

ON FARM PRECISION EXPERIMENTATION WITH COTTON

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Abstract

There is a strong need to develop and refine algorithms for nitrogen (N) application based on spatial variability of the cotton canopy and soil characteristics. The main focus of this presentation is to share preliminary results from large scale on-farm precision agriculture research conducted on farmers' fields using dense dataset to improve site-specific inputs application in cotton. The experiments have been conducted in two farmers in Louisiana, 1 farmer in Texas and 2 farmers in Bahia (Brazil). The experimental design was a Latin Square 4x4 using the whole farmer field as an experimental unit. The reason to use this specific design is to be able to conduct geostatistical analysis and spatial prediction building scenarios in a real condition where the formulation was developed. Two approaches will be presented to support the variable rate N application on those fields and yield maps were used to present the spatial variability and opportunities for such technologies as drones, active sensors and high resolution satellites. One approach uses one grid pattern of N reference strip in the field to capture the optimal N supply and the other approach uses sensor response to different N rates to be used to adjust accordingly to soil characteristics. As relevant and preliminary results two prototype algorithms for N application were generated to be validated in near future.