



TRACER
MINERALS



INGRAINED

Guaranteed Analysis

Total Nitrogen (N).....	3.00%
Calcium (Ca).....	0.05%
Magnesium (Mg).....	1.50%
Boron (B).....	0.20%
Copper (Cu).....	1.00%
Iron (Fe).....	0.50%
Manganese (Mn).....	0.50%
Zinc (Zn).....	0.50%

Derived From:

Nitrogen (amino acids), Calcium Amino Acid Chelate, Magnesium Amino Acid Chelate, Boron Amino Acid Complex, Copper Amino Acid Chelate, Iron Amino Acid Chelate, Manganese Amino Acid Chelate, Zinc Amino Acid Chelate, Water, Potassium Sorbate.

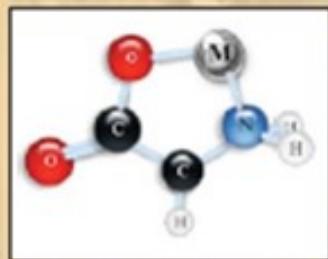
DIRECTIONS:

**Apply 16 Oz Per Acre
(1L/Hectare) Run Through
Sprayer Diluted With 20
Parts Water.**

InGrained is uniquely designed to provide bioavailable nutrients directly to your crops. This foliar applied product is stable and electroneutral so as to be nonreactive. This allows for compatible mixing with many other common crop spray products. Simultaneous application of InGrained with other products, results in fewer passes, less time, and less field compaction.

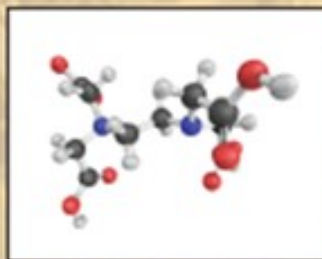
Testing with this product has been conducted via self propelled sprayer and also spray plane in conjunction with other chemicals and/or fungicides.

** Please jar test all products for compatibility*



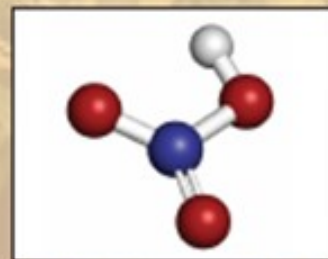
Amino Acid Chelated Mineral Fertilizer

- Small Molecular size and weight
- Electroneutral
- Avoid antagonisms
- Can be applied at time of other chemical applications (with Jar Test Check)
- Freely pass through cuticle
- Recognized by the plant as proteinaceous/ nitrogen containing
- Moved by the plant via the phloem



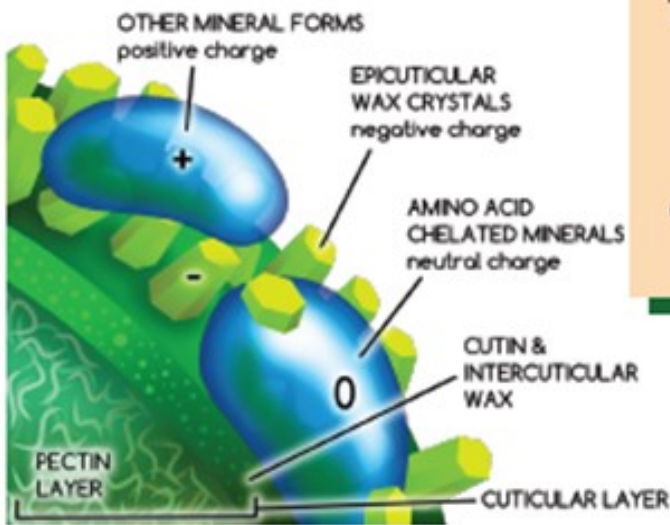
EDTA Chelation

- Larger Size
- EDTA is not utilized by the plant
- Will deliver mineral to plant but will remove mineral from plant as well
- High affinity for calcium and will remove from cell wall if allowed to
- Environmental concerns



