A *Great Friend*

BRUCE H. BATES
1953 - 2016

Our friend Bruce H. Bates, President of Pro-Grounds Products, Inc., passed away on December 30, 2016, after months fighting lung cancer. Bruce was Secretary-Treasurer of the South Florida Sports Turf Managers Association.



Bruce Bates (I) conducts an class in striping at Marlins Park, Miami, November, 2013

Bruce helped many people play on good fields including the University of Miami Hurricanes at Mark Light Field at Alex Rodriguez Park, the Miami Marlins at Marlins Park, the Miami Dolphins at Hard Rock Stadium in Miami Gardens, and players at many high school fields. Bruce got into supplying Sports Turf Managers with sand and soil materials through Hernandez Trucking. He became an expert on soil materials including drying agents and other soil conditioners and built the business Pro-Grounds Products in The Falls area of Miami.



As his friend and business associate Kevin Hardy of Ballpark Maintenance explained to the Miami Herald, Bruce “would get out there and he would help educate coaches . . . on the latest stuff they are doing in field repair and maintenance. He was of the hardest-working guys I’ve ever known and had passion for his work.”

Phil Busey recalls that Bruce had been concerned about his weight loss and anticipating a diagnosis. “When I saw him at a meeting in Jet Blue Park in Fort Myers, in May, I was delighted to see him looking good and in action. With no hesitation, Bruce immediately told me the bad news. I was shocked not only about the diagnosis but that with such a serious illness, Bruce had driven across the state to fulfill his commitment to the South Florida Sports Turf Managers Association. It was just like Bruce. He was always thoughtful, considerate for people as individuals, and always followed through.”

In his spare time, which wasn’t much after working 12 hour days and helping so many people, Bruce got into music. There are several YouTube videos showing Bruce playing guitar.

Bruce is survived by his wife Barbara, daughters Amanda and Carla, five siblings, many loving cousins, nephews, nieces, and a group of boys, now men, he grew up with exploring the backwoods of an earlier Miami. Bruce was a kind and giving man who will be missed by many including Sports Turf Managers he helped through the South Florida Chapter. He loved music and was always fun to be with.

Pro-Grounds Products is going to continue to provide materials and service to Sports Turf Managers. Kevin Hardy is going to assist people by keeping the company going. The business will go on but we sure will miss Bruce’s music. ●



HANGING OUT

IN THE HOME OF THE JAGUARS

EVERBANK FIELD



By Nick Fedewa
Assistant Field Manager
Everbank Field - Home of
the Jacksonville Jaguars

- EverBank Field, home of the Jacksonville Jaguars, the
- annual Florida/Georgia game, Tax Slayer Bowl, and
- Monster Jam is where Mark Clay, Sports Field Manager,
- myself and up to 12 other grounds staff basically live
- throughout the season. In all honesty I don't see what
- we do here as special, we are all in the same boat, trying
- to make the best looking and safest complex, lawn, or
- field that we can with whatever means we have.

The Florida chapters are lucky because we have 3 NFL stadiums, 2 MLB ballparks, countless MiLB ballparks, Spring Training Complexes, Colleges and Universities. There is an abundant amount of resources for everyone and I can only hope that this will show what we do here at EverBank Field and help someone with their field(s).

We have a base grass of 419 that is currently overseeded with AllPro GLS Ryegrass Blend. The grass sits above a herringbone gravity fed drainage system which all drain into a collection drain around the field to 6 vaults buried behind the South endzone area. In those vaults we have 3-20 HP pumps and 1-5 HP groundwater pump. The water is pumped into a pond that we use for the outside irrigation around the Sports Complex as well.

The drainage sits in pea-gravel and is topped with around 15-16" of a sand based soil of 85% USGA spec sand, 10% peat, and 5% profile. This soil has been in basically the entire time since 1995, the first year of the Jaguars. There have been many different challenges faced when we used to grow the field back in year after year with layering of the soil with all of the dead tissue and sand topdressing. We ended up draining .02" per hour 7 years ago and knew it was no longer safe and to remove the entire layer and go back down to our original base with a little added profile into the mix. Since that time we have re-sodded the entire field each year and are able to go back down to the base soil and ensure proper drainage for everyone who steps onto the field.

As with many different places in Florida, we actually have been through a few different kinds of grass and continue to look for the best for our NFL players. EverBank Field started out as 419 Bermuda, then GN1, back to 419, used Princess77 for Super Bowl XXXIX (39) and tried to grow it in from seed after the game (didn't work) and then back to 419 again. It seems to work the best for what we need with aggressive growth, recovery from divots through strong stolons and a nice green color. With

**The drainage sits in
pea-gravel and is
topped with around
15-16" of a sand based
soil of 85% USGA spec
sand, 10% peat, and
5% profile.**

that said, the Baseball Grounds of Jacksonville have been experimenting with TifGrand and we have been very impressed with the results.

