

# Biohumates Australia



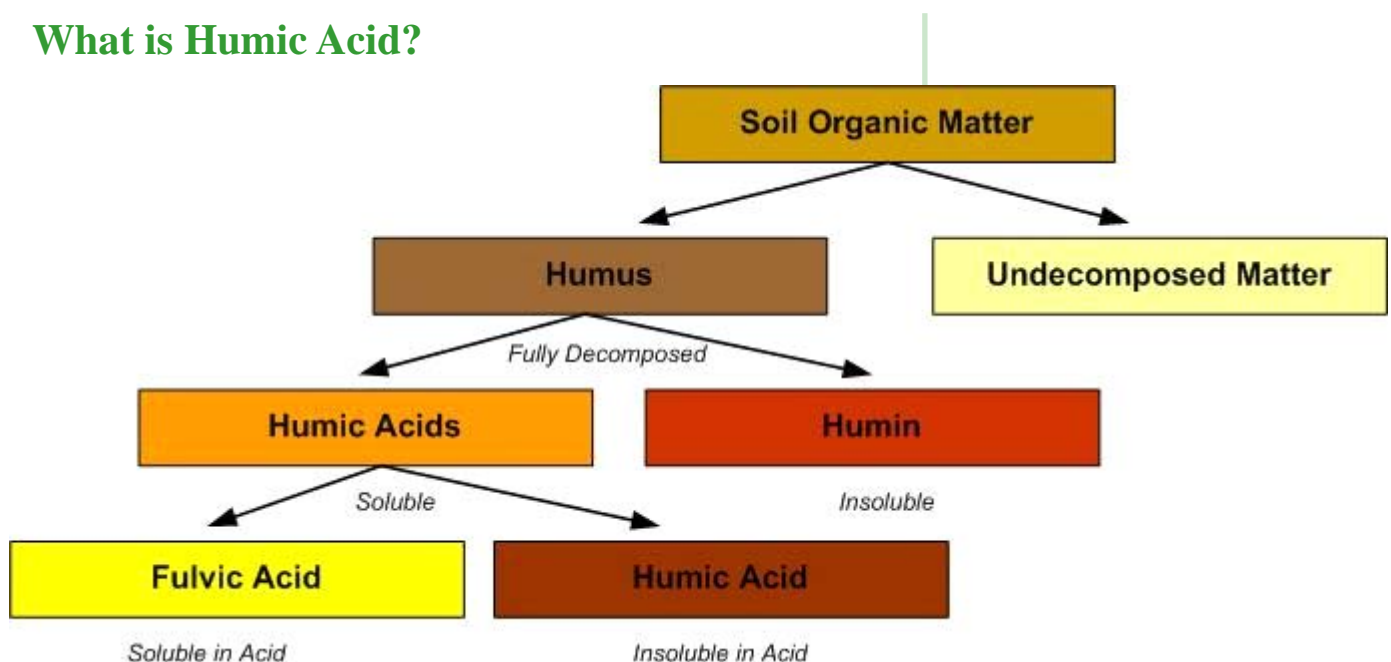
## The BioHumates Difference

Not all Potassium Humates are alike. Good Potassium Humate products have:

- Significant levels of fulvic acids. The smaller the molecules of fulvic acid, the more effective they are. *BioHumates Potassium Humate has high levels of low molecular weight Fulvic Acids.*
- High Acid Group and Carboxyl group content. *BioHumates Potassium Humates have high Acid Group content (0.87mmol/ml) and Carboxyl groups (15.9% of total Carbon).*
- High TKN that indicates the amount of available nitrogen. *BioHumates shows high TKN content – 0.33% w/v.*

- Is here to support the Nutrient Formulator – we are a Potassium Humates supplier to Nutrient Formulators
- Is part of the Total Solution for Nutrient Formulators and Agronomists
- Has achieved increased growth rates in cos lettuces of more than 20%

## What is Humic Acid?



BioHumates Australia has access to a unique high quality Australian Peat-based source of Humates with the following characteristics:

## FEATURES

- Testing has confirmed that all sugars are below detection limits, indicating that full decomposition has taken place. This is a highly developed Humate.
- High Cation and Anion Exchange Capacity to help maximize plant uptake and minimize fertiliser wastage.
- Increases microbiological activity and encourages soil micro-organisms, increases soil water holding capacity, nutrient translocation, plant membrane permeability to nutrients; root respiration and formation.
- Improves soil aeration, friability (crumbliness) of soil; acts as an organic catalyst and stimulates plant enzymes.
- Retains water soluble fertilizers in soil, is rich in organic and mineral substances, improves soil pH buffering capacity, increases soil cation exchange capacity and improves phosphate availability. Very effective in sandy or saline-sodic soils.

