Lamb Finishing Systems

Ground-truthing the theory

NSW GOVERNMENT | Local Land Services South East

NSW DEPARTMENT OF PRIMARY INDUSTRIES

Impact of Feed on Growth rate

- Lucerne
- Plantain
- Forage Brassica
- Special Purpose Pastures
  - Fescue
  - Ryegrass Clover
  - Clover, Lucerne, chickory


5 sites
Ironmungy
Holts Flat
Lucerne
Numbla Vale
Jimenbuen
Bungarby
Jincumbilly
Ando
Gunningrah
Creewah
Hummer Fescue
Ryegrass Clover
and Brassica
Lucerne/Phalaris
And Plantain
Bombala
Rosemeath
Quidong
Brassica
Delegate
Clover/Lucerne/Chickory
and Brassica
Bondi

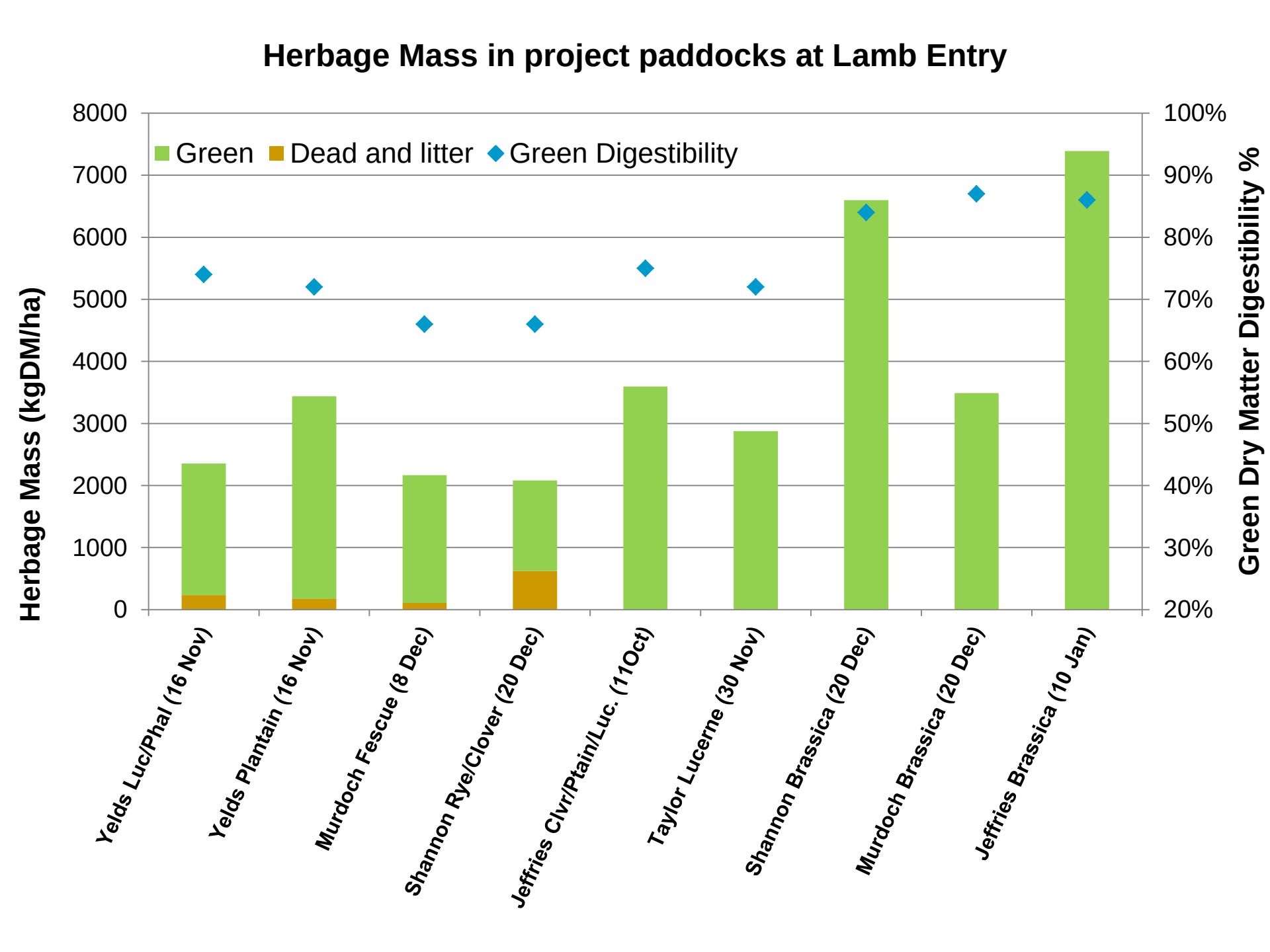
What was measured

- Lamb Weights (50 lambs)
  - Entry
  - Exit

  For each grazing
- Stocking rates
- Herbage Mass
  - Entry + Feed quality Test
  - Exit
- Supplements
