

Winter active tall fescue boosts stocking rates and farm profits

Name:	Kelvin and Estelle Ridgway
Farm Location:	'Moolabar', South Porongurup's, South Coast of WA
Farm System:	Sheep, cattle and grass seed production..
Rainfall:	650 mm
Farm Area	380 ha (home block only)
Perennial Species Sown:	11 ha Resolute winter active tall fescue sown at 17.5 kg/ha
Sowing time:	Autumn 2006
Soil type:	Loamy sand over clay

Key Points

- **Tall Fescue reduces the need for supplements**
- **Attention to detail is needed to get optimum establishment**
- **Tall Fescue increased carrying capacity from 11.5 DSE/ha to 16 DSE/ha**

Background:

Kelvin and Estelle Ridgway run sheep for prime lamb production, beef cattle integrated with contract grass seed production. As such, they know the importance of good establishment and management of perennials to get high forage production and seed yields. In trialling tall fescue, they were looking for a perennial that would provide increased feed during autumn. Previously, the Ridgways had included tall fescue in annual pasture mixes but did not have any pure tall fescue pastures on the property.

Winter active tall fescue Resolute was chosen, as it was recommended as persisting under heavy grazing. Tall fescue is known to tolerate water logging so was well suited to the proposed paddocks that was often very wet in winter. For this comparison, the production from the tall fescue has been compared with that achieved from a typical annual pasture including predominantly sub clover and annual ryegrass with varying amounts of broadleaf and grass weeds.

Establishment method:

Kelvin knew that the key to successful establishment is to get good weed and insect control prior to planting. He used Glyphosphate and Chlorpyrifos prior to sowing to control annuals and red legged earth mite. The paddock was sown at 17.5 kg/ha with a disc machine and rolled after sowing to ensure good seed:soil contact. Tall fescue needs to be sown at a rate of at least 12 kg/ha as the seed is bigger than rye grass so a higher rate is needed to get an adequate plant density. Kelvin believes it's important to go in with a heavy rate rather than skimp on seed and risk the failure of the stand. In 2007, MCPA was used to suppress broad leaf weeds that germinated after seeding.

No fertiliser was used at sowing due to high pre-existing soil nutrient levels. In 2007, a nitrogen based fertiliser was used and 45 kg/ha N, 3 kg/ha P and 3 kg/ha S was applied. Research work at Hamilton in Victoria has shown that tall fescue is very responsive to nitrogen applied in early autumn.

Benefits to animals:

Reduced feed costs - One aim of using tall fescue was to provide more autumn pasture and reduce supplementary feeding. Over the last 18 months, stock on the tall fescue required only half the amount of supplementary feed compared to the annual paddock (Table 1). These figures do not include grain fed from self feeders in the annual paddock in July 08.

Most supplementary feeding occurred in autumn 2008 when the fescue paddock was still immature and with the sandy soil, some damage from cattle pulling plants out was a problem. Since spring 2008, this has not been an issue and supplementary feeding has been minimal.

Table 1: Supplementary feeding for fescue and annual paddock April 2008 – November 2009

Pasture Type	Silage rolls kg	Hay rolls kg	Straw rolls kg	Total kg
Fescue paddock	4,500	5,200	1,500	11,200
Annual paddock	6,000	6,400	10,500	22,900

Flexible grazing management - The fescue paddock has helped plug the autumn feed gap, is a great calving paddock as well as being good for maintaining animals over the autumn period. It could also be used to fatten stock provided it was mixed with something like a chicory or even lucerne. It is also a fantastic lambing paddock providing excellent protection for stock.

Though Resolute is winter active and dormant in summer it has been able to extend the grazing in both autumn and spring. Kelvin is an experienced seed grower and as well as grazing. He harvested the paddock for seed in summer 2007 and 2008. Spelling the paddock ahead of seed production has probably enhanced the persistence of the fescue as it will allow the plants to develop a strong root system.

Environmental benefits:

The fescue paddock had always been a problem with poor annual rye grass growth and severe water-logging. Kelvin hoped to use the fescue to reduce the waterlogging as well as provide more autumn feed. While some water-logging still occurs, qualitative observations are that this is reduced.

