

Future Forage Systems Project

Lucerne Hub Update Kinburn & Ohutu, 12th February 2014



Future Forage Systems - Background

The East Coast Future Forage Systems Project provides the opportunity to road-test a range of forage technologies such as lucerne, plantain and annual clovers – both as crops and on hill country. Where possible, this will consist of on-farm demonstrations where new options are benchmarked against existing farm practice. Once we understand how these alternatives perform locally, we can look at integrating them into farming systems.

The focus at Kinburn is to use lucerne to provide better animal returns over what is possible through cropping.

Kinburn

Effective area 225 ha

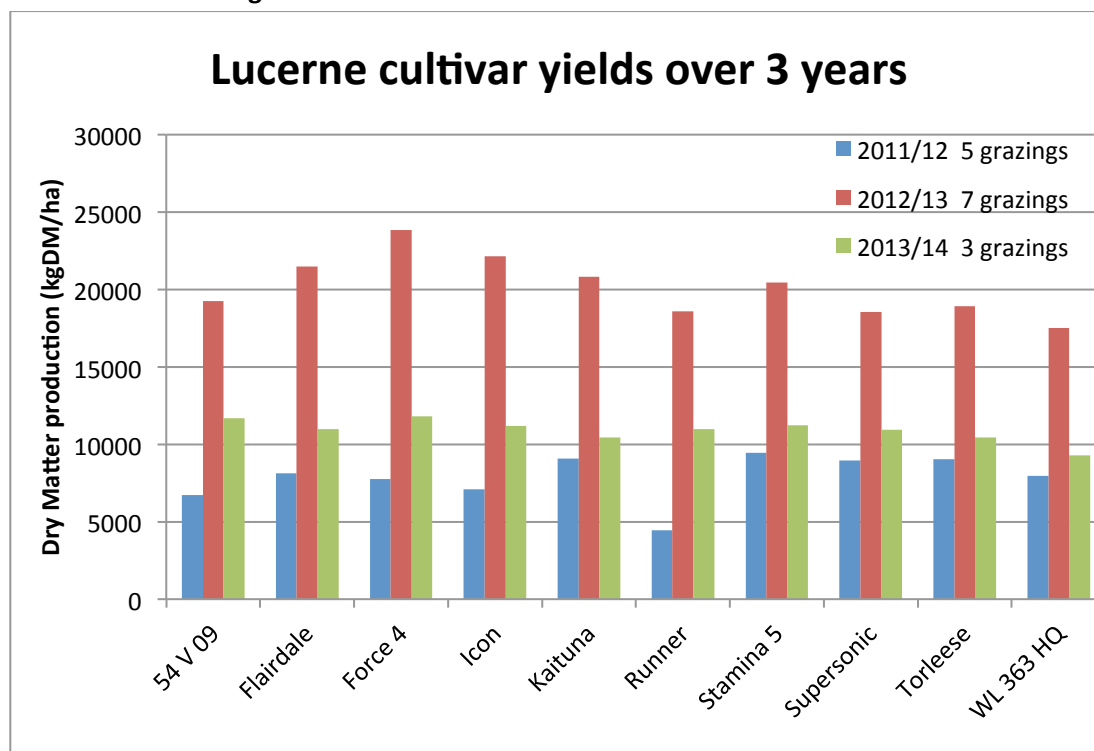
Stock policies

- Winter lamb trading
- Carryover cows
- Bull trading

Lucerne 30 ha

- System 1 – 15 ha established 2011 (Kaituna)
- System 2 – 15 ha established 2012 (Supersonic)
- Lucerne is irrigated – typically 3-4 applications of 50 mm after each grazing from late spring

Cultivar trial running since November 2011



Yearly and total yields from sowing in November 2011

Cultivar	2011/12	2012/13	2013/14 (to date)	Total
54 V 09	6740	19242	11694	37678
Flairdale	8125	21502	10991	40618
Force 4	7763	23856	11804	43423
Icon	7083	22155	11206	40444
Kaituna	9077	20837	10455	40369
Runner	4464	18596	11002	34062
Stamina 5	9459	20470	11220	41149
Supersonic	8969	18568	10947	38484
Torleese	9043	18913	10463	38419
WL 363 HQ	7951	17500	9293	34744

Animal performance:

- Lamb in spring: 240 g/d (average liveweight gain)
- Lamb winter: 248 g/d (average liveweight gain)
- R2 autumn born bull: 1.1 kg/d (0.7 – 1.4 kg/day)

