



AgGrow

AGRONOMY + RESEARCH



LONG FALLOW MANAGEMENT TRIAL

Merriwagga, 2012-2013.

LONG FALLOW MANAGEMENT

KEY POINTS

- * Long fallows and green manure crops are valuable management tools that increase soil moisture and nutrition for the following crop.
- * Controlling weeds 100% of the time in fallows preserves maximum soil moisture. Spraying weeds late in this trial equated to lost income of \$85.56/ha as a result of lower grain yield and quality.
- * Vetch as a green manure compared equally in yield to a fully sprayed fallow. This was not the case with an oats cover crop. Grazing value of these crops would have been significant but was not accounted for.
- * Grain protein was highest in the full spray fallow treatment highlighting how weeds can impact on the availability of soil nutrients.

BACKGROUND

Fallows and green manures are used mainly to conserve moisture, mineralise/produce nitrogen as well as control weeds. Fallow management practices therefore can have a major impact on following crop yield.

The benefits of a well managed long fallow can be quite economically attractive. Historically fallows were used as sheep feed for a component of the season. Recently data suggests controlling weeds for the full 18 months of a long fallow is more economical. If this is so, how does a well managed fallow compare with a green manure vetch crop?

TRIAL DETAILS

A fully replicated long fallow management trial was established at in Merriwagga in March 2012 following widespread flooding.

The trial was set up to compare the yield benefit and economics of various management options of an 18 month fallow and green manure treatments. Treatments included various fallow spray timings versus a green manure vetch and cover crop of oats (both were sprayed out in September).

The trial consisted of 5 treatments including a full spray fallow, a fallow spray commencing in June, a fallow spray commencing in September, a full fallow spray with vetch green manure and a full fallow spray with oats green manure. Each treatment was replicated three times, with plot size 12m x 30m. The trial plan is shown in figure 1.

The trial was set up on 7th March 2012, with the full spray fallow plots (including the vetch and oats) sprayed with 1L Roundup DST + 1L LVEstericide 680 + 120 ml Garlon. The oats and vetch were then sown on 27th March. For a full calendar of operations see figure 2.





Figure 1: Long Fallow Management Trial Plan

		30m Rep 1	30m Rep 2	30m Rep 3
12m	1	Full fallow spray	Fallow spray commenced September	Full fallow spray + oats
12m	2	Fallow spray commenced June	Full fallow spray + vetch	Full fallow spray
12m	3	Fallow spray commenced September	Full fallow spray + oats	Full fallow spray + vetch
12m	4	Full fallow spray + vetch	Full fallow spray	Fallow spray commenced June
12m	5	Full fallow spray + oats	Fallow spray commenced June	Fallow spray commenced September

Figure 2: Calendar of Operations

Date	Herbicide	Full fallow spray	Fallow spray commenced June	Fallow spray commenced September	Full fallow spray + vetch	Full fallow spray + oats
7-Mar	1L Roundup DST + 1L Lvestericide 680 + 120 ml Garlon	✓			✓	✓
27-Mar	0.8kg Diuron + 1L Roundup DST				✓	✓
27-Mar	Sowing				✓	✓
17-Jul	600mL RUP Attack + 600mL Amicide 700	✓				
17-Jul	1L RUP Attack + 1L Amicide 700		✓			
12-Sep	1L RUP Attack + 600mL Tordon 75D + 40G Lontrel		✓	✓	✓	✓
Dec	1L RUP + 60mL Garlon		✓	✓	✓	✓
25-Feb	1.5L Gramoxone + 700mL LV Ester + 120ml Garlon	✓	✓	✓	✓	✓
7-Apr	1L Rup Attack + 200mL LV Ester	✓	✓	✓	✓	✓
9-May	400mL Rup Attack + 1.2L Triflur X + 35g Logran	✓	✓	✓	✓	✓
9-May	Sowing	✓	✓	✓	✓	✓
1-Aug	800mL LV Ester 680 + 200mL Folicur	✓	✓	✓	✓	✓

Figure 3: Photo of trial in August





RESULTS AND DISCUSSION

Figure 5 shows the average yield in kg/ha of each of the 5 treatments. From this you can see that a fully sprayed fallow gave the highest yields followed by the fully sprayed fallow + vetch treatment.

As far as costs go, whilst the spray fallow commencing in June and the spray fallow commencing in July had the least costs, as shown in figure 7, they also had lower yields and grain protein when compared with the full spray fallow.

The full spray fallow had the highest grain protein followed by the full spray fallow + vetch, as shown in figure 8. This put these into the APW grain category from ASW, which increased grain price from \$220/t to \$240/t. The later the spray fallow commenced the more grain protein decreased, with over 1% difference in protein between a full fallow spray and a spray fallow commencing in June. The lowest grain protein was achieved in the full spray fallow + oats treatment.

In summary the highest gross margins were when 18 month fallows were sprayed the whole way through. In a wet season like 2012, vetch can be a valuable tool to add value to long fallows whilst maintaining yield potential and grain quality. The added value of vetch for grazing was not captured in this trial and is a real asset for livestock farming systems.