This is expected as tall fescue can set roots down to 2.5m which enables the plant to reduce recharge by about 30 mm or 1/3 compared to annual rye grass. Also, tall fescue has a dense plant crown and so there is reduced pugging in wet conditions.

Ground cover has been excellent at almost 100% compared to only 70% in the annual pasture (Table 2). This has protected the paddock from any possible erosion, from either wind or water.

Table 2: Ground cover and green herbage for tall fescue and annual pastures; 2009.

Measurement	Tall Fescue		Annual Pasture	
	Summer	Winter	Summer	Winter
% Ground cover	99	100	96	72
% Green herbage	93	91	27	98

Tall fescue dominates the pastures but there is a significant amount of annual ryegrass and sub clover, as some Italian rye grasses was oversown in 2008. Kelvin feels that these species have done better in this paddock as there is less water logging now that the fescue has been established.

Production and costs;

Increased stocking rate - Throughout 2008-09, the fescue paddock had an average stocking rate of 16 DSE/ha (Table 3). This is despite the paddock being destocked for three months in 2009 due to severe water-logging and seed being harvested in January 2009. Over the same period the annual paddock only carried 11.5 DSE/ha and required double the amount of supplementary feeding to maintain the stock.

Table 3: Stocking rates of Resolute tall fescue compared to annual pasture; April 2008 – August 2009.

Stocking rate	Resolute tall fescue	Annual pasture
DSE grazing days per hectare	7,450	5,520
DSE per hectare	16	11.5

The tall fescue at Ridgways has also been harvested for seed which has contributed significantly to the gross returns from the paddock. However, this has not been included in the cash flow analysis.

Tall fescue needs a high seeding rate (10-20 kg/ha) to make up for the larger seed. Fertiliser use has been low as the background soil fertility is high. A summary of establishment costs is shown in Table 4.

Table 4: Establishment costs of Resolute tall fescue, autumn 2006.

Activity	Actual costs \$/ha
Chemicals	\$20
Tall fescue seed	\$192
Contract seeding	\$40
Paddock rolling	\$20
Lost grazing after sowing	\$50
Total costs	\$322

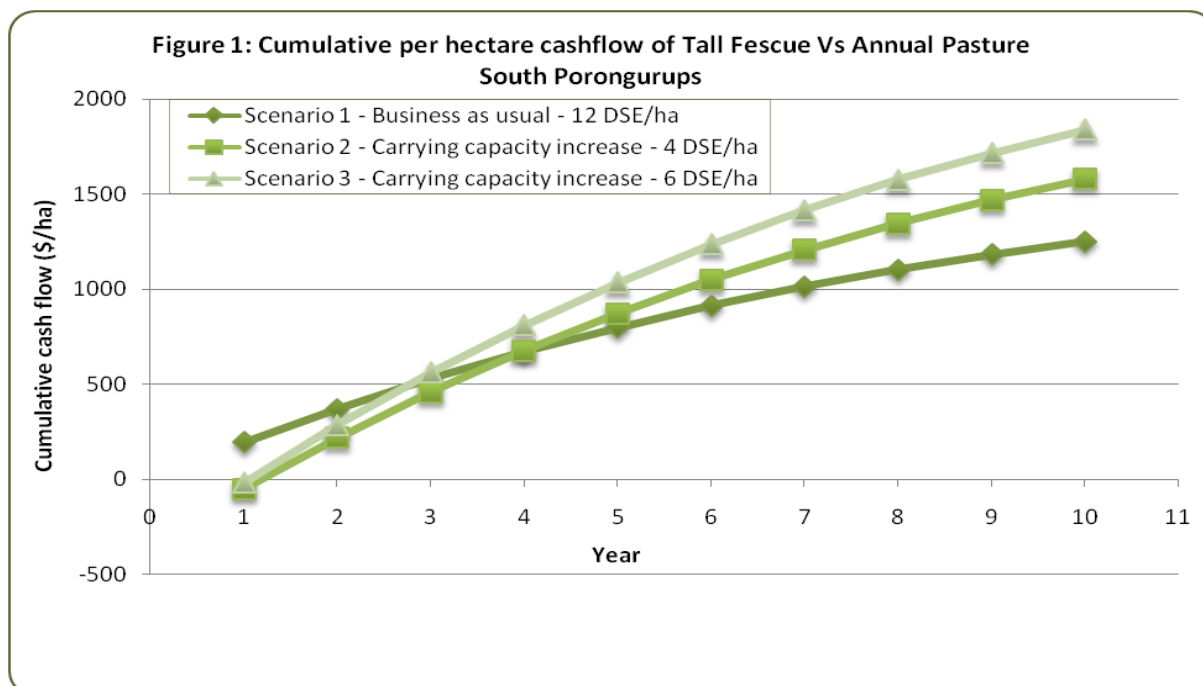
Financial benefits;

