

## Ag-lime...It's Good for the Environment



*Ag-lime application helps provide environmental benefits as well as increased crop yields.*

**F**armers apply ag-lime to neutralize soil acidity, to reduce the risks of aluminum (Al) toxicity ... and for a host of other beneficial reasons. Ag-lime improves the physical, chemical, and biological conditions of soil. It increases crop growth, which results from improved nutrient and water use. Improved crop growth helps protect the soil from wind and water erosion. Adequate liming enhances fertilizer nutrient efficiency and the effectiveness of some herbicides.

**Best plant growth and greatest fertilizer efficiency occurs at an optimum soil pH range of between 5.5 and 6.5 for most crops.** A few crops prefer acid soils, while others like alfalfa perform best above pH 6.5. Increasing the pH of acid soils to this optimum range by ag-lime additions can increase fertilizer use efficiency by as much as 50%, which can translate to reduced fertilizer input costs. Maintenance of an optimum soil pH with ag-lime also improves the performance of certain herbicides, increasing their ability to control weeds that rob the crop of nutrients and water.

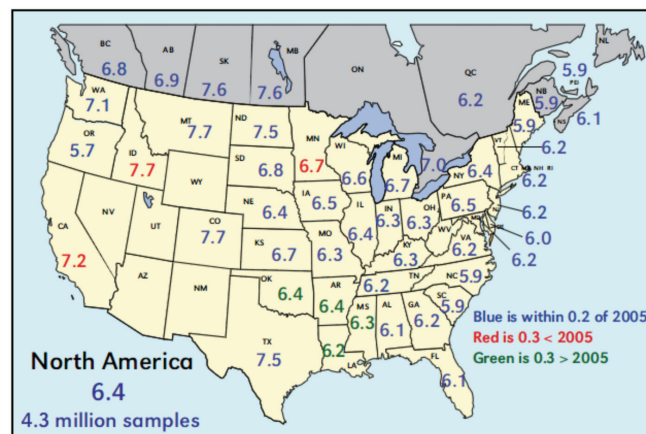
**Soil minerals release Al when the pH is too low.** This soluble Al is toxic to roots and inhibits their ability to take up the water and nutrients that they need to grow. Ag-lime boosts the soil pH back into the range where Al will no longer be harmful to roots and lets them resume their proper function in supporting healthy growth.

**Liming acid soils can dramatically increase crop and forage yields.** That means more of the soil and fertilizer nutrients are recovered by crops and removed from the field with crop harvest. So, potential losses to leaching and runoff, and some emissions to the air are reduced. Ag-lime helps get the crop off to a fast start, with quicker canopy cover over the

soil, which helps to minimize the impact of rainfall and reduces runoff and erosion risks. Increased crop yields mean more plant roots and more crop residues to build soil organic matter and improve soil aggregation and tilth for sustainable production.

**There are many benefits from applying ag-lime.** There is also a great need. A recent survey suggested that ag-lime is needed on more than 25% of the sampled farmland in North America. Summarized results from public and private soil testing laboratories showed that 26% of the 4.3 million samples collected in the fall of 2009 and spring of 2010 had a pH of 6.0 or lower. Soil pH in 54% of samples was 6.5 or lower, which indicates that crop producers need to be diligent in monitoring soil pH and following up with recommended lime additions.

**Ag-lime does more than simply increase soil pH. It also improves the soil's productivity and in so doing helps protect the environment.**



*Median soil pH levels in 2010 and change from 2005 (for states and provinces with at least 2,000 pH tests). (From: Soil Test Levels in North America, 2010, IPNI Publication No. 30-3110.)*

### FOR FURTHER READING:

- Adams, F. 1984. In F. Adams (ed.) Soil Acidity and Liming, 2<sup>nd</sup> edition. ASA-CSSA-SSSA, Madison, WI. p. 211-266.
- Fageria, N.K and V.C. Baligar. 2008. Advances in Agronomy. 99: 345-399.
- IPNI. 2013. Soil Acidity Evaluation & Management. IPNI, Norcross, GA, USA. p. 32.
- Nelson, D.R. and P.E. Mele. 2006. Australian J. Soil Res. 44: 319-329.
- Robson, A.D. 1989. Soil Acidity and Plant Growth. 306 pages. Academic Press. New York, NY.