We are currently in the process of finishing up 4 years of aggressive construction around the stadium which have led to different problems and issues we have had to deal with. Everyone knows we have the largest scoreboards in the world on each end of the stadium. This alone has changed

(continued pg. 10)

the way the sun hits the field. From middle of November until the middle of February we have about 10 minutes of morning sun that will hit from the 10 yard line to the edge of the field. Trying to grow out end zone paint with indirect sunlight has not been easy and we are still looking for affordable ways to help the grass grow and make it safe.

The US Assure Clubs were rebuilt this offseason and we had 2 – 300 ton cranes on the field for 3 months. We had to then use crane mats and large timbers to protect the field wherever they were situated. Along with the clubs we had a new South entrance put in that is 30 feet wide and will open to the new Amphitheater and Indoor Facility. This has completely changed the wind pattern in the stadium. We have had to change how we paint and some irrigation times to compensate for the wind tunnel that was created. Once the Amphitheater and Indoor Facility are built, the wind will no longer be an issue and we will most likely go back to painting the way we used to.

All these bells and whistles doesn't change our job one bit, it just adds a little difficulty of how to do it. Growing a safe and aesthetically pleasing field is what we are tasked to do, first and foremost. Keeping that in mind has helped us because it reminds us to work the problem and not get bogged down in the complaining about how these changes have made us look at different options of getting the same job done.

Our annual maintenance is as varied as the schedule and weather allow it to be. Mark has a vast wealth of experience as he has been the only Sports



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Field Manager the Jaguars have ever had. This makes it easier on us because he knows what works best most of the time and we can give him inputs because he has several other jobs to do around the Sports Complex and other buildings in Jacksonville that SMG manages. We are the “boots on the ground” so to speak.

In a normal year, we will stop maintaining the field after the Tax Slayer Bowl, this year we had a High School All-Star game on January 14th, so we kept the ryegrass growing and maintenance up until then. We then will spray out the Ryegrass with Revolver and

let it die out while waiting for the Monster Jam show February 16 and 17. This is the first year with 2 shows and we aren’t sure if there will be any more damage than in years past. The guys with Feld motorsports do a great job in caring for our field and making sure everything is completely protected. After the track and protection are pulled up, we will survey the field and fix any safety issues, because there are a few events out there (Draft Day) that it needs to be safe for.

We will set up dates, based on any events to rip out the grass and re-sod. We use Bent Oak Farm in Foley, Alabama for our sod and then begin the grow-in process. Because we use the lay and play sod, we know it will be level and smooth from the get go and can concentrate on making sure the field gets the nutrients and water in needs to begin growing in our soil.

Our fertilizer and pesticide program is put together by Mark and ChemLawn applies it for us because we have a marketing deal with them. This is helpful because we don’t lose a guy when we need to fertilize. We mainly use granular applications with a few foliar applications of Apex X, Roots and Iron. We use the Iron to help with the green up the week of a game to make it really show well on TV.

(continued pg. 12)

We start to overseed leading up to the Florida/Georgia Game. We will go out around 10-11 pounds per 1000sq.ft. to start and supplement it with pre germinated seed in the divot mix and subsequent over seeding after each game. We will go through around 10,000 lbs. of seed each year on the stadium field alone each year. We will also soak around 6 bags of seed for 3 days and then put it out with the top dresser lightly across the whole field to try and speed up the germination rate. Lots of seed gets mowed/ vacuumed up so putting out like we do will make sure there is enough to always keep recovery growing as we get cold here in the North.

After the Florida/Georgia game, we will re-sod down the middle of the field around 60' wide by 300' long. End zones are always up in the air depending on the schedule of games and the weather. Once we re-sod we will overseed the sod as well and try and match it up with the rest of the field.

Post game maintenance is always the same, vacuum/blow the field off, mow and divot. We do this directly after the game and then topdress Monday. This allows for the most growth before the next game, hours are crucial in this business. •



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WWW.CFSTMA.ORG



.....With Jason Kruse, Ph.D.

Q Where can I find more information that can guide me through the design and construction/renovation of an athletic field?

