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liquid logics
agronomy update
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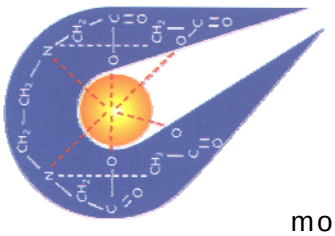
Understanding sulphates, oxides & chelates

The choice of liquid fertilisers you find at your local supplier is endless. How do you make a choice? Does it matter whether you apply chelates or oxide-based formulations? Does the situation make a difference to your choice? Which formulation will give you the most benefits? What type of formulation is the best to use in complicated tank mixes?

It is time for zinc application in several crops. Agrichem alone has at least 3 zinc products on the shelf. In which situation should you use our chelate, Supa Zinc? When do you apply sulphate-based products? What kind of uptake will you get with our oxide-based, King Zinc?

Different chemical structures perform differently in soil or on plant surfaces. It is important to understand their characteristics in order to make the correct choice for each situation.

- **Sulphates** get taken up very quickly but they also fall off quickly, so they will not provide nutrients for an extended time period. Because of their high salt index they may burn plants if they are soft or sensitive, if temperatures are high and conditions are harsh. Sulphates are highly reactive and for this reason they have low tank mix compatibility.



- **A Chelate** is a chemical structure which wraps around the individual trace element protecting it from chemical attack. This is why chelated nutrients don't react with other elements in tank mixes or in the soil and also why they are not affected by soil pH or residual anions. Synthetic chelate molecules (such as EDTA, DTPA, EDDHA etc) are very large structures; this is the reason for the low analysis of chelated products. Where claims are made for chelates with a microelement analysis greater than 7.5 %, be aware that these products are not usually fully chelated and may therefore react in tank mixes and also have other disadvantages. Agrichem's chelates are stable in the presence of phosphate, carbonate and hydroxide anions.

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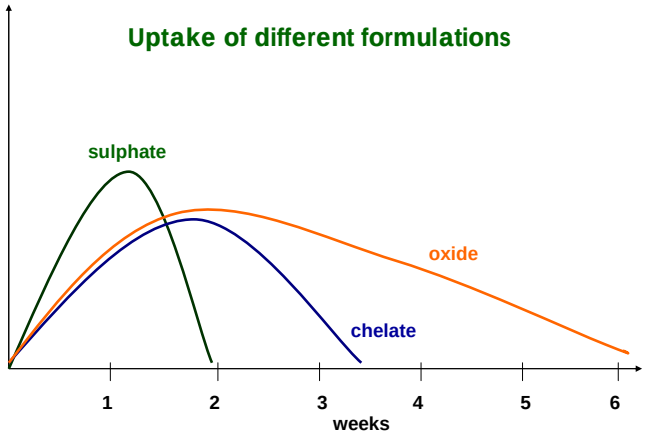

- **Oxides** are usually suspension products which have high nutrient analyses e.g. King Zinc which contains 100% zinc w/v. Typical uptake characteristics of these suspensions are slow but nutrients are provided for a longer period. Oxides do not contain salts and therefore do not have a salt index and are consequently safer to use on soft crops and under weather extremes. Because there are no salts, oxides are not reactive and unlike sulphates are more compatible in tank mixes.

What else matters when it comes to uptake?

Apart from the formulation there are several factors influencing uptake, from pH to moisture content.

Standard foliar suspension

Particle size of a liquid suspension does matter. In many products on the market particle size is large and unrefined. The uptake of microelements from these particles is slow and ineffective. There are fewer particles on the leaves reducing uptake surface area and many of these particles get wasted, as some of them are even too big to stay on the leaves.

Agrichem foliar suspension

The uptake of nutrients from a smaller particle size is faster and thus more effective. Also the number of particles per unit volume is much higher when the particle size is small. This means that better particle distribution can be achieved when spraying, thereby increasing the uptake surface area. Agrichem utilises the latest technology in its milling operations. The particles size in Agrichem's zinc suspensions are of pharmaceutical quality and fineness. Therefore our particle size is controlled and ultra-fine. This is why uptake of Agrichem zinc suspensions will provide the highest nutrient uptake in a cost effective way.

Should you have any questions in regards formulations or particle size, please contact your area manager or our agronomy team.

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