Protene®

Performance Fertilizer

Protene® 19-2-19 Controlled Release Fertilizer

Performance Assessment Compared with Polymer Coated Fertilizer

Objective:

To measure release characteristics of nitrogen, phosphorous and potassium on soils at 1, 32, 49, 63, 91 and 126 days following application of two controlled release fertilizers, **Protene® 19-2-19** and **Polyon 19-6-12**.

Description:

The trial was conducted in Southeastern Pennsylvania on a golf course. Soil was native silt loam. Turfgrass was mostly comprised of creeping bentgrass mown at 0.5 inches 3-4 times per week. Treatments were applied in April using a shaker bottle. Sites were tested prior to trial start-up for N, P and K levels in the soils. Treatments were then targeted to those sites with minimal levels of N, P and K. Treatments were replicated five times in a randomized block design.

1). Soils were tested at 1, 32, 49, 63, 91 and 126 days following application for Nitrogen, Phosphorous and Potassium.

2). Due to the similarity and linear relationships of the treatment data collected a linear trendline and regression analysis was used to analyze the findings and to generate the table and graphs shown.

Protene® 19-2-19 paralleled or outperformed Polyon in nutrient release during a 126 day trial*

Average Soil Concentration (ppm) of N-P-K

	Protene 19-2-19	Polyon 19-6-12	Difference %	Feeding Duration Days	Trendline (Linear)
NO3-N, ppm	4.57	3.96	15.48	126	increasing
NH4-N, ppm – 1-32 days	23.10	16.67	38.57	32 (first)	increasing
NH4-N, ppm – 1-126 days	11.97	10.95	9.36	126 (total)	increasing
Bray Av P, ppm	35.57	34.45	3.23	126	increasing
Potassium, ppm	143.94	133.94	7.46	126	increasing

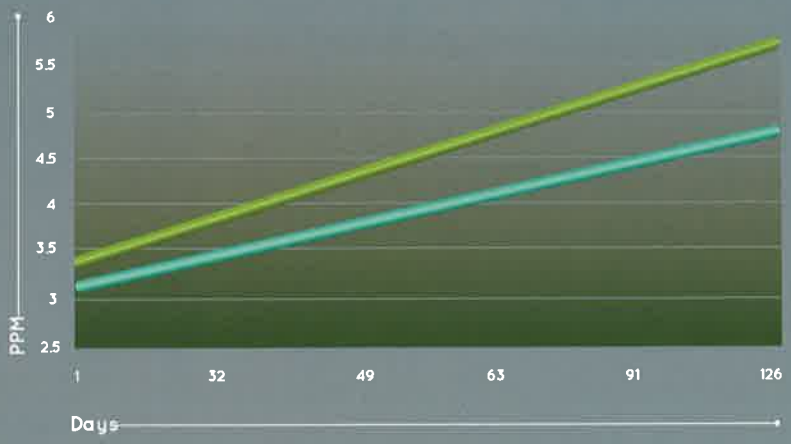
Dates: Start, April 16, 2012; End, September 10, 2012

*Experimental design and field test were conducted by Dr. Steve McDonald, M.S. Turfgrass Solutions LLC. Trial was conducted under commercial golf course conditions.

Statistical Analysis of the data was conducted by Dirk E. Axe, Ph.D., ANTG Research and Development LLC.

the following graphs demonstrate **that Protene® effectively fed** the turf over a 120 day period...

NO3-N in Soils



Plant available Nitrogen in soil for over 126 days

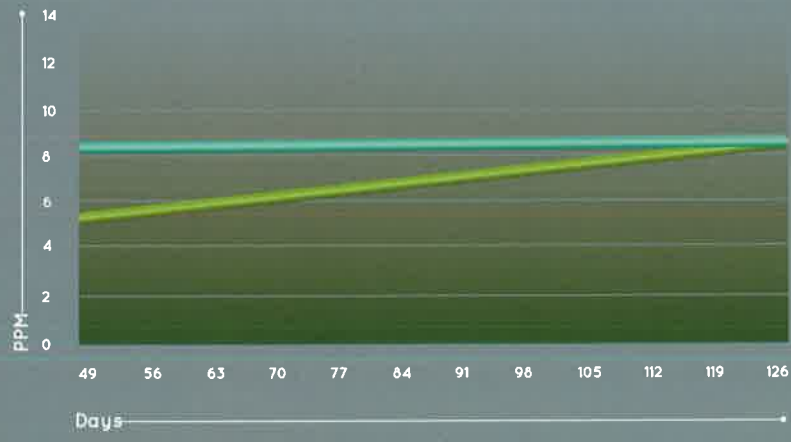
Linear Protene® 19-2-19
Linear Polyon 19-6-12

NH4-N in Soils (1-32 Days)

