

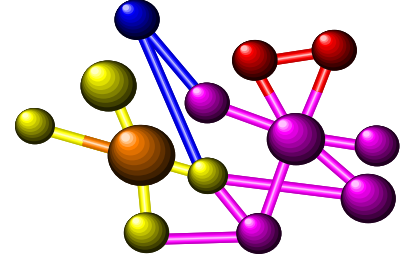


## Organic Solutions for Growth

OMNIA SPECIALITIES AUSTRALIA

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# How Humates Work! Oxygen is the Key!

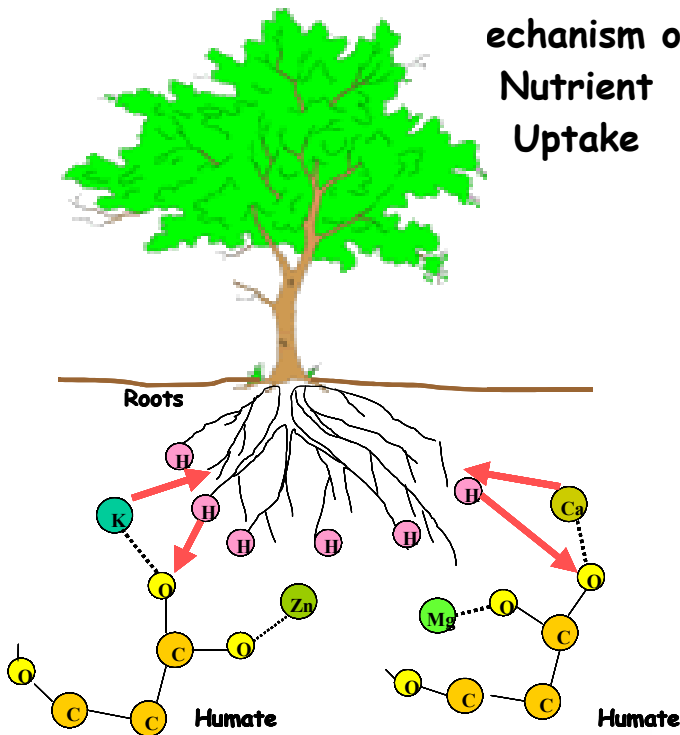


It is now well known that humates (*K-humate™*) have a positive influence on soil in 3 areas.

- 1) Soil Chemistry - Increased nutrient & moisture holding
- 2) Soil Biology - Stimulates beneficial organisms
- 3) Soil Physics - Promotes good structure & breaks clay.

A major factor that distinguishes humic material (humus) from other types of soil organic matter is the Oxygen content. Oxygen is the key to the nutrient and moisture retention properties of humates. The oxygen is found in phenolic and carboxylic functional groups and it is these groups which give humates a high Cation Exchange Capacity (CEC).

### Mechanism of Nutrient Uptake



Nutrients like Ca, Mg, K and Zn shown in the diagram are held by oxygen on the humate molecules. They are then exchanged for hydrogen (H) on the root tips.

Water ( $H_2O$ ) is also held by the oxygen on humates by a process called hydrogen bonding.

*K-humate™* retains nutrients and moisture in the root zone thereby improving efficiency of uptake.

The increased nutrient uptake has been demonstrated by elevated nutrient levels in sap using *OmniSap™* analysis.



Tel: +61 3 5133 9118 Fax: +61 3 5133 9114  
Website: [www.australianhumates.com](http://www.australianhumates.com)

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