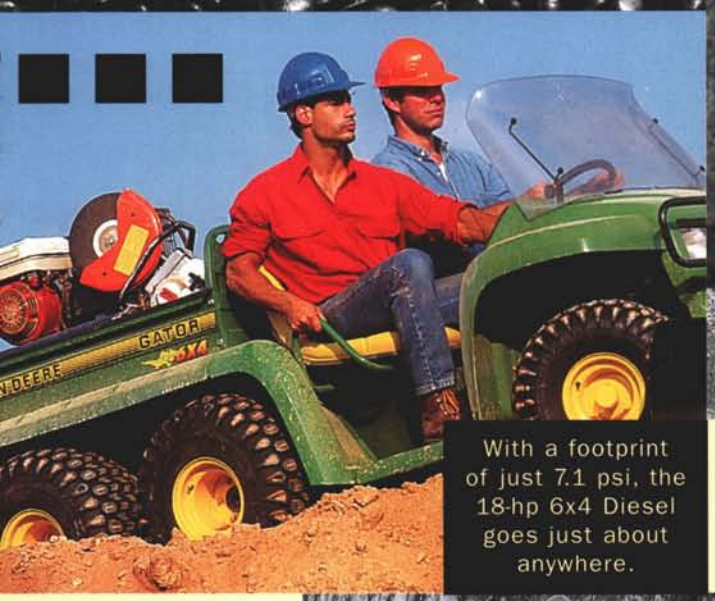
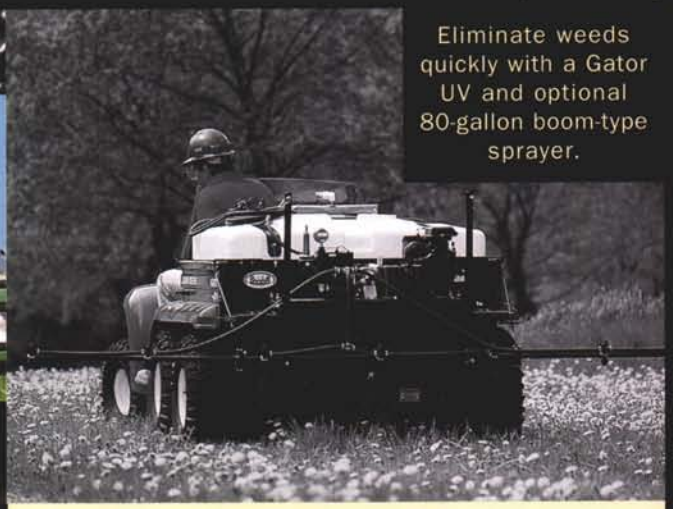


With a footprint of just 7.1 psi, the 18-hp 6x4 Diesel goes just about anywhere.



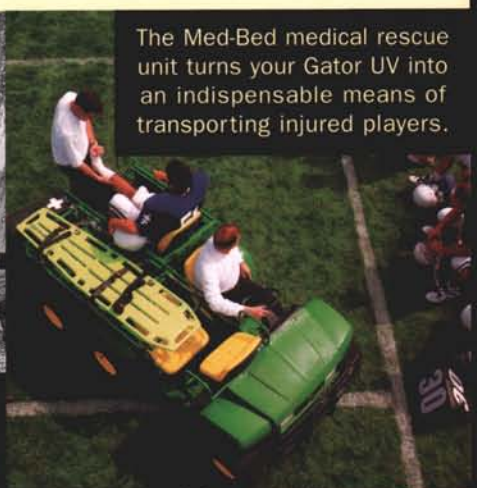
Eliminate weeds quickly with a Gator UV and optional 80-gallon boom-type sprayer.

and Works...

...

Despite their high flotation characteristics, Gator vehicles can't quite walk on water.

Optional lift kit lets you raise or lower the bed easily with a dash-mounted switch.



