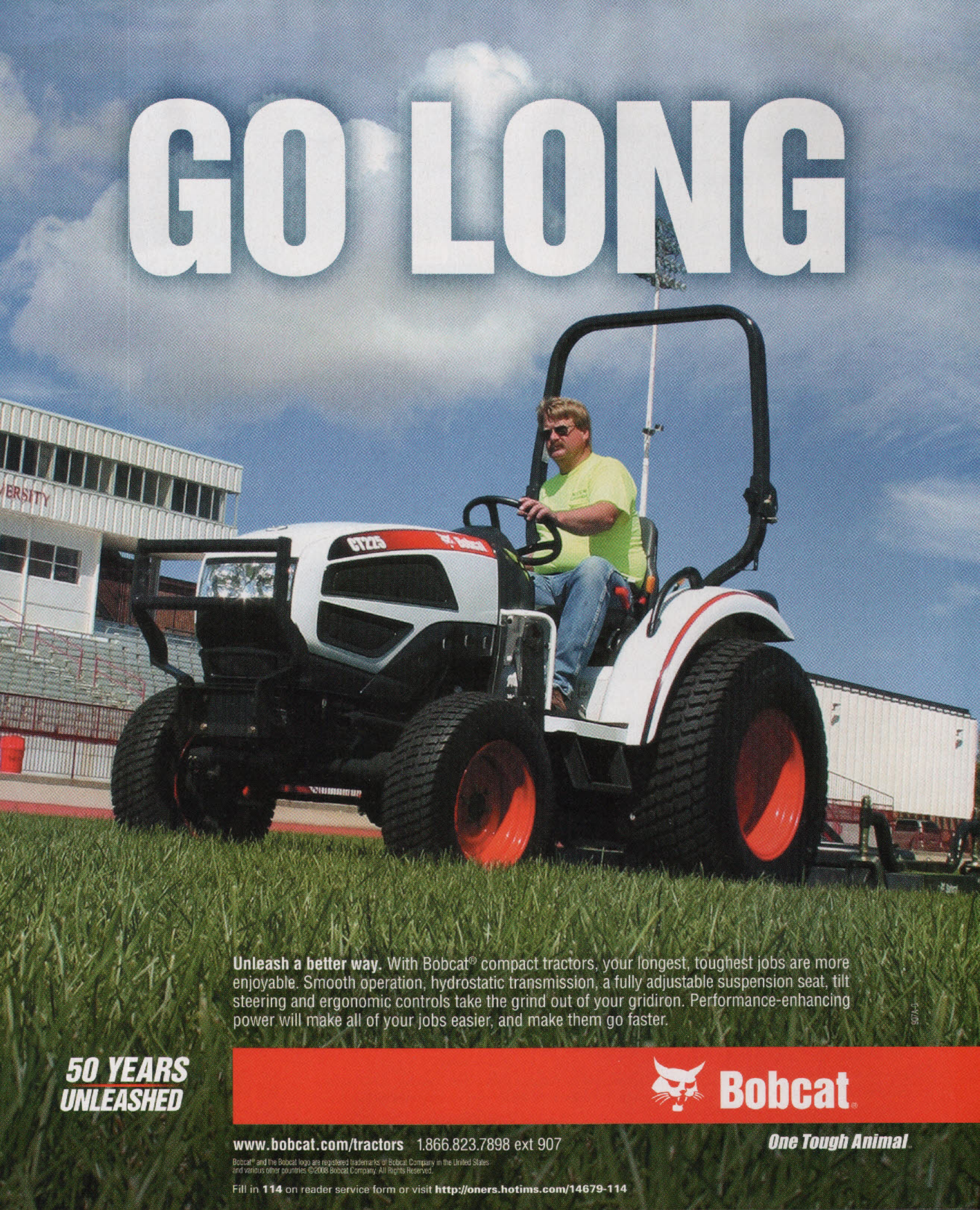
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Tifsport on the left, Patriot on the right

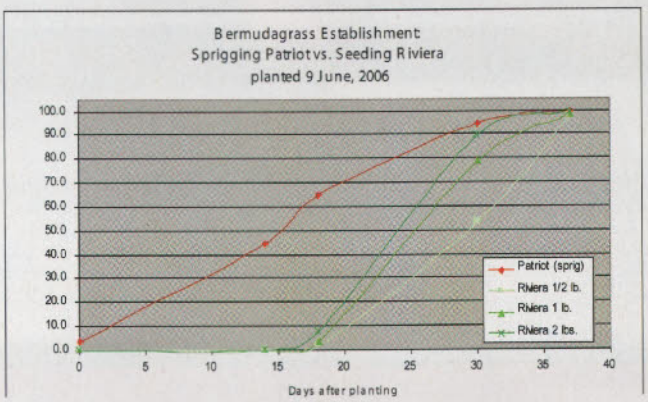
to insulate the turf, retain heat and also help protect the dormant turf from desiccating winter winds.

