EnSoil Algae

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Materials & Methods

Field Trial Locations:

Hawaii-Kai Honolulu (top)
Walmanalo (bottom)

Sweet Corn Varieties:

Venture, Inspiration, Patriarch
(from Stoked seeds company)

Fertilizer and Algae Application:

- Treatments Phase 1:
  - Control - 200 lb/acre N
  - 75% + Algae
  - 50% + Algae
- Treatments Phase 2:
  - Control - 200 lb/acre N
  - 100% + algae
  - 75%+Algae
  - 70%+Algae
  - 65%+Algae
  - 60%+Algae

- **EnSoil Algae: 3 Applications**
  - **V3, V7, V10**

Feather meal (12-0-0) was used as the nitrogen source for both sites. The nitrogen application was split into two-halves. Half application pre-plant and 2nd half a month after sweet corn germination. EnSoil Algae™ was applied as a soil drench after seed germination (V3) and after the 2nd fertilizer application through drip irrigation (V7). The 3rd application was applied as a foliar spray 2-weeks after the 2nd application (V10). EnSoil Algae™ was applied at a rate of 8 oz. / acre.

Data Collection:

- On 5 randomly selected plants from each replication we collected the following data: plant height (in), SPAD leaf chlorophyll, corn ears with husk weight (ounce), corn ears husked weight (ounce), sweetness (BRIX), and individual plant yield.
- The entire plot yield was used to measure the total yield (presented in bushels).

Results

- Reduction in nitrogen up to 35%+Algae produced similar corn ear yields compared to 100% N application.
- Chlorophyll content was sufficient for healthy/optimum crop growth with the N-reduction to 35%, then went below the optimum rate with 40% N-reduction. There was no significant effect on sweet corn ear length or BRIX level.
- There was no significant change in corn ears with husk weight and husked corn ear weight when nitrogen was reduced down to 35% and with EnSoil Algae™ applied for all three sweet corn varieties. However, the reduction of 40% in nitrogen application rate caused a significant decline in sweet corn ear weight.

Discussion

It is clear that the EnSoil Algae™ application helped keep the soil nitrogen at the necessary level for optimum sweet corn growth. Specifically, the improvement in soil microbiology with the EnSoil Algae™ application has improved nitrogen availability to a sufficient level to reduce nitrogen application up to 35% (65% of the total nitrogen rate applied). It is known that soil microbiology and nutrient release/availability for crop uptake are highly and significantly correlated. It's also known that sweet corn is a heavy nutrient feeder. An available N decline is normal with reducing the N application. However, in this case, the reduction of N by 35% did not reach a significant level to affect the growth or yield of the sweet corn. It is clear from the results that EnSoil Algae™reduced the impact by increasing nitrogen availability for the sweet corn.

Conclusion

The results suggest that the increased diversity of soil microbiology (from EnSoil Algae™ application) lead to improved nitrogen availability (Mineralization) for crop uptake. Regardless of soil properties (two study sites), the application of EnSoil Algae™ benefitted the sweet corn when there was a reduction in the nitrogen application down to 65% of the total recommended rate. We believe that cutting down nitrogen application by 25% with EnSoil Algae™ application will lead to many benefits, including: improving farmers net profitability, protecting the environment by reducing nitrogen leaching, while keeping the crop healthy and at its optimum yield.