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NEWSLETTER 38

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Contents

Justin Hoad, Farm Manager

Hello Cicerone Members and welcome to winter.

I hope everyone is enjoying the frosty starts and fine days; it is perfect winter weather, if you don't want rain. The Cicerone board has been working hard putting in many hours representing its members.
Following the member's survey, the symposium and much consultation with your representatives on the Cicerone board, The Cicerone board is putting in an application for a five year project to build on what has already been achieved in the Cicerone Project. This will continue the successful collaboration between producers, researchers, extension officers and education partners. Together we are looking for financial backing from the Catchment Management Authorities (CMA), Meat and Livestock Australia (MLA), Rural Industries Research & Development Corporation (RIRDC), Australian Wool Innovation (AWI), Land and Water Australia (LWA), The Sheep Cooperative Research Center (Sheep CRC) and Landcare. Some brief details about the application are:

Cicerone 2 - 'Improving environmental and whole-farm outcomes'

Goals:

- Transform, through enhanced understanding, the sustainability and profitability of grazing-based land management enterprises in the variable, summer dominant, high rainfall zone of northern NSW.
- Continue to provide leadership and 'ownership' of objectives by producers which, together with our partners, will result in substantial and measurable practice change on at least 300,000 ha of land in this zone within 5 years.
- Develop strategies to enable productive soils and persistent pastures to capture variable rainfall events and maximise water use efficiency with positive impacts on the environment within at least 4 catchment areas.

- Improve natural capital, especially soils, persistent pastures, and trees/shrubs, to support improved per hectare productivity whilst achieving excellent individual animal performance, health and welfare.
- Improve the quality of life of farmers, their families and communities by building a better environment which will attract the support of the wider public.
- Build human capital by helping to train and educate the next generation of producers and professionals who are motivated to and are capable of sustainably managing landscapes.
- Continue to provide information which is trusted, relevant and is readily understood by land managers.

Motto:

We continue to embrace our motto of "Compare-Measure-Learn-Adopt". This has been successful for Cicerone members learning through seeing the evidence accumulated from farm management strategies investigated at a scale which is credible to land managers.

If you feel this is a worthy project and want to continue to bridge the gap between producers, research and extension, your support would be greatly appreciated. Letters and phone calls to the above mentioned organizations showing your support would add a lot of weight to our application.

Thanks

Justin Hoad Cicerone farm manager.

The Silage Field Day Wrap-up

By Clare Edwards, District agronomist NSW DPI Armidale

< Photo: Opened silage on paddock A1 24/03/06

Cicerone held a successful Silage field day on the 24th March. For those who could not attend the day, this article will cover the results and some of the lessons learnt from making silage. Paddock A1, where the silage was made, was sown in 2004 with a pasture mixture of phalaris (var. *Altas* PG), Lucerne (var. *Aurora*) and chicory (var. *Puna*). The A farmlet management plan allows for fodder conservation, and silage was chosen as an activity this year for a number of reasons, including the fantastic spring of 2005 and value of fodder conservation as a pasture management tool. Unfortunately, the wet conditions of spring and early summer meant that silage making was delayed until the 23rd December. By that time, the phalaris had gone to head and was over 1.5m tall, and the lucerne and chicory were also quite stemmy and at the flowering stage.

Results
Pasture quality samples were taken before the silage was made. A silage quality sample and a pasture quality sample were also taken after the cut. The results are shown in Table 1.

Table 1 Pasture and Silage quality results from paddock A1

	Digestibility	Crude Protein	Metabolisable Energy	Dry Matter %
Pasture 25/11/05	53.4	5.1	7.6	92.8%
Pasture 12/12/05	54.0	5.1	7.7	90.7%
Pasture 23/12/05	54.9	6.2	7.8	83.6%
Silage sample 6/03/06	55.0	7.3	7.6	46%
Pasture 14/03/06	69.0	20.0	10.0	18.4%

160 silage bales were made from 4 hectares. One of the main objectives from making silage was to change the botanical composition and increase the 'usefulness' of the paddock in summer. This occurred with the paddock going from a phalaris dominated pasture (over 90%) to one that was composed of 30% legume, 30% chicory and 30% phalaris.

