

QUANTIFICATION OF MAINTENANCE PRACTICES FOR ATHLETIC FIELDS

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Methods of maintaining a high density, low surface hardness athletic fields were investigated at the Hancock Turfgrass Research Center on the campus of Michigan State University in 1999-2001. The major areas of investigation included frequency of mowing and cultivating and rate and frequency of fertilizing. Both a sand-based root zone and a native soil root zone were investigated. This study is being conducted to provide information to budget decision makers as to how resources relate to improved athletic field quality. The motivation for this study comes from the number of athletic injuries induced by poor field conditions (Harper et al, 1984). The objectives of this study were to:

1. Quantify the relationship between 12 turfgrass management programs and turfgrass longevity under trafficked conditions on a sand based and native soil root zone.
 - a. response variables will include: turf color, density, shear strength, surface hardness, and overall quality.
2. Demonstrate the best management practices to athletic field managers/Athletic Directors by evaluating turfgrass quality and wear tolerance on high sand content and native soil fields.

First year results show that application of the high rate of fertilizer (5 g N m^{-2} applied seven times per year for a total of 35 g N yr^{-1}) or the low frequent rate of fertilizer (2.5 g N m^{-2} applied eight times per year for a total of $25 \text{ g of N yr}^{-1}$) will give a 16% increase in fall turfgrass cover, a 14% increase in fall turfgrass quality, and a 10% increase in fall turfgrass color, as compared to the low infrequent rate of fertilizer (5 g N m^{-2} five times per year for a total of 25 g N yr^{-1}). Mowing twice per week will give a 10% increase in fall turfgrass color. The low frequent rate of fertility gives the highest shear strength, and cultivation lowers the surface hardness and decreases shear strength until traffic is applied. Data collected in the second year continues along the same trends and also shows that density increases linearly with mowing.