



COUNCIL OF AUSTRALASIAN WEED SOCIETIES

Medal for Leadership Winner in 2018

Joe Vitelli

Joe Vitelli has been involved in weed management for over 36 years within the Queensland Government. Over this time, Joe has significantly contributed to weed science, and has demonstrated his dedication, strong work ethic, practical skills and professionalism.

In 1985, Joe was one of the original Weed Scientists located in Charters Towers at the Queensland Government's Tropical Weeds Research Centre which was built to advance weed management for priority pests in the northern half of the state. Over the next 21 years, Joe worked tirelessly with a devoted team of colleagues to find control solutions for weeds such as rubber vine, Chinese apple, prickly acacia, calotrope, navua sedge, hymenachne and many others. During this time he became the resident expert on all aspects of integrated weed management, particularly chemical control and to this day is nationally recognised in this area. He was particularly instrumental in advancing the use of aerial spraying for control of weeds in rangeland environments.

Besides herbicide control, Joe has directly undertaken or coordinated many large-scale, replicated field trials using fire, mechanical control and integrated strategies. He has been an early adopter of new technologies and led many research projects to determine if they have a role to play in the management of weeds in Queensland. Examples include initial testing of an EZ-ject lance, Atarus flame throwers and microwave radiation, the findings of which have all been reported in scientific publications. His innovation does not stop there as he is also constantly looking at improved ways to undertake measurements, monitoring of research trials, integrating weed ecology and economics into management options and to identify weeds in the landscape. For example, he is working with a geneticist to use E-DNA technology to locate isolated weeds, using water samples from streams to detect any genetic material of the target weed. This will be a major breakthrough for weed eradication programs.

By the time Joe was transferred from the Tropical Weeds Research Centre to a role in Brisbane in 2006, he had ensured tropical weeds with no prior control options, now had management recommendations and one or more registered herbicides available to cover a range of situations.

Joe continues to this day to obtain minor use and emergency permits through the Australian Pesticides and Veterinary Medicines Authority (APVMA) for weeds and pest animals. He collates permit registration data from research trials or sets up and analyses data from local government weed officers and biosecurity staff. He also liaises with his wide network of chemical company contacts to encourage additions to label registrations where appropriate.

For the past 10 years, Joe's primary research focus has been to improve our understanding of weeds targeted for eradication either on a state-wide or national basis. This has seen him travelling the state working on weeds such as alligator weed, *Mimosa pigra*, water mimosa, *Cecropia* and more recently red witchweed (*Striga asiatica*).

The red witchweed project is an excellent example of the invaluable contribution that Joe makes to eradication of high priority weeds. Red witchweed, a parasitic weed, could pose major export trade



barriers for grain crops, and is the target of a national eradication program. Joe's role in the redwitch weed program is to undertake international research, recommend control options and also provide management with indicators of progress towards eradication. To date his input has been invaluable through the development of an innovative tractor mounted ethylene injection system to stimulate germination, incorporation of trap crops, identification of effective pre- and post-emergent herbicides and monitoring of soil seed banks. The eradication methods being used near Mackay in Queensland are far more advanced than previous methods used in the United States of America and other countries.

Giant rats tail grass is also a current focus for Joe where he is investigating endemic Australian pathogens as potential biocontrol options and also improving herbicide control by testing strategies to increase the efficacy of flupropanate, monitoring residual herbicides across a range of soil types and improving integrated management options of this major grass weed across the east coast Australia. Joe has mastered plant pathology skills and implemented procedures for field collection and identification of weed pathogens to laboratory host-testing endemic pathogens. The pathogen research resulted in Joe finding the first record of the GRT leaf smut *Ustilago sporoboli-indici* in Australia.

Joe is always keen to share his wealth of knowledge and over the years has provided extensive training and advice on herbicides, spray equipment, chemical application and safety, spray adjuvants and minor use permits, to a range of spray operators and landholders, including local and state government land protection officers, national park staff and graziers. His work has also featured in numerous extension products, including two woody weed herbicide application technique videos produced by Dow AgroSciences. He is often requested to present at weed field days as a guest speaker. An ACIAR project required Joe to provide two days weed control training to 20 staff in northern Indonesia.

Joe is an excellent mentor of junior scientific and technical staff and embraces all opportunities to students embed into his projects. He regularly takes industrial placement students from the University of Queensland and gives them meaningful short-term projects that they can be assessed on as part of their course requirements. Joe has also incorporated five post graduate students into his research projects to allow additional information to be gathered whilst providing the opportunity for students to get exposure to real world problems. He is currently co-supervising a PhD student focused on improving ethylene applications for red witchweed and another who is researching the ecology and control of fireweed.

Joe initiated a formal prioritization process for research into Class 1 (prohibited) weeds from Queensland. From this process, Joe instigated research to ensure control options are available for all Class 1 weeds, in the event of an incursion detection or for any eradication program.

Due to recognition for his practical applied research, Joe has sourced and managed over \$1.4million of external funds for weed research.

