

Revised Alfalfa Fertilizer Recommendations for a Changing Environment Greatly Improves Profitability

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Abstract

During the last decade, an ever-increasing percentage of alfalfa fields in northeast Iowa have been exhibiting signs of reduced growth and vigor, resulting in declining profitability. Iowa State University Extension in northeast Iowa initiated an investigation into this problem. Sixteen research trials conducted in northeast Iowa over the next 6 years as both on-farm trials and at the northeast ISU research farm uncovered widespread sulfur deficiency problems in alfalfa production. Over 90 ISU Extension educational meetings in northeast Iowa, and extensive use of the media, communicated this issue and tools to address it to farmers and agricultural providers. Survey results from farmers and agricultural providers in 2008 and again in 2010 documented 72% of the alfalfa fields in northeast Iowa now receive sulfur fertilizer applications. These actions have increased farmers' net profit by an average of \$57 per acre. Increases in yield and improved alfalfa vigor and competitiveness against weeds allowed over one-third of the survey respondents to keep their stand an additional year. Improved yield and stand life on over 70% of the 200,000 acres of alfalfa in northeast Iowa equates to an economic improvement of about \$8 million. In addition, most alfalfa growers in northeast Iowa operate dairies. Improved dairy profitability has a significant economic multiplier effect onto local communities. This research also spurred the interest of University faculty in neighboring states where they have since initiated similar research.

Problem Statement

Over the last 50 years a transition to clean coal, less cropland fertilized with manure, and other related crop production issues have greatly reduced the amount of sulfur deposited onto cropland. During the last decade, an ever-increasing percentage of alfalfa fields in northeast Iowa have been exhibiting signs of reduced growth and vigor, resulting in declining profitability.

Programmatic Response

In 2005, Iowa State University Extension in northeast Iowa initiated an investigation into this problem. Since alfalfa production requires significantly more sulfur than most crops, and sulfur reductions have occurred in the environment, it was possible that previously researched soil fertility recommendations needed to be revised. Sixteen research trials conducted in northeast Iowa over the next 6 years as both on-farm trials and at the northeast ISU research farm uncovered widespread sulfur deficiency problems in alfalfa production. Research results provided farmers with the tools to determine if sulfur deficiency existed on their own farms, and the maximum economic rate of sulfur fertilizer to apply. During these years' of conducting the research, over 90 ISU Extension educational meetings in northeast Iowa, and extensive use of the media, communicated this information to farmers and agricultural providers.

Outcome and Economic Impact

Survey results from farmers and agricultural providers in 2008 and again in 2010 documented 72% of the alfalfa fields in northeast Iowa now receive sulfur fertilizer applications. These actions have increased farmers' net profit by an average of \$57 per acre. Farmer comments about the improved production with sulfur fertilizer included: "This was a God send.", "It made a hell of a difference.", "I was ready to tear up the field, but it (the sulfur) let me keep it (the stand) 2 more years." Increases in yield and improved alfalfa vigor and competitiveness against weeds allowed over one-third of the survey respondents to keep their stand an additional year. Improved yield and stand life on over 70% of the 200,000 acres of alfalfa in northeast Iowa equates to an economic improvement of about \$8 million. In addition, most alfalfa growers in northeast Iowa operate dairies. Improved dairy profitability has a significant economic multiplier effect onto local communities. This research also spurred the interest of University faculty in neighboring states where they have since initiated similar research.

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