

# Efficacy of delaying defoliation to mitigate the soil compaction risk at cotton harvest

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A recent rapid change in the cotton harvesting system due to the inception of the John Deere 7760 round bale module builder has increased the soil compaction risk within the cotton industry due to the increased weight of the new machines (i.e. >36Mg). Due to the implications soil compaction has on farm productivity, it is pertinent to investigate management strategies whereby the compaction risk can be reduced. This project was developed to investigate a novel approach whereby cotton defoliation was delayed at times of high field moisture, allowing the soil profile to be dried down due to the evapotranspiration demands of the crop, thus reducing the compaction risk at harvest. A field trial located at Aubigny, QLD was used to evaluate the merit of the proposed management strategy in the 2014/2015 growing season, and provide a validation data set to be used in a modelling exercise. The modelling component of the project was developed to assess the merit of the proposed management strategy using historical climatic data in a number of cotton regions in Australia. The investigations concluded that the proposed management strategy of delaying defoliation was effective in reducing soil moisture and thus the resulting soil compaction risk at cotton harvest. The extent to which the compaction risk was reduced was however limited, with only small reductions in bulk density after harvest being detected.