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A SIMPLE METHOD TO ESTIMATE THE LEAF AREA INDEX USING DIGITAL CAMERA IN IRRIGATED PROCESSING TOMATO

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INTRODUCTION

A simple method to estimate the leaf area index using digital camera in irrigated processing tomato.

OBJECTIVE

The objective of this research was to develop a non-destructive method that uses photographs taken *in situ* and a public domain software ImageJ.

MATERIALS AND METHODS

To validate the method, we used the irrigated processing tomato crop. Samples were taken at 15, 30, 45, 60, 75, 105, 130 days after planting. For the photographic method a ruler of 1m^2 was placed on the soil in 24 randomized sampling points, and for each point a photograph was taken. For each point, one plant was collected to obtain the LAI through the LI-COR method. The photographs were processed in ImageJ for LAI estimation. The comparison with destructive (LI-COR) and non-desctructive (photo) methods was evaluated by the mean absolute percentage error (MAPE), a measurement of accuracy, and R^2, a measurement of precision.

RESULTS

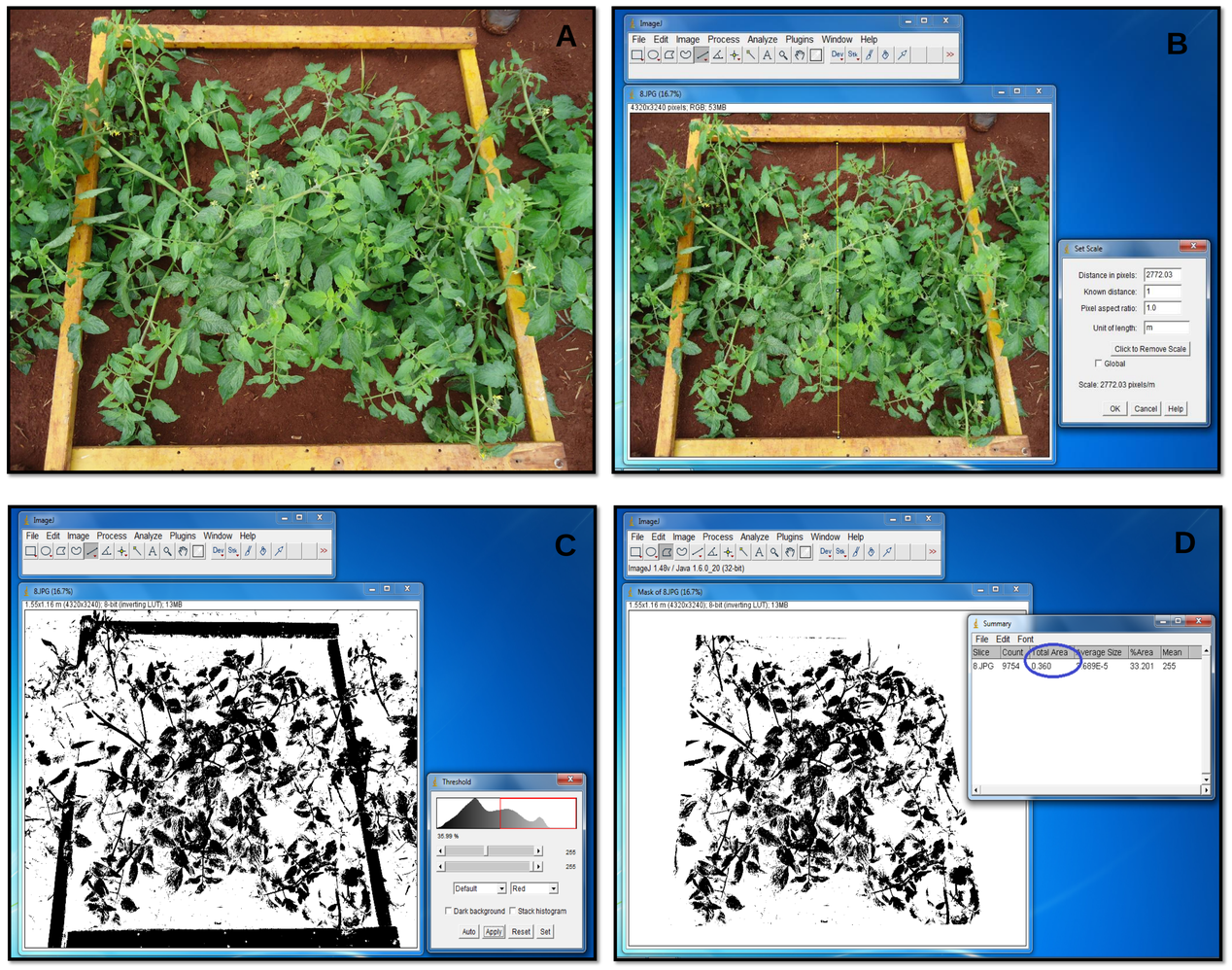

Figure 1: Photography processed in ImageJ for leaf area index (LAI) estimation.

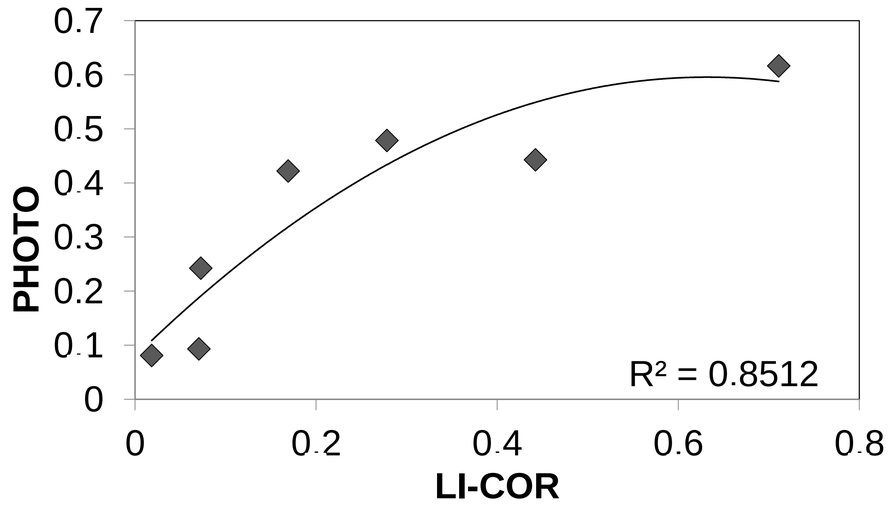

Figure 2: Performance analysis of ImageJ processing in relation to LICOR measurements.

CONCLUSIONS

The photographic method had high accuracy and precision, the MAPE and R^2 were 0.4% and 0.94, respectively.

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