- Other stock carried (on permanent pastures)

Data Analysis

- Average Lamb Weight Gain
  - 95% confidence interval
- Predicted Weight Gain (GrazFeed)
- Crop and Pasture Growth Rates

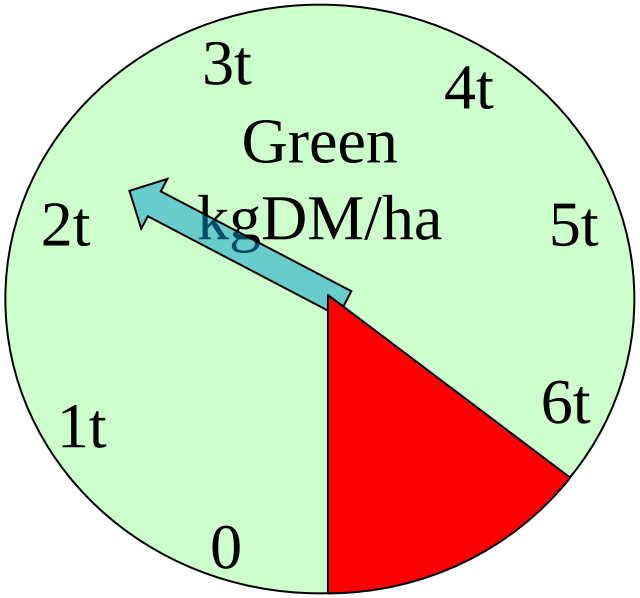

Herbage Mass in project paddocks at Lamb Entry
Herbage Mass (kgDM/ha)
Green Dry Matter Digestibility %
Green
Dead and litter
Green Digestibility
8000
7000
6000
5000
4000
3000
2000
1000
0
100%
90%
80%
70%
60%
50%
40%
30%
20%
Yelds Luc/Phal (16 Nov)
Yelds Plantain (16 Nov)
Murdoch Fescue (8 Dec)
Shannon Rye/Clover (20 Dec)
Jeffries Clvr/Ptain/Luc. (11Oct)
Taylor Lucerne (30 Nov)
Shannon Brassica (20 Dec)
Murdoch Brassica (20 Dec)
Jeffries Brassica (10 Jan)

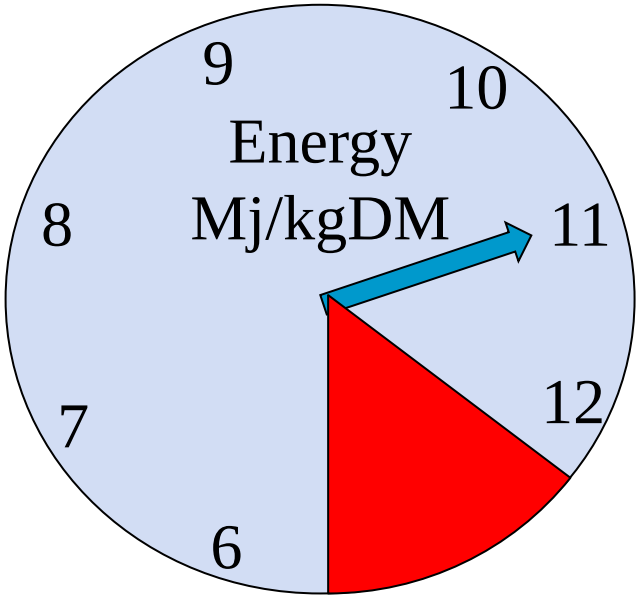
Lucerne

- Yelds (Cobana)
- Taylors (Fishy Lake Rd)