The higher profits from perennials in the Ridgway's farm system come from being able to run the same stock on less area which allows for further perennial establishment or using the land for cropping. Significant savings in supplementary feed (\$9/DSE) have also been achieved from the tall fescue pastures.

Figure 1 shows the net discounted cash flow per hectare of the three different scenarios with full details of the assumptions shown in Appendix 1.

- *Business as usual (BAU)*; assumes annual pasture is used with 12 DSE/ha, no perennials.
- *Scenario 2*; 11% of farm sown to perennials running 16 DSE/ha
- *Scenario 3*; 15% of farm sown to perennials running 18 DSE/ha

It shows that both scenario using perennials have a higher cash flow than BAU where annual pastures are used. Scenario 2 uses 11% of the arable area sown to perennials with Scenario 3 using 15% of the area to perennials. On a per hectare basis, both the perennial systems reach the same cash flow per hectare as BAU within four years.



This per ha analysis has been extrapolated across the whole farm to understand the effect on whole farm cash flow (see Figure 2). On a whole farm basis, Scenario 2 where 11% of the farm is sown to fescue returns about \$26K higher cumulative cash flow compared to Business As Usual (BAU). Scenario 3 uses a higher stocking rate on perennials as well as a larger area sown to fescue and results in a \$46K higher cumulative cash flow compared to BAU.

In addition to these positive cash flows, there are additional benefits from reduced feed out costs, improved management with less pugging and environmental benefits from higher ground cover.

