Foliar applied potassium nitrate beneficial in terms of cotton seed yield and lint yield

This study was performed to evaluate the response of cotton (

Gossypium hirsutum

L.) yield and yield characteristics to foliar K at three silty loam field locations in Arkansas (USA) from 1999 through 2002. The Mehlich 3 extractable (1:7) soil test values for these three locations ranged from 270 to 376 kg K ha^{-1}, which is considered to be in the high range for cotton production in Arkansas. Foliar KNO_3 was applied at 11,2 kg KNO_3 ha^{-1} for four consecutive weeks starting one week after first flowering with a pressurized CO_2backpack sprayer calibrated to deliver 93,5 L ha^{-1}. The foliar potassium nitrate treatment had a statistically significant effect on the number of seeds per hectare. Foliar KNO_3 increased the number of seeds ha^{-1} by 13% compared to the untreated control. Across the five site years, foliar K numerically increased lint yield by only 4% (1285 vs. 1337 kg/ha), with a majority (171 kg) of this increase occurring at one site year (Table 1). The results suggest that foliar KNO_3 applications typically do not increase yields when soil test K levels are adequate, or when recommended rates of K are soil-applied.

Table 1. Effect of foliar applied potassium nitrate on cotton lint yield.

	Cotton lint yield (kg/ha)					
Treatment	1999	2000	2000	2001	2002	Mean
Control	1261	1238	1027	1482	1413	1285
Foliar KNO_3	1280	1225	1086	1512	1584 a	1337 b

a: significant at P<0,05 for the paired tratments.
b: denotes tratment interaction significant at P<0,05.