## BENEFITS

- Increases crop yields per hectare
- Potential to reduce the amount of fertilizer used
- Potential to reduce water usage and increase drought resistance

## KEY CHARACTERISTICS

	As Anhydrous Peat	As Potassium Humate
Specific Gravity 20C	-	1.05
As IHSS Humic Substances	80%	12%
Potassium Fulvates	13%	1.9%
Potassium Humate	51%	7.9%
Acid Group Content mmol/ml	5.8	0.87
TKN %w/v	2.2	0.33
Sugars and Fatty Acids	<350 ppm	< 50 ppm
Carbon %w/v	41	6.1
Carboxyl groups as % of Carbon	15%	15%

## COMPARISONS WITH EXISTING PRODUCTS

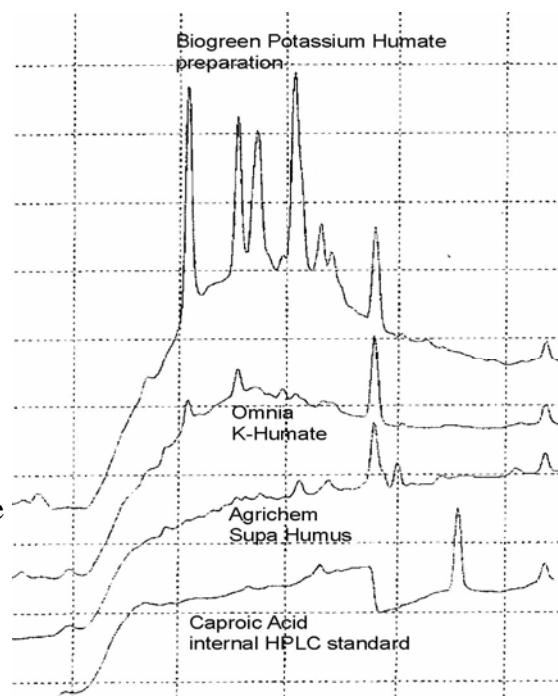
MATERIAL	Acid Group content mmol/ml	TKN %w/v	Humin wt%	Humate wt%
Biogreen Potassium Humates 12%	<b>0.87</b>	<b>0.33</b>	<b>0.6</b>	<b>9.3</b>
OMNIA 18% K Humate	0.71	0.13	1.2	9.5
Nutirtech Humatech Liquid Humus	0.5	0.17	0.4	8.4
Chalmers TriHumic 12%	0.49	0.14	0.2	5.6

**These spectra indicate that Biogreen’s Potassium Humate preparation is enriched in fulvic acids relative to typical commercial humate preparations.**

To obtain these spectra, the Fulvic Acid fraction of the three humate preparations (ie the material remaining in solution after the pH of the solution was adjusted to <2, centrifuged and diluted 1:10 relative to the original sample) was applied to a standard C18 reversed phase HPLC column and eluted with a simple acidified acetonitrile gradient.

The spectra plot the response of the instrument’s Diode Array Detector in Total Ion mode, and the peaks on the chromatograms represent individual molecular species separated according to their polarity, with the most polar to the left.

Note that these spectra have been displaced vertically for clarity.



MATERIAL	Solids wt%	Ash wt%	Carboxyl (as a % of C) wt%	Predominant Functional Group	TOC %w/v
Biogreen Potassium Humates 12%	17	6.1	<b>15</b>	Alkyl, Aromatic, O-alkyl, Carboxyl	6.1
OMNIA 18% K Humate	19	5.9	10.7	Alkyl, Aromatic, Carboxyl	7.6
Nutirtech Humatech Liquid Humus	12	2.4	9.6	Alkyl, Aromatic, O-alkyl	6.9
Chalmers TriHumic 12%	9.7	3.1	10.1	Alkyl, Aromatic, O-alkyl	4.5



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