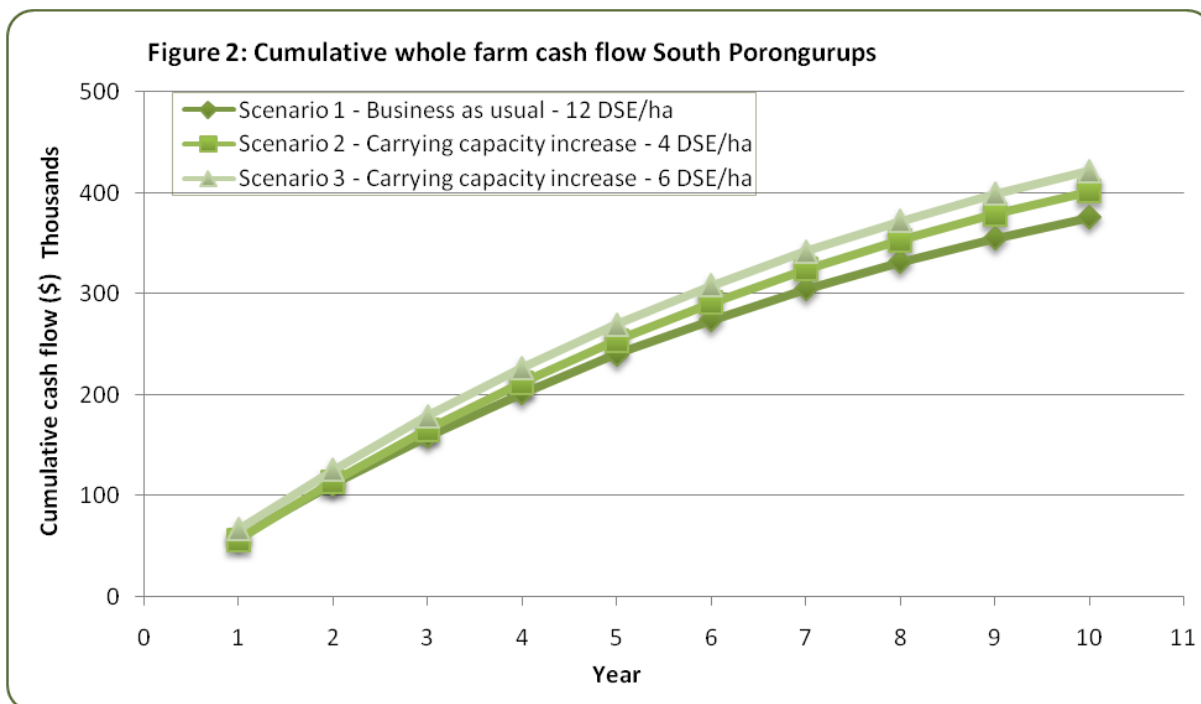


Fig 3 Tall fescue in Nov 2009 running up to seed for harvest.

Future Plans:

Kelvin and Estelle have been very pleased with the performance of the tall fescue and plan to plant more. They are also mixing tall fescue with some of their annual pasture seed mixes. In addition, they have established additional paddocks of tall wheat grass and chicory.

ACKNOWLEDGEMENTS

The information provided in this case study is based on results, data and observations made by the Ridgway's on their farm. We thank them for inviting EverGraze and South Coast NRM region to work on their farm and undertake studies on how perennials work in their situation.

This analysis and report was undertaken by Paul Omodei, agVivo Manjimup and Ronald Master, Department of Agriculture and Food, Albany. Ashley Herbert, Agrarian Management, Katanning provided feedback and input to the development and analysis of this case study.

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APPENDIX 1 - Assumptions and scenarios tested

Financial Model

The financial model used is a 10 year discounted cash flow which incorporates a whole farm approach (cropping and livestock) to the use of perennials. The whole farm approach allows for changes to enterprises mix to be calculated which is important for regions where crop and livestock are options.

Assumptions

The main assumptions used in the model are as follows:

1. The farm runs ewes for lamb production and breeder beef production.
2. Tall fescue was sown in autumn so loss of winter grazing is a cost to the system.
3. Tall fescue lasts for 10 years.
4. A discount rate of 5% is used.
5. Annual and perennial pastures are stocked to ensure that pastures are not over-grazed.
6. Gross Margin \$17/DSE for annual pastures and \$26/DSE for fescue reflecting the lower supplementary feed on fescue and the producers mix of livestock enterprises.
7. Cash crop gross margins are \$350/ha per annum.
8. No additional calving or lambing percentage, or increases in value for lambs or vealers on perennials.
9. Perennial areas are only used for grazing and are not cropped.
10. Stocking rate has been calculated in DSE/ha from paddock recordings of stock movements throughout the year and is expressed in Winter Grazed Hectares.
11. Fencing and ground preparation have been removed from the up-front establishment cost calculation as these provide long-term benefits and requirements will vary from farm to farm.

Model Scenarios

Scenario 1 - Business as usual, all annual pastures - 12 DSE/ha

Farm enterprise runs 12 DSE/ha with no perennials.

Enterprise	%	Area (ha)	Stocking rate DSE/ha	Total DSE
Cash crop	0	0		
Annual Pasture	100	300	12	3600
Perennial Pasture	0	0	0	0
Total	100	300	12	3600

Scenario 2 - Perennials and higher carrying capacity – 16 DSE/ha on perennials

Farm runs 33 ha of perennials (11% of farm) at 16 DSE/ha.

Enterprise	%	Area (ha)	Stocking rate DSE/ha	Total DSE
Cash crop	4	11		
Annual Pasture	85	256	12	3204
Perennial Pasture	11	33	16	396
Total	100	300	12.5	3600

Scenario 3 - Higher proportion of perennials and carrying capacity - 18 DSE/ha on perennials

Farm runs 44 ha perennials (15% of farm) crops 7%, farm stocking rate increases to 13 DSE/ha.

Enterprise	%	Area (ha)	Stocking rate DSE/ha	Total DSE
Cash crop	7	22		
Annual Pasture	78	234	12	2808
Perennial Pasture	15	44	18	792
Total	100	300	13	3600