



# NUTRIENT USE EFFICIENCY STUDY

## MULTI-YEAR SOIL HEALTH STUDY

### MEASURING DIFFERENCES IN NUTRIENT AVAILABILITY

## SUMMARY

Over the past several years, agricultural industries have been focused on the Nitrogen(N) portion for improving soil and plant efficiency. However, we cannot forget the importance of the remaining primary, secondary, and micronutrients. This research report highlights how L-CBF not only capitalizes on N use efficiency but also unlocks the remaining primary, secondary and micronutrient abilities as well.

A Two-Year Study [2020 & 2021] measuring Soil Health, Overall Nutrient Use Efficiency, and Nitrogen Use Efficiency [QLF Agronomy. (2022). Soil health and nitrogen use efficiency study. RT6530, p.1] was accomplished at an independent research station near Martinsville, Illinois. QLF Agronomy Research compared a blend of 10% Liquid Carbon-Based Fertilizer L-CBF BOOST™ 4-0-3-2 S and 90% Urea Ammonium Nitrate [UAN 28%], as opposed to a full rate of UAN 28%.

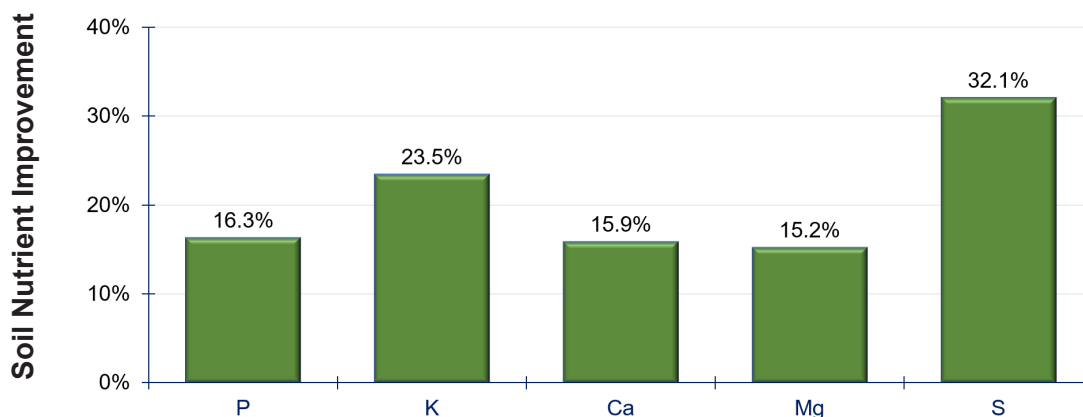
Six-inch depth soil samples were acquired in a grid pattern before pre-emerged [broadcast] and side-dress [Y-Drop @ V4-5] fertilizer applications were utilized. Samples were retaken two weeks after the broadcast and side-dress applications [e.g., post fertilizer applications], thus were evaluated to the first set of soil samples exercising Haney's Soil Health Test Procedure.

Plant growth and development depends on their ability to sequester all mineral nutrients from the soil. Plants often encounter considerable challenges in attaining an adequate quantity of these mineral nutrients to meet the requirements of cellular progressions due to their relative immobility. Nutrient deficiency can also lead to reduced overall soil biodiversity since plants serve as the manufacturers that support most food webs. The four charts below validate how ten percent L-CBF BOOST™ inclusion with UAN 28% improved nutrient availability for plant growth and development while providing the soil microbes with biodiversity. Each graph exhibits that all mineral nutrient listed, beyond N, has surpassed nutrient efficiency over the control treatment, thus proving that L-CBF products have the necessary tools to compete effectively in today's high-demand agricultural sector.

