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# The Aglime Council of Indiana

"Your Resource for Aglime Information"

## HOW AGLIME WORKS

### Soil pH - How Aglime works - Why Aglime? Technical Bulletin

Soils today have the tendency to become acidic. This is the result of the continuing use of fertilizers, the leaching of cations from the soil, the removal of crops, and the decomposing of residues. As soil pH decreases, nutrients become less available to plants. The overall results are reduced crop yields and profits.

### Soil pH

Soil pH is the measure of Hydrogen (H+) ion activity in the soil solution and reflects soil acidity. A pH of 7.0 is considered neutral; less than 7.0 pH is considered acidic. A pH greater than 7.0 is considered alkaline.

**Table 1: Soil pH in Relation to Fertilizer Effectiveness**

#### Acidic Soil Decreases Fertilizer Effectiveness

Soil Acidity	Percent Utilized			Fertilizer Wasted	Cost of Fertilizer Wasted*
	Nitrogen	Phosphate	Potash		
Extremely Acid 4.5 pH	30%	23%	33%	75%	\$84.00
Very Strong Acid 5.0 pH	53%	34%	52%	54%	\$61.00
Strongly Acid 5.5 pH	77%	48%	77%	33%	\$37.00
Medium Acid 6.0 pH	89%	52%	100%	20%	\$23.00
Neutral Acid 7.0 pH	100%	100%	100%	0%	\$0.00

\* Based on conservative application of 200N, 100P & 100K per acre @ July, 2009 average pricing.

### How Aglime Works

ALL LIMESTONES are made up of calcium and magnesium carbonates responsible for neutralizing acids in the soil. The CCE (calcium carbonate equivalent) represents the sum of the calcium and magnesium carbonates in a liming material. The higher the CCE, the more acid neutralizing power in the lime. In order for aglime to work to it's maximum efficiency, the carbonates must come in contact with the acids in the soil. Therefore, smaller sized particles react faster to neutralize the soil.



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## Table 2: Aglime Particle Size and Rate of Effectiveness

### Aglime Effectiveness by Particle Size and Rate

Physical Description and Use	Particle Size	Within 1 Year	Within 4 Years
<i>Coarse: like sand with fine particles</i> <ul style="list-style-type: none"> <li>For sustained pH adjustment</li> <li>To add calcium or magnesium</li> <li>For soil treatment</li> </ul>	Between the #8 and #60 sieve	~50%	100% efficient
<i>Fine: very fine to pulverized</i> <ul style="list-style-type: none"> <li>For rapid pH adjustment</li> <li>To add calcium or magnesium</li> <li>For soil treatment</li> <li>When buyer desires the full value of aglime within the first year</li> </ul>	Passing the #60 sieve	100%	Offers no sustained benefit after the first year

## Why Aglime?

**\$ Aglime** is the keystone to efficient crop production.

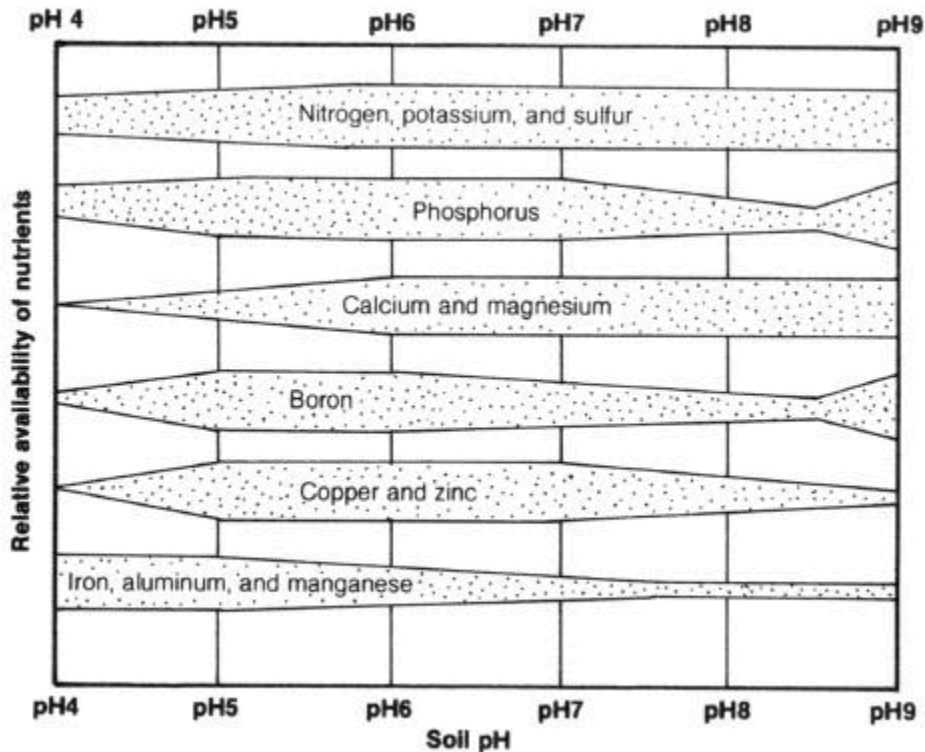
**\$ Aglime** can improve the physical structure of the soil by reducing surface crusting, increasing a soils water holding capacity, and reducing soil erosion. This is largely the result of an increase in the organic matter content of the soil along with calcium saturated soil colloids. This allows crops to better tolerate drought and wet conditions by increasing both root penetration and water percolation through the soil.

**\$ Aglime** reduces toxic conditions caused by iron, aluminum, and manganese. Manganese and iron exhibit toxicity to plants at a low soil pH. Aluminum increases in solubility as soil pH decreases. Too much aluminum can restrict root and plant development.

**\$ Aglime** increases herbicide effectiveness by the removal of Hydrogen from the soil site and/or an increase in the micro-organism activity.

**\$ Aglime** can increase nutrient availability to plants. Soil micro-organisms do not function as effectively when soil pH drops below 6.0. These micro-organisms are responsible for the break down of organic matter and for nitrification ( the conversion of ammonia to nitrate for uptake by plants).

**Table 3: Effects of Soil pH on Plant Nutrients**



**\$ Aglime** adds Calcium and Magnesium to the soil. Most micro-organisms responsible for the conversion of ammonia to nitrates require large amounts of Calcium. Magnesium is an essential component of the chlorophyll molecule necessary in photosynthesis.

**\$ Aglime** is the most cost effective method available to correct soil acidity, provide calcium and /or magnesium, and maintain a proper environment for organic materials to decompose. Have your soil tested on a regular basis, and apply aglime as required.