

TOPIC: FALLOW ON SAND

Group: *Yuna*
2010

ABSTRACT

The purpose of this trial was to investigate low risk, best bet strategies for the low rainfall cropping zone. It involved comparing three simple rotations of wheat following wheat, wheat following late spraytopped pasture, and wheat following spray fallow in a deep yellow sand. The replicated trial was conducted using a farmers airseeder, boomspray and harvester for all treatments.

Sandier soil types inherently have a lower water holding capacity and lower organic carbon levels than heavier soil types. This means that less soil water is stored and carried over to the following years crop and there is less nitrogen mineralisation during the fallow period (compared to a heavier soil type).

The spraytopped treatment and the fallow treatment both yielded significantly better than wheat on wheat in 2010. Weed burden was high in the wheat on wheat in the second year while the spraytopped treatment was slightly cleaner followed by the fallow which was virtually weed free.

TRIAL DETAILS

Property	Phil Vlahov, East Yuna
Soil type	Deep Yellow Sand
Crop & Variety	Bonnie Rock Wheat
Treatments:	Wheat on wheat, Wheat on Spray fallow and Wheat on late spraytop
Replicates:	3 reps
Sowing date	11th May 2010
Seeding rate	60kg
Fertiliser (kg/ha)	120kg (85% Agras, 15% Mo P)
Paddock rotation	2008 Wheat,
Growing Season Rainfall	2009 274mm GSR 242mm, 2010 194mm GSR 182mm

Treatment				\$/ha
Wheat on Wheat				
Income	2009	66t/ha APW (\$230/t)10.8%Pr 3% Scr		152
	2010	1.03t/ha AUH1 (\$323) 11.8% Pr 4%Scr		333
		Total		485
Expenses	2009	Airseeder+2xBoom+Harvest		70
		60kg Bonnie Rock		20
		70kg Agras+25L Flexi-N		93
		Pre and Post		
		Chem		35
		Total		218
	2010	Airseeder+3xBoom+Harvest		75
		60kg Bonnie Rock		15
		120kg Agras+ MoP Blend + 30L Flexi-N		86
		Pre + Post Chem (Monza Included*)		53
	Total		229	
Wheat on Wheat 2 year Gross Margin				38

Wheat on Fallow				
Income	2009	-		0
		1.26t/ha AUH1 (\$323) 12.6% Pr		
	2010	1.6%Scr		407
		Total		407
Expenses	2009	Herb + 2xBoom		49
	2010	Airseeder+3xBoom+Harvest		75
		60kg Bonnie Rock		15
		120kg Agras MoP Blend +30L Flexi-N		86
		Pre + Post Chem		27
		Total		252
Wheat on Fallow 2 year Gross Margin				155
Wheat on Spraytop				
Income	2009	-		0
		1.23t/ha AUH1 (\$323) 12.1%Pr, 1.5%		
	2010	Scr		397
		Total		397
Expenses	2009	Herb + 2xBoom		42
	2010	Airseeder+3xBoom+Harvest		75
		60kg Bonnie Rock		15
		120kg Agras MoP Blend +30L Flexi-N		86
		Pre + Post Chem		27
		Total		245
Wheat on Spraytop 2 year Gross Margin				152

DISCUSSION

- **Wheat on Wheat treatment downgraded to GP due to high brome count in the sample. For the purpose of this comparison I included the cost of a Monza spray in the wheat on wheat treatment because it realistically would not be delivered into that grade (it would either be sprayed or graded at harvest).**
- All input and commodity prices used were current for when each operation occurred (e.g. 2009 Glyphosate \$10/L, 2009 H1 \$250/t). Therefore if current prices were used results may vary slightly.
- Presence of reasonable stubble cover is critical to the spray fallow system. Commencement of spray fallow after drought when cover is limited is very risky due to the stubble not likely to be able to maintain cover until seeding the following year, therefore wind erosion likely.
- During the spray fallow phase, storage of moisture enables useful nutrient mineralisation throughout the growing season up until the following seeding. This mineralisation significantly reduces the reliance on nitrogen fertiliser in the following wheat crop. This means that that purpose behind green and brown manure crops in the low to med rainfall region needs to be questioned.
- **Nitrogen mineralisation on deep yellow sand is significantly less than that of a red loam so the nutrient benefit is less.**
- Build up of weeds in the wheat on wheat treatment, mainly brome, would have not only contributed to yield loss but is an added expense in the following seasons.
- It has been noted in situations other than this trial that fewer weeds are controlled in a late spraytop strategy compared to a Spray fallow. This is because in the spray fallow scenario another germination of weeds occurs following the first spray allowing a greater reduction in the weed seed bank.
- No soil samples have been taken but the presence of root disease such as Rhizo and Take-All (which may or may not have influenced yield) is likely to be higher in the wheat on wheat, therefore increasing risk if another cereal crop is to be planted the following season.
- Summer rainfall will possibly reduce response to spray fallow but this needs to be trialed in the paddock as this reduction is based on theory and modeling.
- Having no subsoil constraints is critical to full utilisation of stored soil moisture. If there is a compacted layer or acid subsoil, roots will not explore to their potential depth, leaving unused moisture deeper in the profile.

SUPPORT

Bernie Quade of Landmark Geraldton, DAFWA for initial trial design and setup.
Phil Vlahov for seeding, spraying and harvesting the trial.