Lessons learnt
Planning for silage is critical for a good result. Contractors are limited somewhat by the available pasture material, as pasture quality directly influences silage quality. Generally, quality does not increase when ensiled, so pasture quality needs to be taken into account. Early cutting may mean fewer bales but better quality. The more stem material and 'pointy' parts of plants, the less chance of effective ensilage. Successful silage needs to be anaerobic, but stemy material makes this more difficult for a number of reasons.

One of the objectives in making this silage was to change the pasture composition and quality in the paddock after the silage was made. At the time of the field day (3 months after the silage making), the pasture had one of the highest percentage green available.

Remember, while silage has the potential to be a useful fodder conservation system, it is not for everybody and for every enterprise (see newsletter No 37). As explained at the field day, many factors need consideration. For those considering silage in the future - plan in advance, speak to your local contractor, decide on the type of pasture or crop and the optimal time to cut, storage options, feeding out and what supplements may be required if the silage sample quality does not match your animal requirements.

For those unable to attend that would like a copy of the TOPfodder leaflets given out on the day, please call and I will send you a copy.

The use of Pregnancy Scanning on the Cicerone Farms.

Michael Lollback, District Livestock Officer (Sheep and Wool), NSW DPI, Tamworth.

Ultrasound pregnancy scanning technology has been available through commercial contractors to sheep producers for many years on the Northern Tablelands. It is used to establish the pregnancy status of ewes which then allows producers to more precisely meet the nutritional requirements of single and twin bearing ewes during the critical last 50-60 days of pregnancy. In many flocks this has resulted in higher lambing percentages largely as a result of higher survival rates of twin born lambs and more productive progeny due to more precisely meeting the nutritional requirements of the ewes during the later critical stages of pregnancy.

Pregnancy scanning was used at the Cicerone project in 2003, 2004 and 2005 to establish the pregnancy status of the adult ewes. The results indicated that there were significant differences between the Farms.

Table 1. Conception rates (number of lambs per 100 ewes) on the Cicerone farms determined by ultrasound scanning

Year	Farm A	Farm B	Farm C
2003	143	120	113
2004	116	108	104
2005	100	83	82

There is considerable variation between years and between farms which can partly be explained by the condition of ewes (fat score) at joining in each year. Generally speaking fat score at joining has a significant impact on conception rates and as you will see in Table 2 this has largely been the case at Cicerone.

Table 2. Fat Score at Joining 2003-2005 on the Cicerone Farms

Date	Farm A Fat Score	Farm B Fat Score	Farm C Fat Score
April 2003	3.2	3.2	2.7
April 2004	3.1	3.0	2.8
April 2005	3.2	3.1	2.7

It has been widely demonstrated in many projects that fat score at joining has been the major driver of conception rates with higher fat scores resulting in better conception rates. This has also been demonstrated at the local site of the Lifetime Wool Project.

The variation between years despite similarities in fat scores at joining is a little more difficult to explain and needs more investigation.

As you are aware different management systems are used on each of the farms and there are differences in stocking rates on the farms with Farm A run at a significantly higher stocking rate than B and C farms.

One of the major targets of any management or production system is to ensure that ewes are in the best possible condition at joining time. Some research has shown that for the New England Tablelands environment a fat score of 3.0 to 3.5 at joining is required to achieve above average lambing percentages.

Table 2 indicates that the different management systems used on the Cicerone farms varies in their ability to achieve this target. Condition at joining is largely determined by how well ewes recover in the period from weaning to joining. Maximizing this period by weaning 14 weeks from the commencement of lambing (based on a six week joining period) and ensuring ewes have access to adequate pasture during the recovery period will help to ensure that ewes achieve fat score targets by joining.

