

# GRAHAM CHARLES

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*C&D Researcher of the Year Finalist*

Graham Charles is an applied weeds researcher with 29 years of experience in all aspects of weed management in the Australian cotton industry, covering such areas as the management of specific problem weeds, the effectiveness of the farming system, developing a threshold for weed control in cotton and the identification and management of herbicide damage in cotton. Graham has established himself as an authority on weeds in cotton farming systems both in Australia and internationally. He was the primary author of 'WEEDpak – the integrated weed management guide for cotton', first released in 2002 and has continued to contribute significant content, including the Herbicide Damage Symptoms Guide. "Weed science in Australian cotton took a whole leap when we produced WEEDpak," Graham explains. "Since 2002 I've increased WEEDpak about five-fold in size, primarily bringing in the weed control threshold work and the herbicide damage work. Even things like weed identification, WEEDpak originally had thirty-two weeds, it's now got two hundred weeds in it. That work is pivotal to the industry, it's taken weeds in cotton from being, just something where a grower rings up and asks you a question to now having that huge amount of information at hand on the internet that growers and consultants can go directly to and get the answers."

The development of a multi-species weed threshold for cotton is currently Graham's primary area of research. It would be the only algorithm of its kind enabling advancements in remote sensing and robotic weed control.



“At the end of the day we will need some sort of algorithm which says, this particular weed population is over threshold, this is what we need to be controlling,” he says. “It’s great to come up with a robot that can control weeds but how many robots do you need? Where do you need them? When do you need them? The algorithm that I’m developing will be that pivotable part of the equation.”

Graham has provided considerable technical support to the industry’s adoption and stewardship of glyphosate tolerant cotton through his dedication to the TIMS Herbicide Tolerant Crops Technical Panel. His ongoing commitment to this panel is helping to prepare for the next generation of herbicide tolerant traits. Over the last 12 months Graham has also presented at most of the CottonInfo regional herbicide resistance/weed training events, as well as the consultant specific events, imparting his significant knowledge on use of residuals in cotton, weed ecology and herbicide resistance. “Every situation with weeds is different, every field is different, every farm’s different, every season’s different so rather than giving growers a recipe to say this is what you do, what we’ve done is to give them all the information so they can make their own recipes to fit their situation,” Graham says.

A wealth of experience and knowledge, developed over years of outstanding research, is enabling Graham to ensure that the industry is well positioned to manage the growing issue of herbicide resistance. He is motivated by working to empower growers, inform consultants and get results in weed control. “When I first arrived in the industry twenty-nine years ago there was very little information for growers here and things like nutgrass were a major problem for growers,” Graham explains. “I’ve been able to give them the tools so they can go to the paddock and, with most of the common weeds, be able to look up the information if they’re in doubt and find out



what the weed is. Herbicide damage, when I started there, there was just no information; growers couldn’t even necessarily identify what herbicide had caused damage, and had no idea what the consequences were likely to be of damage, now that information’s out there they can look at damage, get a pretty good idea of what’s caused it and a pretty good idea of what the consequences are going to be so they can manage that damage. To me that’s been a real driver to just be able to get growers those tools they need to be able to manage their situations.”

Graham believes continued work on robotic sensing and herbicide damage will be crucial into the future. He is proud to have been named a finalist in the Australian Cotton Industry Awards. “It’s a great industry to work in because the growers appreciate the work that’s done,” he says. “These awards are a thank you from the industry and it’s nice to be appreciated.”



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