Magnesium variations don't affect corn yields

UNIVERSITY PARK — Farmers growing corn on high magnesium soils should apply the cheapest source of high quality lime available and not worry about the magnesium ratio of the lime.

That statement comes from the experiments at Penn State's College of Agriculture. Test sites ranged from fields low to high in soil magnesium levels with wide ranges in calcium to magnesium ratios. There were not significant differences in corn grain or silage yields among any of the treatments at any site.

Richard H. Fox, crop scientist in charge of the research, indicated maximum grain yields were obtained with magnesium saturation values as low as 1.8 percent or as high as 29 percent. When the soil magnesium content was expressed as a calcium to magnesium ratio, the range of ratios varied from 1.8 to 37.

"There is no evidence from trials in the U.S. that corn yield is depressed by high soil magnesium levels," Fox affirmed. "There is no need to add gypsum or calcitic lime to high magnesium soils in Pennsylvania to increase corn yields," he added.

At the same time, it was mentioned that some private soil test laboratories recommend that farmers apply gypsum or high calcium, calcitic lime to their soil when the soil magnesium levels are higher than specified values, or when the calcium to magnesium ratios are lower than specified values.

"It is obviously uneconomical for farmers in areas where only dolomitic lime is produced locally to import calcitic lime or apply sypsum when it does not improve yields or crop quality," Fox declared.

Maximum grain yields in the experiments ranged from 103 to 147 bushels per acre. Silage yields went from 8.0 to 10.1 tons per acre. Three experiments were carried out in 1980 at the Agronomy Research Farm of Penn State in Centre County. The testing was repeated in 1981 on one of the low magnesium sites, with no new treatments added.

Two of the test sites had low soil magnesium levels, 4.5 to 5.0 percent saturation; one was high with 20.0 percent magnesium saturation. To create a wide range of magnesium levels and calcium to magnesium rations, the soils were treated with clacitic and dolomitic lime, magnesium sulfate, and potassium chloride.

Other essential nutrients, including potassium, were either at high enough levels or were added to ensure that yields would not be affected. Assisting with the project was William P. Piekielek, senior research aide.

"We do not know how low the magnesium saturation can go before lack of magnesium begins to limit corn yields," Dr. Fox commented. "However, we suggest that the lower limit for magnesium saturation of soil should be 5 percent for corn grown for grain," he added.

On the other hand, no one knows how high the soil magnesium level can be before it damages yields, it was pointed out. Even soils limed continuously with pure dolomite should always have calcium-to-magnesium rations high enough that calcium deficiency or magnesium toxicities will not limit yields.

"This lack of yield response to wide variations in calcium-to-magnesium rations applies only to corn and probably most other agronomic crops," Fox stated.

"There are a number of horticultural crops such as apples, tomatoes, and celery where the ratio of calcium to magnesium must be kept within a narrow range to maintain optimum crop yields and quality," he added.

Similar results at the University of Wisconsin confirm Penn State findings. Wisconsin scientists observed that both corn and alfalfa can produce maximum yields over a wide range of soil calcium and magnesium levels. The Wisconsin researchers also found reports of greenhouse experiments where the soil had twice as much exchangeable magnesium as calcium. Yields were still not affected by high magnesium.

Penn State's current experiments confirm previous research showing that a magnesium saturation of 10 percent ensures that the silage will have 0.2 percent magnesium. The National Research Council recommends this level of magnesium for dairy cattle feeding. Soils maintained at this level will have adequate magnesium to prevent grass tetany.

PFA favors milk pricing change

CAMP HILL — Keith Eckel, president of the Pennsylvania Farmers' Association (PFA) said, "After examining the Sunset Review audit of the Pennsylvania Milk Marketing Board we believe the report is on target in its recommendations and valid as a tool for improving the board's future role in Pennsylvania's milk industry."

The Sunset Review report was prepared by the Legislative Budget and Finance Committee.

Eckel said PFA agrees with the Sunset Review recommendations that the Pennsylvania Milk Marketing Board should consider discontinuing the setting of mandatory minimum resale prices for milk.

Eckel said, "Our members adopted policy in 1982 calling for the Milk Marketing Board to eliminate control of retail sale prices. We believe retailers should have the opportunity to sell milk at prices they determine themselves. However, we also agree with the Sunset Review recommendation that milk should not be priced below the cost of production. After all, consumers can't rely on an adequate supply if dairymen and processors are forced out of business by below-cost pricing."

PFA also agrees with the Sunset Review finding that the Pa. Milk Marketing Board performs a necessary function in maintaining economic stability in the milk industry and in protecting the public's health and welfare. Eckel said, "This report reaffirms our faith in the milk board's valuable service in providing a means for the orderly marketing of Pennsylvania's milk products."

PFA also agrees with the Sunset Review finding that the Milk Producers' Security Fund is not working at the present time to protect dairymen from bankruptcies and defaults by milk dealers. PFA is currently seeking legislation to improve security fund protection.

Zoning meeting on Monday

HONESDALE — Stanford M. Lembeck, Penn State Extension Service Specialist in Community Affairs, will be the speaker at an educational meeting on zoning Monday at 8 p.m. in the Knights of Columbus Hall, Rt 191, south of Honesdale.

Lembeck has been a member of the Penn State faculty since February, 1965. He assumed his present position as community housing and planning specialist in January, 1972. In that role he conducts educational workshops and assistance on planning practices for planning commissioners and local officials, and is a resource person for county Extension staff throughout Pennsylvania providing assistance and in-service education programs. He also teaches in the Graduate Regional Planning Program.

Lembeck will attempt to identify local land use issues and suggest techniques to solve these problems. In addition he will outline the provisions of a zoning ordinance. All interested persons are welcome.