Figure 4: Photo of trial in October 2012 following spraying out.



Figure 5: Yield for individual treatments in the trial.

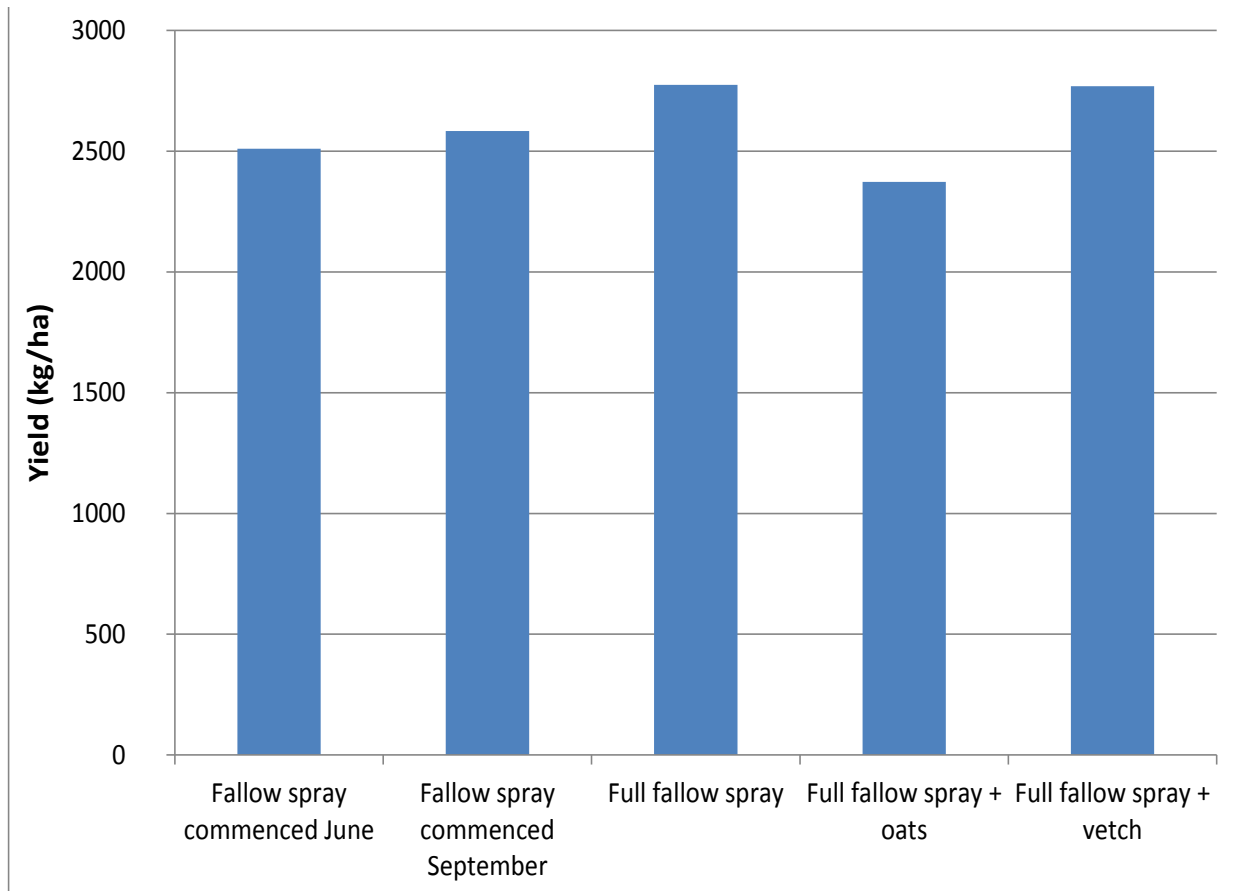


Figure 6: Picture of the trial in September 2013.



