

# Hamilton Proof Site finishes five years of research

The Hamilton EverGraze Proof Site has just finished five years of research into the productivity and profitability of perennial pastures and the results have been outstanding.

Ralph Behrent, EverGraze Proof Site Leader at Hamilton, compiled the results which prove that the right perennial in the right place for the right purpose with the right management increases productivity, profitability and improves our natural resources.

Two systems were tested at the Hamilton Proof Site; the Ryegrass System (see Table 1) and the Triple System (see Table 2).

The Right Plant, Right Place, Right Purpose, Right Management principles (see page 8) were used to design the Ryegrass and Triple systems of the Hamilton Proof Site and results were recorded and monitored over five years.

The results showed profitability goals were met from increased product/ha (stocking rate, wool production, weaning percentage and lamb turnoff weight) and reduced supplementary feeding costs in a variable climate. The primary natural resource management goal was to

## EverGraze Proof Site

- ▶ Five years of research has shown that perennial systems can be profitable, productive and enhance environmental management.
- ▶ The Triple System reduced the need for supplements during dry seasons increasing profits.
- ▶ Both the Triple and Ryegrass systems have shown gross margin increases of up to 50% above the top 20% of producers in the South West Farm Monitor benchmarking program.



reduce recharge, but additional issues were addressed; from persistence of perennials and improved ground cover, to good pasture composition.

So what did the systems achieve?

**Reduced recharge in Triple System**  
Lucerne in the Triple System reduced leakage of water below the root zone measured at a depth of 3.25-4.25m.

**Persistent systems**  
After five years, all species in the Ryegrass and the Triple pasture system have persisted well and maintained stable botanical compositions.

**High stocking rates in both systems**  
High winter growth rates (40-50 kg/dry matter/ha/day) through the warm and dry winters and 1-2 tonnes dry

matter/ha production from summer active pastures in response to summer/autumn rain resulted in stocking rates on the spring lambing Merino system of between 14-16 ewes/ha.

**Improved lamb survival with shelter**  
Lamb survival at the average birth weight was demonstrated to increase from an average of 69% in open areas up to 90% in the sheltered perennial grass hedge rows.

**“Peaky” feed supply in the Ryegrass System matched to spring lambing**  
On average, the gross margins and productivity of the Triple and Ryegrass systems were similar. However, the Ryegrass System is well suited to spring store lamb production. Modeling showed the value of the summer active species in the Triple

Table 1: The Perennial Ryegrass System for Spring Lambing Ewes (All sown with Leura & Gosse sub clover and Mink white clover)

Right Plant	Right Place	Right Purpose	Right Management	Other options?
Early - season maturing perennial ryegrass (Fitzroy)	Persisted on well drained crests (early dinish allows Fitzroy to survive with low summer moisture)	Winter-spring feed for spring lambing ewes	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris and other summer dormant perennial ryegrasses with early maturity. Winter active tall fescues
Mid-season maturing perennial ryegrass (Avalon)	Persisted on mid slopes	Winter-spring feed for spring lambing ewes	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris and other mid season maturity perennial ryegrasses
Late-season maturing perennial grasses (Banquet)	Persisted on valley floor (tolerates water logging and requires moisture to survive summer)	Winter-spring feed for spring lambing ewes and extended summer feed	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris, summer active tall fescue and other long rotation ryegrass with late maturity
Grass hedge rows with inter row sown to perennial ryegrass (BanquetII)	Hedgerows 10m apart in twin lambing paddocks	Shelter and quality fodder for twin lambing ewes *Recharge reduction from summer activity of hedgerows	Short-term set stocking during lambing. Hay/silage from inter-rows during spring. Rotational grazing in summer/autumn to consume feed heads and inter-row regrowth. Spell from autumn break to lambing to build FOO for lambing	Shrubs, trees, and phalaris. Phalaris, other perennial ryegrasses and short term annuals may be alternatives for inter-row feed.