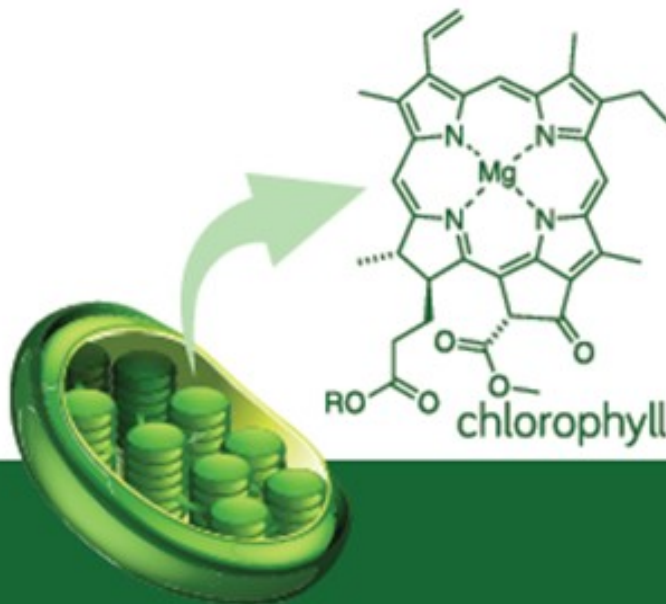
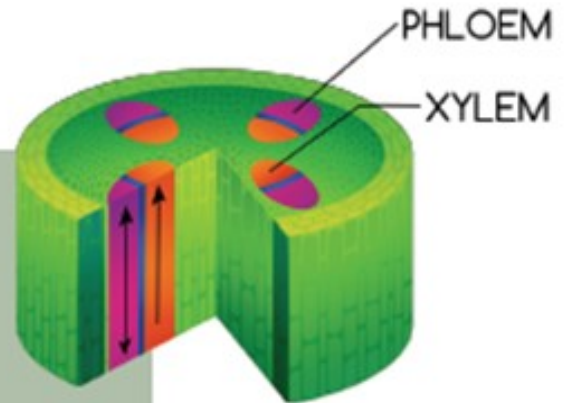
Inorganic Fertilizers

- Sulfates, chlorides, tribasic chlorides, hydroxyls, oxides, carbonates, etc.
- Can be tied up by antagonisms
- Limited solubility
- Interactions may occur with tank mixing
- Ionic interactions may stop absorption through the leaf
- Moved via the xylem
- Risk of phytotoxicity



The waxy cuticle of the plant carries a negative charge so when a positive ion (like an inorganic mineral) comes in contact, the two attract. This holds the positive ions on the surface of the leaf. Amino Acid Chelated Minerals are small in size and neutral in charge and therefore are neither repelled or attracted to the cuticle, they simply pass through.

Plants have two nutrient “highways” in their systems, Xylem and Phloem. The Xylem is used to transport water and ionic minerals, the Phloem is used for carbohydrates and nitrogen containing compounds. Movement within the xylem is dependent on the capillary effects of water and transpiration. The phloem is an active transport system to move nutrients around the cell to sites where they are most needed such as the chloroplast, root meristems, new shoot locations, and reproductive areas.

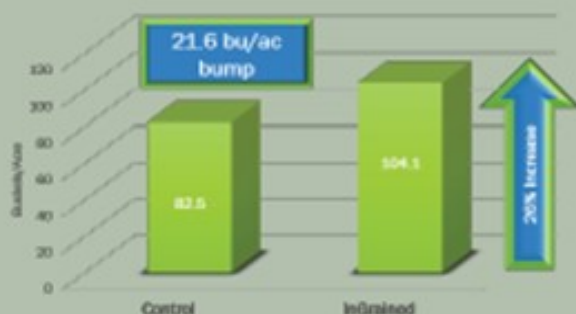


The Chloroplast is the “powerhouse” of the plant cell. Chlorophyll compound directly involved in photosynthesis and is also one of the most important natural chelates on the planet. At the center of this vital chelate there is a Magnesium ion.

