

Turfgrass Cultivation

Roch Gaussoin, Extension Turfgrass Specialist

Turfgrass cultivation is one of the most important supplementary cultural practices. Choice of the "right" piece of equipment and the best soil moisture conditions can be confusing. The following table was adapted from an article published in the August 1990 issue of Golf Course Management entitled, "Developing Turfgrass Cultivation Program," by Robert N. Carrow of the University of Georgia. This table offers an excellent summary of existing cultivation methods and their specifications and requirements for best utilization.

Comparison of Different Turfgrass Cultivation Methods

Cultivation Procedure	Comments Tine dia.	Depth of Penetration Inch	Spacing of Blade/Tine Inch	Degree of Soil Loosening ^z 1-5	Degree of Soil Brought To the Surface ^y 1-5	Soil Moisture for Best Effectiveness ^w
1. Coring with hollow tine, spoon, screw devices.						
a. Tractor-drawn units with spoons or tines that enter the soil at an angle. Some units are motorized.	Several types, interchangeable spoons, hollow tines, slicing blades. 1/2-3/4"	3-6	6	2	2-4	FC
b. Drum-type	Several types, Hollow tine	2-3	2-3	1	2-4	FC
c. Verti-Drain	Hollow tine	10-12	1-8	4-5	2-4	FC-DFC
d. Vertically operated tines	Most common form of cultivation. Many types. 2/3-7/8" dia.	3-5	2-6	2	3-5	FC
e. Deep-Drill Aerofier	Screw device. 1/2-3/4" dia.	5-10	5	1	2	FC
2. Coring by solid tine devices.						
a. Verti-Drain	1/2-1" dia.	12-16	1-8	4-5	1	DFC
b. Shatter-core vertically operated tines	1/2-3/4" dia.	3-5	2-6	2-4	1	DFC
c. Units where tines enter the soil with a rotary pattern (Aera-Vator)	1/2" dia.	3 1/4	4	2-5 (can be varied)	2	FC-DFC
d. Small diameter solid tine often as a quad tine	1/4" dia.	2-3	2	1	1	FC
3. Slicing. Solid tines or blades, are not power driven. Many types.						
a. Straight-line tines	Most common	3-7	6-12	1	1	FC
b. Straight-line blades (verti-slice)	Thin width blades	2-4	4	1	1	FC
c. Offset tines (Aerway)	Larger, width blades 1/3-1/2"	6-8	7	2-4 (can be varied)	1	DFC
4. Spiking. Blades are not power driven, (i.e., do not cut through the soil but penetrate by machine weight)						
	Small knife-like blades. Units may be pull type of motorized drive (Spikeaire)	1/4-2	1-2	1	1	FC
5. Subaerification. (Yeager-Twose Turf Conditioner)						
	Vibrator action as blades are pulled through the soil	2-8	9-10	4-5	1	DFC
6. High Pressure Water Injection (Hydroject)						
	Uses high pressure water action	4-20	3-6	2-3	1	FC
7. Grooving.^x Power driven blades that cut through the soil and thatch layer.						
	Used for renovation and not for routine cultivation	1-5	1-4	4-5	4-5	FC-DFC
8. Forking.						
	The "original" spot treatment cultivation method	6	2-4	3-4	1	FC

^zDegree of soil loosening: 1 = none; 5 = most effective

^yDegree of soil brought to the surface: 1 = none; 5 = most effective

^xGrooving causes severe injury to the turf and is not generally used as a true cultivation method but is used to "open up" the turf in renovation.

^wFC = field capacity; DFC = drier than field capacity.