What's new in bermudagrass research?

Breeding programs continue to focus on selecting and improving bermudagrass aesthetic qualities, darker color, finer leaf texture, sod strength and resistance to the most damaging disease of bermudagrass, spring dead spot. They are also centered on introducing cultivars with the best possible cold tolerance so that the grasses have the widest range of adaptation.

A recent review article outlined the exciting research that has taken place in bermudagrass breeding (Anderson et al., 2008). Among the newer commercially available bermudagrass cultivars with excellent cold tolerance, three newer cultivars have risen to the top. Two are seeded: Yukon and Riviera; and the third is the vegetative cultivar, Patriot.

Among these, Riviera and Patriot have shown very good wear tolerance in our trials in West Lafayette, IN. Although there have been some differing reports by other researchers, differential cultivar responses are not uncommon and this could be due to differences in regional climactic conditions as well as many other management factors. Regardless, when selecting a cultivar for your particular location and intended use, it is best to do your homework. As always, one source of unbiased information is state turfgrass specialist as well as research and field plots often shown at regional turfgrass field day events.



Comparison of bermudagrass establishment rates under optimal planting times for West Lafayette, IN. Seeding rates are actual seed not pure live seed which would be approximately 50% less.

Our research program at Purdue continues to evaluate these and emerging cultivars. The objective of our studies is to take promising cultivars and evaluate the effect of management programs to help turf managers make better decisions regarding management requirements. We have focused our attention on fertility practices, plant growth regu-

Turf Tip

Get Quick Full Coverage and Better Tolerance Year 'Round

May 3: Under germination blankets, 5 days after seeding (DAS)

May 10: Germination underway (12 DAS)

May 29: Second mowing and nearly full coverage (31 DAS)

Razorback Football Stadium Charts Rapid Results with Riviera

Pat Berger — *University of Arkansas, Arkansas Athletic Dept., Sports Turf Manager Mens Athletics*

Due to aesthetic problems with its previous bermudagrass over several seasons, Razorback Stadium's field underwent a renovation — and a fast transformation. After seeding the new field with Riviera, University of Arkansas sports turf manager Pat Berger and his staff documented its grow-in to full coverage in about a month's time!

Since then, they've also found Riviera to have better winter hardiness and traffic tolerance than their former major-brand bermuda. Riviera's lush green color measured up to their expectations too. The word from Razorback Stadium: "Make sure to forward this turf tip to others..." So we are.

Across the U.S. and worldwide, sports turf managers are recommending Riviera for its quick grow-in and greenup, top-ranked turf quality, recovery rate, cold and drought tolerance, and more. To get your own success story going, talk with us now.

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lators to enhance mowing and traffic or wear tolerance.

To date the two best cultivars that we have evaluated are the seeded bermudagrass cultivar, Riviera, and the vegetative cultivar, Patriot. Both of these have strengths and weaknesses but are still far superior to many of the previously used bermudagrasses for our region. Probably the biggest advantage to these cultivars is their rapid establishment rate when planted during optimum growing conditions.

A paradigm shift for fertilization

The general rule of thumb regarding turfgrass fertilization is that they should only be fertilized when green tissue is present and modestly during periods of active growth. This ensures efficient nutrient uptake while minimizing unwanted shoot growth and maximizing carbohydrate or plant food accumulation. For fall use athletic fields, a field manager's goal is to promote growth and recovery from intensive use for the entire season which for many may continue well into early November.