Supplying the plant with the correct minerals in the most bioavailable way is worth more than we have ever understood before.

Corn Pilot Test

(Yields adjusted to 15.5% moisture)



Corn Pilot Test- NW Kansas

Field was dryland in second year of corn. Plants were hand sprayed at time of tassel based on label recommendations. Ears were individually picked, counted, shelled, weighed, and evaluated.

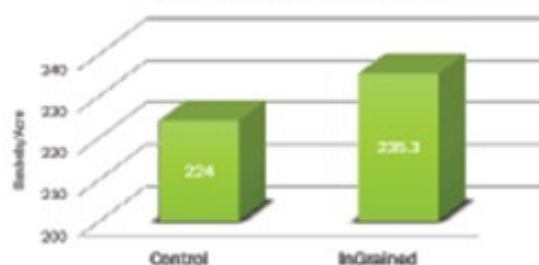
Additional Testing: InGrained was sprayed directly onto corn tassel and soybean flowers in 20X+ concentration to test for over application damage. No signs of distress/burn were seen and no detrimental impact to yield recorded.

Corn Field Test- Illinois

Field was dryland corn. Plants were sprayed via self propelled sprayer with other chemicals in the tank at V5. Both treatments received the same mix except for the addition of InGrained. The control portion accounted for 12.1 acres and yielded 231.4 bu/ac while the InGrained section made up 9.9 acres and yielded 243.1 bu/ac (both adjusted to 15.5% moisture). These results were repeatedly seen across the field.

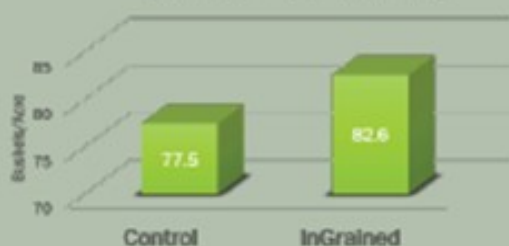
Corn Field Test

(Yields adjusted to 15.5% moisture)



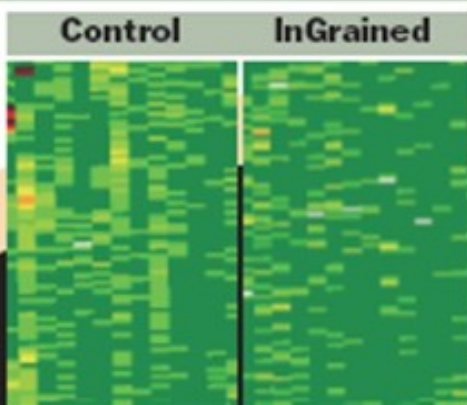
Soybean Field Test

(Yields adjusted to 12% moisture)

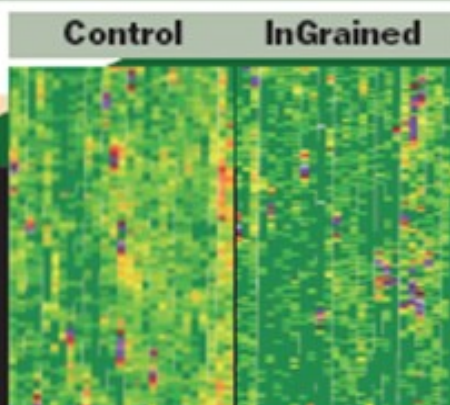


Soybean Field Test- Illinois

Field was dryland soybeans. Plants were sprayed via ground sprayer with other chemicals in the tank at R3. Both treatments received the same mix except for the addition of InGrained. The control portion accounted for 3.2 acres and yielded 77.5 bu/ac while the InGrained section made up 3.2 acres and yielded 82.6 bu/ac (both adjusted to 12% moisture). These results were repeatedly seen across the field.



