RESEARCH ARTICLE

The effect of foliar application of fulvic acid on water use, nutrient uptake and yield in wheat

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Abstract

The effect of foliar application of fulvic acid (FA) on water use, nutrient uptake and yield in wheat was studied in pot experiments and in field trials. FA reduced the stomatal conductance of well-watered plants in pots from ~0.80 to ~0.25 cm s-1. The stomatal conductance of control plants fell continuously from ~0.85 m s-1 to almost zero over a 9-day drying cycle. Plants sprayed with FA at the beginning of the cycle maintained a stomatal conductance of ~0.30 cm s-1 for the whole period. Spraying with FA resulted in a higher level of chlorophyll in the leaves and a greater uptake of 32P by the roots. When droughted at ear-development stage, grain yield was depressed by 30%. Spraying with FA increased the yield of droughted plants to 97% of the irrigated controls. Field trials in North China demonstrated that when FA was used to decrease the water stress or the stress imposed by hot, dry winds during ear development, grain yield increased by 7.3-18.0%.

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