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## Summary of a multi-year soil-applied potassium trial in cotton

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Potassium (K) deficiencies in multiple row crops specifically cotton is a major concern to producers in South and central Texas. Previous research has documented that cotton is more sensitive to low K availability than other major field crops, and often shows symptoms of K deficiencies on soils not considered deficient. Therefore, the first objective was to quantify the K soil levels, surface and with depth, from several major cotton production regions in Texas experiencing K deficiencies. The second objective was to evaluate the impact of application methods on K and rates on cotton yield, quality, and return on investment. Based on these findings, soil K recommendations will be re-evaluated and modified as appropriate to optimize cotton yields. Potassium was applied at rates of 0-160 lbs/a as broadcast incorporated applications and as injected applications in the Blacklands of Texas and Upper Gulf Coast region. In the 2012-2015 trials, positive lint yield responses to applied K were obtained at the majority of the sites. Higher lint yield responses were obtained when soil test levels were deficient; however, significant yield responses also were obtained at some sites with greater than threshold K (125 ppm K). At responsive sites, the liquid K injected increased had a greater response on lint yield compared to broadcast incorporated K, but was year dependent. At yield responsive sites, applied K did impact cotton fiber quality characteristics, including length, strength, and micronaire. These trials were partially funded by Cotton Incorporated, IPNI, and Fluid Fertilizer Foundation.

### Biography

Gaylon D Morgan holds both Bachelor of Science and Master of Science degrees in Agronomy from Texas A&M University as well as a Doctorate of Philosophy in Horticulture/Plant Pathology from the University of Wisconsin. He has worked with the Texas A&M University system since 2003. Currently, he is serving as the Texas State Extension Specialist and is an engaged scientist involved in multi-disciplinary fields of research pertaining to cotton production as well as the practical implementation of those scientific advances to the field.

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