Cicerone livestock performance

Cicerone has agisted 56 steers on the three farms from November 2005 to May 2006. The steers on the A and B farms were used as a tool to clean up wormy paddocks for the sheep. The cattle on the C farm were first used as a leader in the rotation to reduce the grass height for the sheep, and were then put with the main mob of ewes after Christmas to increase stock density to around 350 dse/ha. The different way the cattle were used on the farms would account for some of the differences in weight gains. The A farm was also running a stocking rate 1.5 times the B and C stocking rate.

Cattle weights

Farm	No. Head	LWT 2/11/05	LWT 15/5/06	Ave.Lwt Increase	Daily Wt. Gain 194 days	Kgs.Beef Produced
A	**25**	**186**	**315**	**129**	**0.66**	**3225**
B	**15**	**184**	**334**	**150**	**0.77**	**2250**
C	**16**	**180**	**337**	**157**	**0.81**	**2512**
Average		**183.3**	**328.7**	**145.3**	**0.75**	**2662**

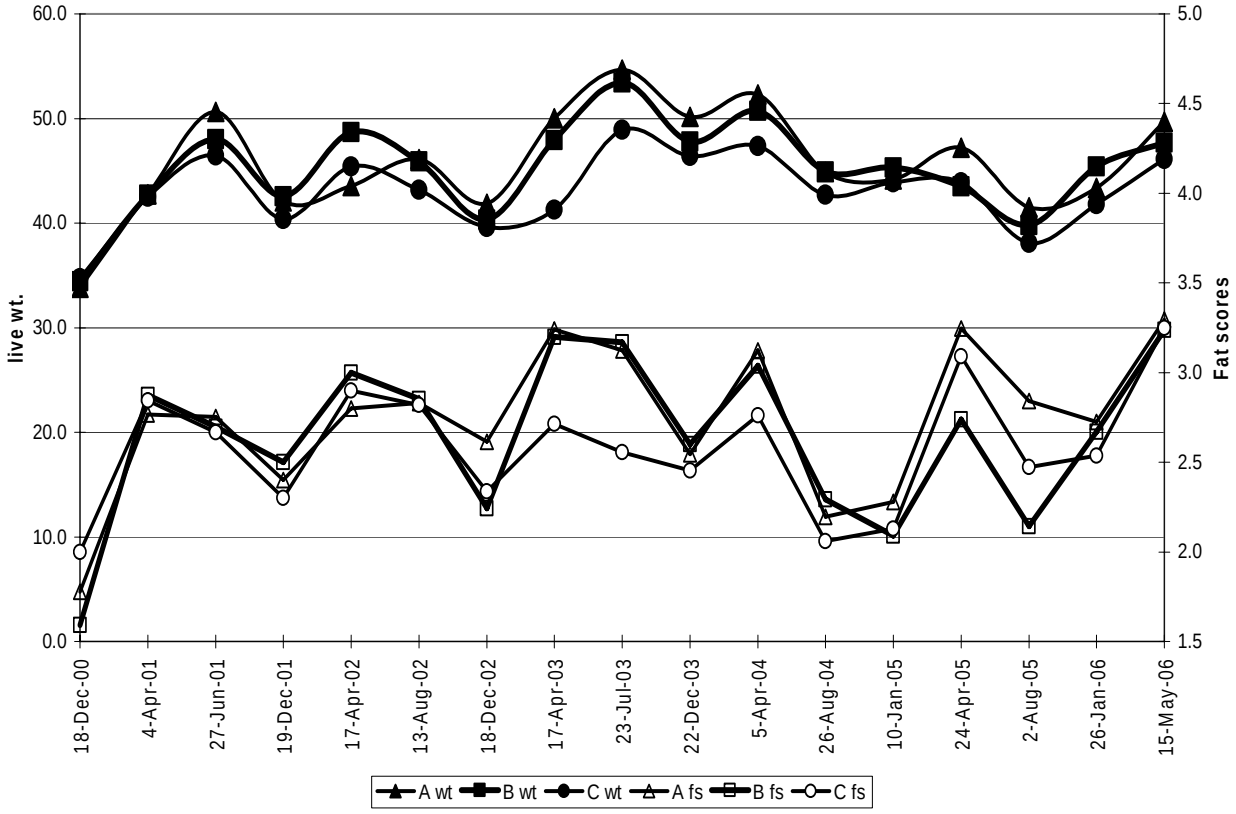
Sheep live weights and fat scores in May

