

SOD AERIFICATION AND ESTABLISHMENT

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Introduction

In Michigan, sod is often the choice for athletic field renovation because of time limitations. The usual step to help promote root growth is to core cultivate the sod soon after it has rooted. A possible alternative to this practice is the pre-harvest core cultivation of sod. The objective of this study was to determine if the pre-harvest core cultivation (aerification) of Kentucky bluegrass sod would a) significantly



decreases the overall weight and strength of the product, and b) improve overall quality of the sod. It is hypothesized that core cultivation before harvesting will significantly reduce the overall weight, which could potentially reduce shipping costs, and strength of the sod and it will be the most effective method for improving sod quality.

Materials & Methods

This experiment was initiated on June 8, 2004 with one study at the Hancock Turfgrass Research Center (HTRC) East Lansing, Michigan on a sandy site. The second study was established at the Michigan State University softball field East Lansing, Michigan on a loamy sand site. The first factor was core cultivation timing: pre-harvest and post-establishment core cultivation at two different rates. The first affected 5-7% of the surface area (one pass) and the second affected 10-14% of the surface area (two passes), a control was also included which received no core cultivation. Factor two was the type of sod that would receive the core cultivation treatments—conventional and big roll Kentucky bluegrass sod.

Results

Below table 1 lists the shear vane and shear/clegg results produced by the different core cultivation treatments and sod types at the Michigan State University Softball Field and the Hancock Turfgrass Research Center (HTRC). Results in table 1 show no significant differences at the loamy sand site. The sandy site, however, showed significant differences between the core cultivation treatments for shear vane and shear/clegg results, and significant differences between sod type shear/clegg results.

Conclusion

The first objective of this experiment was to determine if pre-harvest core cultivation of conventional sod and big roll sod would significantly reduce the overall weight and strength of the sod. Research conducted in this experiment determined that pre-harvest core cultivation 5% affected surface area reduced

sod weight by 7% and sod strength by 27%, while pre-harvest core cultivation 10% affected surface area reduced sod weight by 17% and sod strength by 46%.

The second objective of this study was to determine if the pre-harvest core cultivation and sand topdressing of Kentucky bluegrass sod would improve the overall quality of the sod by minimizing soil-layering issues.

When reviewing the shear vane and shear/clegg data in table 1 it can be noted that no significantly different data was produced on the loamy sand site (MSU softball field), but significant differences were observed on the sand site (HTRC). These results provide reasons to believe that the significant differences produced at the sand site were the results of a soil layering issue. When soil layering was a factor the sod shear strength was significantly reduced by pre-harvest core cultivation treatments in comparison to the control, however the pre-harvest core cultivated sod with 5% affected surface area was significantly stronger than the post-establishment core cultivated sod. Therefore pre-harvest core cultivation allows for immediate response to soil layering without being detrimental to sod strength.



Table 1: Effects of core cultivation and sod type on shear vane and shear/clegg ratings of Kentucky Bluegrass at the MSU Softball Field and HTRC, East Lansing, MI, 2004.

	shear vane		shear/clegg	
	Loamy Sand (Softball Field)	Sand (HTRC)	Loamy Sand (Softball Field)	Sand (HTRC)
	7/8/04	7/12/04	7/8/04	7/12/04
Core Cultivation	Nm			
Pre-harvest 5%	24	26	81	95
Pre-harvest 10%	24	23	83	81
Post-establishment 5%	24	25	73	83
Post-establishment 10%	24	23	77	67
Control	26	30	75	97
LSD (.05)	NS	3	NS	14
Sod Type				
Conventional	24	25	81	83
Big Roll	25	26	75	87
LSD (.05)	NS	NS	NS	NS

NS = not significant

Nm = newtons per meter