As I started pulling together my thoughts to formulate an answer to this and several other closely related questions my first stop was to look into the publications and resources that are available through the Sports Turf Managers Association (STMA) website (www.stma.org) where I found some great bulletins covering a range of topics related to designing and renovating fields in their Knowledge Center. In addition, they have links to extension publications and web resources from many educational institutions across the country that are clearly marked and free to anyone. Last but not least, I pulled one of my favorite sports turf textbooks off the shelf: Sports Fields: Design, Construction, and Maintenance. I have found that this book covers nearly every topic related to management of sports fields and can serve as a nice place to start whether you are considering a new construction project or simply want to look for ways to improve the fields you currently oversee.

With a pile of reference material to review the next challenge is to make sense of everything. I am a firm believer in the idea that it is critical to

QUESTIONS?

**Send them to
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or email jkk@ufl.edu**

balance the expectations of a facility against the budget that will be available to maintain it. It is easy to get stars in your eyes when making plans for a new field. Thoughts of sand-based rootzones and perfectly manicured canopies may be dancing in your head, and that is okay if you will have the maintenance budget to properly care for the field once it is complete. At the end of the day, the goal should be to provide a safe, playable

(continued pg. 14)

THREE BASIC CONSTRUCTION TYPES

FOR ATHLETIC FIELDS

1. NATIVE SOIL
2. MODIFIED SOIL
3. SAND-BASED

surface that will meet the needs of you and your stakeholders while staying within your operating budget. In the next few paragraphs I will try to cover some of the high points that need to be given careful consideration early on in the planning stages of new sports field construction projects.

A clear set of specifications covering in detail all of the materials, soil preparation, and establishment of any athletic field is an absolute necessity. They will provide a uniform basis for the bidding process and

will establish expectations for when and how a job should be completed. While no one set of specifications will work in every situation there are certain elements that should be common to all projects including a statement of work to be done, areas involved, materials to be used, and rates and methods of application. I would be happy to help anyone who is looking to pull together their own set of specifications by sharing some example language for consideration – just send me an email.

It should go without saying that selecting a contractor who has an established history of building/renovating athletic fields is critical. You need to hire someone that understands the importance of protecting the rootzone from compaction during construction and who has access to the proper equipment to complete the scope of work at a high level. This usually means that you will NOT want to hire the local paving crew who happens to have a loader and a road grader that needs something to do. Much of the long-term success of a field depends on proper grading and drainage. This is a step that cannot be overlooked and must be done right. Without proper surface drainage low areas will develop that will hold water after irrigation or rain events. These areas will be prone to additional soil displacement and soil compaction that will make it more difficult to maintain the turf and ultimately can increase the risk of injury to players.

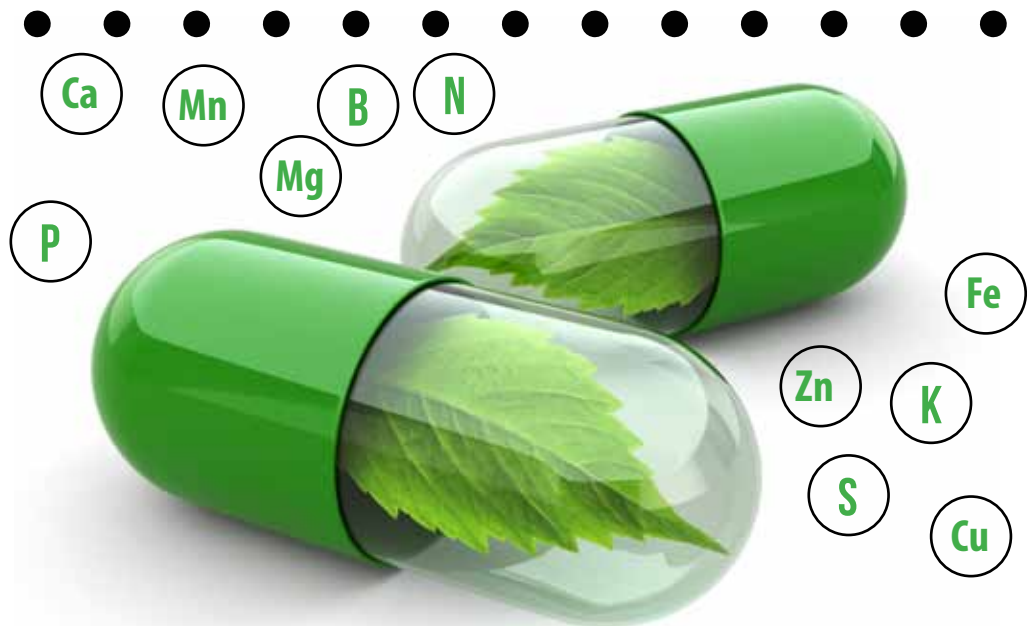
There are three basic construction types to consider for athletic fields. Native soil fields are built using existing soil or topsoil brought on to the site. Modified soil fields are ones where the native soil is amended with things like sand or peat. Sand-based fields have rootzones that are essentially 100% sand and may be referred to as soil-less rootzones or constructed rootzones. The most common type of sports field found in Florida is the native soil field. The only time I typically expect to encounter a field with a sand-based rootzone is when I am visiting

