

# Economics of lucerne establishment for the western wheat belt

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Lucerne may be established as an elite sward or in conjunction with a cereal crop. The undersowing of cereal crops with pasture species (including lucerne) is a slopes and tablelands practice, commonly known as 'cover cropping'. Its success is very dependent upon mild and wet spring seasons. Both local farmer demonstrations and departmental trials indicate that the most effective way to establish lucerne in the western wheatbelt region is without a cover cereal crop. This practice in some regions is referred to as 'elite establishment'.

Wet springs and summers are uncommon to the south-western wheatbelt districts. The searing westerly winds in mid-September increases the competition between the cereal crop and pasture seedlings in a cover crop situation. Lucerne establishment failures are very common under a cover crop. It is illogical and uneconomical to use a high-rainfall tablelands practice in a semi-arid region.

The elite establishment of lucerne has clear advantages over cover cropping in this region. Failures are very uncommon and usually relate to depth of seed placement or to an unforeseen pest problem. Many farmers successfully established elite stands during the 1994 drought. The economic principles for elite establishment are sounder than those for cover cropping.

As a rule of thumb, in order to establish lucerne under a cover crop in this region the farmer usually needs 75 mm of September rainfall to forgo about half a tonne of grain per hectare. To ensure enough moisture is available for lucerne seedling survival, the wheat seedling rate is halved. It is crucial to receive 40 mm of that rain by mid-September, otherwise the lucerne may still die.

The irony is that the sacrifice of half a tonne of wheat is about equal to the cost of elite establishment. Substantial quantities of money can be lost when the undersown lucerne not only robs yield but impacts on grain quality, reducing a prime hard wheat or malt barley crop to a low-value feed grade due to excessive screening levels.

To form a decisive economic and objective picture in order to compare the merits of the two establishment techniques, a 2-year period needs to be considered. The cost of elite establishment is detailed in Table 1, but it is necessary to look at the year prior to when the paddock was under wheat (see [Table 2](#)) and review income, costs and reasons.

**Table 1. The cost of lucerne pasture establishment 2005**

	\$/ha	Totals (\$/ha)
2 x scarifyings	\$8.84	
1 x sowing	\$5.46	
2 x sprayings	\$0.70	\$15.00
3 kg lucerne seed (farmer dressed)	\$16.00	
50 kg Starterfos (11 kg P)	\$21.00	
0.8 L Treflan 480® (wireweed & grasses)	\$7.00	
2.0 L Brominil®	\$24.00	
100 mL Lemat 290® (earthmites)	\$4.00	\$72.00
<b>Total variable costs</b>		<b>\$87.00</b>

**Note:** Costs are based on 2004 prices. Total tractor hours 0.55 h/ha.

It is important to observe sound agronomic practices to understand some of the cost inputs. Weed control in wheat ([Table 2](#)) the year prior to



sowing lucerne is essential. Glean® or Logran® is used to control the typical district weeds such as annual ryegrass, wireweed, fumitory, spiny emex, Paterson's curse, mustards, turnips and radish. There is a post-emergent application of MCPA 500® to control capeweed and thistles—especially saffrons which are common to the district.

That same standard of weed control must also be observed in both the 2004 cover crop program ([Table 3](#)) and in the 2005 elite establishment

([Table 1](#)). Consequently the same standard of crop and pasture nutrition must be observed.

The elite established lucerne had 50 kg Starterfos/ha applied at sowing in 2005. To maintain comparable pasture and livestock productivity, the lucerne that was established with the cover crop in 2004, will require top dressing in 2005 with 50 kg Starterfos/ha, costing \$21.00/ha fertiliser and \$5.00/ha for spreading.

**Table 2. Wheat budget 2004**

<b>INCOME:</b>				<b>(\$/ha)</b>
Yield:	2.0 tonnes/ha ASW Wheat	@ \$150.00/tonne		<u>\$300.00</u>
<b>TOTAL INCOME</b>				<b><u>\$300.00</u></b>
<b>VARIABLE COSTS:</b>				
Tractor costs	1.00 h/ha	130 PTO KW	@ \$26.00/hour	\$ 26.00
Seed	50 kg/ha		@ \$ 0.20/kg	\$ 10.00
Fertiliser	50 kg/ha	Starterfos	@ \$ 0.42/kg	\$ 21.00
Herbicide	20 g/ha	Glean®	@ \$ 0.10/g	\$ 2.00
	1.0 L/ha	MCPA 500®	@ \$ 5.00/L	\$ 5.00
Harvesting	0.24 h/ha		@ \$36.30/h	\$ 8.71
Cartage		Del. Silo	@ \$ 8.00/tonne	<u>\$ 16.00</u>
<b>TOTAL VARIABLE COSTS</b>				<b>\$ 88.71</b>
<b>GROSS MARGIN/HA</b>				<b><u>\$211.29</u></b>