FARMAX Outputs

- Using 13.3% of farm in lucerne
- Assuming an opportunity cost of the area planted in lucerne is **\$1200/ha** for cash cropping plus the value of a winter lamb trade on Italian ryegrass.
- Based on 2012/2013 animal performance, the advantage of established lucerne to the whole farm system (compared to cash cropping) is **+\$22,956 (\$765 per hectare of lucerne)**
- Based on 2012/2013 performance the advantage of established lucerne to the whole farm system (compared to the base grass only system is **+\$27,482 (\$916 per hectare of lucerne)**
- During establishment the impact of lucerne on the whole farm system in a status quo year when compared to the:
 - Cash cropping system - a disadvantage of **-\$56,030 (-\$1867 per hectare of lucerne)**
 - Grass only system - a disadvantage of **-\$51,510 (-\$1717 per hectare of lucerne)**
- The internal rate of return is:
 - Over the cash cropping based system = **36% IRR**
 - Over the grass based system = **50% IRR**
- Lucerne needs to produce at this level (i.e. Year 2 level) for **3.5 years** for Lucerne be able to **out perform cash cropping** financially
- Lucerne needs to produce at this level (i.e. Year 2 level) for **3 years** for Lucerne to **break even** with the existing pasture system
- Based on last season's performance, stocking and grazing policy, Lucerne would outperform cash cropping financially in a status quo situation.

FARMAX results indicate that In the year after establishment (2012/13) lucerne at Kinburn

- Produced **800 kg** saleable product/ha
- Generated a gross income of **\$2,320 /ha**
- After variable costs generated a gross margin of **\$1,730 /ha**
- Grew a potential pasture production of **16,010 Kg DM/ha**
- With livestock eating **12,420 kg DM/ha**

Potential opportunities

- Better use of summer feed than 11.3c/kg DM eaten by bulls
- Potential gains in production from keeping lucerne within the suggested optimum pre-graze range and running a higher stocking rate
- Cash cropping to utilise fixed nitrogen at the end of the stand's productive lifespan
- Potential reduction in negative impacts on soil sustainability
- Advantage of lucerne in variable seasons
- Opportunity to stitch in plantain towards the end of the lucerne stands life

Ohutu – New dryland lucerne hub

Effective area - 544 ha

Summer dry – 850 mm rainfall

Soil type – on lucerne hill areas is a grey silt loam with a shale base (soil is light, shallow and gravelly)

Soil test results

Flat	pH	P	Ca	Mg	K	Na	S	Org S
7/09/12	5.8	27	9	22	7	11	19	4
4/10/13	6.5	27	10	15	5	10	26	

Hill	pH	P	Ca	Mg	K	Na	S	Org S
7/09/12	5.9	16	8	26	5	14	26	4
4/10/13	6.4	26	11	27	7	12	21	

Stock policies

- 1800 Romney breeding ewes
- Bull beef finishing with a specialist Techno unit

Lucerne – currently 30 ha of Torlesse. Target 120 ha

- System 1 – 15 ha established 2012 (+3.7 ha of grass)
- System 2 – 15 ha established 2013 (+2.8 ha of grass)

Lucerne stocking policy

10th Sep - multiple bearing ewes at 11.7/ha introduced

18th Sep - ewe numbers increased to 12.7/ha and 2.6 yearling bulls/ha added

Bulls in with ewes for 2-3 days and remaining behind ewes for a further 3-4 days

4th Nov - 25 bulls removed

16th Nov - remaining 25 bulls removed

11th Dec - weaning (all stock removed)

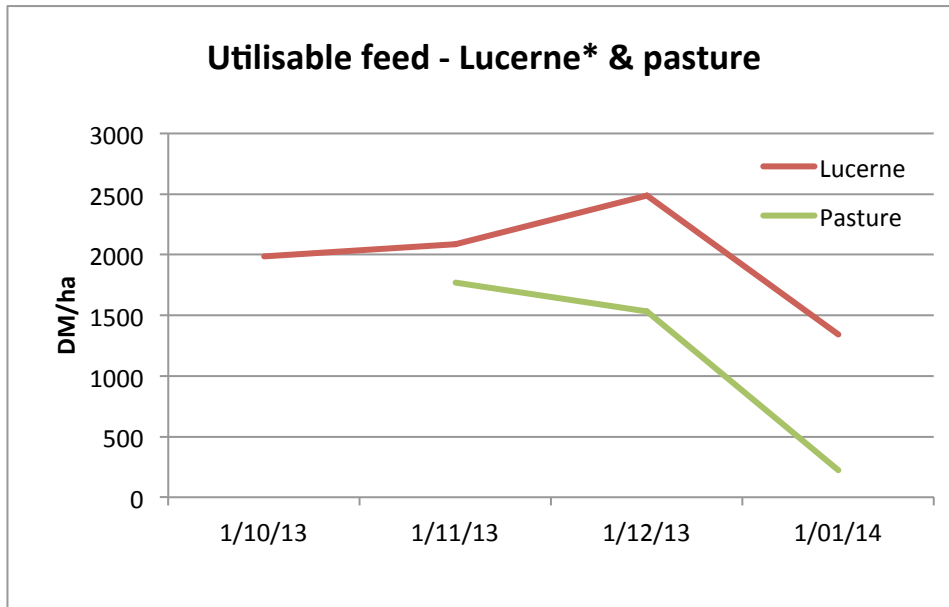
19th Dec - 487 ewe lamb replacements added

24th Dec - 15 bulls added

Pasture vs lucerne (measured)

	Lucerne on offer	Lucerne residual	% not consumed
11/10/13	2775	791	28.5
18/11/13	2468	384	15.6
24/12/13	2972	486	16.4
29/01/14	1689	347	20.5

On average, 20% of the lucerne on offer is left behind as un-eaten stalk.



