SOIL HEALTH

Fulvic Acid Powder

Foliar fertiliser uptake enhancer

>95% Fulvic Acid
>98 % Water Soluble

Fulvic Acids are important for plants to obtain their nutrition from soil.

Fulvic Acids are created by soil-based micro-organisms. They improve uptake of minerals and nutrients by plants.

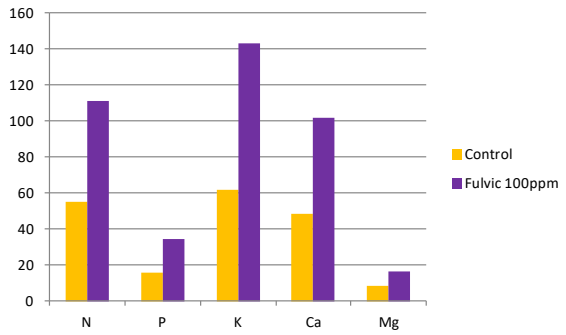
Few Australian soils have adequate microbial life combined with enough soil organic matter to produce fulvic acid.

We recommend using fulvic acid as a foliar spray or via fertigation with fertilisers and trace elements as a cost-effective way to get the benefits of fulvic acid in Australian soils.

Fulvic acid has multiple benefits including:

1) Improving the uptake of nutrients by plants in foliar and soil applications

How - Because of the relatively small size of fulvic acid molecules, they readily enter plant roots, stems and leaves. They carry trace minerals and nutrients from plant surfaces into plant tissues. Fulvic acids are the most effective carbon containing chelating compounds known with a CEC of 1400 meq/100g (which is a result of more caboxyl groups - COOH, and about twice CEC of humic acid). (Yazdani 2014)



100ppm fulvic acid increased the total content (mg/plants) of nutrients in cucumbers (Rauthan 1981).

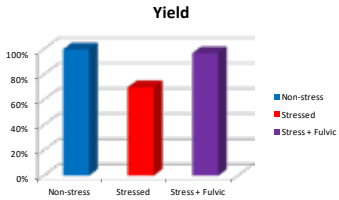
2) Easy to use effective chelating agent

Effective chelating agent across a wide pH range

How - Fulvic acids are a biologically active mixture of weak organic acids which are soluble in water at all pH conditions.

3) Offers drought protection due to improved water storage

How - Multiple mechanisms including higher water and chlorophyll content in plants and enhanced antioxidant enzyme activities that destroy ROS (reactive oxygen species toxicity). (Lofti 2015, Xudan 1989)

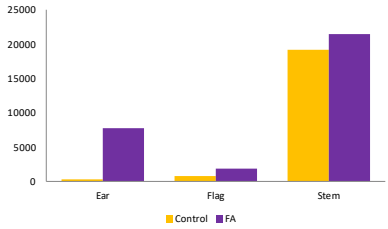


Wheat yield under water stress.

Fulvic acid increased the yield of water stressed plants to 97% of irrigated control. (Xudan 1989)

4) Bonds with plant nutrients to reduce their immobilisation in the soil.

How - High CEC holds nutrients and makes them plant available.



FA at 0.05% improved the uptake of P (unit dpm) in plants exposed to hot-dry wind by an average of 61%. Effect greater at boot stage than when sprayed at early grain filling stage. FA improved overall yield levels, but higher on plots which had a lower yield level. (Xudan 1989)

5) Fulvates also:

- Promote quicker seed germination and faster root and shoot growth
- Provide a valuable source of active carbon for soil micro-organisms
- Buffer UAN foliar sprays
- Improve the efficacy of many non-selective herbicides

Corrects nutrient deficiencies

WHY FOLIAR SPRAYS OF FULVIC

Fulvic acid enhances nutrient uptake and plant growth at 10 - 300ppm in the soil or in foliar sprays. (multiple references) As plants grow, expand and develop their root system it is not always practical to maintain these levels in the soil. Foliar applied fulvic acids can be a more convenient way to promote growth when plants develop a full canopy.

Following early bloom when fruit begins to size, crops daily nutrient demand can outstrip the ability of the soil to supply nutrients. Fulvic acid can provide extra help to the plants by improving nutrient availability and uptake during such critical growth stages.

TYPICAL ANALYSIS:

>95% fulvic acid

98% water soluble

PACK SIZES:

25kg

DIRECTIONS FOR USE:

Ensure all product is dissolved prior to application. To produce a dissolved concentrate, mix at 1:10 with water; do not add solid to spray tank. Add the Fulvic Acid Powder to warm water slowly. Always mix under vigorous agitation.

Test compatibility before using with other products. Care must be taken when mixing. Wear protective clothing, face mask. Avoid inhalation. Apply 3 - 5 L/ha of the dissolved concentrate via boom spray or via irrigation.

APPLICATION RATES:

Foliar Spray: Apply 100-300g/100L water.

Via irrigation: Apply 0.3 - 1.0kg/ha.

Granular Fertiliser Coating: Blend at 1 - 3 kg per tonne.

Herbicides/Pesticides: 20 - 50g in 50L spray mix per ha (always pre-mix with water).

Seed Treatment: 4-5kg per tonne seed.

COMPATIBILITY:

Physically compatible with a wide range of commonly used products. Always mix a small quantity (jar test) and check for physical compatibility before combining with other ingredients.

CLEAN UP PROCEDURE:

Use all mixture in spray and irrigation tanks; purge tanks and lines with clean water; flush irrigation lines. Do not return mix to original drums.Store in original container away from direct sunlight and moisture.

WARNING:

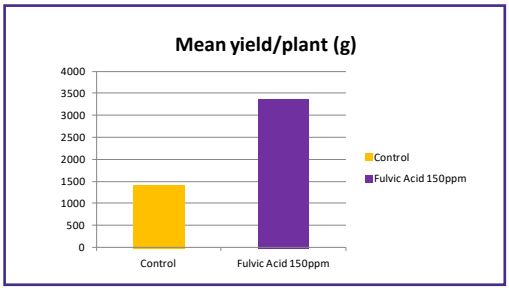
Nuisance Dust - may cause respiratory and eye irritation. Read SDS prior to use.

FULVATES - VALUABLE EXTRAS!

Due to their diverse functional groups fulvates have a lot more to offer including improved growth, enzyme activity and disease reduction.

In research by Kamel 2014 on cucumbers, 150ppm fulvic significantly increased growth parameters including plant height, leaf number, yield.

FA increased activity of soil microorganisms, the enzymes dehydrogenase and nitrogenase and chlorophyll content in fresh plants. FA also reduced downy mildew and powdery mildew disease.



How - As fulvic acid molecules are relatively small they readily enter plant roots, stems and leaves and carry trace minerals and nutrients from plant surfaces into plant tissues. Increasing the plant growth processes within the leaves increases the carbohydrate content of the leaves and stems.

These carbohydrates are transported down the stems into the roots where they are released as root exudates to provide nutrients for soil microorganisms. The microorganisms in turn release acids and other organic compounds to increase the availability of plant nutrients plus microbes outcompete pathogenic soil microbes and reduce disease. (Kamel 2014)

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