

## **Organic Land Care Practices in Maintaining Sustainability of Athletic Field Turf**

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There is increased interest in organic land care practices for Athletic and Recreational Fields in lieu of using conventional practices that use pesticides and chemical fertilizers. Organic land care may be the only avenue open to maintaining athletic and recreational fields if a ban on pesticides is enacted, which has already occurred in Connecticut for fields adjacent to schools with grades K through eight. However, as the conversion from conventional practices to organic methods takes place, there is no science based information related to use of an organic system on turf sustainability and field safety. A long term field study was initiated at the Joseph Troll Turf Research Center, University of Massachusetts, Amherst in 2010. The objective of the study is to examine the long term effect on turf grass sustainability, playing quality characteristics and soil quality using an organic land care system for athletic fields compared to a conventional maintenance system using Integrated Pest Management. The turf is grown on a silt loam (coarse silty mixed nonacid, mesic Typic Udifluvent) at two mowing heights (3.2 and 6.4 cm). Nitrogen is applied as leaf compost supplemented with other organic based fertilizers for the organic plots. Ammonium sulfate and complete fertilizers with some slow release nitrogen are applied to the conventional plots. Treatments are set out in a randomized complete block design with three replications. The results are from 2010 to 2014. Differences in turf quality between the organic and conventional treatments was in 2011 and 2013 at the 6.4 cm mowing height because of the ingress of crabgrass into the organic plots thus providing a significantly lower rating than the conventional treatment that received a post application of herbicide in 2011 and a pre-emergent herbicide in 2013 to control the crabgrass. Wear injury was significantly greater on the 6.4 mowing height during the Fall of 2011, 2012 and 2013 compared to the 3.2 cm height because of continuing crabgrass competition which was absent on the 3.2 cm mowing height plots. This also affected slower Spring recovery at the higher mowing height. No difference in wear injury between the two treatments was noted in 2014. There was no difference in root biomass between the organic and conventional management systems taken from samples in 2012 and 2014. However root biomass was significantly greater in the conventional treatment in 2013 which was largely manifested in the 6.4 cm mowing height. Infiltration rates were not significantly different between the two systems in 2011, 2012, 2013 and 2014. Aggregate stability and earthworm populations were determined in 2013 and 2014 with no difference observed between the two management systems. There has been a significant increase in the soil CEC capacity, soil test levels of soil available phosphorus, and the soils organic matter content in the organic system relative to the conventional system. The study will continue to examine additional plant and soil properties in 2015.