System may be greater in self-replacing sheep or cattle enterprises where young stock are carried through summer, reducing supplementary feeding costs and increasing weaner growth.

**Reduced supplementary feeding costs in Triple System in poor years**

In poor springs and autumns, lucerne and tall fescue responded to summer rain, producing extra feed (compared to the dormant ryegrass) and saving on supplement. During 2006-07, summer growth in the Triple System saved \$295/ha in supplementary feeding costs resulting in gross margins of \$247/ha in the Ryegrass compared to \$547/ha in the Triple System. In most years, time off pasture due to summer/autumn destocking (at ground cover and FOO thresholds of 75% and 800 kg dry matter/ha respectively) also tended to be greater for the Ryegrass System than the Triple System.

**Increased product per hectare**

Lamb production ranged from 351-774 kg/ha compared with 215-374 kg/ha for the top 20% of the South West Farm Monitor benchmarking program (FMP). Wool production varied with the sheep system from 35-64 kg clean wool/ha compared with 35-46 kg clean wool/ha for the FMP top 20%. Beef steer liveweight production per hectare ranged from 644-928 kg/ha compared to 579-732 kg/ha for the FMP top 20%.



Sheep at the Hamilton Proof Site

**Improved gross margins and return on investment**

Both the Triple and Ryegrass systems have shown gross margin increases of up to 50% above the top 20% of producers in the South West FMP, and up to 1.5 to 2 times larger than the average benchmarked farm. Care needs to be taken with these figures as they are steady state estimates and do not include extra labour, management complexity, risk or impacts on cash flow over time.

Modeling has shown that implementing EverGraze pasture systems on 10% of the farm area for a typical livestock farm achieved return on capital invested of 20-30% and 5-7 year pay back period. This was accounting only for stocking rate increases, with further returns expected from flushing ewes, increases in weaner survival and improved finishing weights.

Detailed economic analysis of the Hamilton Proof Site will be available later this year.

**Differences in animal health and farm management between systems**

The Ryegrass pastures had wild endophyte, so could produce ryegrass staggers in certain conditions.

Lucerne also has potential to cause other animal health issues such as red gut, bloat and pulpy kidney.

In general, the Ryegrass System is easier to manage than the Triple System because;

- ▶ tall fescue requires strict management to maintain pasture quality during spring and summer,
- ▶ lucerne requires winter cleaning every few years to keep it productive
- ▶ strict grazing management is required for lucerne to persist and
- ▶ greater vigilance on livestock vaccination and feeding is required when transitioning between species (especially lucerne).

For fact sheets and research results go to [www.evergraze.com.au](http://www.evergraze.com.au)



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Table 2: The Triple System for Spring Lambing Ewes (All pastures sown with Leura and Gosse sub clover and Mink white clover)

Right Plant	Right Place	Right Purpose	Right Management	Other options?
Semi-winter active lucerne on 1/3 of the farming system (SARDI7)	Persisted on well drained crests with aluminium <3%. Lime applied at sowing to increase pH.	Reduced soil moisture in a wet year. Reduced supplementary feeding costs in poor years. High quality summer/autumn feed for improved livestock production.	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing but graze ryegrass and tall fescue if possible. Save lucerne for weaned lambs.	Chicory (short term option). Future options may include tедера or lotus corniculatus
Mid-season maturing perennial ryegrass (Avalon)	Persisted on mid slopes	Winter-spring feed for spring lambing ewes	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris and other mid season maturity perennial ryegrasses
Summer active tall fescue (Quantum)	Persisted on valley floor (tolerates water logging and requires moisture to survive summer)	Winter-spring feed for spring lambing ewes and extended summer feed. Early autumn growth and comparable growth to ryegrass	Rotational grazing: ▶ Spring 14-28 days ▶ Summer/autumn 28-42 days ▶ Winter 42-56 days Set stock at lambing	Phalaris, Banquet ryegrass, Other long rotation ryegrass with late maturity
Hedge rows	(place, purpose and management as for the Ryegrass System)			