was gleaned from conversations with ITS board members. We are all familiar with the project which involved moving turfgrass to the Pontiac Silverdome for World Cup 1994 which was headed up by Trey Rogers of Michigan State University. There were also projects undertaken for World Cup 1994 which involved putting in temporary sod over artificial turf in stadiums such as Meadowlands Stadium in New Jersey and Giants Stadium in New York. These techniques involves placing plywood on top of the artificial turf followed by up to three layers of polyethylene and geotextiles. The agronomists had to guarantee that at the end of the soccer games that the artificial turf would be as good as new. The geotextiles were topped with a layer of sand anywhere from 3-10 inches and then large rolls of bermudagrass sod were laid on top. Bermudagrass is not normally grown in the Northeast but it was felt that they would withstand the wear and the temperatures better that cool season turf species. This all took place from a month to 3 weeks before the soccer games. At the end of the games the organizers had as little as 24 hours in some cases to bring the fields back to artificial turf. Since the World Cup of soccer there have been several exhibition soccer games which have taken place in the U.S. featuring European teams. At these events artificial turf has been covered and thin layers of sand (as little as 3 inches have been brought in) and thick cut sod (1.5 inches) has been placed on top. Dr. Jim Watson of Toro International will be talking about some of these projects in his keynote speech at the upcoming 1996 Ontario Turfgrass Symposium.

Dr. Jim Watson also reported on work being done at Michigan State University on use of crumb rubber (recycled tires which have been ground up) as a topdressing for heavy wear areas in sports fields. A one time application on 1/4 inch provides good protection of turfgrass crowns from wear. This also has been useful for high traffic areas in passive parks and golf courses where cart traffic is heavy. This technique could easily be adopted by Ontario sports turf managers.

Researchers from New Zealand are conducting trials on a new type of turf which consists of natural grass grown into a synthetic matting on a sand base. The result is a surface with the playability of natural grass with the wear resistance and durability of synthetic turf. This type of turf is compatible with a Prescription Athletic Turf system or any other field construction, provided there is good drainage. Maintenance practices are very similar to a natural turf field, however the field could not be aerated but could be verticut to control thatch. Water use may be less because the mat provides a barrier which slows down evapotranspiration. Optimum mowing height for this type of system is 1 1/2 inches which is similar to a natural turf field. There are two fields in the United States which have this system - Rice Stadium at the University of Utah and University of California at Los Angeles practice field. This system also shows promise for golf tees and walk-off areas near greens. (see following article)

New Zealand has also developed protocols for measuring the quality of sports turf surfaces. The idea behind this is to have a minimum standard for sports field surfaces. If a field falls below the minimum the teams are not obligated to use the field. The motivation is to provide a high quality, safe playing surface for all athletes.

The ITS board member from Japan reported on the current economic recession in Japan. Although golf course construction is down by 20% there is an increase in interest in sports field construction. This has partly been triggered by the fact that Japan will be hosting the World Cup Soccer tournament in the year 2002.

As you can see there are many new products and techniques being investigated around the world to make your job as turf managers easier, or more challenging. By the time 2001 arrives there will be many more innovations. I hope many of you will mark your calendars for the 9th International Turfgrass Research Conference to be held in Toronto in July 2001. Again, I want to thank the Sports Turf Association for making this trip possible.

The Best of Two Worlds?

Terry McIver
Editor, Landscape Management

Natural and Synthetic Turf Joined for Divot-free Playing Surface.

Proponents from both the artificial and natural turf will be thrilled with the latest ally in athletic turf surfaces: SportGrass.

The invention of sport field expert Jerry Bergevin, president of Turf Systems International, SportGrass consists of natural grass growing into a synthetic matting. Grass grows down through the synthetic backing and in between fibrulated synthetic strands, which protect the crown and roots of the plant.

The results is a surface with playability of natural grass and the wear resistance and durability characteristics of synthetic turf. The natural turf cushions the impact of sports activity, and the artificial turf and matting below act as an anchor to reduce - if not eliminate - divots.

SportsGrass is available as sod, or it can be established on site, as it was this past summer at the University of Utah's Rice Stadium, the first major SportsGrass installation in the U.S.

Brian Nelson, director of buildings and grounds at the university, says the field has held up "extremely well" after practices and two full games. A pregerminated ryegrass mix was used to fill in minimal wear areas - which the company says should be expected - but Nelson reports there were "no divots whatsoever."

SportsGrass needs five to six weeks to establish, after which the grass has grown above the height of the plastic blades, and the roots have formed a mass of interconnecting fibres in the soil.

SYNTHETIC SECRET - The key to field stability seems to lie in the type of synthetic material used. SportsGrass uses Desso DLW synthetic turf, manufactured by Desso DLW Sports Systems, Int., headquartered in Germany.

"SportsGrass is basically the same material as a sand-filled synthetic turf. "All we've done is modify the material." says Bergevin. The artificial turf is made out of polyethylene, which is softer than

polypropylene or nylon, and has a more grass-like feel.

"The fibre is thicker," says Bergiven, "and I don't allow them to use the secondary latex backing because that makes it impervious (to air and water and gas exchange)."

