Article title	Evaluation of Fused Ammonium Sulfate Nitrate Fertilizer for Crop Production
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Abstract	Granulated or blended ammonium nitrate (AN) and ammonium sulfate (AS) are commonly used fertilizers to provide nitrogen (N) and sulfur (S) nutrients. One problem of AN is that it possesses a potential explosive nature. A new ammonium sulfate nitrate (ASN) fertilizer has been developed through a fusion process that renders AN impractical for use as an explosive agent. The main objective of this study was to investigate the effect of the fusion process on the agronomic properties of fused ASN. Granular fused ASN and granulated ASN were surface applied to a calcareous soil (pH 7.9). The cumulative amount of NH_3-N volatilized after 15 days was significantly lower for the fused ASN than the granulated ASN. In an acid sandy soil, a significant reduction of cumulative leached NH_4-N and SO_4-S (but not NO_3-N) was observed after 75 days for the fused ASN compared with that for the granulated ASN. Three greenhouse experiments were conducted. Fused ASN, granulated ASN, and urea with incorporation at various N rates were equally effective in wheat grain yield using a neutral soil (pH 6.4). Rape was grown to maturity and ryegrass was cut several times on an S-deficient neutral soil, with incorporation at various S rates of fused ASN, granulated ASN, or granular S-enriched monoammonium phosphate (MAP), which contained 5% AS-S and 5% elemental S (ES). The fused and granulated ASN were equally effective in cumulative ryegrass yield or rape straw yield, but fused ASN was more effective in rapeseed yield. Both were more effective than MAP (5% AS-S + 5% ES-S) at lower S rates. The ES-S in MAP did not contribute any available S to ryegrass or rape growth.
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