

NEW JERSEY GRAIN AND FORAGE JOURNAL

*A COMPILATION OF RESEARCH AND
EXTENSION PROJECTS IN CORN, SOYBEAN, SMALL
GRAIN AND FORAGE*

SUPPORTED BY:

NEW JERSEY SOYBEAN BOARD

**GRAIN AND FORAGE PRODUCERS' ASSOCIATION
OF NEW JERSEY**

RUTGERS COOPERATIVE EXTENSION

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**1999
VOLUME 6**

NEW JERSEY GRAIN AND FORAGE JOURNAL - 1999

PREFACE

This is the sixth edition of the New Jersey Grain and Forage Journal, an annual journal highlighting research and extension projects in field crops. Traditionally the publication has presented work conducted in New Jersey. This year articles from Delaware and Pennsylvania are included as a result of collaborative efforts by field and forage crop agents, specialists and researchers from the Mid-Atlantic region.

Grain and forage production represents the largest agricultural acreage in the Mid-Atlantic States, adding significantly to and supporting related industries. Not only does this support the local and regional economy, but also provides the benefits of open space to the residents of the region.

We would like to acknowledge and thank the New Jersey Soybean Board and Grain and Forage Producers' Association for their financial support. The Soybean Board allocates soybean checkoff funds for research and promotional activities that benefit the soybean industry. The Grain and Forage Producers' Association promotes research, marketing, legislation and education related to the grain and forage industry.

We hope that these results will be helpful to you as you plant and produce crops in the 2000 growing season and beyond. Your suggestions for research and educational projects are always welcome, as it is our desire to develop programs that serve you most important needs.

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Survey Results Imply Improper Soil pH and Liming Material Management

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- Situation Statement** A review of Rutgers University soil test reports for central New Jersey field and forage crop farms showed that approximately 20% (98 of 499) of sampled fields where alfalfa was not being grown had soil pH test values of 6.8 or greater. Proper pH management is essential to ensure nutrient availability, and optimize crop growth and production.
- Casual Agent or Factor** These findings imply inaccurate or excessive applications of limestone, by-products or lime-stabilized sludges. Alternative liming materials and lime stabilized sludges are being used more frequently and in place of agricultural limestone for pH adjustment. Lime-stabilized sludges typically contain lime and sewage sludge (often referred to as biosolids) in a ratio of 4 to 1. Because of the high lime content, these products are agronomically most beneficial when used on acid soils.
- Importance or Impact** The average soil pH test value was 7.0, and the highest value reported was 7.6. Although most samples did not include information on previous limestone or alternative liming material use, many of the higher pH samples (7.1 to 7.6) were from fields where lime stabilized sludge application was indicated.
- Over application of an alternative liming product can have the same adverse effects as over application of agricultural limestone. If the soil pH is raised above the optimum level for crop production, crops are more likely to suffer from micronutrient deficiencies. Manganese, zinc, iron and copper availability decrease with increasing soil pH, especially on sand textured soils. In addition, the effectiveness and application rate of some herbicides changes with soil pH. For optimum crop growth and production, pH should not be raised above 6.5 for most field crops or above 7.0 for alfalfa.
- Recommendations** *What can be done to insure proper pH management?*
- It is important to have a soil test taken before the application of any liming material. The soil test determines the soil pH and limestone requirements by considering the initial pH along with the soil texture, organic matter content and the desired pH increase. It is also important to know the calcium carbonate

equivalent (CCE) or effective neutralizing value (ENV) of the material to be used. The application rate of any lime-sludge product should not apply more than the amount of material necessary to fulfill the limestone requirement of the soil. Therefore proper calibration of spreading equipment is also essential.

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