*Residuals removed so actual growth

Animal performance

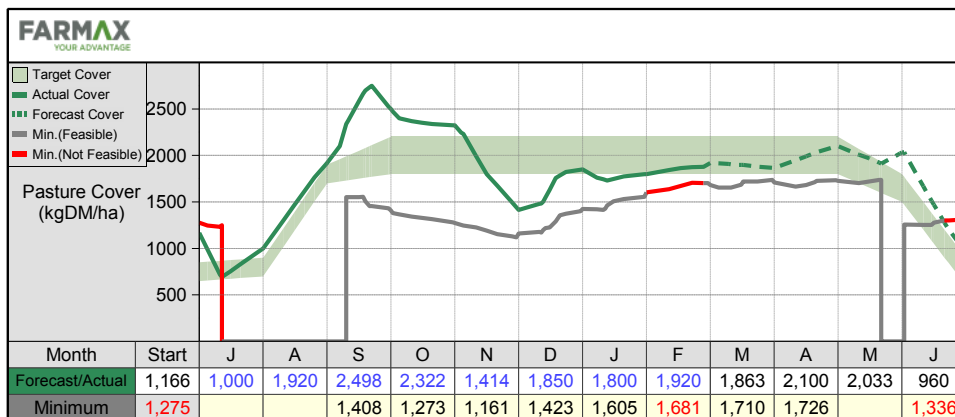
- Lambs pre-weaning 234 g/d (lucerne)
 262 g/d (grass)
- Bull liveweight gain 1.05 kg/d
- Ewe hoggets post weaning 195 g/d (19th Dec – 12th Jan)

Ewe weights	Lucerne	Grass control
18 Jul	74.5 kg	74.5 kg
04 Oct	71 kg	75.0 kg
11 Dec	72 kg	73.5 kg

Projected FARMAX results for lucerne 2013/14

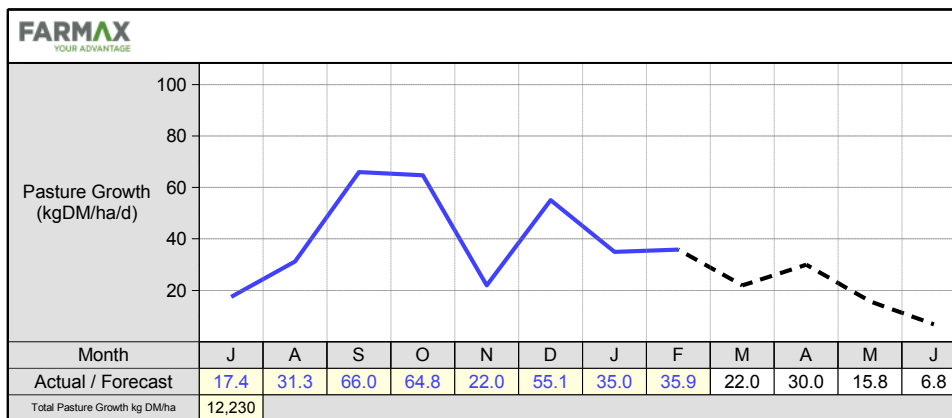
- Projected saleable product from lucerne - 704 kg/ha

Lucerne cover 2013-14



- Potential annual pasture production - 12,230 kg DM/ha projected
Year to date 8,964 kg DM/ha

Lucerne growth rate 2013-14



Lucerne Block Gross Margin

			\$/ha	\$ Total	c/kg DM
Revenue	Sheep	Sales - Purchases	4,286	80,152	
		Wool	28	527	
		Capital Value Change	-2,237	-41,833	
		Total Sheep	2,077	38,846	22.4
	Beef	Sales - Purchases	162	3,032	
	Total Beef	162	3,032	14.0	
	Total Revenue	2,239	41,878	21.5	
Expenses	Stock Costs	Animal Health	55	1,035	
		Shearing	49	908	
		Total Stock Costs	104	1,943	
	Interest on Capital (livestock & feed)	145	2,704		
	Total Variable Expenses	248	4,647	2.4	
Gross Margin		1,991	37,232	19.1	

Enterprise Gross Margins (c/kg DM consumed)

	Lucerne	Grass
Ewes	18.8	17.8
Yearling bulls	11.5	23.1
Replacement ewe lambs	20.7	

Key issues

- Ewe and lamb growth to weaning – what should we have expected
- Scald in lambs on Lucerne
- Sprayed 4 blocks with Velpar 15th Nov - reduced lucerne growth by estimated 80% for 2 weeks.
- Lost significant amount of lucerne with a hail storm on 14th Dec
- Some spraying required for Aphids early Nov