

2022 Pivot Bio PROVEN® 40 Nutrient Uptake & Grain Yield Research Conducted by NC State University



Objective

The study's objective was to determine the impact of PROVEN® 40 on nutrient uptake and yield in corn compared to a nontreated control across several nitrogen rates.

Location

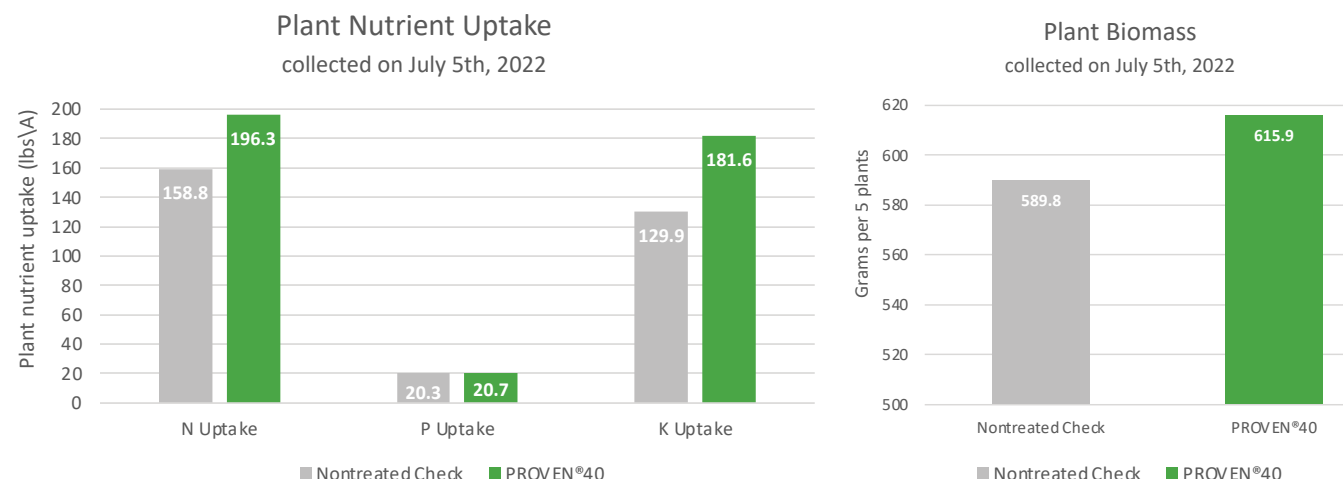
Peanut Belt Research Station (outside Lewiston-Woodville, NC)

Trial Year

2022

<p>Protocol</p>	<p>This agronomic study was a split-plot design with four replications. The main plots consisted of the following treatments:</p> <ul style="list-style-type: none"> • Nontreated check • PROVEN® 40 <p>Within each main plot were five subplots of varying nitrogen rates. The five nitrogen rates were: 70, 110, 140, 180, and 200 pounds per acre.</p>
<p>Details</p>	<ul style="list-style-type: none"> • Soil Type: Lynchburg sandy loam • Hybrid: Pioneer 1847 YHR • Planting Date: April 20, 2022 • Planting Method: Conventional tillage • Plots: 30" rows, 40 ft long x 10 ft wide • Seeding Rate: 33,000 seeds per acre • Application: In-furrow at planting via Precision Planting FurrowJet® treatments • Nitrogen Application: <ul style="list-style-type: none"> - 10-27-0 at 20 gal/ac at planting, 30% UAN broadcast at 15.6 gal/ac post plant, layby 30% UAN applied at various rates for each nitrogen rate treatment. • Harvest Date: September 16, 2022

PROVEN® 40 treated corn plants enabled greater uptake of macronutrients while maintaining yield.



Impact of Treatments on Nutrient Content, Biomass and Uptake

Compared to the nontreated control, the use of PROVEN® 40 produced **greater N and K uptake**, primarily the result of **greater biomass**. The plant could not fully realize the value of this added growth and nutrient uptake due to drought conditions. Plant tissue was collected on July 5, 2022.



