



facts

THE NATIONAL FERTILIZER
SOLUTIONS ASSOCIATION

FLUID LIME - VALUE IN TODAY'S AGRICULTURE

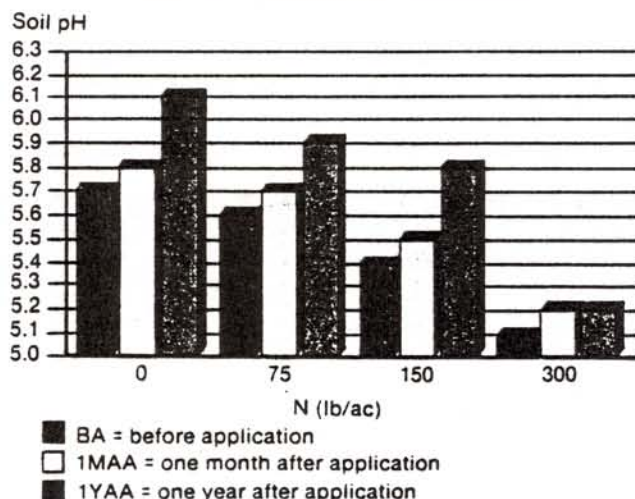
Benefits of Fluid Lime

- Even application particularly on sloping land.
- Fast neutralization of soil acidity.
- Fast penetration into the soil from topdress application.
- Can apply low rates to correct a thin surface layer of acid soil in no-till fields.
- Can co-apply with herbicides, potassium fertilizer and small seeded crops.
- Can band to correct acidity in specific zones, such as subsoil.
- Improves crop yields with applications made just prior to planting.
- Yearly applications can be made to help yields, cash flow and management on land with one year rental agreements.
- Clean application can be made with no wind loss or hazardous dusty conditions.

Soil Acidity Reduces Soil Productivity If Not Corrected

Soil acidity limits crop yields in many regions of the United States. Low soil pH, due to excess acidity, can cause plant nutrient deficiencies such as phosphorus and molybdenum even if fertilizer is applied; aluminum and manganese toxicities can also occur. The optimum pH needed to eliminate these problems in agronomic crops usually ranges from 6.0 - 7.0.

Figure 1. Effect of N Rate and Elapsed Time After Fluid Lime Application on Soil pH.



Grove & Blevins, Univ. of KY, 1985

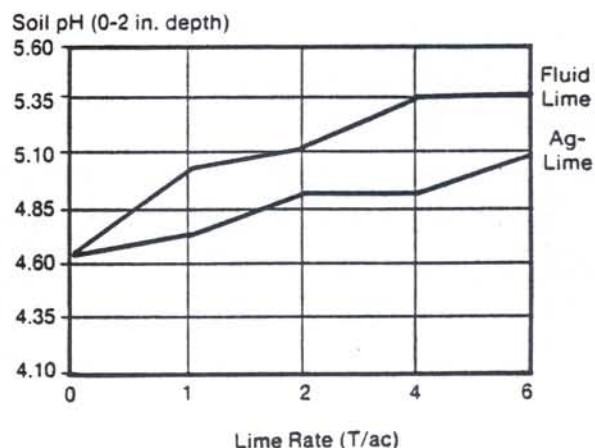
Kentucky Study Shows Continued Use of Nitrogen (N) Fertilizer Decreases Soil pH

Ammoniacal N fertilizers, those composed of ammonia, urea or ammonium salts, cause soil acidity. Notice in Figure 1 that before the application of fluid lime to no-till corn that the soil pH dropped from 5.7 to 5.1 as the N application rate increased from 0 to 300 lbs N/ac.

Fluid Lime Provides Quick Reaction to Increase pH

Figure 1 shows that the pH increased only one month after application. Fluid lime is composed of very finely ground limestone which is mixed with water or fluid fertilizer and a small amount of clay to form an easy handling and very effective liming material. The small particle size allows the lime to neutralize soil acidity very rapidly . . . much faster than standard grade ag-lime. The graphs in Figure 2 show that one ton of fluid lime increased soil pH to a level greater than five tons of coarse ag-lime at the 0-2 inch depth in no-till corn after one year from time of application. Using small amounts of fluid lime that give an even, fast and penetrating reaction should be considered to reduce acidity in thin top layers of soil in no-till corn to insure adequate triazine herbicide activity and phosphorus availability.

