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Foliar Burn and Wheat Grain Yield Responses Following Topdress-Applied Nitrogen and Sulfur Fertilizers

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Abstract

The most common fertilizer sources for topdress nitrogen (N) applications to winter wheat (Triticum aestivum L.) in Virginia are a urea ammonium nitrate (UAN) solution (30-0-0) or a UAN solution with added sulfur (S) (UAN-S; 20-0-0-4). However, there are some concerns regarding leaf burning following foliar N applications, particularly at later growth stages. An experiment was conducted from 1999 through 2002 to evaluate and quantify foliar burn associated with various topdress-applied N sources, any subsequent effect on wheat grain yield, and any yield response to added S. Ammonium nitrate (AN; 34-0-0), UAN, UAN-S, and ammonium sulfate (AS; 21-0-0-24) were topdress-applied at either GS 30 or 32. Following the GS 30 and 32 foliar applications, digital images were obtained from each plot and pixel analysis was used to estimate

the percentage of foliar burn. At GS 30, foliar burn increased with increasing N rate with no difference in the percentage of burn being observed between sources. At GS 32, foliar burn again increased with increasing N rate; however, UAN-S resulted in significantly greater foliar burn than UAN at both N rates. Despite the increased foliar damage that occurred when UAN-S was topdress-applied at GS 32, there was no reduction in grain yield compared with UAN or either of the soil-applied sources at either growth stage. Although there was no evidence of a grain yield response to added S in this study, many soil types common to the Coastal Plain of Virginia are likely to lack sufficient S for optimum winter wheat production.

Keywords:

Nitrogen | Sulfur | Foliar fertilizer | Winter wheat

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