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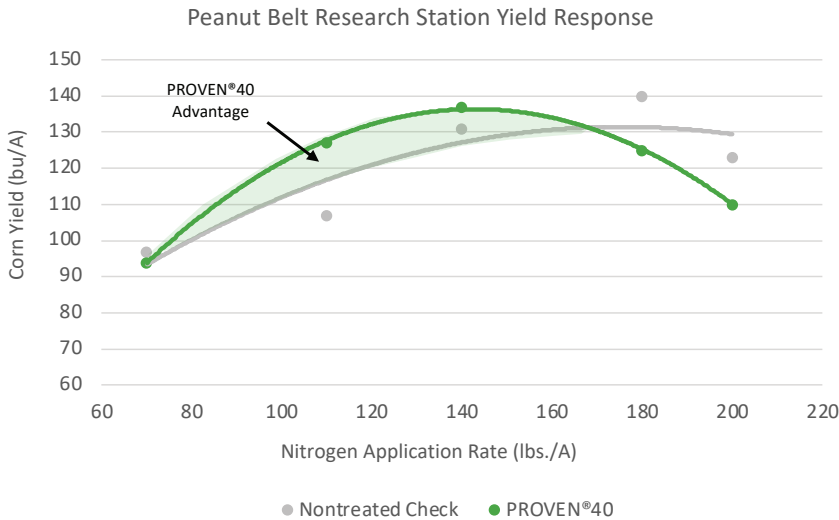
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Location

Peanut Belt Research Station (outside Lewiston-Woodville, NC)

Trial Year

2022



Impact of Treatments on Yield

Averaged over four replications, PROVEN® 40 replaced nitrogen and provided a yield advantage, specifically in treatments where the synthetic nitrogen rate applied was not meeting the demands of the crop.

The yield was greatly limited by drought at this location. PROVEN® 40 allowed corn plants to establish an early biomass and nutrient uptake advantage. Even under these water-limited conditions, **maximum corn yield was achieved with PROVEN® 40 using less nitrogen** than commonly used by growers.

*Drought was a key problem across the region in 2022. The dry period occurred over critical growth stages from V10 to R1 and would have had more impact on grain yield, except that irrigation was initiated with 1.5 inches of water applied.



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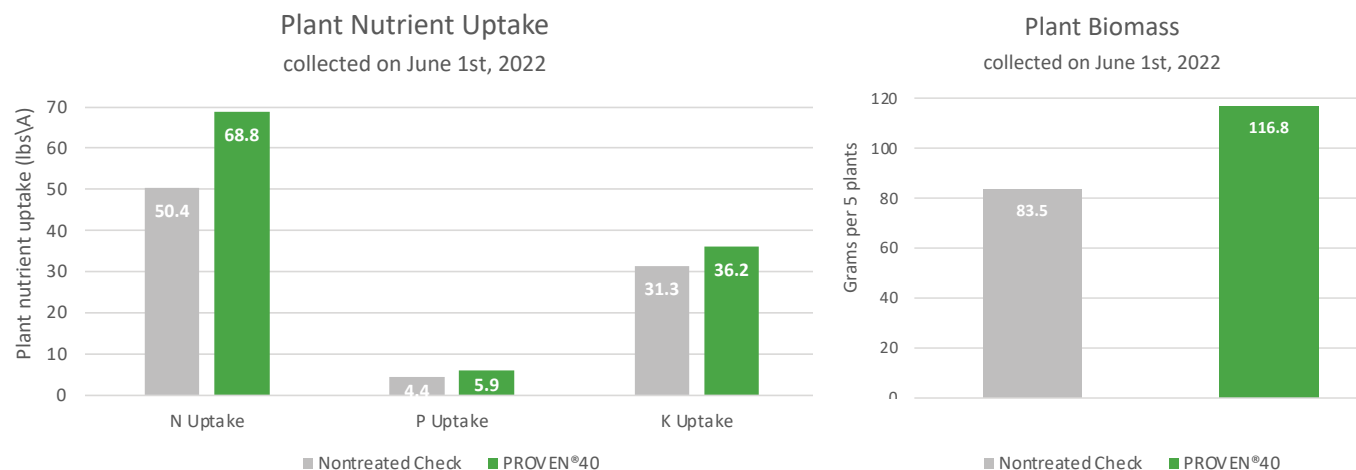
Mike Harris farm
(near Roper, NC)