collegiate and professional athletic fields. Sand-based fields have many advantages when it comes to their ability to withstand heavy use while maintaining surface consistency and playability under a wide range of conditions. However, they are expensive to build and are more difficult to maintain than native soil fields. If a field is primarily going to be used a few nights a week and on weekends it is difficult to justify the roughly \$300,000 premium for a sand-based field.

Bermudagrass is the preferred species for athletic fields in Florida. Bermudagrass is quick to establish and recover, exhibits high wear-tolerance, and is capable of withstanding periods of drought stress without significant risk. Recent turfgrass breeding efforts have brought several new bermudagrass cultivars to the market that are worth considering. These new cultivars have shown improved tolerance to shade, drought, and wear. Two newcomers to the market that are showing promise for the sports turf industry in Florida are Latitude 36™ and TifTuf™, both of which are available through sod producers and are worth a look if you have not had a chance to see them yet. If you want to see how various cultivars compare to each other I recommend that you visit the National Turfgrass Evaluation Program website at www.ntep.org for the latest data. In addition, my colleagues and I here at UF are installing a new research project comparing many of the new cultivars this spring at the research facilities located in Jay, Citra, and Ft. Lauderdale. You can expect to see the preliminary results of these trials at our field day events and extension presentations in the coming year. ●

My Soap Box

I want to take a moment to emphasize how important and valuable a membership with the STMA can be when looking for information related to all aspects of athletic field management. We have three chapters of the STMA in Florida (North, Central, and South) that offer educational opportunities coupled with their regularly scheduled meetings along with a chance to tour host facilities and network with other sports turf managers in your region. On a national scale, a membership in STMA gives you a reason to attend the annual STMA Conference and Exhibition. As a new member you get a complimentary conference registration to the first conference you attend as long as it is within your first three years as a member. I attended the 2017 conference in Orlando where more than 1,200 sports turf managers gathered for numerous educational sessions and networking opportunities. I will be the first to admit that the annual STMA Conference and Exhibition is my favorite out of the numerous conferences and meetings that I attend each year. Next year the conference is in Fort Worth, TX January 16-19, 2018. Start making plans now to attend!



TURFGRASS NUTRIENT ANALYSIS

A COLLABORATIVE VENTURE BETWEEN SPORT TURF MANAGERS AND THE UNIVERSITY OF FLORIDA

Our efforts will result in a new classification of turfgrass nutrient interpretations deemed 'reference ranges'. What exactly are reference ranges and how do they differ from the current system? A reference range is the nutrient range in which 95% of the healthy population would normally exist. So essentially, a reference range provides an answer to the question, 'What is normal?' Once these ranges have been established, tissue samples that are of concern can then be compared to the 'normal' range and a reliable recommendation can then be provided. This method is very different from the current interpretation system which compares a tissue sample to nutrient ranges that were developed for forage turfgrasses, which is not representative of sport turf.



By **Travis Shaddox, Ph.D.**
University of Florida

The advantages of using reference ranges to interpret nutrient analysis include providing ranges specific for your cultivar, location, and time of year. Many of the current interpretation philosophies assume that nutrient ranges are similar among cultivars but this is inaccurate. Many of the newer bermudagrass cultivars have very distinct growing characteristics and therefore they are very likely to exhibit different nutrient ranges. The same holds true for location and seasons. We all know that turfgrass health and growth changes throughout the year based on light and temperature, yet nutrient analysis only provides a single interpretation. Reference ranges will change all of this by providing more specific interpretations for your situation.

