Travel Report
Dr Catherine Borger
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Destination: Christchurch New Zealand
Dates of travel: 24 September 2010 to 3 October 2010

Purpose
Attend: 17th Australasian Weeds Conference – New Frontiers in New Zealand, together we can beat the weeds.

Oral presentations:
Borger C, Riethmuller G, Hashem A (2010) Emergence, survival and seed production of curly windmill grass in wheat or pasture systems. 17th Australasian Weeds Conference, Christchurch New Zealand, 26-30 September 2010. *Approximately 40 people in audience.*
Borger C, Doncon G, Hashem A (2010) Colonisation of agricultural regions in Western Australia by *Conyza bonariensis*. 17th Australasian Weeds Conference, Christchurch New Zealand, 26-30 September 2010. *Over 80 people in audience.*
Borger C, Riethmuller G, Hashem A (2010) Control of windmill grass over the summer fallow increases wheat yield. 17th Australasian Weeds Conference, Christchurch New Zealand, 26-30 September 2010. *Approximately 45 people in audience.*

Attend the annual general meeting of the Council of Australasian Weed Societies, as the delegate of the Weeds Society of Western Australia.

Key points of interest from the conference
The conference had approximately 200 delegates, mainly from Australia and New Zealand, although international delegates were also present. The conference had a diverse range of talks, although only about 40 delegates were directly involved with agronomic weed control in systems similar to that of the Western Australia wheatbelt. Some national and international research was presented that may be relevant to the Western Australian grains industry, immediately or following further research to determine suitability to local conditions.

Key benefit to Western Australia
Research applicable to the Western Australian grains industry includes:
- Allelopathic influence of wheat stubble or wheat roots against growth of certain weed species, in India and China. Future research may indicate that wheat can also suppress growth of weeds in WA.
- Range expansion of tropical Australia weeds due to climate change. This research can be directly applied to assessment of the current and future severity of weeds in northern WA.
- Spread of herbicide resistant genes within populations of annual ryegrass, and the management of glyphosate resistance in annual ryegrass, conventionally or through use of GM crops. This research can directly benefit herbicide resistance management in WA.
- Depletion of the weed seed bank through practices to encourage emergence (i.e. varying levels of cultivation, stubble biomass retention) in Queensland, or India. Future research in WA may indicate that varying practices (i.e. degree of stubble retention) influence the emergence of local cropping weeds.

Follow-up action and/or recommendation
Research directly relevant to integrated weed management in Western Australia may be incorporated into the extension program (those areas relating to development/spread/management of glyphosate resistant annual ryegrass) of the joint GRDC project between the Australia Herbicide Resistance Initiative (University of Western Australia) and DAFWA staff (myself, Abul Hashem and Glen Riethmuller). Research that may be applicable to the Western Australian grains industry will be considered for future GRDC projects.
A project considering the impact of varying levels of crop biomass on emergence of various weed species and possible allelopathic impacts of straw on weed growth and root development may be beneficial in those areas of WA were growers are dedicated adopters of zero tillage and do not adopt stubble burning practices.

The New Zealand agricultural system

Rangeland systems

The New Zealand rangeland system has fewer poisonous plants than the Australian system. Mortality of livestock (especially sheep) can be as high as 10% on an annual basis, but this is mainly the result of adverse climatic conditions.

Cows were free to roam over roads and mingle with the general population (and stray tourists). Possibly New Zealand cows are friendlier than Australian cows.

New Zealand agriculture was surrounded by windbreaks (mainly pine trees), to protect agricultural endeavours from the climate.

Cropping systems

The high rainfall and irrigation systems used in New Zealand cropping systems ensure that crop and weed growth is prolific.

An irrigation system, used for irrigation of both pasture and cropping systems.

Cropping systems in New Zealand include a diverse range of crop species. The range of available herbicides is more restricted than the range available in Australia. The herbicide companies do not always register their products for use in New Zealand, as it is a small market and the cost of registration may exceed profit from future herbicide sales. As a result, much of the research in correct herbicide use is conducted by organisations like FAR (Foundation of Arable Research), which is mainly funded via a farmer levy.

Nick Poole (left) and Richard Chynoweth (right) of the New Zealand Foundation for Arable Research (FAR) displaying herbicide tolerance experiments.

The restricted number of herbicides ensure that physical weed control is popular within all crops. Cultivation is used to remove weeds prior to sowing, and inter-row cultivation is used to remove weeds within the crop.

Glen Riethmuller (Merredin Department of Agriculture and Food WA) examining a Kongskilde Vibro Crop, used for inter-row weed control in New Zealand crops. The attachments probably would not work over soil in WA due to the stubble that occurs in the WA system. However, work is being conducted in WA on inter-row cultivation for weed control. Inter-row cultivation may benefit from using disks similar to those found on this cultivator, to protect the crop rows from excessive damage.

Due to the diverse range of crops (and weeds), and the restricted range of herbicides, spot spraying is popular in New Zealand crops. This system is labour intensive, but has allowed New Zealand to avoid the issues of herbicide resistance that the Australia system is faced with.

A farm worker using a hand held spot sprayer in a crop of beets.

An Eagle Eye. This machine is directed via the control pad next to the operators seat. The machine can move in all directions, and the arms supporting the seats can be expanded or retracted. The Eagle Eye is used for greater ease of spot spraying in crops.