**Table 3. Cover cropped wheat budget 2004**

<b>INCOME:</b>				<b>(\$/ha)</b>
Yield:	1.5 tonnes/ha ASW Wheat	@ \$150.00/tonne		<u>\$225.00</u>
<b>TOTAL INCOME</b>				<b><u>\$225.00</u></b>
<b>VARIABLE COSTS:</b>				
Tractor Costs	1.00 h/ha	130 PTO KW	@ \$26.00/hour	\$ 26.00
Seed	25 kg/ha	Wheat	@ \$ 0.20/kg	\$ 5.00
	3 kg/ha	Lucerne	@ \$ 4.33/kg	\$ 16.00
Fertiliser	50 kg/ha	Starterfos	@ \$ 0.42/kg	\$ 21.00
Herbicide	0.8 L/ha	Treflan 480®	@ \$ 8.75/L	\$ 7.00
	2.0 L/ha	Brominil®	@ \$12.00/L	\$ 24.00
Insecticide	100 mL/ha	Lemat 290®	@ \$40.00/L	\$ 4.00
Harvesting	0.24 h/ha		@ \$36.30/h	\$ 8.71
Cartage		Del. Silo	@ \$ 8.00/tonne	<u>\$ 12.00</u>
<b>TOTAL VARIABLE COSTS</b>				<b>\$123.71</b>
<b>GROSS MARGIN/HA</b>				<b><u>\$101.29</u></b>

If we are observing comparable agronomic practices, then where are the savings in cover cropping? There is \$15.00/ha in tractor costs (from [Table 1](#)), and 0.83 hours/ha<sup>1</sup> of labour in preparation and sowing. Many farmers say it's the 0.17 hours/ha sowing that they do not have to spare at the peak crop planting time, and this is why they cover crop.

It is common practice for district farmers to sow cover crops last. While the wheat seed may be sown into adequate moisture, the lucerne seed is often placed in dry soil in the surface—essentially the lucerne is dry sown. If time is limited, why not dry sow an elite lucerne stand before the break, say mid to late April. It is then possible that grazing of the lucerne may commence in early August which would allow for the possibility of a barley-grass-free lucerne paddock for weaners in late September.

The financial difference between the two establishment methods when costed over 2 years will surprise some farmers:

- The 2004 cover crop program had a gross margin (GM) of \$101.29/ha. Deducting the 2005 top dressing cost of \$26.00/ha leaves a final GM of \$75.29/ha.
- The elite crop program had a GM of \$211.29/ha produced from the wheat in 2004, less \$87.00/ha of lucerne sowing in 2005, giving a final GM of \$124.29/ha.

Elite establishment had a \$49.00/ha advantage over cover cropping when properly costed. In actual practice the advantage of elite establishment may be larger when the wheat quality is assessed for protein premiums and screenings penalties, and these are taken into account.

Another important point in favour of elite lucerne establishment is that the postharvest wheat stubble ([Table 2](#)) usually provides about 6 weeks of grazing at 6 DSE/ha (dry sheep equivalents per hectare) postharvest. There is typically 3% of wheat spilt in front of the comb, some 60 kg/ha. This is valued on average at \$10.00/ha for grazing the stubble.

The undersown wheat leaves weak and spindly lucerne seedlings postharvest, which should not be grazed until there is sufficient crown development, which may not be until March 2005. By then the grain amongst the stubble is wasted. These undersown lucerne paddocks are often overrun with potentially deadly infestations of white heliotrope.

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<sup>1</sup> For each tractor hour in the paddock there is an additional allowance of 30 minutes in labour for maintenance and down time.

The big picture view should financially compare:

- the farm that has 100% of lucerne pastures successfully established
- versus
- the farm that is cover cropping with 20% lucerne and 80% of the pastoral area composed of annual crop weeds.

On the cover cropping farm there would be significant reductions in animal productivity, increased hand feeding costs, increased herbicide expenditure, and the need to purchase urea to maintain comparable crop yields.

Cover cropping is not a practical or economical method to establish a lucerne pasture in the western wheat belt. Establishing lucerne pasture without a cover crop will be a 'leap of faith' for many of the region's farmers, but like all businessmen they must objectively assess the economic situation.

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