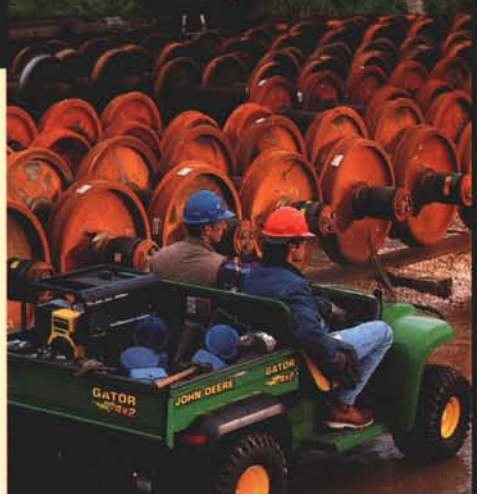
The Med-Bed medical rescue unit turns your Gator UV into an indispensable means of transporting injured players.

and Works

With a John Deere Gator® Utility Vehicle, the play is **not** the thing. Gas or diesel, 2- or 4-wheel drive, the concept behind the Gator is simple — it works. And works. And works. Stable, surefooted and able to seat two-up comfortably, a Gator vehicle can tote up to 1,400 pounds* — turf, trail, or no trail at all.

These go-anywhere haulers are the elite of the working class. The best full-time, no-nonsense, all-wheels-on-the-ground, off-road pack animals you'll find.

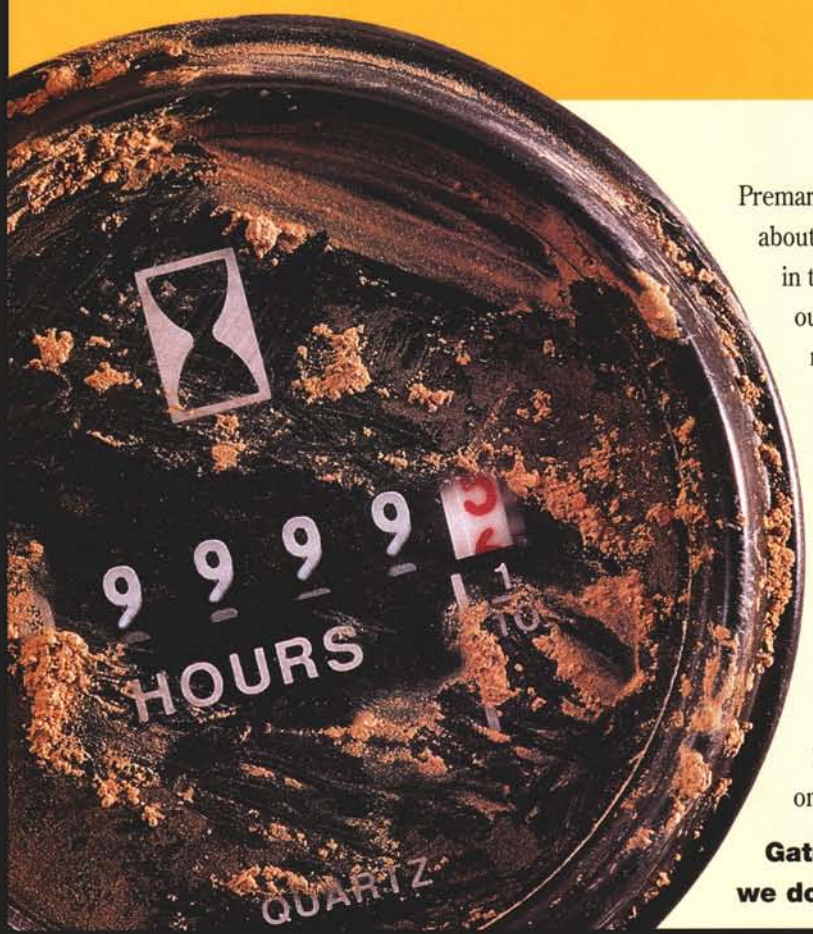
Get your hands on a Gator today.