The sheep weights are closer now than three year ago. The higher stocking rate on A farm has reduced the individual performance, and the C farm has improved with more paddocks and improved management.

Farm	Adult ewes	2004 ewes	2004 wethers	2005 weaners*
A	**50**	**39**	**39**	**26**
B	**48**	**42**	**40**	**24**
C	**46**	**37**	**39**	**24**

*mixed sex weaners

Ewes Wt. & FS



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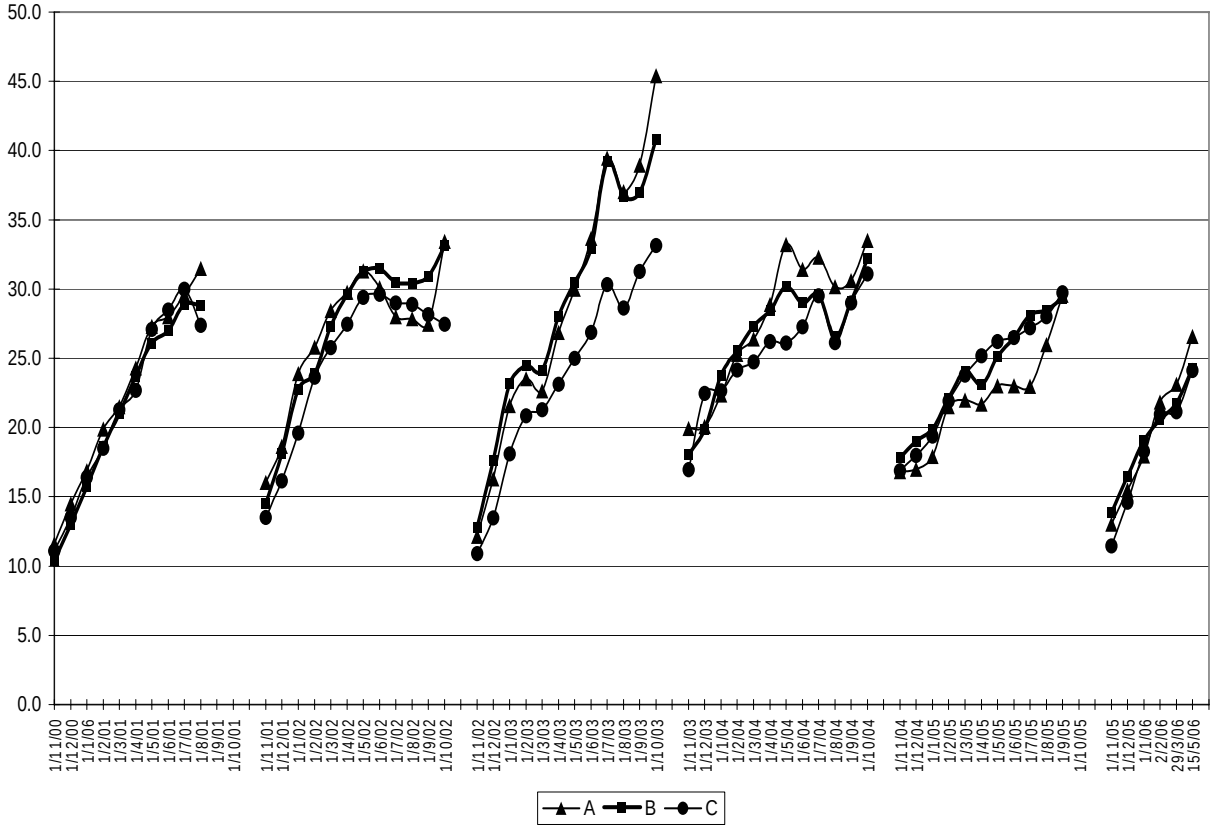

