STOP #12

TURF CULTIVATION STUDIES

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The primary objectives of cultivation (or aerification) practices on turf sites are to reduce soil compaction and enhance thatch control. Reducing compaction of the soil should improve rooting, aeration, resilience, infiltration and stress tolerance. Cultivation may also break through any soil layers and serve as a tool in overseeding and renovation. As soils become more compacted, more intensive cultivation will be needed with regard to depth, spacing, tine diameter and frequency. To deal effectively with a thatchy condition, more soil will need to be brought to the surface more frequently. Depending on the objectives for cultivating a given turf site, one may desire many small holes (to improve infiltration) or deeper holes with larger tines to bring more soil to the surface.

While there is no given answer on the number of holes per square foot, the depth of penetration, or amount of soil brought to the surface; generally speaking we would prefer more holes and more soil brought to the surface. The use and quality of the turf play significant roles in how aggressively a turf should be cultivated.

Several small studies have been conducted over the past 3 years in which the depth of penetration and amount of soil removed have been evaluated for several aerifiers. The first was done in the fall of 1985. Data for depth of tine penetration and soil removed are given in Table 12. The depth of tine penetration was reduced somewhat on the more compacted site as would be expected. In 1986 another study was set up on a loam soil (Table 12). The smaller Salsco unit removed less soil as would be expected. Penetrometer readings (data not shown) collected on an MSU intramural field pointed out the importance of tine size on loosening the soil on turf sites. Select your aerifier to accomplish the objectives as determined for the turf sites which you manage.

TABLE 12. Aerifier treatment effects on loam soils. Hancock Turfgrass Research Center.

Aerifier	Depth, inches (1985)		Soil wt	
	"Normal" Soil	"Compacted" Soil	gm/4ft² 1985	gm/4ft² 1986
Dedoes - standard spacing	2.0	1.8	634	--
Ryan Ride-Aire	1.8	1.5	270	--
Verti-Drain, 4" spacing				
hollow tines	6.2	5.9	957	639
solid tines	9.0	8.5	--	--
Verti-Drain, 2.5" spacing				
hollow tines	6.1	--	1647	935
solid tines	8.9	--	--	--
Toro Aerifier	--	--	--	727
Salsco Aerifier	--	--	--	121