In order to produce nutrient reference ranges for sport turf, an extensive database must first be created. This process involves the collection and analysis of hundreds (perhaps thousands) of tissue samples from various cultivars and geographic regions. The collection of tissue samples will involve numerous University of Florida faculty and sport turf managers. Before the sample is sent in, the turf must be identified as either 'acceptable' or 'unacceptable' according to the turf managers own standards. The samples will then be received by the UF turfgrass program and categorized according to cultivar, location, and time of year. That is the easy part. The difficulty in creating reference ranges is the analysis of thousands of tissue samples within a reasonable time, and this is where the Florida Sport Turf Managers Association is helping out. To process thousands of samples would require years (perhaps decades) of work using previous technology. However, within the last 10 years, nitrogen analysis by combustion has been gaining popularity, is now affordable, and can process samples in about 1/10 the time compared to past methods. The instrument required for combustion analysis is the LECO 628 (Fig. 1) and can analyze all nitrogen and carbon using a dry sample. After sample preparation, the turfgrass tissue is dropped into a furnace that ignites the tissue which

Background Info

Analysis of turfgrass nutrient concentrations is becoming a more common approach to diagnosing turfgrass problems. This simple process involves collecting a representative tissue sample, sending the sample to a laboratory for analysis, interpreting the results, and providing a recommendation. The laboratory results will provide the nutrient concentrations as they existed at the moment the sample was collected. These concentrations are then interpreted by comparing the concentrations to known nutrient ranges. Unfortunately, this is where the value of tissue testing becomes suspect. Established nutrient ranges for most sport turfgrasses in Florida do not exist, yet the interpretation is still provided. This method of interpreting nutrient concentrations is of little value for sport turf and will provide you with inaccurate recommendations. Thankfully, the central and south Florida Sport Turf Managers Associations have been working with the University of Florida to correct this issue.



Figure 1. The LECO 628 setup in the Ft. Lauderdale chemistry laboratory.

converts all the nitrogen into a gas. The gas then passes through a series of filters to remove any contaminants. Finally, the nitrogen gas then passes along a thermal conductor which analyzes the sample. While this may sound complicated, the process is much simpler, safer, and faster than previous methods.

In the fall of 2016, the Florida Sport Turf Managers Association, in collaboration with the Florida Golf Course Superintendents Association and the Environmental Research and Education Foundation, agreed to support the purchase of this instrument to be utilized by the University of Florida turfgrass research team. The instrument arrived at the Ft. Lauderdale research and education center, was installed in November of 2016, and has already processed more than 600 samples (Fig. 2).

So what do we do now? The UF turf team has already collected thousands of samples and we will be processing these samples as quickly as possible. However, we only have a few samples from sport turfs. In the near future, the Ft. Lauderdale facility will begin accepting tissue samples for analysis of N, P, K, Ca, Mg, S, Fe, Mn, B, Cu, and Zn. At that point, we will be reaching out to you through your local STMA chapter. Through this collaboration, we hope to provide evidence-

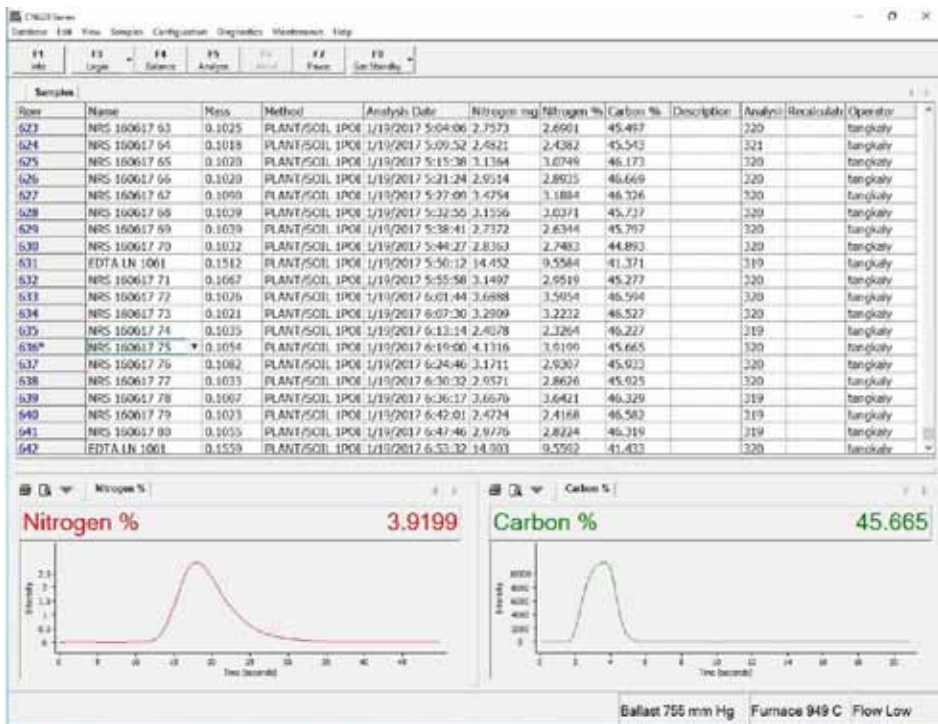




Figure 2. Screen grab of analysis software showing nitrogen and carbon percent within turfgrass tissue samples.


based interpretations that you may then be able to use to better manage nutrient applications. Therefore, in the future when you are trouble shooting turfgrass issues and you are unable to determine the problem, a rapid tissue nutrient analysis accompanied with a valid interpretation may provide you with the answer. •

Note: The University of Florida turfgrass team would like to thank the central and south Florida Sport Turf Managers Associations, the Florida Golf Course Superintendents Association, and the Environmental Research and Education Foundation for their support.