Since bermudagrass is a warm-season turfgrass with maximum growth during midsummer, it is a widely held belief that bermudagrass should only be fertilized during the summer months because previously there had been concerns that late-season fertilizer applications would be detrimental to winter-hardiness. Our research at Purdue and that of other researchers working in the upper transition zone has shown that bermudagrass can be fertilized modestly (e.g. 1 pound of actual N monthly) into early October without negatively affecting winter survival. In fact, in many years where turf has received supplemental early fall N, the turf actually greened up faster the following spring.

Once the turf is dormant, however, N should not be applied because it will not be taken up and the N will be subject to leaching. This fertilization strategy stimulates growth later into the use season, helping to maintain turf cover. Even as durable and vigorous as bermudagrass can be, it is still a living plant and can be subject to stand decline and losses in density when overused. By the same token, overstimulation of growth through aggressive fertilization and irrigation can result in excess thatch resulting in shallow rooting, less stress tolerant plants and spongy surfaces prone to more frequent mower scalping. This is particularly true for newer aggressive cultivars like Patriot.

Other species?

Most of this article has focused on bermudagrass but it is not the only choice for athletic fields. In general, spring and early summer use fields perform best when planted to Kentucky bluegrass, perennial ryegrass and even certain cultivars of even some of the newer turf-type tall fescue cultivars. Of these species, Kentucky bluegrass may have an advantage over ryegrass or fescue in that it produces rhizomes which promote recovery into worn or thin areas. If not properly maintained, or simply overused, bunch type grasses like tall fescue or ryegrass will severely clump and result in a bumpy surface.

For now, the most vigorous and reliable turf species for summer and fall use athletic fields from the transition zone and South appears to still be bermudagrass.

Periodically the question comes up regarding the use of zoysiagrass for athletic fields. Although the industry standard for cold hardiness is Meyer, which is more reliable than many bermudagrass cultivars for winter hardiness, this species would probably not be a good species choice for athletic fields. The primary reason is that zoysia is inherently slow growing and does not recover from excessive wear very quickly. Additionally, zoysiagrass may be prone to severe disease problems from *Rhizoctonia* large patch (zoysia patch), a disease from which zoysiagrass is very slow to recover from. Like anything in the turf industry, only time will tell on the use of zoyisagrass for athletic fields. I have been told there are actually a few zoysiagrass fields intended for use in the Beijing Olympics in this summer. But again, a caveat for these fields, this world sporting event is only being held for a few weeks in the hottest part of the summer, August. Zoysiagrass may produce an acceptable surface during that short time period of active growth.

For now, the most vigorous and reliable turf species for summer and fall use athletic fields from the transition zone and South appears to still be bermudagrass. Although winter-kill may be a risk in some years, increasingly hot and dry summers are more likely to damage cool-season grasses in almost all years. The advantage for using bermudagrass is that the renovation period, summer, can be used to re-establish bermudagrass and seeding bermudagrass for bermudagrass occurs in what is often a quiet period during part of the summer is now even easier than before. By comparison, cool-season grasses are best must established in late-summer which coincides with periods of intensive athletic field use for recreational sports.

The future continues to look bright for this species and those that want to continue to manage a natural grass field. For some athletic field managers the advances in bermudagrass breeding and our understanding of establishment and maintenance requirements for this grass make it an ideal species.

Let's face it, if you are managing a natural grass athletic field regular turfgrass renovation and re-establishment is an on-going process. Players continue to prefer natural grass surfaces for many reasons. The idea of rotating traffic, limiting and taking areas out of use make it easier. One example would be for soccer fields, often the goal mouths become worn due to overuse. Altering practice locations by moving portable goals to the side-lines to create make two-half fields perpendicular to the game field or moving the portable goals out to the top of the penalty box are just some methods that can be employed to spread wear and promote recovery in the game-areas. I am confident that plant breeders will continue to improve all species and as turf researchers and managers we must learn to take advantage of the strengths of these new cultivars and truly put them to the test. ■

Dr. Cale Bigelow is an assistant professor of agronomy/turfgrass science at Purdue University.

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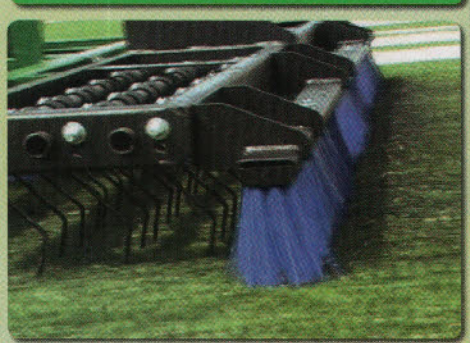

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Winter Springs (FL) Parks and Rec use three different varieties of paspalum.

