SPORTS TURF MANAGER

... for safe, natural sports turf

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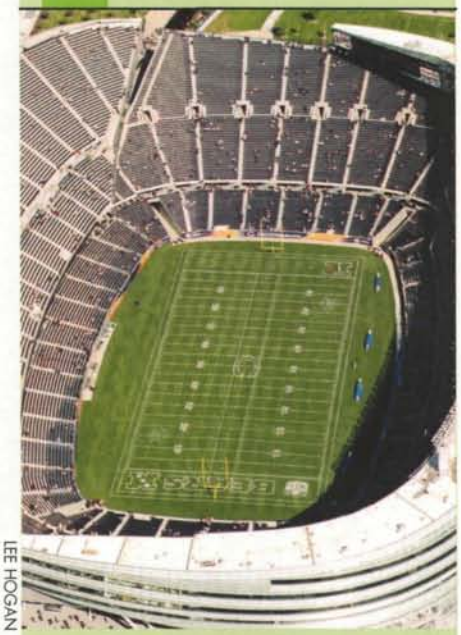


LEE HOGAN

NEW HEATED SOLDIER FIELD HOME OF THE CHICAGO BEARS

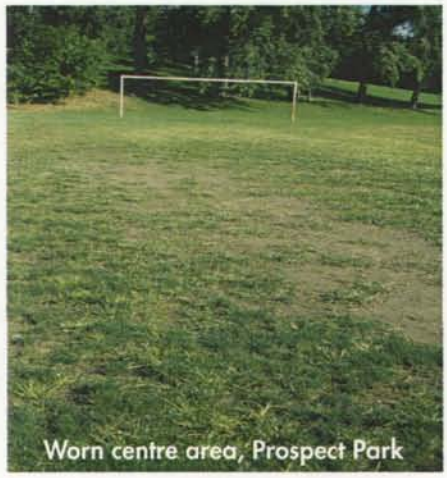
Page 10. Modeled after Halas Hall, the Bear's practice facility in Lake Forest, Soldier Field's construction allows it to withstand the chilly Chicage climate and daily player traffic.

ONTARIO Turfgrass SYMPOSIUM

Heavy Repetitive Overseeding

IMPROVING LOW-INPUT SPORTS FIELDS

Overseeding, or distributing seed over an existing turfgrass area to increase density, is a traditional practice followed by many turfgrass managers. Unfortunately, success in overseeding is not easily accomplished. Researchers in this study chose two low-input sports fields in New York State and applied three seeding rates for comparison. Results indicate that heavy, repetitive overseeding using perennial ryegrass can improve turfgrass density on low-input sports fields.



Worn centre area, Prospect Park

To improve the chances that a high rate of seed germination and establishment will occur, it is often recommended that some sort of cultivation is done before seeding. Types of cultivation include removing cores of soil (core cultivation), spiking and vertical mowing.

An aggressive overseeding program for a sports field might be to overseed four or five times per year, hoping each time for some limited success. Home lawns and commercial properties, which are not usually overseeded, might be overseeded once or twice per year in a "best case" scenario.

With limitations on the use of pesticides increasing, overseeding might seem to be a better option than ever. However, turfgrass managers often report disappointing results with overseeding (1). This is especially true on low-input fields, or fields where fertilizer, irrigation, weed management and other cultural activities are limited or nonexistent. The cultivation requirement attached to overseeding can be disruptive to the use of the turf area in question, as well as adding costs. Clearly, easier and more effective ways to overseed turfgrass areas are needed.

In August 2003, a research project examining heavy, repetitive overseeding was conducted on two sports fields in the Capital District. This study was designed to put into practice the ideas of Dr. Frank Rossi, Extension Turfgrass Specialist at Cornell University (2). Rossi has demonstrated that dramatic increases in turfgrass density were possible when high rates of perennial ryegrass (*Lolium perenne*) were overseeded *weekly* on a simulated sports field.

Study Objective

To demonstrate the practice of heavy, repetitive overseeding on... → page 7

"A Report To The New York State Turfgrass Association" Principle Investigator: David Chinery, Cornell Cooperative Extension of Rensselaer County. Cooperators: Dr. Frank Rossi, Cornell University, Dennis Weatherwax, The Averill Park School District & Jim Conroy, The City Of Troy.

Heavy Repetitive Fall Overseeding • *Cover Story Continued...*

RESEARCH RESULTS ON LOW INPUT HIGH SCHOOL AND INNER CITY FIELDS IN NEW YORK STATE

two low-input Capital District sports fields using three seeding rates.

