Part 1 - Summary Details

CRDC Project Number: **CRC108**

Project Title: Spray Drift Workshop for Darling Downs 2006

Project Commencement Date: **Project Completion Date:** 2006

CRDC Program: Capacity & Community

Part 2 – Contact Details

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Part 3 – Final Report Guide (due 31 October 2008)

(The points below are to be used as a guideline when completing your final report.)

Background

The Darling Downs represents a region, which is comprised of 19 local authorities within an area of 90,000 square kilometres. The major primary industries are grain and cotton farming, grazing and intensive livestock production.

A major % of the Darling Downs is under rain-grown crop production with about 5% of the Downs consisting of irrigation (both supplementary and full irrigation). Cotton, grain sorghum, mung-beans, soybeans, maize and sunflowers are the major crops grown in the 2005/2006 summer cropping season.

For rain grown crops, minimum tillage is the major method used to control weeds in the fallow period between crops. Minimum tillage relies heavily on the use of fallow herbicides, especially glyphosate and 2,4-D products which are an essential part of all minimum tillage systems on the downs.

Spray Drift – Grains

Significant amounts of grain crops, especially grain sorghum are damaged from glyphosate drift. Most damage occurs in the early stages of growth just after emergence. Another major problem associated with spray drift has come from drift of products where no maximum residue limit (MRL) exists. Where these products (especially insecticides) have drifted onto the grain crops prior to harvest has meant the grain has been rejected.

Spray Drift – Cotton Industry

For the cotton industry, the biggest concern over spray drift has been from the phenoxy based herbicides, especially those containing 2,4-D. Most fallow spray containing 2,4-D is usually tank mixed with glyphosate.

The Darling Downs has reported approximately 3 500 ha of cotton that has been affected by 2,4-D or phenoxy based herbicides. This constitutes approximately 7% if the area planted to cotton on the Darling Downs.

Actual economic damage for the current season is not known.

The areas that are the most affected on the Darling Downs are areas where flax-leaf fleabane, Peach Vine and Bell vine *Ipomoea plebia* and Bladder Ketmia *Hibiscus trionum* dominate the weed spectrum.

2,4-D is the most cost effective and generally has the highest efficacy on these weed species.

Other common herbicides that have caused damage to cotton in previous seasons include;

- fluroxypyr
- metsulfuron

- diquat/paraquat (Spray Seed)

The fallow herbicides mentioned above are seen as essential by the cotton industry to manage weeds in sustainable production systems

DDCG inc and Cotton Australia supports a cotton industry that maintains access to the most advanced chemistry and pest control agents for use in the growing of cotton, based on effective training, management and application of that chemistry.

The spray drift workshops were conducted to increase the awareness and knowledge of application processes and weather conditions in the hope that this would decrease the number of incidences of spray drift in these areas.

Funding of $5 000 was sought from the CRDC to run a pilot project of "Spray Drift Workshops" in Norwin (5th Jan 2006) and St Ruth (6th Jan 2006) localities on the Darling Downs. These locations were picked due to their centrality to the spray drift incidences.

Objectives

Workshop Agenda

- Weather conditions
  - Delta T, Wind Speed, Temperature,
- Droplet Behaviour
  - Affect of release height
  - Delta T
  - Wind Speed
  - Atmospheric Stability Inversions, stable, un-stable and neutral conditions)
  - Droplet Size (Droplet life with respect to droplet behaviour and weather conditions).
  - Spray Quality (Very Fine, Fine, Medium, Coarse, Very-Coarse, Extremely Coarse
- Legal Requirements
  - Label requirements
  - Relevant label changes
- Target
  - Appropriate product selection
  - Water Volumes
  - Boom set-ups
  - Droplet size selection
  - Timing (Weather conditions and pest behaviour)
  - Droplet coverage Vs Water Volume
- Boom Set-up
  - Nozzle selection for desired droplet size with respect to expected operating parameters.
  - Pressures
  - Application Speed
  - Automatic-Rate controllers
- Spray Plans

- Conducting spray plans for expected in-field situations
- Band spraying

Results

1. Detail and discuss the results for each objective including the statistical analysis of results.

Outcomes

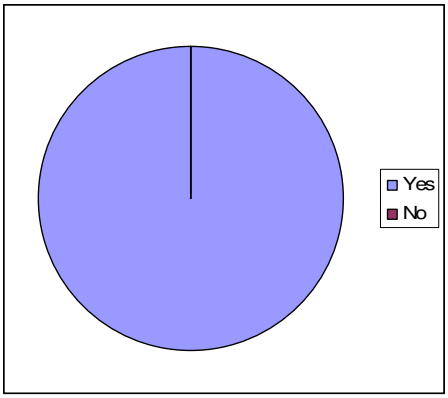
All participants were surveyed in attempt to quantify some of the outcomes 2 weeks after the workshops. Table 1 lists the survey questions that were asked of participants.