USING PASPALUM: ONE MANAGER'S PROS AND CONS

By Chuck Pula

In the City of Winter Springs we have three different varieties of paspalum, Aloha, Sea Isle 1 and Sea Dwarf. All of these are grown in different soil material and have almost the same characteristic in growth except on how fast it grows. The bottom line is to get the soil to hold moisture and feed it lightly monthly. Also, a good irrigation program is crucial.

Paspalum pros

• Durable. Wearability is great but you still can't abuse this turf ; it needs down time especially after a season of football and lacrosse.

• Don't have to mow this grass as much as bermudagrass. Our staff during the summer months only mows the turf once a week instead of twice.

• With a once a month fertilization program it will strip when mowed with reel mower.

• Salt can help with reducing the amount of weeds in the turf at a rate of 400 pounds per acre.

• Doesn't need as much herbicide as bermuda because of the salt application. It will require under half the amount of herbicides compared with bermuda.

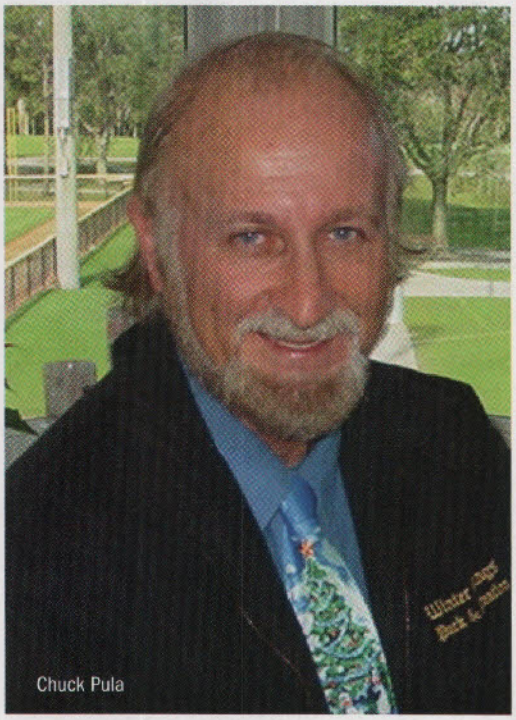
• Paspalum will rebound quickly after effective treatment of any insect infestation, usually within 2 weeks.

• Paspalum grows well with under an inch height of cut. This chokes out weeds and the turf grows horizontal better than if the height is longer.

• Drought tolerance is good; it will not die as fast as bermuda in dry conditions. It doesn't shock (turn brown) as fast as bermuda.

• The roots grow more rapidly than 419. The roots can be twice as long as bermuda roots if grown in the same soil conditions.

• It really likes K-Mag fertilizer because we have applied this product and had great results in the greening and roots of the grass after applications. Every other month is a good application of Magnesium.


Chuck Pula

• Overseeded rye can be removed quicker with salt. The salt will diminish the rye grass within a week's time with 400 pounds per acre rates.

Paspalum cons

• Encroachment of bermuda is intense especially when a low fertilization program, which I define as every other month, is in place. The only way to get rid of this bermuda is Round Up or grow the paspalum over the bermuda and choke it out. Salt will slow the growth of the bermuda so the paspalum can take over but in large bermuda areas you need Round Up and/or cut out. Salt will slow the rate of growth because it burns the bermuda while leaving the paspalum unharmed.

• A good soil base is crucial for a recreational area when growing paspalum for recovery. A good soil base is an area that holds moisture and holds nutrients in the grass.

• Be careful with the cut worms; they can destroy a field but if you get to them quickly enough the paspalum will rebound quickly.

• Doesn't grow as good in sandy material. If you have a sandy soil, topdress with organic material.

• This variety likes to be aerated a lot and if you do not aerate you will have witches' broom or clumping as grass grows. At least four times a year should be sufficient.

• If you want it to be green then you need to water it as much as you would bermuda, at least ¾ inch of water twice a week. ■

Chuck Pula is the director of Parks and Recreation for the City of Winter Springs, FL.

