



# *The advantages of adding humates to lime*

***Humates are the most exciting, yield building, profit boosting tool available in crop or pasture production.***

Growers could reduce their fertiliser requirements and retain the fertiliser ingredients within the plants rooting zone through the application of lime mixed with humate containing humic acids. The application of calcium with humic substances to soils dramatically increases its efficiency.

Research has shown increased uptake of calcium (Ca) by the plants through the liberation of carbon dioxide (CO<sub>2</sub>) from calcium carbonates present within the soil. The plant may take up the released CO<sub>2</sub> or it may form carbonic acids. The carbonic acids act on the minerals, held on the soil, to be released for plant nutrients.

The application of dry humic substances to soils dramatically increases fertilizer efficiency.

## ***Why mix humates and lime?***

***There are two fundamental reasons for using humates:***

**1.**

When applied to the ground it greatly improves soil quality and releases locked in minerals for uptake by plants.

**2.**

When humates are mixed with fertiliser, lime and urea, it helps hold and slow releases it so that plants get much more and a lot less is released into the environment.



## The advantages of adding humates to lime

### Key Humate Benefits

- Improved water retention, and water holding capacity
- Humates can hold up to 7 times their weight in water.
- Humic substances can enhance the release of fixed K from montmorillonite soils.
- Addition of humic acids can increase P uptake by 25%.
- Humic substances will increase length, and number of lateral roots, seedling growth after germination, nutrient availability and nutrient uptake.
- These substances also affect a wide range of enzymatic processes.

Humates, play a vital role in soil fertility and plant nutrition. Plants grown on soils which contain adequate humates are less subject to stress, are healthier, produce higher yields, and the nutritional quality of feeds are superior.

Humic substances are important in soil fertility and plant nutrition because of the part they play in the life cycle on earth. The life-death cycle involves a recycling of the carbon from plants to animals through the soil and air and back into the living plant.

Humates have been "forgotten" when it was discovered that soluble acidic based N P and K fertilizers could

stimulate plant growth. Continued use of these acidic fertilisers has decreased humic substances in the soil. This decrease is the main cause of leaching and erosion. Giving higher priority to soil humus and

humates is a must to improve soil condition and yield.

Humic substances help to neutralize the soil pH and liberate carbon dioxide. Repeated

field studies have provided evidence that the addition of humic substances to soils helps to neutralize the pH of those soils. Both acidic and alkaline soils are neutralized. Once the soil is neutralized, many trace elements formerly bound in the soil are available to plants.

### Humates stimulate micro-organisms and therefore are conducive to humus restoration



### Trial data

A trial was conducted at Ashley Dene, the Lincoln University light land farm, in 2009 to 2010 to assess the quality of plant growth with humates from New Zealand.

*With lime applied at 2 ton/ha. the addition of humate at 250kg increased pea yields.*

	Final seed yield (g m <sup>-2</sup> )	Harvest index	Seeds (m <sup>-2</sup> )	1,000 seed weight (g)
Treatment:				
Humate rate: (kg ha <sup>-1</sup> )				
0	148	0.47	641	230
250	169	0.48	698	241
(Increase)	(12.5%)	(2.5%)	(9%)	(5%)

### Application Rates when adding to lime

**POWDER FORM**  
100 kilos  
per hectare

**LIQUID FORM:**  
10 – 15 litres  
per hectare  
when using  
lime slurry