GRIGG®

Research Driven,
Proven Results®

NUTRITION PROGRAM

GET THE MOST FROM AERATION

Overview of Aeration Practices

Aeration is conducted on golf and sports turf for many agronomic reasons including compaction relief, oxygenation of the root zone, and improved water infiltration, which modifies soils and controls organic matter in the upper soil profile. Aeration is often the optimum time to apply granular nutrients and soil amendments. Properly conducted aeration also has a long term smoothing effect on the surface, whether that surface is a putting green, lawn bowling pitch, infield or other turf surface. Regardless of the type and timing of the aeration procedure, most turf managers are trying to maximize the agronomic benefits of aeration and promote a rapid recovery of the disrupted surface. GRIGG has the products and programs to assist turf managers with achieving these goals.

GRIGG Proprietary Nutrient Technologies

GRIGG Proven Foliar® products, including GRIGG Gary's Green®, GRIGG Ultraplex®, GRIGG Gary's Green Ultra®, GRIGG Nutra Green™ and GRIGG Kelplex™ stimulate rapid recovery, strong root growth and optimal turfgrass vigor. The technology and nutrients in our programs contain adequate nitrogen for spoon feeding with a controlled release and response that provide superior color and controlled growth. A typical program also includes micronutrients, biostimulants, buffering capacity, and an organic surfactant.

GreenSpec® granular nutrients, including GRIGG Seven Iron™ and GRIGG Turf Rally™ are formulated with protein technology that is utilized more efficiently by bacteria, this provides better nutrient availability and results than other granular fertilizers on the market. Adding a GreenSpec granular product to your aeration program is ideal for establishment, root growth, and recovery from mechanical or environmental stress.

GRIGG soil amendments, such as GRIGG Z-mendit™ (inorganic zeolite), is designed to improve cation exchange capacity (CEC) – thus increased nutrient utilization and a subsequent improvement in turfgrass recovery from mechanical cultivation and/or aeration.

How Zeolite Enhances Turf Health

The natural form of zeolite, clinoptilolite, is a microporous tetrahedral arrangement of silica and alumina, which improves soil chemical properties and results in an increased nutrient pool for plant use. This provides accelerated establishment, limited nutrient leaching, lower fertilizer requirements, improved turfgrass recovery and vigor, and increased rooting.

Product	Bulk Weight lb/ cu ft	meq/100 g soil CEC
*GRIGG Z-mendit	60	165-180

**also contains K, Ca, Fe*

GRIGG Nutrition Program for Maximum Recovery and Performance at Aeration	
Pre-Aeration: Apply 3-5 days prior to aeration to kickstart recovery from mechanical stress	
GRIGG Gary's Green Ultra	12-15 fl oz/1,000 ft²
Post-Aeration- Granular: Apply 1-3 days after aeration and irrigate immediately after	
GRIGG Seven Iron	10-15 lbs/1,000 ft²
Post-Aeration- Foliar: Apply 5-7 days after aeration and continue every 14 days	
GRIGG Gary's Green Ultra	12-15 fl oz/1,000 ft²
GRIGG Nutra Green	6 fl oz/1,000 ft²
GRIGG Kelplex for increased rooting	1.5 fl oz/1,000 ft²

If pre-mixing *GRIGG Z-mendit use the following guidelines per ton of sand:

5% . . . . . .60 lbs
10%. . . . . 120 lbs
15%. . . . . 180 lbs
20% . . . . . .240 lbs

** Contact your representative to discuss zeolite incorporation depending on the hole sizing, spacing and depth of the aeration process.*

GRIGG Research

A 5% v/v Z-mendit application increased root zone mix CEC compared to a 10% v/v application of other soil amendments (Table 1.) This subsequently increases the volume of other amendments required to produce an equivalent CEC (Figure 1).

Root Mix	lbs / 1,000 ft²	CEC meq/ liter	CEC meq/ 100 g
Sand	n/a	33	2.0
GRIGG Z-mendit 5%	2500	111	6.8
AXIS 10%	2083	43	2.8
Profile 10%	3223	50	3.0
Isolite 10%	2859	43	2.8

***Table. 1** - Comparing root zone Cation Exchange Capacity (CEC) after treatment with various volumes of different soil amendments*

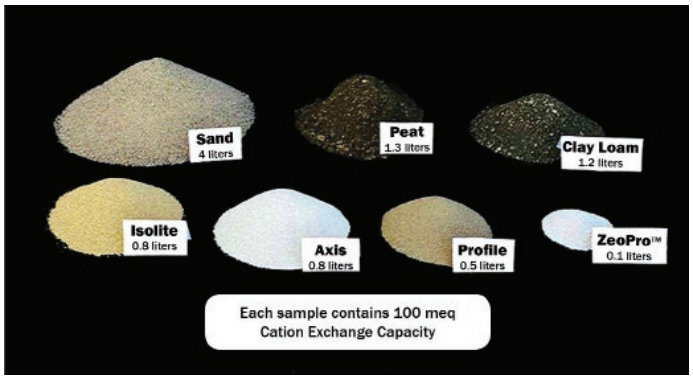
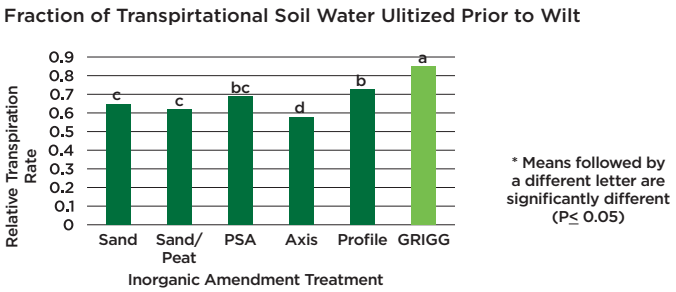


***Figure. 1 -** Bulk density comparisons necessary to generate an equivalent CEC*

In 2003, research resulted in improved establishment of creeping bentgrass and higher root zone CEC's after treatment with a GRIGG soil amendment (v/v) compared to sand and peat amendments. The GRIGG treatment increased 'Tiftway' Bermudagrass relative transpiration rates under lower soil water conditions (Figure 2) (Miller, 2000).

***Figure. 2** - Bermudagrass response to drought stress. The mechanism for this effect was reported as a delay in stomatal closure under increasing water deficit.*



For a distributor near you contact:
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References

Miller G.L. 2000. Physiological response of Bermudagrass grown in soil amendments during drought stress. In Hort. Sci. 35(2): 213-216

Ok, C., S. H. Anderson, and E.H. Ervin. 2003. Amendments and contruction systems for improving the performance of sand-based putting greens. In Agron. J. 95:1583-1590.