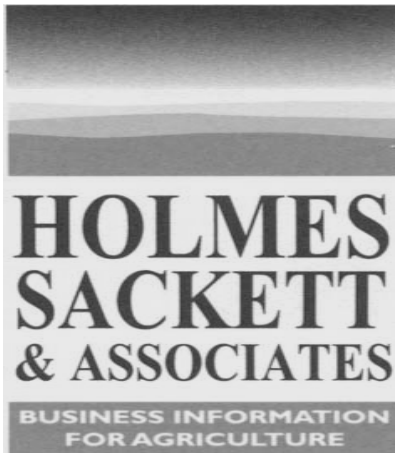

The Cicerone Farms

By Sandy McEachern of Holmes Sackett and Associates

The following analysis is done using a modified version of the Holmes Sackett and Associates benchmarking services to benchmark the relative farm performance of three Cicerone Project Farmlets over the five years from July 2000 to June 2005.

The farmlets are run independently as commercial farms on the one site, all running self replacing merino wool enterprise and with opportunity cattle fattening. The three different treatments are:

The A Farmlet is high input/high output with an aim of 100% improved pastures, flexible grazing (5 mobs in 10 paddocks) aiming for an average stocking rate of 15dse/ha.

The B Farmlet represents typical district practices. Some fertiliser, minimal pasture improvement, similar grazing management as Farmlet A but with a target stocking rate of 7dse/ha.

The C Farmlet has the same inputs as Farmlet B but with intensive grazing management (3 mobs in 40 paddocks) and a rotation length based on plant recovery.

All income and expenditure on each farmlet has been recorded by the Cicerone project over the five years and given to Holmes Sackett and Associates for analysis. Expenses include direct enterprise expenses including animal health and supplementary feed as well as pasture, fertiliser and labour expenses. The inclusion of the pasture fertiliser and labour expenses into the gross margin calculation is a variation from standard Holmes Sackett and Associates methodology where these expenses are included as overheads.
To compare the three farmlets we have first looked at the comparative gross margins per hectare across the five years. In this part of the analysis we exclude all capital expenditure on Farmlet A and Farmlet C and look purely at the relative profitability of the Farmlets based on their gross margins. Capital expenditure is one off investments in order to change the production system. For Farmlet A the capital expenditure was considered to be the cost of pasture renovation. On Farmlet C capital expenditure is considered to be the cost of paddock subdivision.

For each Farmlet all other ongoing running expenses for that system were included in the profit and loss records. For instance, Farmlet A has higher annual pasture fertiliser costs in order to sustain higher stocking rates.

Stock numbers and movements have been recorded on each farmlet and inventory values allocated to record profit and loss results. Where trading cattle were used to utilise excess feed on each Farmlet their DSE contribution to average annual DSE's is used to adjust the area grazed by the wool flock. Table 1 provides an example of how this works. On both farms the wool flock has a total annual average of 500 DSE's. On Farm X there is also a trading cattle enterprise that contributes a total annual average of 100 DSE's. The total average annual DSE's for Farm X is therefore 600 whereas on Farm Y it is 500. The average annual stocking rate on Farm X is 12 DSE's per hectare whereas on Farm Y it is 10 DSE's per hectare. The wool flock on Farm X therefore occupies 42ha whereas the wool flock on Farm Y occupies the whole 50ha. All income and expenses for the two wool flocks are therefore spread over 42ha and 50ha respectively for Farm X and Y. So the presence of trading cattle on the Cicerone Farmlets effectively reduced the average annual area allocated to the wool flock thereby increasing income and enterprise expenses per hectare.