Building a better operating budget

By Don Savard, CSFM, CGM

Don Savard, CSFM, CGM

Every year schools, park departments and other organizations that operate Facility Management Departments create operating budgets for their next fiscal year. When financial officers attempt to connect dollar amounts to the maintenance and operation of a sports field or grounds department, sometimes the most crucial details are missed. Worse yet, the input of an experienced grounds or sports field manager is often underutilized and the result is an underfunded budget and an inadequate grounds maintenance program.

Budget conscious sports field and grounds managers who know their costs can provide invaluable information for creating an operating budget.

A budget is nothing more than a plan described in financial terms. There are two sides to a budget, the money you have to spend or the revenue side and what you are going to spend it on or the expense side. These two sides must equal (or balance). Operating budgets or expense budgets list the primary activities undertaken by a unit to achieve its goals, convert them into line items and allocate a dollar amount to each.

There are a couple of ways to begin when creating a budget. A traditional way is an Incremental Budget, taking last year's budget and inflating it by a percentage, adjusting each line item until it balances. Another way is to list all of your projected activities and find the costs and justify the request for funding. This is called a Zero Base Budget. Both methods have advantages and disadvantages.

Many budget administrators use the Incremental Budget approach because it is simple and easy to understand. The budget remains stable from year to year and change is gradual. Managers can continue to operate

John Mascaro's Photo Quiz

Can you identify this sports turf problem?

Problem:
Dead area in front of sidewalk

Turfgrass Area:
Stadium field

Location: Tallahassee, FL

Grass Variety: 419 bermuda overseeded with rye

Answer to John Mascaro's Photo Quiz on page 45

John Mascaro is President of Turf-Tec International

their departments as they have before. But if there were problems, such as waste or underfunding, they will likely remain.

The Zero Base method is the reverse. Rather than building from the previous year's budget, every projected activity and expense is listed from scratch, and every line item must be justified. This approach requires more time and effort but if done correctly results in a right sized and more accurate budget. Zero-based budgeting is useful for grounds and facilities departments to show to the administration or management what the costs really are, especially where the output is difficult to identify and all expenditures are looked at as overhead.

Regardless of which budget method you use, there are certain steps necessary to gather the information needed to build a budget that works. You must know how the site will be used. For example, is it an open space used for a variety of activities, or will it is used for a single purpose such as baseball games? What are the expectations of the owner? Will certain rules or conditions apply such as the amount and severity of use, non sports activities such as concerts or use during inclement weather? Different sites will have different budgets based on their maintenance levels. Find out the expectation of the owner first. Without the support of the owner, you might waste your time to budgeting

Here's an example, using a Level 3 maintenance program:

Mowing

- Mow 2 times per week or as needed to maintain 2-inch mowing height year round
- Never removing more than 1/3 growth at any time
- Sharp mower blade
- Alternate mowing pattern each time
- Remove excess clippings as needed

Irrigation

- Maintain soil moisture equivalent of one inch rainfall per week using sprinklers as needed

Nutrient Management and Pest Management

- Annually; 3.75 lbs./1000 sq. ft. Nitrogen and Potassium, 1 lb./1000 sq. ft. Phosphorus, based on soil test results
- Pest control products as required

Aeration

- Deep root aeration in spring and fall
- Aerate monthly, or more as required
- Other aeration methods employed as required
- Machine seeding in the spring and fall during optimum time
- Overseeding wear areas weekly during growth periods

Sports fields: Level 3 Maintenance

- In compliance with sport specific regulations and standards
- Clean, safe, playable and in good repair
- Game lines: always visible, fresh for games
- Field repairs: made promptly as required

Pest Management Economic Thresholds (Sample)

PEST	COUNT OR % SQ. FT. OF AREAS	ACTION LEVEL	CONTROL TREATMENT	POPULATION REQUIRED FOR PROACTIVE TREATMENT NEXT SEASON
Diseases: Brown Patch, Gray Leaf spot, Pythium	3-4%	5%	5%	No program
Surface Feeding Insects: Chinch bugs, Sod Webworm	2 insects	2 insects	4-5 insects	4-5 insects
White Grubs:	3-4 larvae	3-4 larvae	5-6 larvae	5-6 larvae
Green June Beetle Grub	1 larvae	1 larvae	2 larvae	2 larvae
Broadleaf Weeds	2-3%	2-3%	2-5%	No Program
Grassy Weeds	2-3%	2-3%	2-3%	3-4%