Effects of Cultivation on Yield

Joe Delaney, Agronomist, Elders Scholz Rural

Key Messages

- Reduced yield experienced on cultivation treatment with the drying out effect at seeding.
- More root biomass in the early part of the season with cultivation.
- With no sub soil moisture cultivation did not have the desired effects on yield.

Aim

To compare and evaluate the yield effect from cultivation, before seeding versus a full cut system in a wheat crop.

Background

Cultivation farming, considered the traditional practice of farming, is the process by which paddocks are ploughed on several occasions before seeding. This step of prior cultivation helps in airing the soil, allowing good root growth and aiding the penetration and infiltration of rainfall deeper into the soil profile. It also helps in incorporating organic matter such as stubble and trash from the previous year and can also be used to incorporate lime quicker into the profile. However, the disadvantage of cultivating is soil erosion and increased water evaporation.

Trial Details

Property	Fitzsimons Property, east Buntine
Plot size & replication	3m x 15m x 3 replications
Soil type	Sand over gravel
Soil pH (CaCl2)	0-10cm: 4.5 10-20cm: 4.1 20-40cm: 4.7
EC (dS/m)	0.117
Soil amelioration	Off set disc before seeding
Sowing date	09/06/2014
Seeding rate	60 kg/ha Corack
Fertiliser	06/06/2014: 50 kg/ha DAP
Paddock rotation	2011: wheat, 2012: wheat, 2013: lupins
Herbicides	09/06/2014: 1 L/ha Paraquat, 1.2 L/ha Trifluralin, 200 g/ha Diuron pre-seeding 18/07/2014: 1 L/ha Velocity, 5 g/ha Ally, 1% Hasten
Growing Season Rainfall	180mm

Results

Table 1: Full cut and cultivation differences.

	Full Cut	**Cultivated**
Plants/m^2 @ 3WAS	173	83
Volunteer Lupins/m^2	30	2
Grasses/m^2	5	1
	15% more root biomass in the cultivated treatment	
Yield t/ha	0.87 t/ha	0.74 t/ha

Comments

The offset discs went in at a depth of 6 inches into good moisture. To simulate full cut we ran the seeder over the seeded plots again to be the same as full cut. With the cultivation it did dry out the soil before the seeding. This slowed emergence of seedling for 3-5 days against the non-cultivated treatments. The off-set discs also had a negative effect on germination numbers due to the drying effect of the cultivation. I believe this was the reason for the yield difference. Another reason for the low germination numbers was the depth of seeding. It was hard to get the depth right on the trial seeder in the cultivated strips as it did tend to dig in making the

seeding depth uneven. In general the cultivation did have a good effect on weed control as it did bury seeds and could be used for the mechanical control of weeds.

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Paper reviewed by: David Scholz, Elders Scholz Rural

Contact
Joe Delaney, Elders Scholz Rural
joe.delaney@elders.com.au
0418 212 961