Table 1: How the grazing area is calculated for the wool flocks

Total Area (Ha)	**50**	
Av. An. DSE's	**Farm X**	**Farm Y**
Wool Flock	500	500
Trading Cattle	100	0
Total	**600**	**500**
Av. An. Stocking Rate	**12**	**10**
Grazing Area (Ha)		
Wool Flock	42	50
Trading Cattle	8	0

The five year average merino enterprise results from each Farmlet are shown in Table 2. Farmlet A generated the highest income per hectare, $117 per hectare more than Farmlet B. This increased income came from increased wool and sheep trading income. The income per hectare on Farmlet C was lower than Farmlet B mainly as a result of reduced sheep trading income.

Farmlet A also had the highest enterprise expenses, $95 higher than Farmlet B. Expenses were higher across all categories but in particular pasture costs, supplement costs, shearing costs and wages. Farmlet C had similar enterprise expenses to farmlet B with increased supplementary feeding costs balanced by decreased pasture and animal health costs.

Farmlet A had the highest gross margin per hectare, $22 per hectare higher than Farmlet B and $50 per hectare higher than Farmlet C.

When compared to other wool flocks benchmarked by Holmes Sackett and Associates Farmlet B has above average profitability and therefore we can assume that it is a well run Farmlet under traditional management systems. This is important to note because often when new production systems or some other 'magical' solution to increasing profitability are promoted, the 'control' is not a well run paddock or farm under traditional systems and therefore the returns from the new system are inflated.

Table 2: Farmlet A has the highest gross margin per hectare of the three farmlets

MERINO INCOME & EXPENSES PER HA			
	Farm A	**Farm B**	**Farm C**
INCOME/HA			
Sheep Trading	$80	$51	$29
Wool	$318	$230	$226
	$398	**$281**	**$255**
ENTERPRISE EXPENSES/HA			
A/Health & Breeding	$17	$13	$11
Contract Services	$5	$4	$5
Freight	$0	$0	$0
Insurance	$0	$0	$0
Pastures	$57	$22	$19
Selling Costs: Wool	$13	$9	$9
Selling Costs: Stock	$5	$3	$3
Shear & Crutching	$48	$34	$32
Supplementary Feed	$62	$38	$42
Wages	$42	$30	$34
	$248	**$153**	**$155**
GROSS MARGIN/HA	**$150**	**$128**	**$100**

Table 3: Farmlet A produced more income per hectare that the other two Farmlets principally through higher stocking rates

Key Performance Indicators			
	Farm A	**Farm B**	**Farm C**
Price Received/Kg Clean Wool	$13.32	$12.90	$14.72
Kg Clean/Adult Shorn	2.90	2.97	2.56
Average Adult Fibre Diameter (micron)	18.4	18.2	17.8
Kg Clean Wool/Ha	25	18	15
Mid Winter Stocking Rate (DSE/Ha)	12.2	8.1	7.4
Weaning %	73%	76%	69%
Enterprise Size (Annual Ave DSE's)	546	430	360

The higher wool income per hectare on Farmlet A is a result of higher wool cut per head and higher stocking rates . Given that the fibre diameter was slightly higher in Farmlet A receiving a higher price than in Farmlet B is an unusual result.

Farmlet C had a similar wool income per hectare to Farmlet B however it achieved this income through decreased fibre diameter and increased price received at the expense of wool productivity per hectare which was a result of a lower stocking rate.

Differences in sheep trading income per hectare are also largely due to the differences in stocking rate and individual stock performance/price received. There are also small differences in weaning percentage per hectare with Farmlet C having the lowest. All weaning percentages were considered to be on the low side by the Cicerone management team due to high lamb losses on open paddocks in poor seasonal conditions.

From these results we can say that over this five year period and under these conditions the high pasture input system produced the highest gross margins per hectare. What we have not verified is whether it is a worthwhile investing in this strategy. The fact that Farmlet A has a higher gross margin per hectare does not necessarily make it a sensible system to employ. Most changes in systems require a capital investment of some sort. For Farmlet A it was the investment in pasture renovation. For Farmlet C it was the investment in paddock subdivision.

