

Micro & Trace Metals - Extracting “Total”, “Soluble”, “Chelated” and “Complexed” Micronutrients

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- What is your understanding of “ Total”, “ Soluble”, Chelated / Complexed”?
- What are the source materials used to make the various claims?
- Is there a “regulatory” need for these descriptions?
- Agronomic relationship ???



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- “TOTAL”
- Acid soluble vs “true” total
- What is the purpose for this value
- Is it related to the agronomic impact – i.e. plant uptake



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- **“SOLUBLE”**
- **In what ????**
 - **Water**
 - **2 % Citric acid**
 - **2 % Formic acid**
 - **Neutral Ammonium acetate**
 - **Some other type of buffered extracting solution (as in Silicon)**



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- ▶ **Chelated vs Complexed**
 - ▶ How strong are the bonds holding the nutrient?
 - ▶ What is the purpose of using this type of micronutrient?
 - ▶ Do we look at the complexing agent, the amount of the nutrient bound or the total amount?



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- ▶ Looking at the OP and the various nutrient sources (definitions) allowed –
 - ▶ How ‘soluble’ are they in water, and are they available?



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