SOYBEANS



CORN

CALCIUM

- ✦ Vertical Integrity
- ✦ Nitrogen Metabolism
- ✦ Detoxifying Agent

DEFICIENCY

- ✦ Wilt
- ✦ Death Of Growth Points
- ✦ Reduced Crop Quality

MAGNESIUM

- ✦ Enzyme Cofactor
- ✦ Protein Synthesis
- ✦ Chlorophyll Production

DEFICIENCY

- ✦ Chlorosis
- ✦ Premature Senescence
- ✦ Delay Of Reproductive Phase

BORON

- ✦ Energy Utilization
- ✦ Carbohydrate Metabolism
- ✦ Nutrient Transfer Regulation

DEFICIENCY

- ✦ Reduced Yield
- ✦ Stunted Growth
- ✦ Reduced Pollination

COPPER

- ✦ Enzymatic Activity
- ✦ Seed Formation
- ✦ Protein Synthesis

DEFICIENCY

- ✦ Stunted Growth
- ✦ Reduced Yield
- ✦ Chlorosis

IRON

- ✦ Nitrogen Utilization
- ✦ Catalyst Function
- ✦ Protein Metabolism

DEFICIENCY

- ✦ Reduced Photosynthesis
- ✦ Chlorosis
- ✦ Leaf Loss

MANGANESE

- ✦ Oxygen Release
- ✦ Chloroplast Membrane Maintenance
- ✦ Lignin Synthesis

DEFICIENCY

- ✦ Stunted Growth
- ✦ Reduced Heat Tolerance
- ✦ Chlorosis

ZINC

- ✦ Protein Synthesis
- ✦ Nitrogen Metabolism
- ✦ Cell Division

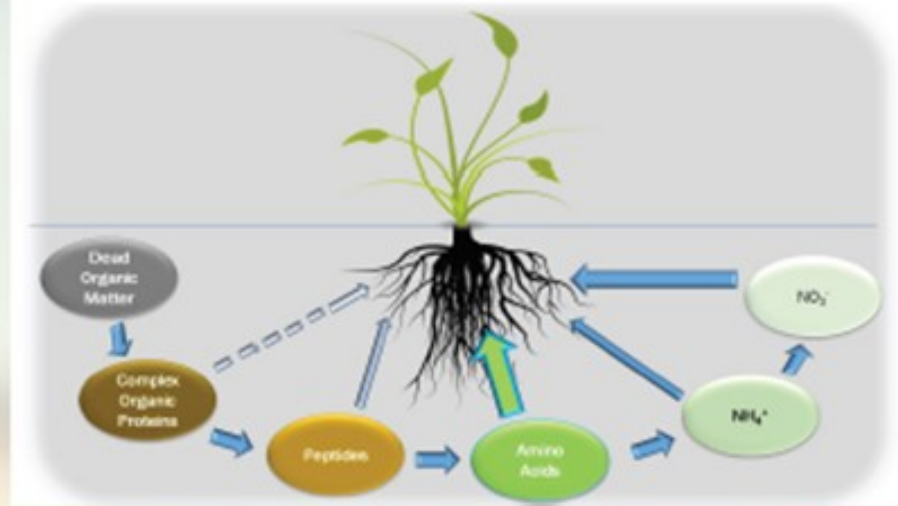
DEFICIENCY

- ✦ Stunted Growth
- ✦ Reduced Yield
- ✦ Leaky Membrane

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Nitrogen Source Utilization



Lower Rates, Measurable Response

It is no mistake that InGrained includes magnesium, copper, zinc, and other minerals in larger ratios than the "industry standard". Tracer Minerals formulated InGrained with extensive review of the biochemical pathways within plants with focus on alternative absorption and utilization routes to deliver the most bioavailable product Tracer Minerals has to offer.

Individual amino acid chelated mineral liquids also available



Contact a tracer minerals representative to learn more about bioavailable Amino Acid Chelated Micronutrient Fertilizers

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