For Farmlet C given these short term results the return on investment is inconsequential because there were no additional profits generated. There were less tangible benefits recorded such as improved ground cover and perennial pasture retention but over this time period these benefits had not translated into changes in farm profitability.

The total capital investment in pasture renovation in Farmlet A was $534 per hectare. Whether this level of investment is typical or is a result of a series of bad seasons which meant some pastures had to be resown is open for debate. To accommodate this we have taken the reverse approach to analysing whether it was a sensible investment.

Our approach is to take the additional profits actually generated and work out what we could spend in order to get those profits and meet our required rate of return on investment.

There are a few variables that make this sort of analysis complicated. The first is that we do not know what the life of the investment in more productive pastures is. A pasture costing $534 per hectare to develop that lasts 10 years will require a much larger gain in profitability than a pasture that will last a lifetime. So the expected life of the pasture is important. In this example we have looked at four different pasture life spans, 10 years, 15 years, 20 years and indefinite.

The next variable we need to consider is the expected rate of return that we require from the investment. This will vary for each individual and therefore we have selected three rates based on some common benchmarks. The three required rates of return on the investment are:

- 5% which is the opportunity cost of putting that money into a fixed interest rate bearing investment
- 8% which is approximately the opportunity cost of debt reduction
- 15% which is the opportunity cost that a good investor might put on their money because they believe they can get that sort of return elsewhere.

Table 4 looks at the combinations of these two variables and shows the capital investment that will deliver the required rate of return given a $22 per hectare increase in profit from Farmlet A.

To help you understand how this table is read assume that the pasture will last 15 years and that your required rate of return is 8%. If you read the number that corresponds with the 15 years column and the 8% row then you will see that the maximum you could spend on pasture renovation is $188 per hectare.

Table 4: The capital investment per hectare that will give a required yield over a given investment lifetime with a $22 per hectare increase in gross margin

		Investment Life (Years)			
		10	15	20	Unlimited
Required Investment Yield	5.0%	**$170**	**$228**	**$275**	**$430**
	8.0%	**$148**	**$188**	**$216**	**$270**
	15.0%	**$111**	**$129**	**$138**	**$146**

Remembering that the actual capital investment on Farmlet A over this five year period was $534 per hectare, Farmlet A is a long way from meeting any sort of reasonable investment benchmark. Not even if the pastures will last forever and the required return is 5% could you justify spending that amount of money for a $22 per hectare increase in gross margin.

The returns would have been higher in a better run of seasons with higher commodity prices. Table 5 shows that if the gross margins had been $35 higher than farmlet B (a 50% increase in the benefit actually recorded), then $534 would have met the 5% investment return target for a pasture with an unlimited lifespan.

Table 5: The capital investment per hectare that will give a required yield over a given investment lifetime with a $35 per hectare increase in gross margin

		Investment Life (Years)			
		10	15	20	Unlimited
Required Investment Yield	5.0%	**$270**	**$363**	**$435**	**$690**
	8.0%	**$235**	**$300**	**$343**	**$430**
	15.0%	**$176**	**$205**	**$219**	**$231**

This trial does not provide conclusive evidence that either the high input or rotational grazing systems are without merit. What we can say is that careful consideration needs to be given to the cost of embarking down this path because the returns may not be as brilliant as you expect. Implementing some well known 'traditional' principals may generate you a much higher return in the first instance.

The Proceedings of the Cicerone Symposium II, May 2006 is available.
$25 hard copy or CD
Contact Cicerone to place your order.

The Cicerone Roadshow

To ensure that all producers on the Northern Tablelands have the opportunity to benefit from the findings of the Cicerone project over the last five years, Cicerone will be running a series of meetings at various locations to present and discuss the key messages from the research and demonstration projects conducted by the Cicerone. Dates and venues will be publicized during July. For more information contact the Editors.

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