COMPARISON OF N/S AND E/W DIRECTIONAL SEEDING

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AIM

To determine if yield differences can be achieved between a crop seeded in a north-south direction compared to an east-west direction.

BACKGROUND

This trial is an on-farm demonstration for the Liebe Group's GRDC funded adoption project '**Growers critically analysing new technologies for improved farming systems**'. The site was selected by the farmer as it was reasonably flat and was generally a well performing paddock with few soil constraints, these characteristics were thought to enhance any differences which may be achieved between east-west and north-south seeding orientations.

Crop row orientation is an important factor in regulating crop/weed competitive relationships for water, nutrients and sunlight, factors which directly affect crop growth and yield. Trials conducted in Merredin and Avondale by Dr Shahab Pathan (DAFWA, Merredin) and Dr Abul Hashem (DAFWA, Northam) have suggested that an east-west wheat crop orientation has the potential to yield up to 0.8 t/ha greater than a north-south orientation in Northam and 0.5 t/ha in Merredin. The results presented from Merredin were produced from weed free conditions, which suggest that there was a higher percent of soil water available to plants in an east west crop orientation.

Crop rows orientated at a near right angle to the sun direction may suppress weed growth by creating a partial shade for weeds, however such effects have rarely been observed in many parts of the world. In some parts of the Western Australian wheatbelt the sun angle goes as low as 35° during winter time, reducing the amount of shade weeds would receive throughout the growing season.

In another study on seeding direction conducted in the eastern states by Minnipa Agricultural Centre, results found some evidence of soil evaporation being greater in the east-west crop orientation. However, no significant treatment differences were found in the yields between both orientations.

TRIAL DETAILS

Property	Keith and Rosemary Carter, Wubin
Plot size & replication	26m x 130m plots, 4 replicates
Soil type	Sand over gravel (Sugar bush and tamat tussock vegetation)
Sowing date	23/5/06
Seeding rate	60 kg/ha, Calingiri Wheat

Fertiliser (kg/ha)	100 kg/ha Macro-pro Plus
Paddock rotation	2003 lupins, 2004 wheat, 2005 lupins and 2006 wheat.
Herbicides	Herbicides are the same for all plots. Specific details unknown at time of reporting.
Growing Season Rainfall	115mm (April – October)

RESULTS

Table 1: Yield and quality of Calingiri wheat sown on 23/5/06 in north/south and east/west directions.

Variety	Yield (t/ha)	Protein (%)	Moisture	Weight (g)	Screenings (%)	Payment Grade
East-West	0.84a	11.2	9.60	82.53	1.50	ASWN
North-South	0.79a	11.2	9.58	82.53	1.73	ASWN
LSD (5%)	0.18	0.37	0.12	0.67	1.50	

There are no significant differences in yields between east-west crop orientation and north-south crop orientations (Table 1). As the paddock had good weed control, the results were primarily influenced by water availability and evaporation within the crop. High evaporation rates and low water availability subsequent of the drought meant that any yield differences which may have been present in a season with higher rainfall were suppressed in the 2006 trial.

The trial will be run again in 2007 to further investigate any potential yield differences between north-south and east-west crop orientations.

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