Bedliner option helps protect the box from cargo damage.

*Total capacity for the 6x4 Diesel — includes 200-pound operator, 200-pound passenger and maximum box capacity.

And We've worked it Thousands of Hours to prove It



Premarket field testing can tell you a lot about the way your equipment will hold up in the real world. In testing conducted at our field sites in Arizona, representative models of the 4x2, 6x4, and 6x4 Diesel really showed their stuff — logging more than 27,000 total hours without a major equipment failure. Pretty impressive numbers to say the least.

But the real test is the one you conduct yourself in your own applications. To line up your personal on-site test, contact your local John Deere dealer. For the one near you, call 1-800-537-8233. Or visit us online at *http://www.deere.com*

Gator Utility Vehicles — we don't build them for the fun of it

DKE973007(97-02) - Litho in U.S.A.

STMA Action *continued from page 18*

maintenance issues. An information packet on football field maintenance also will be provided. Featured speakers include Mike Andresen and the Jack Trice stadium staff, and Jeff Salmond and Gary Peterson of ISU. Registration for this workshop includes a ticket to the game.

For more information, contact Lori Westrum at The Turf Office: (515) 232-8222 (phone) or (515) 232-8228 (fax).

Southern California Chapter: The Southern California Chapter will hold a Fall Football Event in San Diego on October 18. Activities start at 2 p.m. with a tour of Qualcomm Stadium (formerly Jack Murphy Stadium). A tailgate party follows the tour. The group will then attend the game between San Diego State University and UNLV.

A December pesticide workshop to be held at Mira Costa College is in the planning stages. There will be 8 hours of CEUs offered at this event.

Plan now to attend a Super Bowl seminar in early January at Qualcomm Stadium, the site of the 1998 Super Bowl. Further details on these December and January events will be announced soon.

For further information, contact The Chapter Hotline: (1-888) 578-STMA (toll free in Southern California).

Midwest Chapter: The Midwest Chapter of STMA will hold its annual meeting on December 2 in conjunction with the North Central Turfgrass Exposition at Pheasant Run Resort and Conference Center in St. Charles, Ill. The annual meeting will wrap up that day's special sports-turf track of educational sessions. The NCTG Exposition runs from December 1 through December 3.

For more information, call The Chapter Hotline: (847) 439-4727.

Colorado Chapter: The Colorado Chapter of STMA will again participate in the Rocky Mountain Regional Turfgrass Association (RMRTA) Annual Turf Conference and Trade Show. This event will be held December 10-12, 1997, at Currigan Hall in downtown Denver. For more information on this event, call (303) 770-2220.

For information on the Colorado Chapter and other upcoming activities, call the 24-Hour CSTMA Chapter Hotline/FAX: (303) 438-9645.

Minnesota Chapter: As part of the Minnesota Turf & Grounds Foundation, the Minnesota Chapter of STMA will take part in the MTGF 4th Annual Conference and Trade Show, which will be held December 10-12, 1997, at the Minneapolis Convention Center. For more information on this event, contact Scott Turtinen: (612) 473-8169.

For information on the Minnesota Chapter's schedule for the conference or other activities, contact Connie Rudolph: (612) 646-1679.

MAFMO: For information on the Mid-Atlantic Athletic Field Managers Organization (MAFMO Chapter STMA) or upcoming activities, contact The Hotline: (410) 290-5652.

KAFMO: For information on upcoming activities or the Keystone Athletic Field Managers Organization (KAFMO Chapter STMA), contact Dan Douglas, Reading Phillies Baseball Club: (610) 375-8469, extension 212.