Procedures

Anyone who has visited practice soccer and football fields at high schools and parks would probably agree that many are examples of ugly, beat-up turf and weeds. Two fields were used in this study. The practice football field at Averill Park High School had compacted clay loam soil, a low pH (5.9), and was composed of bare spots, crabgrass, knotweed, plantain, dandelion, perennial ryegrass and Kentucky bluegrass.

The second field was a multi-purpose soccer/football field in an inner city park, Prospect Park, in Troy. The soil was a loam with pH 7.5. The predominate species here were purslane, Kentucky bluegrass, perennial ryegrass and goosegrass. See Table 1 for a description of the initial composition of each field.

Four treatments were made: no seed (check plots) and overseeding at rates of 2, 6 and 10 pounds of seed per 1,000 square feet (M), with three replications made of each treatment at each site.

Overseeding started on August 14 and continued weekly (except for the week of 9/18) until October 16, for a total of 10 applications in 11 weeks. Seed was distributed evenly across the plots using a Gandy drop spreader.

There was no cultivation done on the sites (other than that done by the football/soccer players or other field users); the seed was simply spread on the plots. No irrigation was supplied as rainfall was abundant.

Traffic and wear on the Averill Park field was concentrated in the centre, and as a consequence, one set of plots received light traffic, one medium and one heavy. All of the plots at the Prospect Park field seemed to have received equal traffic.

Results

Results for Averill Park field are outlined in Table 2. Turfgrass density increased for all treatments, even for the check plots that did not receive overseeding. Small amounts of turfgrass already existed in these plots and when competition from weeds was removed after they died from frost and cooler temperatures, the density of the grasses increased.

This same phenomenon is also partly responsible for the increase in density of the overseeded plots as well, except for the three treatments that started with no turfgrass, in which case the increase in density can be attributed to overseeding alone.

"Net increase in turfgrass density" was calculated as the density estimated at Week 11 minus the initial density. It is an attempt to measure the density increase caused by overseeding and to remove the influence of a plot having some turfgrass at the beginning of the study.

The largest net increase in turfgrass density was seen in the 6 lbs./M light traffic plot, where density increased from 0% turfgrass at Week 0 to 100% at Week 11. The largest increase in net density for heavy traffic plots was also seen in the 6lbs./M plots, where density increased from 0 to 78.1%. Plots overseeded with 10 lbs./M had higher net increases in density at Week 5, but the 6 lbs./M plots had greater net increase in density by Week 11 of the study. For a visual comparison, see the photo on page 8.

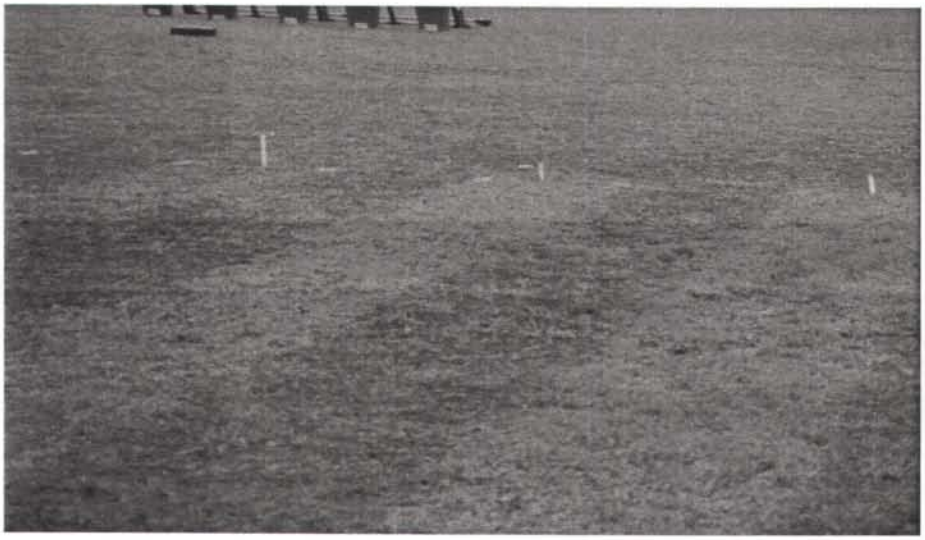
Very different results were obtained at Prospect Park (Table 3). In the first few weeks of the study, perennial ryegrass seedlings were observed to be germinating in many of the plots. After Week 5, all of

Table 1. Initial composition (% of each component) on the two study fields.

