Foliar Nitrogen Applications and Crop Safety: What Research Says About Urea-Triazone Technology

Understanding Foliar Nitrogen Fertilization

Foliar fertilizer applications are commonly used by growers to supplement soil fertility programs, correct nutrient deficiencies, and support crop performance during periods of rapid growth. However, one of the long-standing challenges with foliar nitrogen applications has been the potential for leaf burn and crop injury.

Traditional foliar nitrogen fertilizers based on urea, ammonium nitrogen, or nitrate nitrogen can create osmotic stress on plant tissue when applied at excessive concentrations. This often limits application rates and reduces the amount of nitrogen that can be safely delivered through the leaf surface.

Research Demonstrates Improved Crop Safety

A landmark study published in HortTechnology evaluated urea-triazone-based nitrogen fertilizers on 61 commercial grower sites throughout the United States. Researchers examined a wide range of agronomic and horticultural crops, including vegetables, fruits, nuts, nursery crops, and field crops.

The study concluded that urea-triazone nitrogen solutions could be applied safely at concentrations significantly higher than those typically reported for conventional foliar nitrogen sources. Researchers observed safe foliar applications ranging from approximately 1.5% nitrogen on sensitive crops such as sweet corn, apples, cherries, and pears, to more than 15% nitrogen on certain nursery crops. The authors reported that urea-triazone solutions were substantially safer on crop foliage than traditional ammonium-, nitrate-, or urea-based foliar fertilizers.

What Makes Urea-Triazone Different?

Urea-triazone technology contains a heterocyclic nitrogen compound recognized by the Association of American Plant Food Control Officials (AAPFCO) as a source of slowly available nitrogen.

Unlike conventional nitrogen sources that can rapidly increase salt concentration on the leaf surface, triazone nitrogen provides a more controlled nitrogen release profile. This characteristic helps reduce the risk of foliar burn while extending nitrogen availability to the plant.

Benefits commonly associated with urea-triazone technology include:

- Reduced potential for foliar injury
- Improved crop safety during foliar feeding
- Extended nitrogen availability
- Lower risk of nitrogen loss
- Enhanced compatibility in many nutrient programs

• Potential for improved nitrogen use efficiency

The Substain-N® Advantage

TradeMark Nitrogen's Substain-N® product line utilizes advanced triazone nitrogen technology designed to provide a controlled-release nitrogen source for professional agriculture and turf management applications.

Substain-N® delivers slowly available nitrogen that helps maintain plant color, vigor, and growth while reducing the rapid flushes often associated with conventional quick-release nitrogen sources. Because of its triazone-based chemistry, Substain-N® can provide a more consistent feeding program while supporting crop and turf safety.

Supporting Modern Nitrogen Management

As agriculture continues to focus on efficiency, sustainability, and crop safety, technologies that improve nitrogen utilization become increasingly important. Independent university and commercial research has demonstrated that urea-triazone fertilizers can safely deliver nitrogen through foliar applications at rates exceeding many conventional nitrogen sources.

TradeMark Nitrogen remains committed to providing innovative nitrogen solutions such as Substain-N® that help growers maximize crop performance while improving nitrogen management practices.

References

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