STMA Chapters on the Grow

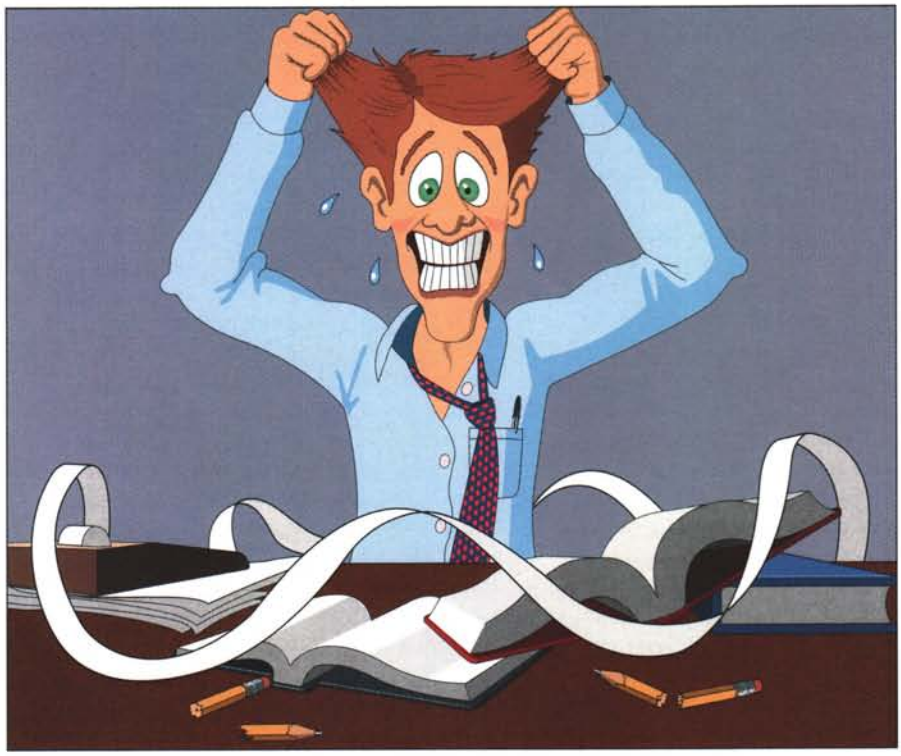
Northern California: Touchdown! A Northern California Chapter of the Sports Turf Managers Association is now open for business. A grand opening is currently being planned for mid-November in the San Francisco Bay area. Become an active member today! Several Commercial Charter members are already on board and participating. Membership categories include Charter Commercial, Commercial, Professional, and Student. Be a leader in the industry and take advantage of the vast networking opportunities.

For membership and other information about the Nor-Cal STMA Chapter, contact Gail Setka at the UC Davis Grounds Office: (916) 752-5035 (phone) or (916) 752-9631 (fax).

Arizona: Mark your calendars for December 4 and 5 and join the Sports Turf Managers Association of Arizona in two major events in Yuma. Begin with the Second Annual City of Yuma Golf Tournament, which will be held at Desert Hills Golf Course in Yuma on December 4. Then take part in the Fifth Annual City of Yuma Sports Turf & Equipment Field Day on December 5. For more information on either of these events, contact Larry Munoz: (520) 329-2824.

For information on STMA of Arizona or other upcoming events, contact Bill Murphy, City of Scottsdale Parks and Recreation Department: (602) 994-7954.

Great Plains: For information on the Great Plains Sports Turf Managers Association or upcoming activities, contact Mark Schimming, City of Wichita: (316) 337-9123. ❑



Fine-Tuning the Budget for 1998

By Steve and Suz Trusty

It's neither rocket science nor fun and exciting, but it may have as much impact on your professional life in 1998 as anything else you do. The budget you submit for the coming year is your game plan for the maintenance practices that follow. While you may have some flexibility within the budgetary parameters, the hard cold facts are: the better you plan, the more you can accomplish.

Where Do You Stand?

