

PROBLEM SOLVING EFFORTS ON THE SPARTAN FOOTBALL PRACTICE FIELD

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Introduction

When a coaching change occurs at the collegiate or professional level of sports, more than coaching philosophies can change. This was the lesson learned by the Department of Intercollegiate Athletics when Nick Saban was hired as the head football coach at Michigan State University in 1995. The particular change of interest was the demand put on facilities, particularly the natural turf practice fields. The two practice fields are both sandy loam textured fields that are a mixed stand of Kentucky bluegrass and perennial ryegrass with some annual bluegrass infestation. This article will discuss Michigan State University's commitment to providing high quality practice fields for its athletes.

History of Fields

During the George Perles era (1983-1994), the practice fields were used more conservatively than they are today. The fields were used sparingly after mid-October and were not used during unfavorable weather conditions. The fields were able to survive with a moderate level of maintenance. Enter coach Saban who believes strongly in the philosophy that if you must play in poor weather you must practice in poor weather. Despite the efforts of Lowell Spotts, the current Athletic Grounds Manager, and his crew to do everything possible with the resources available, the new coaching style combined with the stressful weather of the summer of 1995 destroyed the fields. This heightened the awareness of the Department of Intercollegiate Athletics that something needed to be done.

In early 1996, the Department of Intercollegiate Athletics contacted the Michigan State University Turfgrass Program to assist in the matter. After a discussion with Lowell Spotts to determine his needs, an automatic irrigation system became a unanimous top priority and field quality goals were established. The fields had to be regraded, re-established, and monitored daily. An automatic irrigation system was then installed in May 1996 and the fields were sufficiently renovated. As the year progressed, daily monitoring became more and more of a priority since many of the Athletic Ground's responsibilities took the manpower indoors away from the fields. In January 1997, the decision was made to create a position that would enable someone to work under Lowell Spotts and attend to the fields daily while working towards a Masters degree. Since the position has been filled, several management practices have been implemented to improve the quality and wear tolerance of the fields.

Re-establishment Methods

Management of the practice fields at Michigan State University is challenging because of the timing, intensity and utilization of the fields. Spring practice begins in early April when the badly damaged turf from the previous fall is still dormant, and continues throughout the month of April. Once spring practice is over, the first opportunity for renovation presents itself. In the spring of 1997, the decision was made to sod both fields between the hash marks. Large rolled, 1-inch thick sod was used. The individual pieces were 3.5ft wide and 70ft long, weighing approximately 2000 lbs. The sodding option was chosen instead of seeding because the coaching staff wanted to use the fields for summer football camps, which usually begin the second week of June, approximately 6 weeks after the date of establishment. The sod was believed to be more resistant to the traffic of the summer camps than the seed established stand would have been after the six week period.

Once summer camps end in the last week of June, the window of opportunity to re-establish turf is only one month, before two-a-day practices begin the first week of August. The damage done by the football camps was severe, but concentrated. The damaged areas were core cultivated and overseeded with perennial ryegrass (3.5lbs/1000sq. ft.) using a rotary spreader. Some areas were damaged so badly that overseeding did not suffice to obtain the desired density. These areas were sodded using supina bluegrass sod that had been maintained on plastic. Since this sod had been growing on plastic, the root system was fully intact allowing the sod to root very quickly. As the season progressed and some areas began to show significant wear,

overseeding was utilized again to maintain a consistent turf stand. Two methods of overseeding were used; broadcasting and slit seeding. Broadcasting was typically done before practice sessions so the cleats of the players would work the seed into the soil. The larger wear areas were slit seeded. These methods were used to maintain as dense a turf stand as possible before the growing season ended because the fields see consistent wear through the end of November and possibly December if the team qualifies for a bowl game.

Mowing

For the majority of the summer, the fields were mowed twice per week at a height of 2.5 inches using a rotary mower (Toro 580-D). The height of cut was high because the mower is used to mow other areas on campus that are maintained at that height. Labor constraints and a desire for efficiency prevented the constant adjustment of the cutting decks. As the summer progressed and more labor became available, the cutting height was reduced to 2 inches with a Toro Groundsmaster to increase turf density. Mowing frequency was then increased to 3 times per week. Towards the end of the summer a John Deere reel mower (Model 2653A) was purchased to increase the quality of cut and reduce the cutting height to 1.75 inches. By increasing the quality of cut the turf not only looks better, but the plant is able to recover faster from the stress induced by mowing making it less susceptible to disease and other turf pests.

Fertilization

After obtaining a soil test in late May and determining that the phosphorus level was more than adequate, a fertilizer containing equal amounts of nitrogen and potassium was chosen. Potassium has been shown to increase wear tolerance applied up to 8lbs./1000 sq. ft. over a growing season (Shearman 1985). With the amount of traffic these fields receive it is important to keep the fertility level up so the growth rate remains high for adequate recovery. Considering the soil texture, light and frequent applications were considered optimal to reduce the potential for leaching while maintaining a consistent nutrient level. 26-0-26 was applied at .5lb N/1000sq. ft. every two weeks. In 1998 the plan is to incorporate a slow release nitrogen carrier into the program in early June to create a nutrient base that would help maintain nitrogen levels through the peak growth periods of the summer.

