COMPARISON OF SOIL COMPACTION PATTERNS BY ON-BOARD MODULE BUILDERS

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Abstract

A study is proposed to determine if there would be increased soil compaction that might be caused by On Board Module Builder (OBMB) Technologies introduced by Case IH (Module Express 625) and John Deere (7760 Cotton Picker) relative to current (Conventional) cotton pickers. We propose to compare compaction levels in the identified grower's fields caused by these systems. The economics of alleviation measures that the farmers would take in consecutive years of monoculture cotton production to arrive at breakeven point of the investments made on the OBMB technology would also be studied. Yield comparison would also be made as a result of cumulative compaction that would be caused by additional weight of the machine. It is speculated that the gradual increase in weight of accumulated seed cotton from the beginning of a cotton picker load to the location in the field where the cotton picker capacity is met, would create a pattern of increased compaction along the harvest path. We propose to give substantial considerations of the soil texture in the field under cultivation. Preliminary data would be collected using cone-penetrometer, and spatial technologies would be introduced in later stage of study to determine feasibility of quicker identification of soil compaction. Aerial images of the fields under study would be acquired at the harvest for the duration of the project that we hope to reveal visual wheel traffic pattern. This conceptual case study serves to recommend the best soil compaction management practices in the event of widespread adoption of OBMB cotton harvest systems.