Before you wrap up plans for the 1998 budget, know exactly where you stand for 1997. Pull out your original budget proposal and if changes were made, as usually happens, the final version. Compare both of these to your actual expenditures, by month and, if possible, by project and by field or facility. For example, check your monthly totals for labor; supplies; and equipment operation, purchase and maintenance. Then break down your investments in labor, products and equipment usage for such categories as the baseball stadium, the soccer/football practice fields, and the construction of the new softball practice field.

Anticipate expenditures to the end of the year within the same categories. Now compare each of these compiled figures with both versions of the 1997 budget. Were you on target with the final version? With the original proposal? Where and when did variations occur? How much did they differ from the two proposals? Can you pinpoint why these variations occurred? How many of these variations are in areas you can control? How many are weather-related? How many are one-time occurrences?

If you were able to "live within" a budget reduced from your original proposal, how did you do it? Could you do it again if necessary, or are the results of limited resources making a major impact on field quality?

Was 1997 an "Average" Year?

Compare your 1997 budget figures with budget figures from the past five years. If possible, compare the category breakdowns as well as the totals. Are there any surprises? Are you moving forward as planned?

Are you balancing growth with budget increases, or are you struggling to do more with less? Have you added new fields and facilities or increased the number of sports, sport-related events or other activities on some of the fields without increasing the budget? Have you developed new sources of funding or volunteer labor? Have

you experienced major changes in your own staff, your supervisory entities, or within your field-user groups? If so, how have these changes impacted your maintenance procedures and your budget?

What Changes Are Ahead?

What's on the horizon for your facility? Are you anticipating new construction, reconstruction of existing facilities, or acquisition of more property? Is your park district in a growing community, or a declining one? Is your school or university experiencing growth or decline in student populations and student participation in athletics?

What lies ahead within the ownership and management of your facility? What about the directors, coordinators, and coaching staffs of your major field users? What is the status of volunteer groups that provide support? If your relationship with all these entities is not strong enough for you to be "in the loop" on plans for the future, you're putting your own program at risk. That doesn't mean you need to be on the board or have a say in key decisions, but you do need to be aware that discussions are underway and changes are being considered, and have the ability to provide input on issues that directly affect your program.

If your own research and planning show the need for major changes, have you taken the proper steps to convey this information to those who can make such decisions? Have you gathered enough data to make a good case for the project? Have you enlisted the assistance of others who may be affected by the projected change?

Where Would You Cut or Add?

As you fine-tune your 1998 budget proposal, keep in mind the question, "Where could I cut?" Do you have a built-in "fudge factor" that has allowed you to avoid making those little changes that trim a few dollars here and there? Have you explored alternate sources for labor or equipment on specific procedures that might help trim the budget, but haven't taken the time to give them a conditional try-out? Have you considered different purchasing procedures that would result in additional discounts or extended payment options?

Be able to support your budget requests with solid figures from past budgets and well-researched cost projections for the coming year.

Do you have areas where money spent in 1998 will result in budget savings in the long-term? For example, will replacing an old mower with a new one save in overall expenses by reducing downtime and repair costs? Would the new machine cover more area in a shorter time, or improve the quality of cut? Would extra education and training raise the ability of cer-

tain crew members to enable them to tackle additional tasks or do a better job at tasks already assigned? Can you show the dollar savings in all of these areas? Can you pinpoint the payback time for each investment?

What's on Your Wish List?

If you had an unlimited budget, what would you do differently? Have you shared those dreams with anyone? Have you asked your crew and your field-user groups to consider the ideas and provide their own input? If not, why not? You never know what is possible unless you ask. Even if the powers that be all say no, you haven't lost anything.

What aspects of that wish list could you put into practice with a little more creativity or some additional support internally or externally? Analyze the end result of what you want to achieve. Are there other ways to accomplish the same results?

Is Alternate Funding Available?

Have you tapped into every available resource? It's been said there are hundreds of potential volunteers in the stands willing to lend their support and just waiting to be asked.