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I have seen major mistakes in sports turf fields caused by not understanding soil organic matter. Organic matter is the most valuable part, by weight, of most soils. But organic matter sources are not equal.

On the positive, high fiber organic matter sources such as sphagnum peat and reed-sedge peat are fairly consistent. In the right amounts they are beneficial to sand-based fields. In contrast, muck, which is well-decomposed and widely available in Florida, has been shown to cause dangerously low permeability, the opposite of what we want from sand-based fields.

Beyond understanding types of organic matter sources is the need to understand amount. Organic matter sources are blended with sand by volume, but the sources vary in bulk density, the ratio of weight to volume, which I will explain. This causes confusion. It is impossible to verify the mixing ratio after a root-zone mix is blended.



By **Phil Busey, Ph.D.**
Agronomist
Phil Busey Agronomy
Consulting


The dual problems of quality and amount are serious. Too much of anything beneficial can be detrimental, so if organic matter is not described and measured on a common basis, we cannot say how much is used and how much is enough but not too much.

WHY ADD ORGANIC MATTER TO SOIL?

In Florida the most obvious purpose of organic matter amendments in field soil—which should always be mixed off-site—is to correct the problems of sand. Sand-based fields are desirable but hard to manage.

A close-up photograph of green grass growing out of dark, rich soil.

SOIL ORGAN



Sand-based fields can support play activity even during the rainy season by allowing water to percolate. But organic amendments are needed to correct sand's problems of low fertility, droughtiness, and instability. To do so effectively, soil organic source quality and amount are critical because, like a lot of things, too much is just as bad as too little and can erase the benefits of sand.


Soil organic matter greatly increases nutrient holding, reduces leaching, and reduces fertilizer requirement. The ability of soil to hold most nutrients is called "cation exchange capacity" or CEC. Sand alone has very little ability to hold nutrients, so most of the CEC in sand soil comes from soil organic matter. In high pH soil, which is common in Florida sports turf fields, organic matter increases CEC about four times faster than in low pH soil. A separate feature of organic matter is that the vast majority of the nitrogen in soil is contained as a part of, and is cycled through, soil organic matter.

Soil organic matter increases available water capacity by increasing capillary (small) pores between soil particles, preserving large air-filled soil pores, and contributing to the stability of playing surfaces. Unamended sand-based fields dry out readily and are difficult to manage. A mass of sand particles has little cohesion and can slip sideways under the feet of players if they accelerate, change directions, or stop. That's what players do. A sand field without organic amendment is difficult to play, particularly for larger athletes; it can contribute to injuries, and is prone to getting torn up. I visited a field constructed for NFL practice before a SuperBowl. Large athletes were creating divots a couple feet across. When a running athlete made a quick turn, a huge basin of soil tipped up sideways creating a crater. These were sand fields with no organic matter added.

(continued pg. 22)



IC MATTER



Even non-sand-based fields benefit from organic matter because it helps cement soil particles into crumbs, giving structure to soil to aid in internal drainage. Without organic matter, finer loamy and clayey soils have no structure and no tilth and are hard like a brick, and generally impenetrable to plant roots and there is almost no soil infiltration. Again, soil organic matter is the most valuable part of soil.

What made me aware of soil organic matter over the years was the NFL field and other mistakes in not amending sand-based fields with organic matter, or not even understanding organic matter. At one extreme, an architect proudly reclaimed a spoil of sandy muck for construction, which was a disaster because the resulting fields were always wet. In another case which wound up in litigation, a sub-contractor was enticed to use dredged soil in a major soccer field even though the soil survey showed the area to be a bog.


BULK DENSITY IS WEIGHT DIVIDED BY VOLUME

But what really got me interested was an 80:20 sand:peat mix that a friend bought for a field. When I had it tested, the laboratory said it was only 0.66% organic matter, not 20%. What's going on here?

Sand is blended by volume but laboratories measure organic matter by weight. Organic sources such as peat have low bulk density, weight divided by volume, compared with the sand they are mixed with. When a light, low density material such as peat is mixed into sand with high bulk density, the dilution of the organic matter by weight is several times larger than the dilution by volume. So you would expect smaller organic matter content by weight than the volume mix ratio.

