



Our Chemistry

WHY COMPLEX RATHER THAN CHELATE

Question: What does the word “Chelate” mean?

Answer: This is the bringing together of a nutrient metal with the chelating agent to a bound molecule. “The binding together chemically into one”.

Question: What does the word “Complexing” mean?

Answer: This is ‘attachment’ of molecules together in a weak bond that allows for transport and easy release. Separate Molecules, not strongly bound together.

Question: Why complex products?

Answer: The practice of supplying plants with chelated or complexed nutrients is well known in the industry. These materials have been categorized for years.

A. Synthetic Metals:

EDTA, NTA, EDDAA etc.

B. Long chain natural organics:

Polyflavanoids
LignoSulfonates
GlucoHeptinates
Amino Acids
Humic & Fulvic Acids

C. Short chain or small organics:

Citric Acid
Ascorbic Acid
Tartaric Acid
Adipic Acid

At **DeltAg**, we consider complexing to be the best way to improve nutrient uptake through roots or foliage. EDTA has been the long standing preferred chelator for soil applied nutrients for many years. However, in recent years, much research has shown that while EDTA chelates are very stable and will tank mix with many liquid fertilizers, they are not as effective as originally thought and have been shown to be detrimental when in direct contact with some types of seed. At **DeltAg** we prefer organic complexing over EDTA chelating.

Question: Why do we prefer complexing over chelating?

Answer: Synthetic chelating agents such as EDTA are very expensive and are not believed to assist the plant in taking up nutrients through the leaf. Also, EDTA chelated metal nutrients, while they tank mix with many different materials, have been shown to be inefficient for crops to actually take in and metabolize. In other words, they are so tightly bound that it is difficult to get the actual nutrient released from the chelation. On the other hand, a product with an acid pH may not have a perfect reputation for mixing with anything, but they are much more efficient for soil and foliar applications. Therefore, at **DeltAg**, we prefer to formulate products that are easily taken into the roots or leaf that are more readily available and not so tightly bound as EDTA chelated metal nutrients.

Question: Why not use Humic Acid as a natural organic chelator?

Answer: The long chain natural organic chelating or complexing agents, particularly Humic Acids do help the plant in translocating nutrients. Humic Acid is pH sensitive however, and cannot be mixed with fertilizers that are acid or neutral and becomes somewhat insoluble. Humic Acid products are also black in color and quick to stain equipment or containers and most will have a short shelf life before settling out. For these reasons, we feel they are less than desirable.

In Review: EDTA chelated nutrients stay soluble in high pH solutions and have a long shelf life – but high pH solutions are not very crop responsive and will tend to salt out on the leaf surface. Organic complexing agents will stay soluble in most any pH solution (especially low pH) and have an undetermined long shelf life. Low pH solutions tend to get taken into the leaf with very little salting out. The result is better nutrient uptake and translocation.