### Graph 1

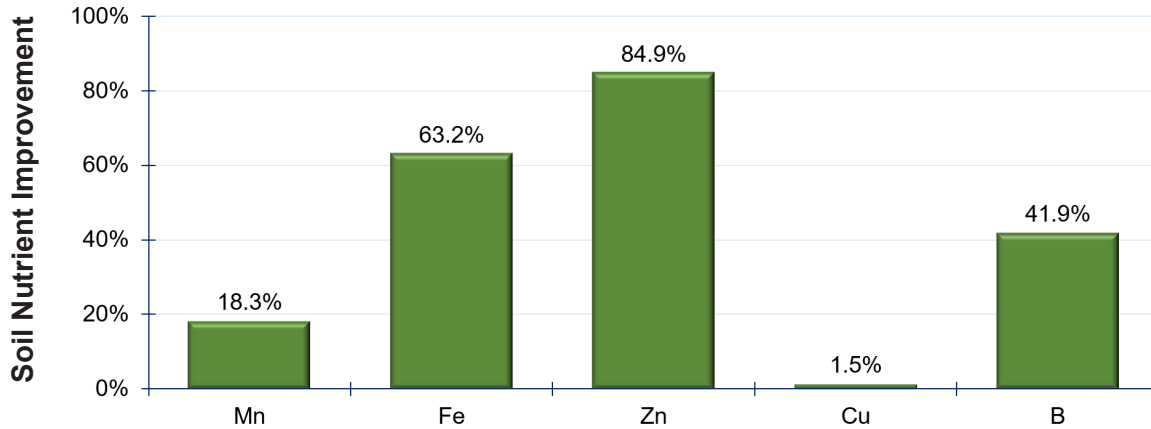
Ten Percent L-CBF BOOST™ Inclusion With UAN 28%.

Pre-Emerge [PPI] Application of 36+4 GPA Compared to 40 GPA of UAN 28%. Two Year Post Mean [2020-2021], Martinsville, Illinois.



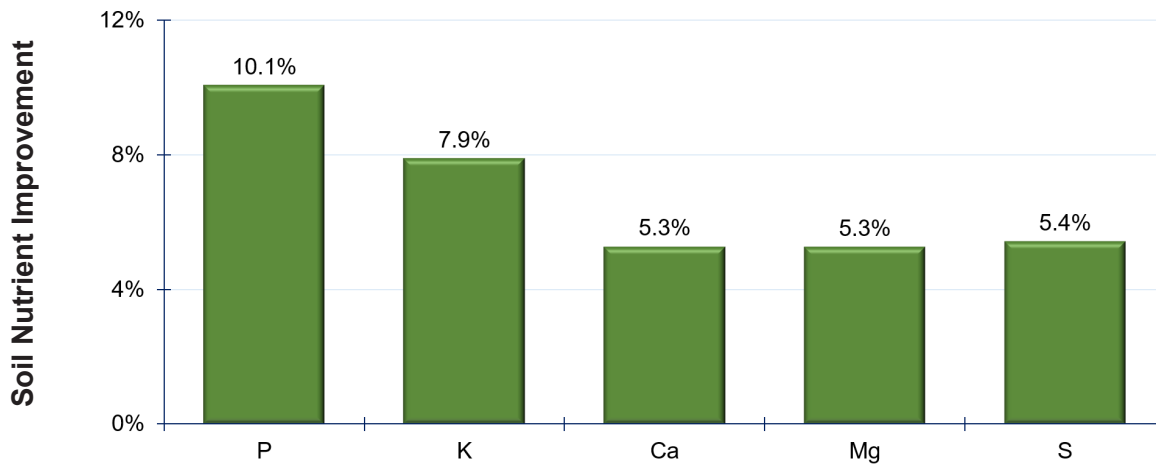
### Graph 2

Ten Percent L-CBF BOOST™ Inclusion With UAN 28%.  
Pre-Emerge [PPI] Application of 36+4 GPA Compared to 40 GPA of UAN 28%.  
Two Year Post Mean [2020-2021], Martinsville, Illinois.



### Graph 3

Ten Percent L-CBF BOOST™ Inclusion With UAN 28%.  
Side-Dress [Y-Drop] Applications of 36+4 GPA Compared to 40 GPA of UAN 28%.  
Two Year Post Mean [2020-2021], Martinsville, Illinois.



### Graph 4

Ten Percent L-CBF BOOST™ Inclusion With UAN 28%.  
Side-Dress [Y-Drop] Applications of 36+4 GPA Compared to 40 GPA of UAN 28%.  
Two Year Post Mean [2020-2021], Martinsville, Illinois.

