

**EVALUATION OF NUTRIENT FERTILITY
GUIDELINES FOR IRRIGATED
COTTON IN ARIZONA**
A.S. Thelander and J.C. Silvertooth
University of Arizona
Tucson, AZ

In crop production there are many nutrients that are integral to a successful yield and profit base. The use of nutrient management is important to optimize plant health and yield in cotton (*Gossypium spp*) production systems. Nutrient recommendations should be based on soil test and plant tissue correlation and calibration procedures that are specific for a given crop and region. A series of field experiments were conducted in Arizona from 1988 to 1999 involving phosphate (P) fertilization. A total of 21 site-years were used to study the effects of P on both Upland (*G.hirsutum* L.) and Pima (*G. barbadense* L.) varieties. The purpose of these experiments were to evaluate University of Arizona fertility guidelines with respect to soil test results (NaHCO₃ extractable P) and to possibly fine-tune or calibrate these guidelines for common Arizona soils used in cotton production. Results from these experiments, based on soil test information, quantitative plant measurements, and lint yield showed no significant difference (P<0.05) due to treatments for all the studies, with the exception of a single P study conducted in Graham County in 1998. The 1998 Graham County site had a pre-season soil test value of 7.6 ppm NaHCO₃ extractable P. All data from all site-years has been summarized and evaluated. Analysis of percent relative yield vs. soil P for both Upland and Pima show that soil test ranges greater than 5 ppm are consistently sufficient. Percent relative yield vs. applied P (lbs. P₂O₅/acre) for both Upland and Pima did not indicate a positive response over the rates of fertilization tested (20-160 lbs. P₂O₅/acre). Based on the results of these studies, the current University of Arizona soil fertility guidelines for P fertilization of cotton appear to be valid.