Cultivation

This past summer the fields were core cultivated the first week of July. The primary objectives were to encourage the roots of the sod to go deeper, reduce the effects of a layering problem on the east field and relieve the compaction created by the summer camps. Sport camps present a problem because of the number of participants participating in a limited area. The coaches put the players through several drills to develop fundamental football skills. Often times, the drills are not moved to distribute the wear evenly and the areas are worn down to crown tissue in a very short period of time. These areas also become highly compacted making recovery for any living plants very difficult. The highly compacted areas were core cultivated in two directions to ensure a good seed bed for overseeding. In the spring 1998, the plan is to re-establish by seed instead of sod, so the fields will be aerified following spring practice and again in July, following summer camps, to renovate the practice fields for the 1998 season.

Topdressing

In the summer of 1997, the fields were only topdressed once because time was focused on establishing the sod, raising irrigation heads, dealing with a specific drainage problem, and overall renovation. In 1998 a more consistent topdressing program will be implemented, matching applications to the growth of the turf. The primary goal of topdressing, in this particular instance, is to obtain a more uniform playing surface. After years of spot treating areas, the consistency of the playing surface has suffered. Other objectives of topdressing, such as thatch management and soil modification are less important because of the intensity of traffic and the suitability of the native soil.

Pest Management

The only pest management practice utilized in 1997 was the application of a broad leaf weed control the first week of October. This is a good time for broad leaf weed control because the winter annuals are beginning to germinate. The weeds that were most predominant were common plantain and clover. In 1998 the objective will be to reach maximum turfgrass density as early as possible to keep weed infestations down. The preferred method of control in 1998 is to monitor the fields and spot treat as necessary, keeping pesticide use and costs to a minimum.

Drainage problem

During summer camps, an area approximately 30ft by 20ft located at the north end of the east field became saturated after receiving over an inch of precipitation during a period of 3-4 days. The area was saturated to the point that any type of football related traffic would displace the soil and badly disrupt the playing surface. Two factors had combined to allow excess water to accumulate in the area. The area represents the lowest point of the entire practice facility and a limiting layer had formed, significantly reducing drainage. Once camps were over, a Floyd Mckay drill aerifier was used to increase oxygen levels in the soil. The Floyd Mckay drills several holes at a time reaching to a depth of 12 inches, but this was not deep enough to go through the limiting layer into the sandy subsoil, to correct the drainage problem. After discussing many possible solutions, it was decided to drill several more holes (approximately 24 inches deep) in the area and fill them with a very uniform sand. The uniform sand would keep the holes open and would maintain a large number of macropores for the best possible drainage. A gasoline powered auger was used to penetrate the limiting layer by drilling over 250 holes, 2 inches in diameter, on 20 inch centers. Once each individual hole was drilled, the soil was removed and the hole was filled with sand. The area around each hole had been raised slightly by the auger, creating several small mounds. This was corrected by dragging and then rolling the entire area. This improved the drainage of the area tremendously. The area remained playable the entire season.

Traffic Management

Proper traffic management often times can influence field quality more than proper maintenance practices. When the fields are used in the spring, summer, and fall, sometimes during poor weather conditions and the same areas are used for the same drills day in and day out, field quality can diminish very quickly. The turf that was established during break periods is not mature enough to withstand the intensity of traffic the next season will impose. The goal was established early to make the coaching staff aware of the importance of traffic management. This is currently being attained through constant communication, and the coaching staff has been receptive. They seem to take more of an interest in the condition of the field before a decision is made to practice outside and there is speculation that the team may travel to another site for next season's two-a-day practice sessions. Those are good signs, but more can be done on a day to day basis to distribute the wear more evenly. The two practice fields are designated by use. One field is used predominately by the offense and the other by the defense. From there, areas are utilized by specific positions to conduct their individual drills. Individual drills are done daily to develop the fundamental skills needed to perform well at each respective position. Coaches tend to initiate these drills from a line because it is easier to direct players where to line up and where to finish the drill. This is how wear patterns develop. To help reduce the severity of these wear patterns, the north endzone of each field was divided into sections thereby increasing the number of lines. This way the position coaches can use their own judgement in rotating the use of each line, thereby distributing the wear more evenly. This has helped not only to reduce wear patterns, but it gets each position coach involved on a daily basis, accessing the condition of the field and making decisions to prevent the destruction of turf in his area.

Conclusion

The new era of Michigan State football has presented some interesting challenges for the future. The

Department of Intercollegiate Athletics has made a commitment to meeting those challenges by enabling Athletic Grounds and the Turf Program to work together towards the common goal of improving the quality of the practice fields. Through educating the coaching staff on the importance of traffic management and properly executing the management practices discussed above, this goal will be attained.

Reference

Shearman, Robert C. 1985. Potassium-A Miracle Element? USGA Green Section Record. Vol. 23: pp. 5-6.