Figure 2. Effect of Lime Source on pH One Year After Application.

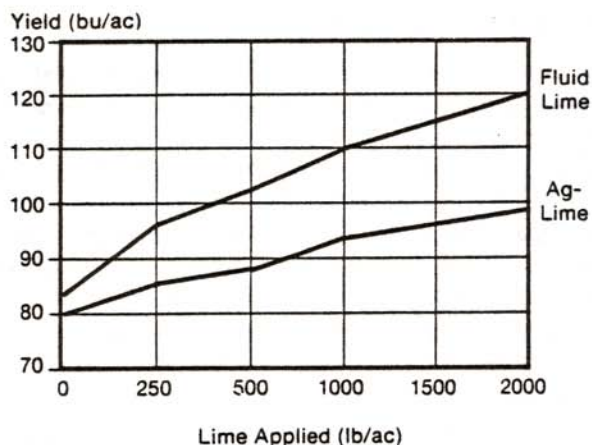


Grove & Blevins, Univ. of KY, 1985

Wheat Yield Comparisons Between Fluid Lime And Dry Ag-Lime

Lime application often increases wheat yields on soils that have a pH less than 5.3. A 1986 study conducted by R.L. Mahler at the University of Idaho contrasted fluid and ag-limes. All particles of the fluid lime source passed a 200-mesh sieve. The dry ag lime source had 80% of the particles pass a 20-mesh sieve, 50% a 60-mesh sieve and 20% a 100-mesh sieve. Both sources had the same neutralization value. The results in Figure 3 show the superiority of fluid lime over ag-lime when applied one day prior to planting winter wheat. It took 2,000 lb/ac of ag-lime to equal the same yields produced by about 250 lb/ac of fluid lime. At the 2,000 lb/ac lime rate, the fluid lime treatment produced 121 bu/ac while the ag-lime treatment produced 99 bu/ac.

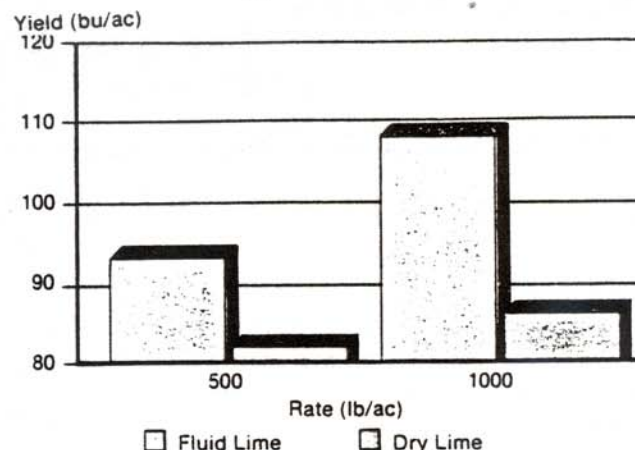
Figure 3. Wheat Yield as Affected by Source & Rate of Lime Applied 1 Day Prior to Planting



Mahler, Univ. of ID, 1986

The results in Figure 4 show that fluid lime was also better than ag-lime when topdressed three days after wheat planting. The lime was not incorporated. At the 1,000 lb/ac rate, the fluid lime treatment yielded 108 bu/ac while the ag-lime treatment yielded 85 bu/ac.

Figure 4. Wheat Yield as Affected by Source & Rate of Lime Applied Three Days After Planting



Mahler, Univ. of ID, 1986

These results give credibility to the use of fluid lime and the inherent value of small limestone particle size for rapid neutralization of yield robbing acidity. After the first year of a 2,000 lb/ac application rate no yield differences should be expected between fluid and ag lime sources *if* the same amount of acidity is neutralized by both sources and *if* the ag-lime source is as evenly applied as the fluid source. In the Idaho study, both sources were evenly applied on small plots. Since it is difficult to get even applications of dry lime on hillsides and in other situations, yield differences in favor of fluid lime could be greater in commercial operations than what is reported here.

Management Flexibility

Fluid lime can be coordinated with many production practices for different crops. Its application is an alternative to ag-lime and may be well suited to a specific situation to reduce soil acidity. Because ag-lime has several particle sizes, it is more difficult to evenly spread and acid neutralization can vary widely across a field. If management requires precise application, effective low application rates and rapid neutralization of acidity, fluid lime would be an excellent choice of liming material.