"SportGrass is stabilized horizontally and vertically, which is very important," says Gundolf Becker, U.S. marketing manager for Desso DLW. "SportGrass is stabilized horizontally by the backing," explains Becker, "to distribute the load. Vertically, it's stabilized by the fibres."

Bergevin says SportGrass are compatible with a Prescription Athletic Turf system or any other viable field construction, provided there is good drainage.

SHORT GROWING SEASON - Bergevin realizes that playing on a newly established field is not always the best treatment for tender young seedlings. "Generally," he admits , "you like to have a full growing season. But it will survive fine as long as they don't play on it too much. The second season it will be great."

"We're still doing lot of testing," says SportGrass Marketing Manager Donny Jones, who adds that he's had inquires on how SportGrass can be used at golf driving ranges and in tee boxes. "it's working well in high traffic, walk-off areas on test golf areas," says Jones. "We're almost there for tees, but the main focus is ball fields."

SODDED VARIETY - Three thousand square feet of SportGrass sod were recently installed at a UCLA practice field. Dave Ashman, facilities director, is most impressed with SportGrass's "instant playability."

"The sodded material gave us such an advantage because you didn't have to wait to get on it," says Ashman. "It gives the team a competitive advantage and gives them a safe environment. It may not be the final answer, but it's close."

Bergevin cautions against thinking of SportGrass as a "perfect" turf, but he says it still is subject to the pests which plaque normal turf, but without the problem of root-feeding insects.

"It's still 100 percent natural turf," reminds Bergevin, but he adds that he doubts pest problems will appear in the same degree of severity as they can on a field that does not have the artificial underbelly.

AIR CONDITIONED - An added feature of Rice Stadium field is the SubAir cooling system. Developed by Augusta National superintendent Marsh Benson, SubAir picks up cooler air from the tunnels below the stands and blows it through the subsurface drainage system to oxygenate and cool the turf.

Eric Chapman specializes in nutrient movement through sand-based profiles. He's consulted with Bergevin during the Utah SportsGrass establishment phase, and gives the field high marks.

"There would never be a need to aerify if you maintain an aggressive verticutting and thatch control program via nutrition, catching clippings and irrigation," says Chapman. Verticutting is advised at the rate of four to six times a year.

"There may be some management changes in water use because the mat actually provides a barrier against evaporation," suggests Chapman. "It may be that this field uses less water in the long run because of the barrier to evaporation."

EARLY FERTILITY PROGRAM - Chapman explains that during establishment a granular fertilizer was used,

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one that contained a bit more soluble nitrogen rather than a full-blown slow-release product.

"It's young field," reminds Chapman, "and as in sand-based situations, the microbiological activity needed for breakdown of slow-release materials isn't there yet. So we're using more of quick-release fertilizer for now. They'll be able to use a blend of nitrogen that has more slow-release as the field ages.

Optimum playing height for SportsGrass is one-and-one-half inches.

[Reproduced from *Landscape Management,* October, 1995, pp 8G &G]

Reel Grinding for Turf Health, Beauty

by Don Lindenfelser
John Deere Ltd., Golf & Turf Division

Reel mowers are precision machines that need daily maintenance to retain the turfgrass's well-groomed appearance. The scissor-like shearing action of a reel mower is only possible if the reel and bedknife are sharp and the proper reel-to-bedknife clearance is maintained.

Cutting action begins as the bedknife positions the grass to be cut at the cutting edge. The reel then pulls the grass toward the bedknife where it is sheared by the cutting edges as they pass one another.

For the grass to be cut at the proper height, it must contact a bedknife with the proper angle at the cutting edge, so you should grind a 5 percent relief angle on the front face of the bedknife. Without a relief angle, the blade of grass will contact the lower edge of the bedknife and bend over at too much of an angle prior to being cut. When mowing greens, where very small cuts are being taken, an improperly aligned bedknife may not capture the grass at all, and no grass will be cut.

Close examination of the reel-to-bedknife relationship reveals two square edges passing one another with approximately .002 of an inch clearance. This clearance is necessary because:

- If the reel contacts the bedknife, the square (sharp) edge of the reel and bedknife will roll over, becoming dull.
- Contact between the reel and bedknife generates heat which can distort the shape of the bedknife, and cause the bedknife to draw closer to the reel, resulting in the cutting surfaces rolling over more, and more heat being generated in the bedknife.
- Drag produced by an improperly adjusted cutting unit may result in an unacceptable clip ratio, undue strain on drive mechanism and premature wear of the cutting unit.

Reel and bedknife grinding - Reel and bedknife grinding are used to:

- restore the cylindrical shape of a reel that has become cone-shaped due to improper adjustment of the reel-to-bedknife clearance or due to worn reel bearings;
- restore the edge when the grass is not being cut across the entire length of the bedknife due to nicked blades;
- restore the edge when the lack of frequent backlapping allowed the edge to be rounded beyond the capability of the backlapping procedure to restore the edge; and
- restore the edge when the reel-to-bedknife clearance has been improperly adjusted allowing the reel to contact the bedknife.

Relief grinding - Relief grinding restores the factory relief angle to prolong cutting unit life and promote fast between grind sharpening (lapping). To grind a cutting unit without relief is doing half the job, and maintenance costs will increase due to the constant metal-to-metal contact of the "flat" ground reel blade.