

COTTON AND CORN YIELD RESPONSE TO INCREASING NITROGEN RATES IN VARYING SOIL**EC ZONES****B. Arthur****G. Morgan****Texas A&M University****College Station, TX****R. Schnell****T. Provin****J. Mowrer****D. Coker****D. Mott****Texas A&M Agrilife Extension Service****College Station, TX****Abstract**

Collecting intensive spatial data on soil characteristics to identify nutrient management zones can increase nutrient use efficiency and have environmental benefits. Veris® instruments can be used to intensively measure soil electrical conductivity (EC), soil pH, and color over large crop production fields. The value of this intensive soil characterization with Veris® need to be validated and determined how it can be used to compliment traditional soil sampling methods. Thus, the objective of this study was to determine how nutrient management recommendations can be refined to cut costs and minimize the potential for detrimental environmental impacts from over application of nutrients. Soil electrical conductivity was collected with the Veris® 3100 over a 38-acre field at the Texas A&M Agrilife Research farm near College Station, TX. The spatial EC map was developed and the field was divided into three EC management zones. Within the field, soils samples were collected annually within each of the EC zones and using a 1.8-acre grid-based protocol. In 2014, 2015, and 2016 a nitrogen rate study was superimposed within each EC management zones to determine the ability to credit residual nitrogen (N_R) content within each EC zone. Cotton and corn yield data were collected and compared to the applied nitrogen (N_A) and N_R content in each zone. In 2014 and 2016, corn yield showed a quadratic relationship to total nitrogen content (soil residual + applied). In 2015, cotton did not show significant yield response to (N_A) in any EC management zone. These results reinforce previous findings for the need of sampling and crediting N_R when making year-to-year fertilizer applications.