



Aspire®: Impact on Potassium Uptake (Greenhouse Trial)

Objective

- Quantify the impact of Aspire® (0-0-58-0.5B) on potassium (K) uptake and plant growth in corn when applied with low vs. high nitrogen (N) rates.

Overview

- Adequate levels of K and N can aid in nutrient uptake and optimize nutrient recovery.
- Optimizing Nitrogen Use Efficiency (NUE) relies on potassium ions (K⁺) to balance the negative charge of nitrate (NO₃⁻) as it is taken up by roots and distributed throughout the corn plant.
- Aspire is an innovative K fertilizer that uses Nutriform® technology to combine potassium along with two forms of boron (B) (fast and slow release) for optimal nutrient delivery and distribution.

Trial Details

CROP: Corn (*Zea mays*)

YEAR: 2023

LOCATION: Sabanci University, Turkey

DATA SOURCE: Dr. Ismail Cakmak

EXPERIMENTAL DESIGN: Pot trials conducted under greenhouse conditions and averaged across two soil types.

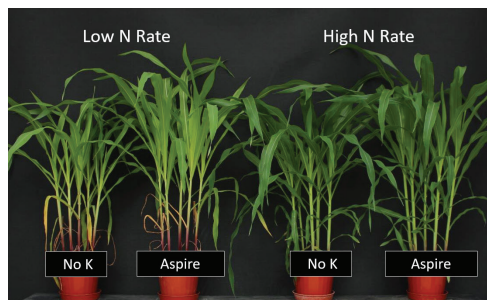
- Loam (7.8 pH, 244 ppm K, 0.1 ppm B)
- Clay (4.6 pH, 81 ppm K, 0.4 ppm B)
- Fertilizer applied representing a low and high nitrogen rate

Treatments:

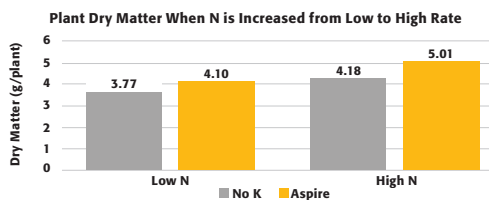
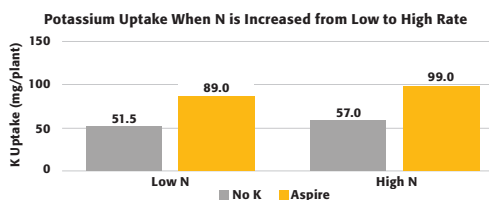
- Low N, no K
- Low N, Aspire
- High N, no K
- High N, Aspire

Study Details:

- Fertilizers were homogeneously mixed with soil, simulating broadcast and incorporated applications.
- Above ground dry matter and nutrient uptake was determined 37 days after planting.



Plant health and biomass production with low N rate compared to high N rate, with and without Aspire.



Sufficient K and N are needed to optimize plant dry matter and nutrient uptake efficiencies.

11.2%

Increased K uptake when providing K nutrition with Aspire and adequate N.

22.0%

Increased plant dry matter when providing K nutrition with Aspire and adequate N.



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WARNING: Contains boron. Use of boron may result in crop injury. DO NOT place this product in direct contact with the seed. For more information, go to AspireBoron.com.

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Summary

- Corn potassium uptake increased 10 mg/plant (11.2%) when nitrogen application rates were increased to sufficient levels with Aspire, but only 5.5 mg/plant when no K was applied.
- Plant dry matter increased 22% (0.91 g/plant) with Aspire when N rate increased from low to high, compared to only an 11% (0.41 g/plant) increase when N rates were increased from low to high with no K.
- Potassium nutrition with Aspire is needed as part of a balanced crop nutrition program to optimize N applications, plant dry matter production, and K uptake.