*Available Nitrogen for "green-up" in first 32 days**

Linear Protene® 19-2-19
Linear Polyon 19-6-12

NH4-N in Soils (Day 49-126)



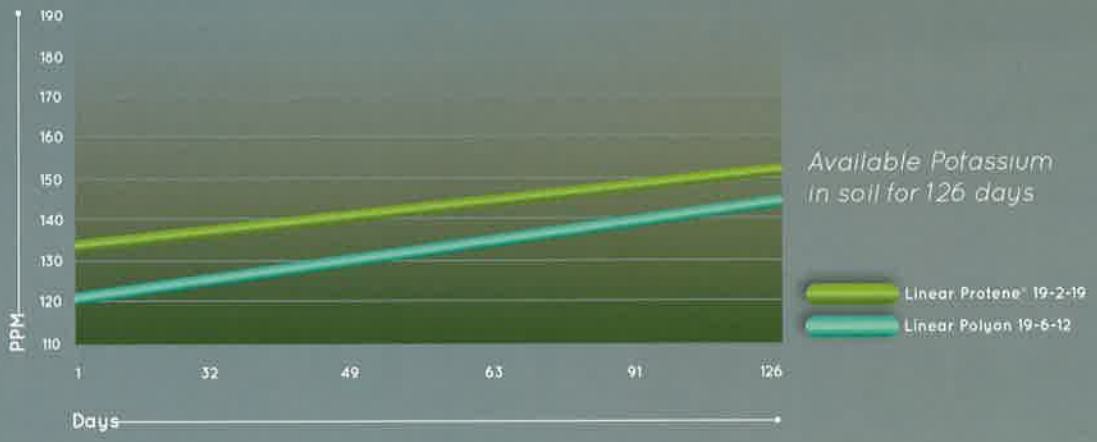
Available Nitrogen from day 49-126

Linear Protene® 19-2-19
Linear Polyon 19-6-12

*More available nitrogen in spring, and long lasting release for a sustained feed during the entire season!

...and that nutrient release was
better than or equal to
Polyon over the same time-frame.

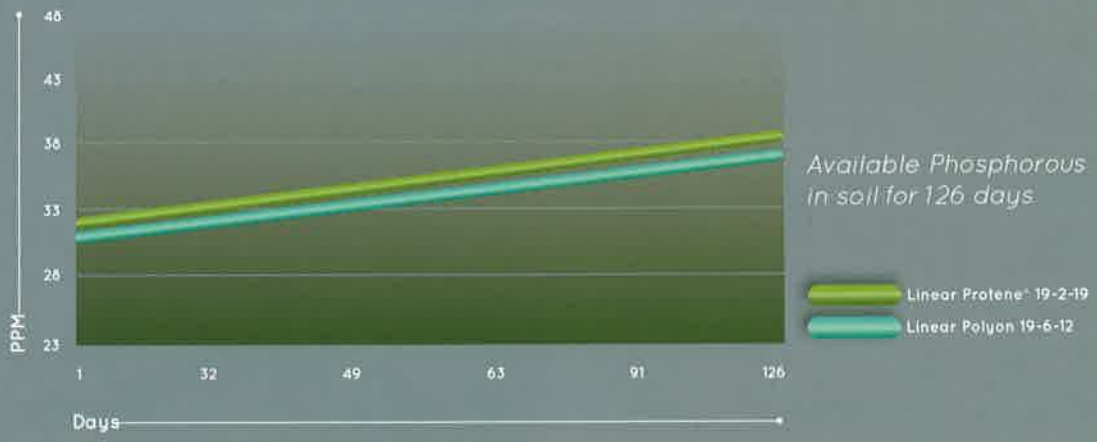
Potassium in Soils



Available Potassium in soil for 126 days

Linear Protene® 19-2-19
Linear Polyon 19-6-12

Bray - Av P in soils



Available Phosphorous in soil for 126 days

Linear Protene® 19-2-19
Linear Polyon 19-6-12

Conclusions:

Protene® 19-2-19 effectively fed N, P, K, over 120 days, and provided more available nitrogen in the first 32 days (spring green-up) compared with polymer coated fertilizer. Turfgrass color and quality were similar for both treatments for the duration of the trial.

Protene® 19-2-19 performed well compared with polymer coated fertilizer in release properties of key nutrients to support turfgrass management. **Trial summary is available at www.proteneusa.com.**

Protene® 120 days

19-2-19

for your peace of mind

Protene®

provides

all nutrient requirements **in one**

homogenous granule

designed to go the distance!

Protene® 19-2-19 is a homogenous granule, rather than a blend of nitrogen, phosphorous and potassium ingredients that are prone to cause speckling and/or uneven distribution of nutrients.

www.proteneUSA.com

We guarantee our product performance.