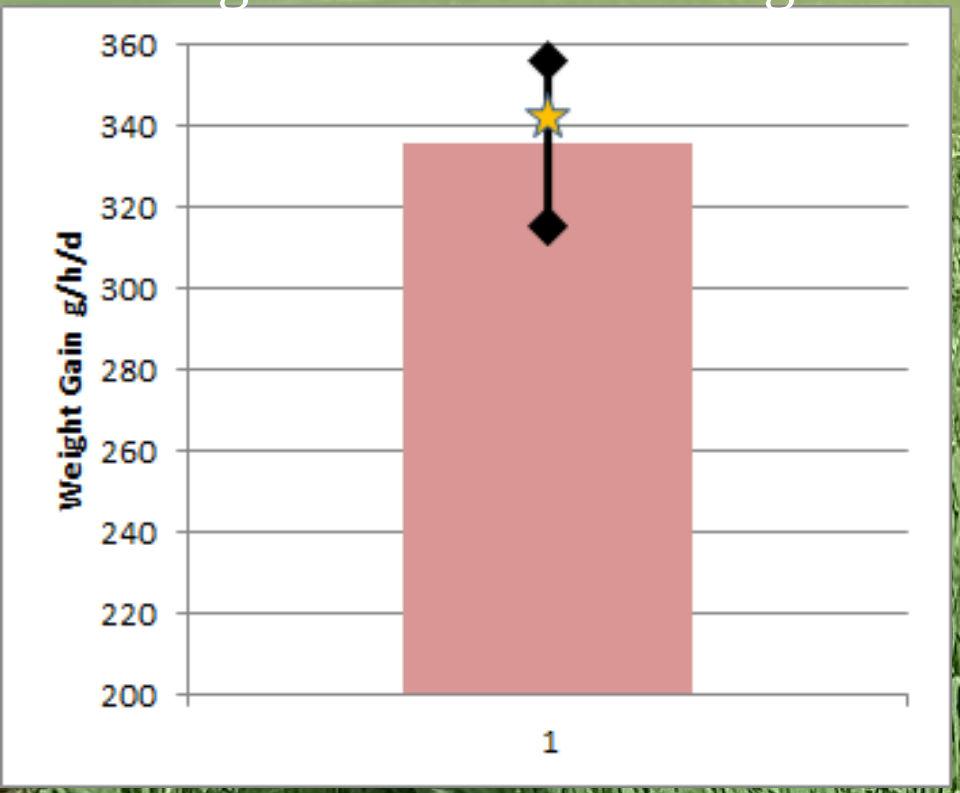
Yelds

- 3 x 10ha paddock rotation
- One paddock measured

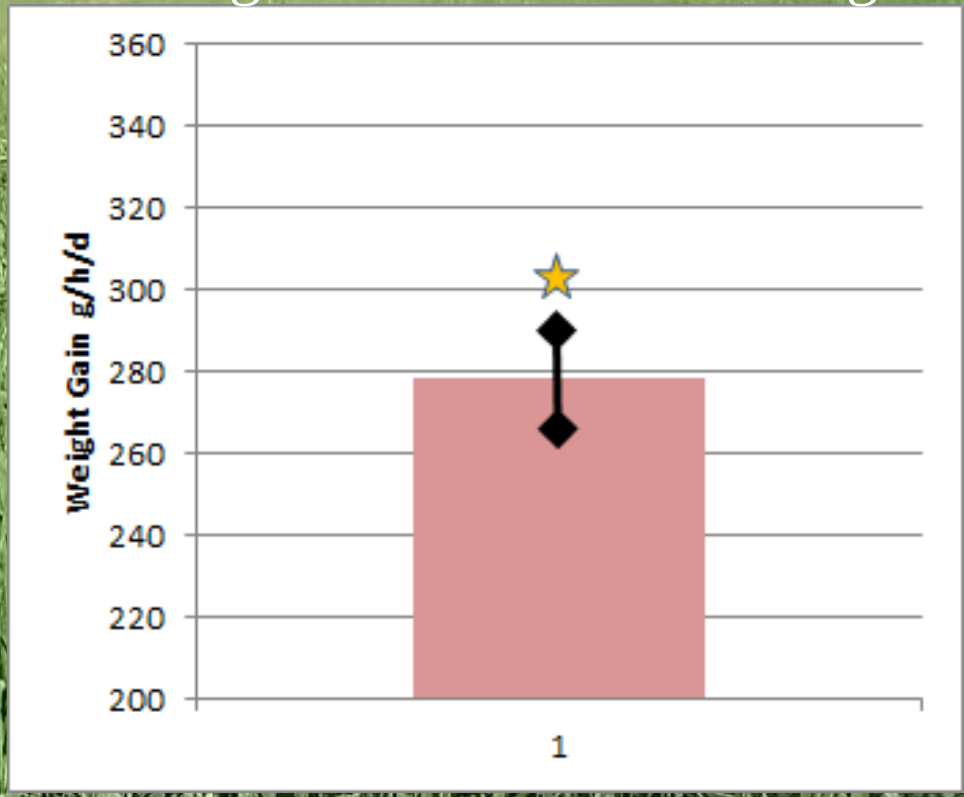




Weight Gain First Grazing



Weight Gain Second Grazing



★ = GrazFeed predicted weight gain