Have your school's teams formed any ties with other student groups? How active are your booster clubs? Do the grandparents of players of your user groups attend games? Have you asked them to lend a hand with pregame preparations or post-game cleanup? Have you asked them to form a fund-raising, calling chain?

Have you offered your services as a speaker for local community service organizations? Even if you don't raise funds or drum up volunteers in these meetings, you'll at least have the opportunity to explain the basics of field maintenance and why it matters — which should have an impact on the overall support of your program.

Look to the Future

Where do you want your facility and your maintenance programs to be in the next two years, five years, 10 years? How do you plan to get there? What steps are you taking to raise your own level of professionalism? Have you budgeted for STMA membership at the national and chapter levels, for chapter-meeting and annual-conference attendance, for steps toward certification? Does your budget include professional development funds for your assistant and other crew members?

Like any game plan, your budget is only as good as the effort that goes into it. Take the time now to fine-tune your budget for 1998. Your time investment will pay major dividends. ❑

Steve and Suz Trusty are partners in Trusty & Associates, an industry consulting firm located in Council Bluffs, Iowa. Steve is executive director of the Sports Turf Managers Association.

Stretching Your Dollars with Crumb Rubber

By Dr. J.N. Rogers III and J.T. Vanini

Crumb rubber particles topdressed into turf can reduce compaction and wear in high-traffic areas, thereby saving maintenance dollars and improving overall turf quality. Those are the conclusions we reached after conducting studies in 1993 and 1994 at Michigan State University (MSU). Because crumb rubber is made from discarded tires, it also has the advantage of recycling a difficult-to-reuse product that takes up landfill space.

Since 1990, MSU has investigated crumb rubber as a soil amendment in different turfgrass situations. Original studies of incorporating crumb rubber into the soil by tilling proved it to be an ideal soil amendment for high-traffic areas. However, it required taking an area out of play for three or four months, an often impractical task for a turf manager.

The objective of our 1993-94 research was to explore an incorporation method, topdressing, that is less disruptive and easier than tilling crumb rubber into the soil profile. When topdressed, crumb rubber particles eventually settle down to the soil surface. However, crumb rubber will not transgress through the soil profile because it is lighter, having a lower particle density (rubber's particle density is 1.2 g/cc; soil particle density is 2.65 g/cc). Unlike a sand topdressing, which moves into the soil profile, crumb rubber remains on top of the soil, where it surrounds the crowns of turfgrass plants.

Additionally, sand has sharper, more abrasive edges than crumb rubber, leading to scarification of the crown tissue area. The abrasive action of sand can be detrimental to any high-traffic turf area as well as areas under reduced light, growing and recuperative conditions (i.e., cooler weather). If environmental conditions are not conducive to regrowth and the crown is thrashed and mangled — either by sand particles or play on the field — the plant can very easily die, thus resulting in bare soil. Consequently, aesthetics and playability are reduced, and the potential for surface-related injuries increases.

The hypothesis of our study was that topdressing crumb rubber in the same manner as sand can reduce the abrasive action caused by athletic activity, which is especially severe in soccer and football. With a greater surface area and more rounded edges than sand, crumb rubber is better able to cushion the crown tissue area while still providing a smooth and uniform surface.

Although we collected data throughout the 1993 and 1994 sea-

sons, space allows us to focus mainly on the trends we observed in 1994.

Color and Density

Turfgrass density and color are important to the turf manager as indicators of good playing conditions. Turfgrass color and density ratings taken during our study provided substantial evidence that turfgrass conditions had been maintained despite intense traffic. They were attributed to the crumb rubber particles protecting the crown tissue area of the plant.

During the 1993 season, the density ratings depended on the amount of rubber used as well as the size of rubber. We had higher turfgrass densities where we used the smaller rubber size (10/20 mesh) and high rates. We believe this occurred because the smaller particles were able to work down to the surface faster, thus protecting the plant. When this relationship did not occur in 1994, it was evident the larger particles had also worked to the surface during the winter and were now providing protection to the turfgrass plant.