Components	Averill Park High School	Prospect Park
Per. Ryegrass/Kentucky Bluegrass	4.4	17.5
Bare	1.3	38
Purslane	0	27.9
Goosegrass	0	15.2
Crabgrass	57.8	<1
Plantain	2.1	<1
Knotweed	32.3	<1
Dandelion	0.8	0

Table 2: Average percent turfgrass for 8 treatments over 10 seedings at Averill Park High School. Last column: Net increase in turfgrass density.

Treatment	Week 0	Week 5	Week 11	Net Increase
Check, light traffic	3.1	12.5	28.1	25.0
Check, heavy traffic	9.4	34.3	46.8	37.4
2 lbs./M, light traffic	12.5	71.9	96.9	84.4
2 lbs./M heavy traffic	0	28.1	59.3	59.3
6 lbs./M, light traffic	0	62.5	100.0	100.0
6 lbs./M heavy traffic	0	31.2	78.1	78.1
10 lbs./M, light traffic	15.6	81.3	96.9	81.3
10 lbs./M heavy traffic	3.1	53.1	75.0	71.9



Adjacent photo. From left to right: 2 lbs./M, 6 lbs./M and 10 lbs./M seeding rates in a heavily trafficked portion of the practice field at Averill Park High School.

Table 3: Average percent turfgrass for 4 treatments over 10 seedings at Prospect Park. Last column: Net increase in turfgrass density.

Treatment	Week 0	Week 5	Week 11	Net Increase
Check	12.5	6.2	13.6	1.0
2 lbs./M	9.4	20.8	30.2	20.8
6 lbs./M	15.6	43.8	23.9	8.3
10 lbs./M	12.5	63.4	33.3	20.8

the plots, except the untreated checks, had a net increase in turfgrass density. The largest increase of 50.9% was seen in the 10 lbs./M plots.

After the week 5 observations, however, the 2 lbs./M plots continued to show an increase in turfgrass density, while the 6 lbs./M and 10 lbs./M showed decreases.

This was largely due to factors on the site. The middle of this field is very compacted and slightly depressed. Given the large amount of rainfall during the time period this study was conducted, this depressed area flooded repeatedly. Seed from treated plots was observed to have washed away and moved onto untreated strips between the plots. Seedlings may have also been uprooted or died from flooding.

While a net increase in turfgrass density was still achieved for all seeded treatments, these confounding factors decreased the possible gains which could have been made. These results clearly indicate that the topography of the field will influence the success of overseeding.

Conclusions

These results indicate that heavy, repetitive overseeding using perennial ryegrass can improve turfgrass density on low-input sports fields. Greater increases were observed in plots receiving light traffic versus heavy traffic, yet even in plots with heavy traffic, significant increases were still seen.

The least successful situation seen in this study was on the Prospect Park field, where the uneven topography combined with heavy rainfall caused seed to wash out of treated plots and seedlings to die. An even (or at least not severely rutted) field surface is therefore important to overseeding success.

Overseeding at the 6 lbs./M rate gave the greatest increase in net density and is also a less expensive alternative to the 10 lbs./M rate.

Is heavy, repetitive overseeding a cost-feasible proposition for sports fields? An internet search shows that perennial ryegrass seed prices (US$) range from $1.40 per pound to $2.80/lb; wholesale prices and bulk quantities can push the low end price to less than $1.00/lb.

Given a $1.00 to $2.80 price range, the cost for a 10 week overseeding program at a 6 lbs./M rate would be $60 to $168 for 1,000 square feet. If a school wanted to overseed the middle of a worn football field (approximately 18,000 square feet), the cost would be in the range of $1,080 to $3,024. While this may not be an insignificant cost to financially-troubled school districts, it seems far less expensive than most pesticide treatments or a lawsuit brought about from a student athlete's injuries suffered due to a poorly-maintained sports field.

Since cultivation is not necessary with heavy, repetitive overseeding, further expenses are avoided and fields can remain in play as the overseeding is taking place. The effect of providing high-phosphorous fertilizer with overseeding should be studied, since such starter-fertilizers can increase seeding success and are fairly affordable.

A project examining how this system performs in spring conditions on home lawns is planned for 2004. If you have any questions or experiences with overseeding to share, please call 518-272-4210 or email me at dhc3@cornell.edu. ♦

Resources Cited

1. "High School Sports Fields: The Last Frontier Of Turfgrass Management," Ed Leonard and David Chinery, New York State Turfgrass Association, 2003.
2. "Aggressive Sports Turf Overseeding," Dr. Frank Rossi, in "Cornell Field Day '03 Program Booklet," Cornell University, 2003.

Editor's note: If you are interested in obtaining a copy of *High School Sports Fields: The Last Frontier of Turfgrass Management*, contact David Chinery at dhc3@cornell.edu or Lee Huether at the STA office.

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