Table 1: Spray Workshop Participant Survey

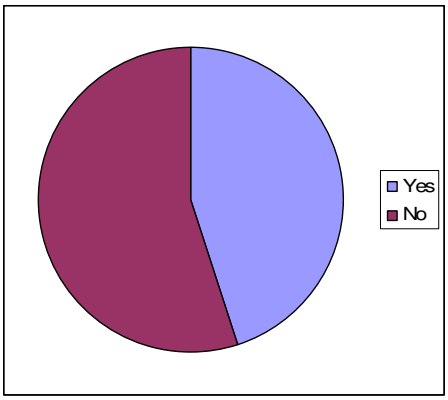
Phone Survey:	
Question 1:	
Did you think the spray drift workshop was worthwhile attending?	
Yes/No	Why?
Question 2:	
Have you changed the way you approach your spray application based on the information presented at the spray drift workshop?	
Yes/No	Why?
Question 3:	
Have you changed your nozzles in response to information presented at the spray drift workshop?	
Yes/No	Why?
Question 4:	
What parts of the spray drift workshop did you gain extra knowledge or understanding from (if any)?	
Nozzle Selection:	Y/N
Droplet Behaviour	Y/N
Planning Spray Applications	Y/N
Spray Controllers	Y/N
Weather Parameters	Y/N
Other	

Survey Results

Question 1: Did you think the spray drift workshop was worthwhile attending?

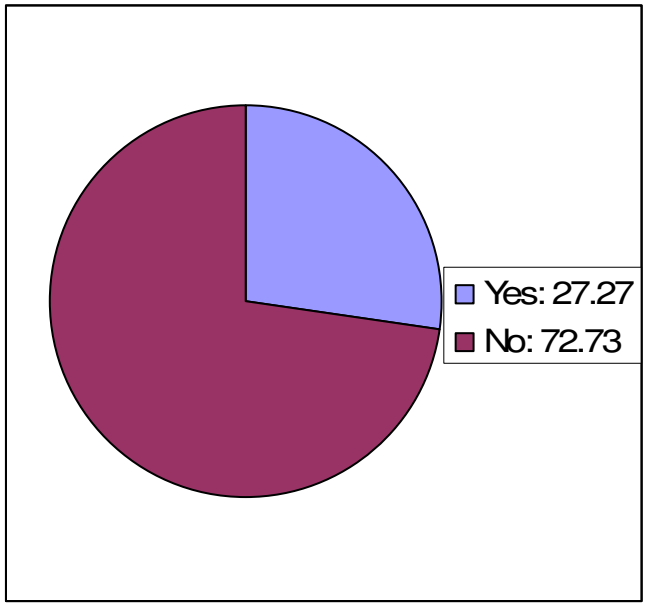


Question 2: Have you changed the way you approach your spray application based on the information presented at the spray drift workshop?



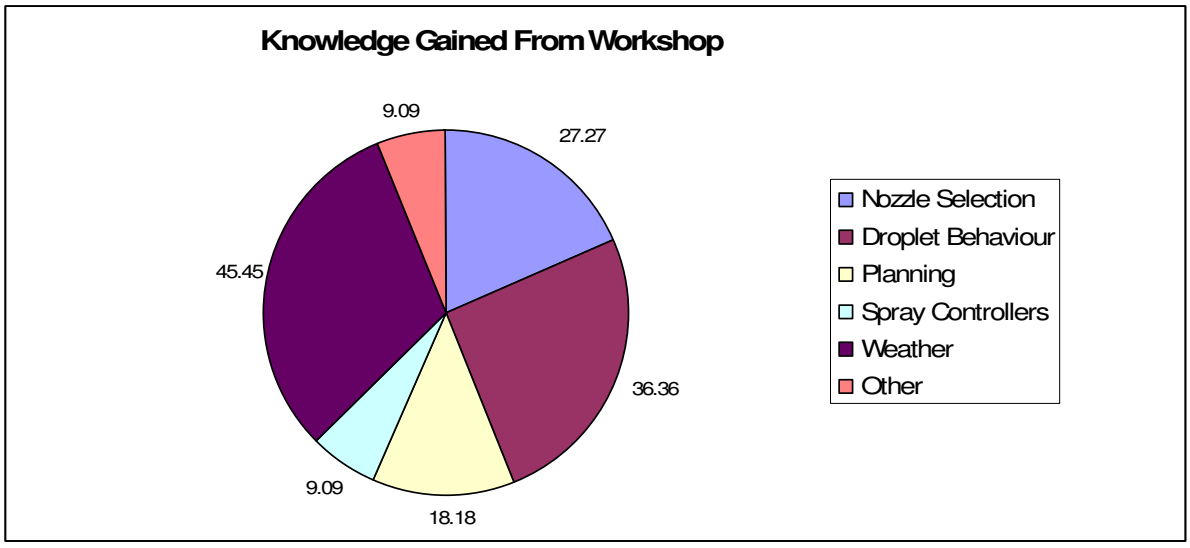
Yes – 45.45 %
No – 55.55 %

Question 3: Have you changed your nozzles in response to information presented at the spray drift workshop?



Comments: Those that have not changed their nozzles were already using drift reducing nozzles such as air inclusion nozzles running at pressures that produce large droplets. Those that did change have changed their nozzles to produce bigger droplets.

Question 4: What parts of the spray drift workshop did you gain extra knowledge or understanding from (if any)?



NB: Respondents could answer more than once.

Part 4 – Final Report Executive Summary

Two "Spray Drift Workshops" were held at Norwin Hall and St Ruth Hall on the 5th and 6th of January respectively. The agenda of the workshops was designed to give participants a working knowledge of nozzles and application parameters that reduce the risk of spray drift but maintain efficacy of the products used.

Outcomes from the workshop included;

- All respondents thought that the workshops were worthwhile and they gained extra useful and relevant information.
- Approximately 30% of respondents changed their nozzles to produce coarse droplet spray quality. The other 70% of respondents were already running with nozzles that produce a coarse spray quality.
- The respondents noted that the 4 main areas where they gained extra knowledge was on droplet behaviour, weather conditions, nozzle selection and planning.
- 21 participants expressed interest in undertaking the commercial applicators course.