UNIVERSITY OF SOUTHERN QUEENSLAND

Centre for Agricultural Engineering

Precision weed spot and spray with machine vision

Weeds are estimated to cost Australian agriculture $2 to $4 billion dollars per year, in reduced yield and control measures.

Current control measures involve selective herbicides, tilling or manual spot spraying.

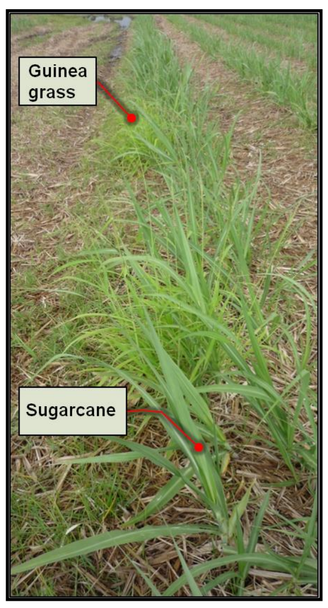
There are no commercial sensor systems that can discriminate green weeds from a green crop environment.

Machine vision technology is being developed and commercialised at USQ-CAE for use in commercial farm conditions, with herbicide usage savings of 70 to 80%.

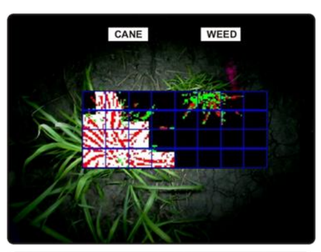
Ground-based see-and-spray

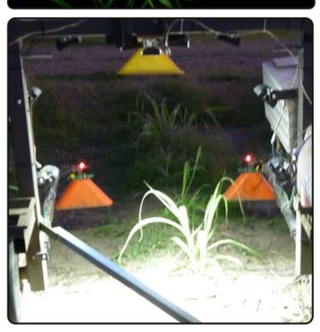
Key innovations at USQ-CAE are:

- real-time weed detection at commercial groundspeeds
- operation in daylight
- Guinea grass from sugarcane discrimination in the sugar industry — 85% hit rate
- Volunteer cotton, broadleaf and grass discrimination in the cotton industry



Orange areas indicate detected weeds





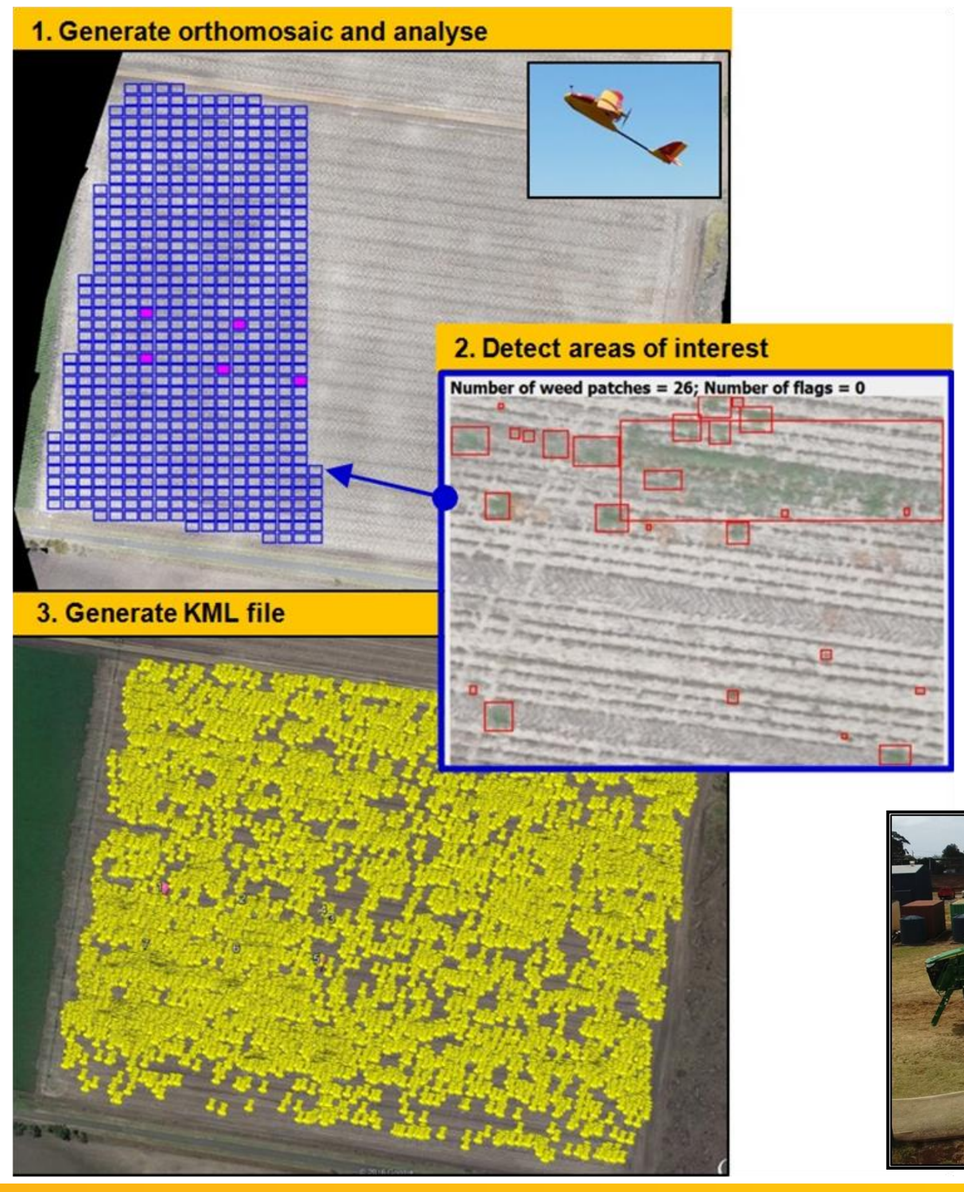
One week after spray operation with Roundup — white areas are Guinea grass 'hits'

Prescription weed maps using drones

Drone systems - drone flies over a field, detects weeds and their locations, and generates a prescription map for a boom sprayer

Future research - see-and-spray drones, i.e. drone carries a spray tank and selectively sprays weeds

Sub-2 kg consumer drone
Photo acknowledgement: Warwick Waters, CottonInfo



Upload drone prescription map to sprayer

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