Figure 7: Costs for each Fallow Treatment

Activity	Full fallow spray	Fallow spray commenced June	Fallow spray commenced September	Full fallow spray + vetch	Full fallow spray + oats
1L Roundup DST + 1L Lvestericide 680 + 120 ml Garlon	\$ 15.00	\$ -	\$ -	\$ 15.00	\$ 15.00
0.8kg Diuron + 1L Roundup DST	\$ -	\$ -	\$ -	\$ 10.00	\$ 10.00
Sowing	\$ -	\$ -	\$ -	\$ 50.00	\$ 50.00
600mL RUP Attack + 600mL Amicide 700	\$ 10.00	\$ -	\$ -	\$ -	\$ -
1L RUP Attack + 1L Amicide 700	\$ -	\$ 14.00	\$ -	\$ -	\$ -
1L RUP Attack + 600mL Tordon 75D + 40G Lontrel	\$ -	\$ 15.00	\$ 15.00	\$ 15.00	\$ 15.00
1L RUP + 60mL Garlon	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00
1.5L Gramoxone + 700mL LV Ester + 120ml Garlon	\$ 19.00	\$ 19.00	\$ 19.00	\$ 19.00	\$ 19.00
1L RUP Attack + 200mL LV Ester	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00	\$ 8.00
400mL RUP Attack + 1.2L Triflur X + 35g Logran	\$ 14.00	\$ 14.00	\$ 14.00	\$ 14.00	\$ 14.00
Sowing	\$ 72.00	\$ 72.00	\$ 72.00	\$ 72.00	\$ 72.00
800mL LV Ester 680 + 200mL Folicur	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00	\$ 10.00
Harvest	\$ 40.00	\$ 40.00	\$ 40.00	\$ 40.00	\$ 40.00
Transport	\$ 32.00	\$ 32.00	\$ 32.00	\$ 32.00	\$ 32.00
Total costs (\$/ha)	\$ 228.00	\$ 200.00	\$ 186.00	\$ 261.00	\$ 261.00
Grain yield (kg/ha)	2774	2510	2583	2769	2373
Grain price (\$/t)	240	220	220	240	220
Total income (\$/ha)	665.76	552.2	568.26	664.56	522.06
Gross margin (\$/ha)	\$ 437.76	\$ 352.20	\$ 382.26	\$ 403.56	\$ 261.06

Figure 8: Average Grain Protein of each Fallow Treatment

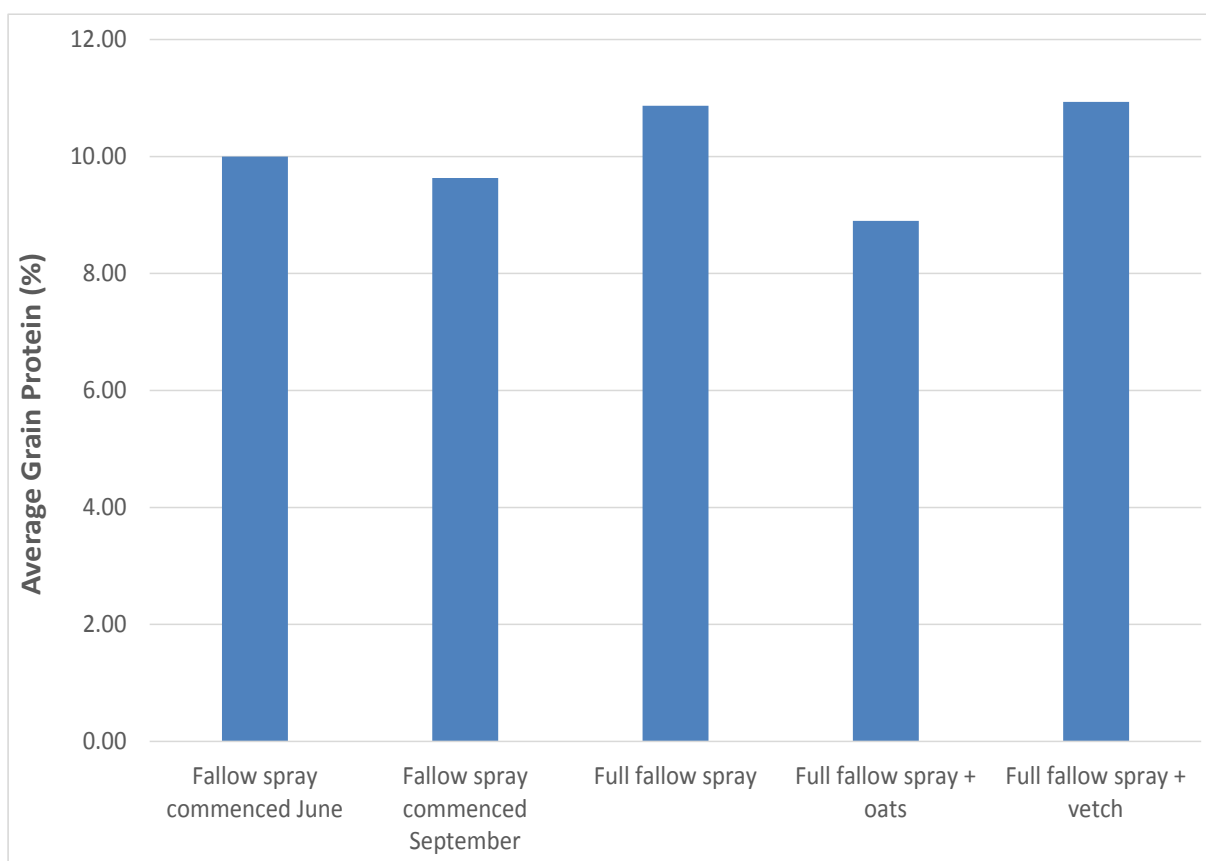


Figure 9: Photo taken September 2013 showing the more leafy treatment of wheat following vetch (left) and wheat following brown manure oats (right). Notice the variation in crop maturity. Wheat following oats flowered 15 days before wheat following vetch.



ACKNOWLEDGEMENTS

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