Trial Year

2022

<p>Protocol</p>	<p>This agronomic study was a split-plot design with four replications. The main plots consisted of the following treatments:</p> <ul style="list-style-type: none"> • Nontreated Control • PROVEN® 40 <p>Within each main plot were five subplots of varying nitrogen rates. The five nitrogen rates were: 70, 110, 140, 180, and 200 pounds per acre.</p>
<p>Details</p>	<ul style="list-style-type: none"> • Soil Type: Roper Muck • Hybrid: DEKALB DKC 68-69 • Planting Date: April 26, 2022 • Planting Method: Conventional tillage • Plots: 30" rows, 40 ft long x 10 ft wide • Seeding Rate: 33,000 seeds per acre • Application: In-furrow at planting via Precision Planting FurrowJet® treatments • Nitrogen Application: <ul style="list-style-type: none"> - 10-27-0 at 20 gal/ac at planting, 30% UAN broadcast at 15.6 gal/ac post plant, layby 30% UAN applied at various rates for each nitrogen rate treatment. • Harvest Date: September 14, 2022

PROVEN® 40 treated corn plants enabled greater uptake of macronutrients while maintaining yield.



Impact of Treatments on Nutrient Content, Biomass and Uptake

Although not statistically significant, compared to the nontreated check, the use of **PROVEN® 40 produced greater N, P, and K uptake and greater plant biomass.** Plant tissue was collected on June 1, 2022.



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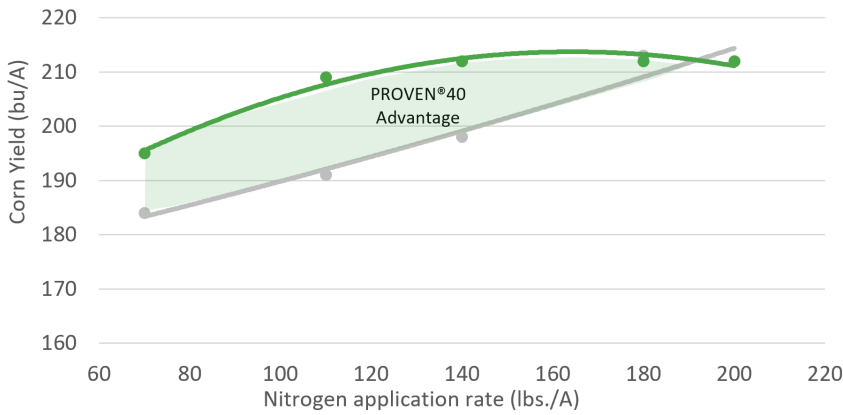
Location

Mike Harris farm
(near Roper, NC)

Trial Year

2022

Corn yield response to nitrogen rate and PROVEN®40 at the Harris Farm near Roper, NC



Impact of Treatments on Yield

Averaged over four replications, PROVEN® 40 replaced nitrogen and provided a yield advantage, specifically in treatments where the synthetic nitrogen rate applied was not meeting the demands of the crop.

On average, across all N application rates, corn plants treated with PROVEN® 40 resulted in significantly greater yields **(+8.2 bu/A.)** than the nontreated check.

Corn yields at this location with PROVEN® 40 were **maximized using about 40 Lbs./A less nitrogen than farmer standard practice.** Drought likely limited the ability of the corn plants to fully benefit from the biomass and nutrient uptake advantages established with PROVEN® 40.

*Drought was a key problem across the region in 2022. A long dry period from April 1 – May 31, 2022, was followed by adequate rainfall from June 1 – July 15, 2022.