Bulk density is normally measured in metric units, such as grams per cubic centimeter, so we can also call it specific gravity. Water under standard conditions weighs 1 gram per cubic centimeter, so it has a specific gravity of 1.00 while most sports turf soils have a specific gravity or bulk density around 1.5. In contrast, the bulk density of common organic sources goes all the way from 0.05 to 0.75





My friend's 80:20 mix was supposed to be 20% peat by volume. We can't know for sure if that is what the sand supplier actually provided, because the only data was 0.66% by weight. But with some assumptions we can determine if what the sand supplier attested was even possible. I developed and posted an online converter on my website philbusey.com to solve this problem. As an example, let us be very generous to the sand supplier and give the benefit of doubt. Assume that a high quality sphagnum source was used, with bulk density typical, about 0.13, and organic matter content 95% of the organic source. Assume also that the original sand had bulk density of 1.6. By the converter, the resulting mix should have had 2.01% organic matter by weight, not 0.66%. The deficiency from what was paid for was 2/3. If the sand supplier had used a lower quality organic source, as was probably the case, the results were even worse.

Not surprisingly, vendors of soil mix don't report the characteristics of the organic source, unless you ask. These are bulk density, organic matter content, and fiber content, which are all important quality factors.

HOW MUCH ORGANIC MATTER SHOULD BE ADDED TO SAND SOIL?

There are general principles of soil mixtures but most of what we know is based on tedious research by making up a wide variation of mixtures and testing their characteristics under precise laboratory and field conditions. Soil physical characteristics of interest to sports turf managers for growing fields are hydraulic performance (water retention curves and conductivity), capillary porosity (relative volume of small pores that hold plant available water), and macroporosity (relative volume of large pores that diffuse oxygen to roots and percolate water down by gravity). Other physical measures of root-zone soil mixes that are interesting indicators but less consequential are bulk density and compression index.

Ohio State University's Dr. Ed McCoy is one of the leading scientists who have done much of the meticulous research on soil amendments. After decades of research, he said "it is difficult to surmise a precise rule" but that, "10% to 20% by volume of sphagnum peat or quality compost and

(continued pg. 24)



5% to 10% of a reed-sedge peat is appropriate for most zone sands.” McCoy pointed out that about 15% by volume of a fibric sphagnum or 7.5% by volume of a hemic reed-sedge peat would result in 1.5% organic matter by weight. This is probably a better target than the 3.5% that had been sought in earlier publications and is at the low end of the scale of the USGA Recommendations for Putting Green Construction which are 1% - 5% (ideally 2% - 4%) organic matter by weight.

Most of the variation in recommended organic matter mixing ratio probably involves inconsistency among sources and a failure to control mixing ratios based on weight as well as volume. The median bulk density that I have observed from many reports of sphagnum peat is 0.13 (range 0.07 to 0.25) while the median value of reed-sedge peat is 0.23 (range 0.16 to 0.41), a difference of about 2 X, which almost perfectly explains the 2 X difference in McCoy’s recommended volumetric mixing ratios for the two different peats. Both sphagnum peat and reed-sedge peat have very high and consistent organic matter content, median values 95% and 90 %, respectively. More well decomposed muck is not recommended and is generally not suitable for amending sand fields because it has smaller particle sizes and little fiber.

Peat is very compressible and the bulk density varies under natural conditions with depth and other factors. By its nature peat develops under wet conditions but once it dries it can be fluffed up. Vendors can theoretically fluff up the peat before incorporating it. In my opinion, this is probably less of a source of error and less of a problem in quality control than the actual source.

There are inorganic alternatives that may give benefits to sand-based fields as high quality organic matter sources. But unlike sphagnum and reed-sedge peats, research is still ongoing on inorganic alternatives, the main ones being clinoptilolite zeolite, calcined clay, and diatomaceous earth. •



Recommendations

The most desirable organic sources for amending sand-based fields are sphagnum peat and reed-sedge peat, at about 15% and 7.5%, respectively. These are "fibrific" sources having high fiber content and very low bulk densities and high organic matter content. In specifying and describing soil mixtures, the organic matter source should be described by type, volume mixture, bulk density, organic matter content, and fiber content. At a minimum, a sphagnum or reed-sedge peat would be specified, at least 85% organic matter.

In conclusion, when soil mixes are specified and blended, it is done by volume. That's easy and looks more precise than weight because organic sources such as peat often contain a lot of water. Who wants to pay a high price for water? But if you go by volume, and not know what was used, you may be paying a huge price for air and damaging the sand field.

