INVESTIGATING THE FEASIBILITY OF PREDICTING COTTON FIBER QUALITY USING MULTI-TEMPORAL UAS DATA

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Abstract

Cotton (*Gossypium hirsutum* L.) growth, yield and quality are influenced by genetics and environmental conditions. Measures of cotton fiber quality include micronaire, length and strength. Research has shown that micronaire and length are highly influenced by environmental factors. During the elongation phase, fiber development is very sensitive to adverse conditions such as water stress, extreme temperatures, as well as nutrient deficiencies. Micronaire tends to increase when there is ample supply of carbohydrate to mature bolls on the plant and is highly influenced by photosynthesis occurring 15 to 45 days after flowering. Thus, seasonal shifts in plant growth and metabolism are manifested in higher levels of fiber maturity. Our group has successfully evaluated plant growth using UAS data. In addition, yield prediction models have been developed using temporal and non-temporal plant parameters. Based on these findings, our hypothesis is that since micronaire and fiber length are highly influenced by environmental factors, it is possible to develop models that can successfully predict these variables based on crop growth parameters. Results will be presented in terms of prediction accuracy.