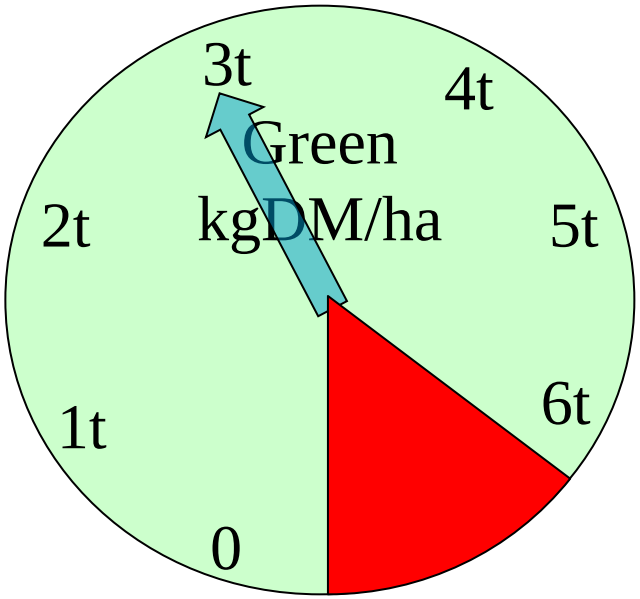
Taylor

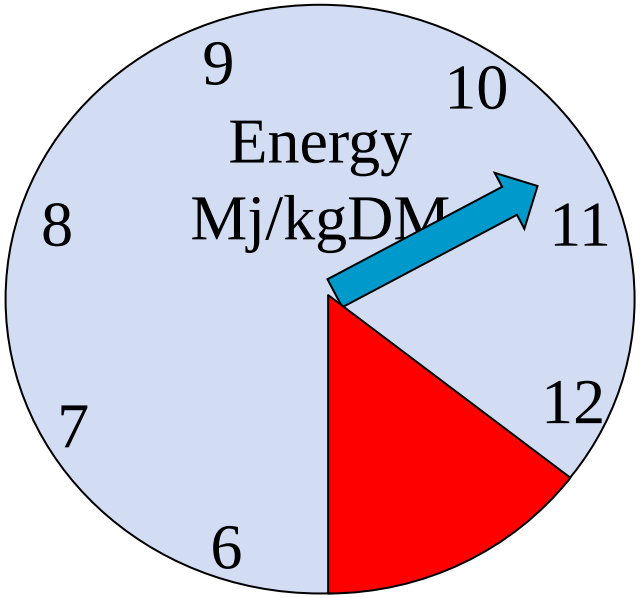
- 2 paddock rotation
- One 39ha paddock measured
  - 26ha lucerne
  - 6ha phalaris
  - 7 ha native
- Grazed 30th Nov – 3rd Jan then 19th Feb – 4th Mar

