

DETONATION[®]

DETONATION DELIVERS INCREASED NUTRIENT AVAILABILITY



TRIAL OBJECTIVE

Quantify changes in plant-available nitrogen (N), phosphorus (P), and potassium (K) resulting from the inclusion of Sanctuary Detonation in established bluegrass turf over a 12-week period.

SITE INFORMATION

PARAMETER	VALUE
Location	Stony Brook, New York
Turf species/cultivar	Bluegrass
Soil type	Sandy Loam
Plot size	1,000 sq ft
Replicates	4 Control plots & 4 Treated plots (paired blocks)
Trial duration	12 weeks
Application dates	3/25/26, 4/22/26, 5/20/26
Final sampling date	6/10/26

TREATMENTS

CODE	DESCRIPTION	RATE
C	Control: no microbial treatment	N/A
T	Treated: NPK Consortia	1 oz/1,000 sq ft

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SITE PREPARATION

- The site was selected based on uniformity of soil type, pH, organic matter, and nutrient availability
- Composite baseline samples were collected prior to trial initiation
- Each composite sample consisted of 8 soil cores per plot at 0–5” depth
- Plots were arranged in four blocks, each containing one control and one treated plot to minimize positional effects

BASELINE SOIL CHEMISTRY (PRE-TRIAL)

Plot	pH	% OM	Available N (A)	Available P (B)	Exchangeable K (C)
C-1	6.4	2.87	12 ppm	25 ppm	97 ppm
T-1	6.5	2.84	11 ppm	27 ppm	96 ppm
C-2	6.4	2.88	13 ppm	28 ppm	93 ppm
T-2	6.5	2.87	12 ppm	27 ppm	95 ppm
C-3	6.4	2.28	12 ppm	28 ppm	93 ppm
T-3	6.4	2.87	11 ppm	25 ppm	89 ppm
C-4	6.5	2.87	13 ppm	31 ppm	96 ppm
T-4	6.5	2.86	12 ppm	30 ppm	94 ppm

ANALYTICAL METHODS

A) Plant-available N: Total N by Kjeldahl / combustion

B) Available P: Bray extraction (acidic soil)

C) Exchangeable K: Ammonium acetate extraction

PRODUCT APPLICATION

- Control plots received no treatment other than irrigation.
- Treated plots received Detonation on 3/25/26, 4/22/26, and 5/20/26.
- Applications were made using a pre-calibrated FlowZone 4-gal backpack sprayer, delivering 1 oz product per 1,000 sq ft in 2 gallons of water (fan nozzle).
- All plots were irrigated as needed.
- No fertilizer or lime had been applied to the site since October 2025.

SAMPLING & ANALYSIS

- Final composite samples were collected on 6/15/26 from the same sampling points as baseline.
- Each composite sample consisted of 8 soil cores per plot at 0–5” depth.
- All samples were analyzed using the same methods as baseline readings.



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NUTRIENT AVAILABILITY: BASELINE VS FINAL READINGS

BLOCK 1 (C-1 & T-1)

	Available N	Available P	Exchangeable K
Baseline C-1	12.1 ppm	25.3 ppm	97.0 ppm
Final C-1	13.8 ppm	29.9 ppm	113.2 ppm
Baseline T-1	11.1 ppm	27.6 ppm	96.2 ppm
Final T-1	12.9 ppm	33.4 ppm	113.3 ppm
Mean Δ (C-1 & T-1)	+1.7 ppm N	+7.5 ppm P	+16.1 ppm K

BLOCK 2 (C-2 & T-2)

	Available N	Available P	Exchangeable K
Baseline C-2	13.3 ppm	25.3 ppm	93.7 ppm
Final C-2	16.1 ppm	29.9 ppm	111.9 ppm
Baseline T-2	12.4 ppm	27.6 ppm	95.2 ppm
Final T-2	14.8 ppm	33.4 ppm	113.3 ppm
Mean Δ (C-2 & T-2)	+2.8 ppm N	+7.8 ppm P	+18.1 ppm K

BLOCK 3 (C-3 & T-3)

	Available N	Available P	Exchangeable K
Baseline C-3	12.6 ppm	25.3 ppm	93.6 ppm
Final C-3	15.2 ppm	29.9 ppm	113.8 ppm
Baseline T-3	11.5 ppm	27.6 ppm	89.2 ppm
Final T-3	13.9 ppm	33.4 ppm	100.3 ppm
Mean Δ (C-3 & T-3)	+2.6 ppm N	+7.5 ppm P	+11.1 ppm K

BLOCK 3 (C-3 & T-3)

	Available N	Available P	Exchangeable K
Baseline C-4	13.5 ppm	31.0 ppm	96.1 ppm
Final C-4	16.1 ppm	38.5 ppm	116.8 ppm
Baseline T-4	12.2 ppm	30.8 ppm	94.6 ppm
Final T-4	14.1 ppm	37.3 ppm	113.1 ppm
Mean Δ (C-4 & T-4)	+2.6 ppm N	+7.6 ppm P	+22.7 ppm K



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INTERPRETATION: MECHANISM-BASED

The results indicate that Sanctuary Detonation supported measurable increases in plant-available N, P, and K in just 12-weeks.

- Free-living nitrogen fixing organisms typically begin contributing detectable plant-available N within 2–4 weeks of establishing themselves in the rhizosphere.
- Phosphorus-solubilizing bacteria and potassium-mobilizing organisms commonly show measurable increases in available P and K within 3–6 weeks, with effects strengthening as populations stabilize through the growing season.

Across all four blocks, treated plots consistently demonstrated greater increases in available N, P, and K relative to their paired controls. The data supports the assertion that Detonation can be a valuable tool in improving nutrient uptake and overall efficiencies.

Results Summary

- These results support the reduction of nutrients in areas having fertilizer rate restrictions or blackout dates.
- These results also support the overall performance of Detonation when combined with other dry or liquid product application.
- These NPK results can be extrapolated to include an increased availability of all macro and micro nutrients that are critical to overall plant health
- These dry and liquid combination product applications can translate to a healthier plant that is less prone to stress, wear or disease issues.