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Here are a few tips from STMA on the care of your Spring season turf. Please keep in mind that they are just tips and you will need to develop a plan that works for you.

APRIL - MAY

MOWING

Recommended mowing heights is 1" - 2" and should not exceed the 2 inches. Mow as often as need be so that we are not removing more than 1/3rd of the leaf blade. As bermudagrass starts to green up mowing can take place as often as 2-3 times per week. Mowing early in the day to expose the plant to light also helps to aid in spring green up.

If you have overseeded with ryegrass reduce the mowing height of the ryegrass 2 weeks before the bermudagrass comes out of dormancy. Mowing direction is also very important, remember to change your mowing direction each time that you mow, this will help to promote upright growth and can help to reduce wear from the equipment continually following the same pattern. Also if you have more than one person mowing on your crew make sure to right down the way you just mowed somewhere like a desk calendar and tell someone. This way if something happens then the next person will know which way to go.

IRRIGATION

The recommended amounts per week minus any rainfall is 1" - 1.5" per week. It is important to know the soil physical properties (water infiltration rate, compaction, soil texture, soil structure, infiltration, water holding capacity, and soil drainage) of your root zone to establish a successful irrigation program. To establish a successful program the depth of the root zone must be known. Deep infrequent irrigation that wets the entire root zone generally 4 inches in depth leads to the healthiest turf. Always water at the first sign of wilt.

FERTILIZER

For fields overseeded with ryegrass in April and May .5 - 1 lb. of soluble N/1000sqft. A soil test should be conducted on a routine basis, every one (sand-based fields) to three years (native soils) is recommended. A soil test will analyze nutrient requirements, pH, phosphorus and potassium levels and will provide the best guide to fertilization to maintain or achieve a healthy field. Remember to check with your local extension agent for any black out days that may apply.

CULTIVATION

Bermudagrass fields should only be cultivated when they are actively growing. Dethatching or core cultivation should take place on bermudagrass after spring greening is completed. Some of the benefits for soil cultivation are:

- Physical penetration of the soil improves air, water and nutrient movement within the root zone.

- Correct or alleviates soil compaction. This is especially important for high traffic areas such as goal mouths. It may be necessary to cultivate these areas 6-8 times per year.
- Improve water infiltration
- Improve gaseous exchange between the soil and atmosphere.
- Reduces thatch

WEEDS

The best defense against weeds is by increasing density and vigor of Turfgrass to discourage weed competition.

- April - Preemergence/ postemergence control of crabgrass, goosegrass and summer broadleaf weeds, grasses, sedges, broadleaf.
- May - Postemergence control of crabgrass, goosegrass and summer broadleaf weeds, grasses, sedges, broadleaf, annual and perennial broadleaf weeds.



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Florida's STMA Chapters welcomes new members. We are a very inclusive organization and have a membership category for anyone interested in learning more about sports field management.



___ **\$50 Sports Turf Manager** - If you are primarily responsible for managing or maintaining a sports field(s). This position is an eligible voting member and hold elective office.

___ **\$35 Sports Turf Manager Associate** - If you are primarily responsible for managing or maintaining a sports field(s) and your organization already has a Florida STMA chapter member employed. The Associate(s) has the same benefits and privileges as the Sport Turf Manager. Dues are lower because of multiple members (groundskeepers, turf specialists, grounds maintenance, etc.).

___ **\$50 Academic** - If you are in teaching, extension or research. This position is an eligible voting member in the Chapter and hold elective office.

___ **\$75 Commercial** - If you work for a company engaged in a commercial enterprise providing services and/or products to the sports turf profession (consultants, architects, designers, contractors, management companies, distributors and manufacturers, etc.). This position is an eligible voting member and can hold elective office available to the commercial category.

___ **\$50 Commercial Associate** - If you are the 2nd person (or more) from a commercial company. All Commercial Associates **must** first have a Florida STMA Chapter commercial member at their company before the lower dues category can be selected. This is a non-voting member and not eligible to hold office.

___ **\$35 Affiliate** - If you are indirectly or on a part-time basis involved in the maintenance/management of sports field(s) (coaches, athletic directors, volunteers, or full-time students). This is a non-voting member and not eligible to hold office.

After being accepted for membership, members of any Florida Chapter have the same member benefits and privileges in all chapters except the right to vote and hold office. Voting rights and right to hold office are restricted to a member's home chapter, defined as the chapter to which member's dues are paid. Members may only claim Home Chapter membership in a single chapter.

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