Spring Growth

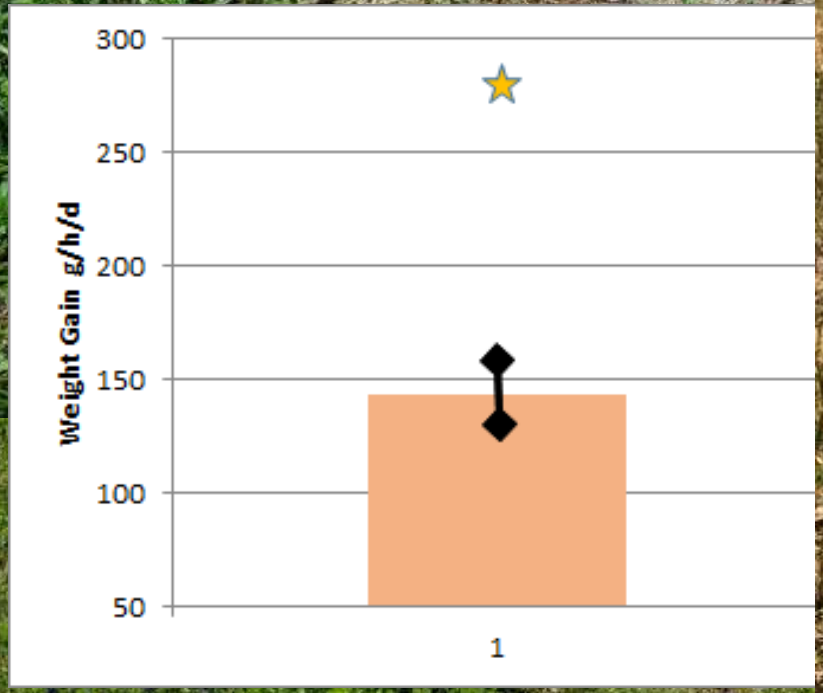
Accumulated 2677kgDM/ha 3rd Oct to 30th Nov.

