

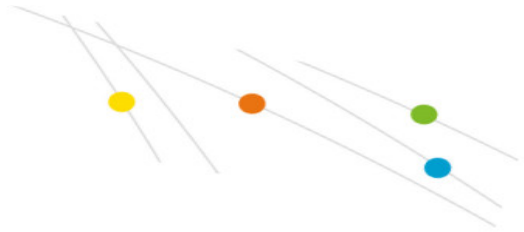
Spraying surfactants in combination with potassium nitrate enhanced cotton lint yield

A trial was conducted at West Tennessee (USA) in 1991 to evaluate the effects of foliar applied potassium nitrate with and without surfactants on cotton (

Gossypium hirsutum

L.) lint yield and K concentrations in the leaf and petiole. Cotton plants were grown on a silty loam soil and plots received a base dressing according to recommended farm practices. The experiment was set up as a randomized complete block design. Foliar treatments included an untreated control, 10,8 kg KNO₃/ha + water, 10,8 kg KNO₃/ha + 'Penetrator Plus', 10,8 kg KNO₃/ha + 'X-77', 5,3 kg KNO₃/ha + 'Penetrator Plus', and 5,3 kg KNO₃/ha + 'X-77'. Foliar sprays were supplied at 94 L/ha and the surfactants were added to the solutions at: 1,25% (v/v) for Penetrator Plus and 0,5% (v/v) for X-77. The foliar sprays were applied 4 times: at two, four, six and eight weeks after mid-bloom in the first three years. In the fourth year (1994) the first spray was applied at mid-bloom, the second 2 weeks later and the third and fourth spray were applied 9 and 18 days after the second spray.

Increases in leaf and petioles K concentrations mostly occurred from the 10,8 kg KNO₃ treatments applied with a surfactant. Seven days after foliar applications the K concentrations of the leaves and petioles were increased by respectively 11% and 6% compared to the untreated control. First harvest lint yields were generally unaffected by foliar treatments. Second harvest and total yields were increased by applying the 10,8 kg KNO₃/ha with Penetrator Plus relative to the other treatments. Total cotton lint yield for the 10,8 kg KNO₃/ha with Penetrator Plus treatment statistically significantly increased by 10% compared to the untreated control (Figure 1). These



results suggest that spraying surfactants in combination with KNO_3 may enhance K uptake and cotton yield.

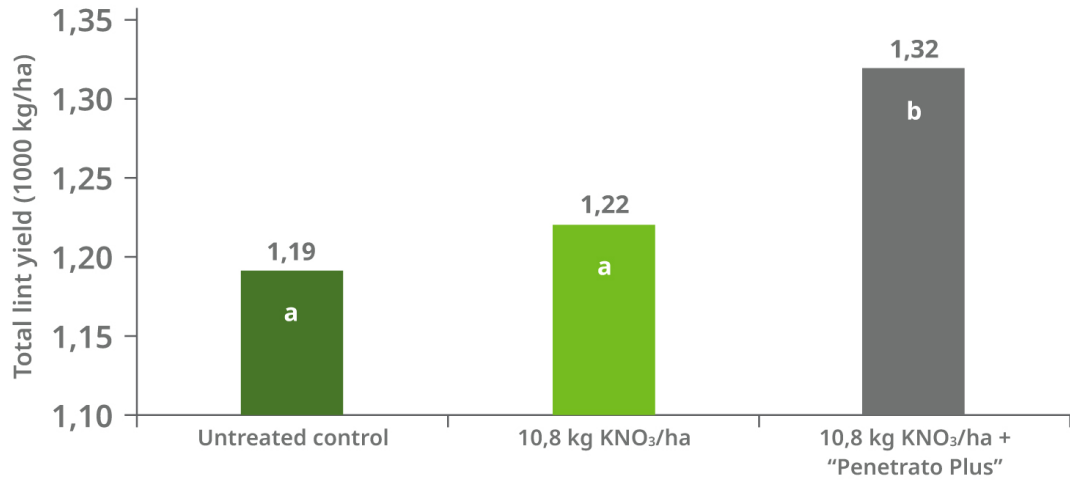


Figure 1. Total lint yield (two harvests per year; four-year averages).