While there were no significant turfgrass color responses in 1994, we did see an increase in color immediately after putting the rubber down in 1993. This response was positively correlated to crumb rubber rate, but we still do not have the exact reason for the response.

Impact and Shear Values

Impact absorption values were significantly lower (better) at high crumb rubber rates in 1993. While this phenomenon did not continue in 1994, other surface characteristics — duration of impact (Tt), time to peak (Tp), and rebound ratio (rr%) — increased at the high rates of crumb rubber and showed the effectiveness of crumb rubber (0.75 inch) in providing a softer, more resilient surface.

TABLE 1. EFFECTS OF CRUMB RUBBER ON FIELDS*

Particle Size	Impact absorp.	Time of duration	Time to peak	Rebound ratio	Shear resist.	Soil moisture	Surface temp.
1/4"	60	10.3	5.7	0.216	14.2	16.3	47.5
10/20 mesh	62	10.2	5.8	0.236	14.7	16.6	47.8
Significance	NS	NS	NS	NS	NS	NS	NS
Topdressing Depth	**Impact absorp.**	**Time of duration**	**Time to peak**	**Rebound ratio**	**Shear resist.**	**Soil moisture**	**Surface temp.**
0.00"	58	10.1	5.6	0.168	11.9	16.2	47.6
0.15"	60	9.7	6.1	0.181	15.3	16.5	47.6
0.30"	62	9.9	5.5	0.210	13.7	16.3	47.6
0.38"	61	10.5	5.7	0.257	16.0	16.8	47.7
0.75"	62	11.1	5.8	0.314	15.4	16.4	47.8
LSD (0.05)	NS	1.0	0.4	0.03	2.1	NS	NS

*Effects of crumb rubber size and topdressing rates on a variety of field measurement values, measured on a Kentucky bluegrass/perennial ryegrass stand after 46 football games simulated at Hancock Turfgrass Research Center, Michigan State University, East Lansing, Michigan, on November 10, 1994.

Measurements: Impact absorption in Gmax; shear resistance in Nm; soil moisture in percent; surface temperature in degrees Fahrenheit.

Tt, Tp and rr% values are important as they define critical elements of surface hardness, such as duration and severity of impact. When an object is in contact with a surface, the longer the time of impact, the more resilient that surface is and the more likely the surface will resist compaction. Crumb rubber particle size was not significant in regard to these hardness characteristics.

Nor was particle size significant in shear tests, although levels of crumb rubber did matter. In 1993, shear values decreased significantly (got worse) as crumb rubber levels increased. In 1994, as crumb rubber levels increased, shear values increased significantly (got better) and stabilized.

To help explain this scenario, crumb rubber was topdressed in 1993 but not 1994. In 1993, the crumb rubber had not settled down to the crown tissue area, so when the shear vane apparatus was applied to take a measurement, the teeth could not grip the surface as well. One correlation to this is when players dig their cleats into the surface and they slip out from underneath. In 1994, shear values increased significantly as crumb rubber levels increased because the crumb rubber had settled to the soil surface and stabilized.

The lesson learned is that turf managers should try to incorporate the rubber as far in advance as possible and expect better results as the treated area matures.

This settling process, in part, also explains the lack of significant differences in impact absorption values in 1994, unlike 1993.

Temperature

In 1993, surface temperatures were significantly higher as crumb rubber levels increased. The data collected on November 10, however, showed no significant differences in surface temperature. This occurred because on November 10 surface temperatures had dropped below 50 degrees Fahrenheit and the growth and recovery of the turfgrass had slowed.

Ultimately, however, the effect of crumb rubber on surface temperature was significant. On April 7 (data not shown here), there was a 7.5 degree Fahrenheit difference between the check treatment and the highest crumb rubber treatment. The exposure of crumb rubber at the surface heats the turf surface and revitalizes dormant turfgrass. This translates to

continued on page 31