

ORGANIC MANAGEMENT PRACTICES ON ATHLETIC FIELDS: PART 2: THE EFFECTS ON PLAYING SURFACE CHARACTERISTICS AND SOIL PHYSICAL PROPERTIES

Miller, N. A., and J. J. Henderson. 2013. Organic management practices on athletic fields: Part 2: The effects on playing surface characteristics and soil physical properties. *Crop Sci.* 53(2):p. 637-646.
doi:10.2135/cropsci2012.03.0195

Many organic products have been used effectively in turfgrass management programs, but their exclusive use in athletic field maintenance and effect on playing surface characteristics and soil physical properties have not been extensively researched. The objectives were to determine the effects of management regimes and overseeding perennial ryegrass (*Lolium perenne* L.) into an existing Kentucky bluegrass (*Poa pratensis* L.) stand during simulated traffic on (i) rotational traction and surface hardness and (ii) soil physical properties. Treatments were arranged as a 2×6 factorial in a randomized complete block design with two overseeding levels (overseeded and not overseeded) of a perennial ryegrass blend during traffic and six management regimes (fertility and pest management): (i) conventional, (ii) organic manure (OMan), (iii) organic protein (OPro), (iv) organic manure plus compost tea (OMan+CT), (v) organic protein plus compost tea (OPro+CT), and (vi) a control. This research was conducted over 2 yr on a mature stand of 'Langara' Kentucky bluegrass on a Paxton fine sandy loam. Fall traffic was simulated with a Cady Traffic Simulator. There were no consistent effects on rotational traction or surface hardness as a result of management regimes or overseeding. Management regimes did not affect soil physical properties, but overseeding increased total porosity by 2.2% and increased aeration porosity by 12.4% in 2008. In 2009, overseeding increased capillary porosity by 2.2% but had no effect on total and aeration porosity values. Overseeding minimally decreased particle and bulk density values during both years. Overseeding also increased soil organic matter by 5.7% in 2009 when accompanied by organic fertilizers but not with compost tea applications. Using organic fertilizers or compost tea showed no enhancement or deterioration of soil physical properties over this two year study.