

IMAGE ANALYSIS-BASED WEED DETECTION FOR SPOT SPRAYING

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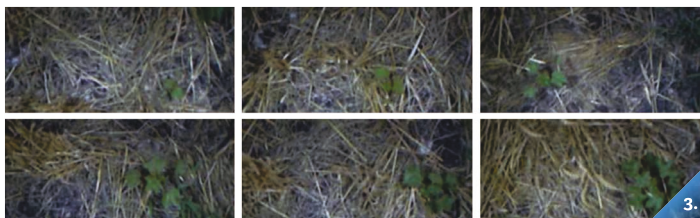
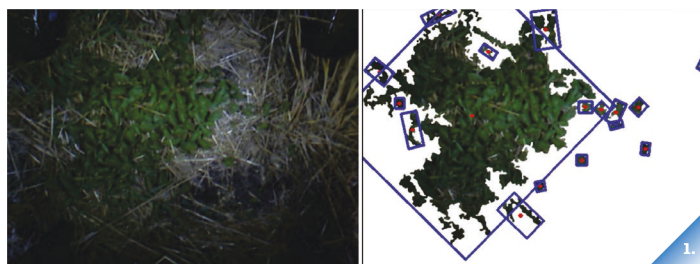
Issue being addressed?

Volunteer Roundup Ready cotton is becoming an emerging weed issue for the Australian cotton and grains industry. Innovative weed management strategies that specifically address volunteer cotton are required to eliminate a potential and significant problem for the industry into the future. A key component of volunteer cotton management is the ability to detect volunteer cotton in fallow fields and amongst other crop. An image analysis-based detection system is being developed to achieve such discrimination.

Results and findings

Proof-of-concept image analysis algorithms have been developed (Figures 1 to 3) and will be implemented on a three-metre weed spot sprayer for commercial-scale evaluations.

- Green from brown segmentation based on the greenness of pixels in controlled lighting successfully detected 100% of manually discernible plants, on soil and trash background.
- Grass from broadleaf discrimination based on the long leaves of grasses was successful at identifying 100% of sorghum plants amongst low-lying broadleaf weeds.
- Volunteer cotton up to 10-node stage was discriminated successfully from other plants



(vines, thistle and grasses) using criteria based on the cotton plant's morphology.

Weed Management and formulation of weed control strategies

Impact on industry

Weed detection using image analysis has potential application to weed spot spraying, targeted tilling and weed scouting. The technology will support:

- minimum- and no-till farming practices and the associated environmental benefits
- reduced chemical application rates through targeted treatments of individual weed species
- labour-saving infield weed identification for Integrated

The technology can be used to generate weed maps over different seasons with potential for emerging weed problems to be identified.

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www.australiancottonconference.com.au

Further Information

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