GrassGro best case = 2300kgDM/ha over this period





Weight Gain First Grazing



= GrazFeed predicted weight gain

Feed Budget

1159 lambs

Total Intake

= 1139 x 1.1kg/h x 34days

= 42598 kgDM

= 1638 kgDM/ha

Approximate Residual

= 200 green + 400 stubble

= 600 kgDM/ha

Calculated Growth

= Intake – Opening DM + Residual

= 1638 - 2877 + 600

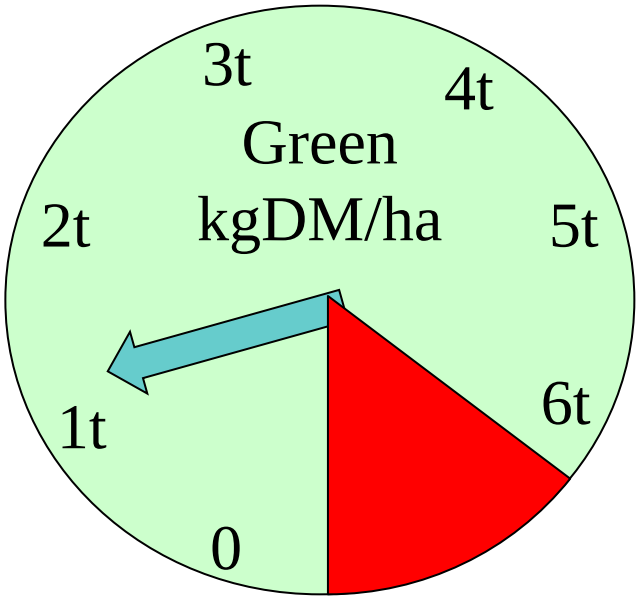
= - 638 kgDM/ha

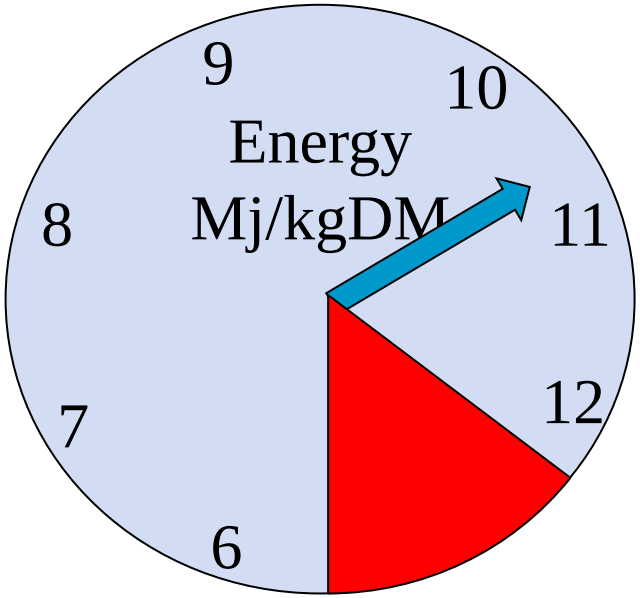
Loss = 18kgDM/ha/d

Summer Growth

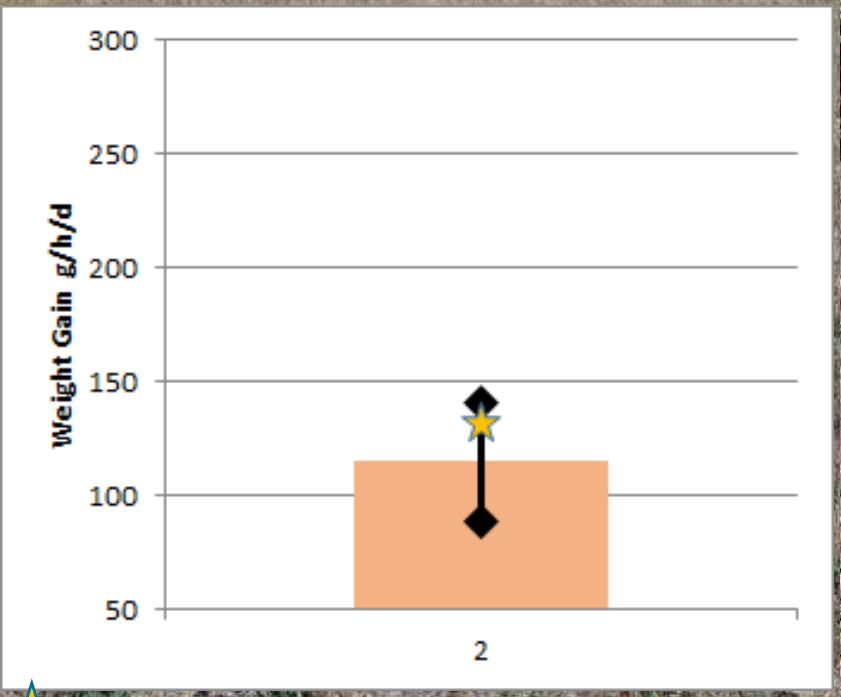
Accumulated an extra 959kgDM/ha 3rd Jan to 14th Feb.

Around mid tercile growth rate in GrassGro





Weight Gain Second Grazing



= GrazFeed predicted weight gain

Feed Budget

1130 lambs

Total Intake

= 1130 x 1.4kg/h x 18days

= 28476 kgDM

= 1095 kgDM/ha

Estimated residual

= 400kgDM/ha

Additional Growth

= 1159 – 1095 - 400

= 336 kg/ha/d

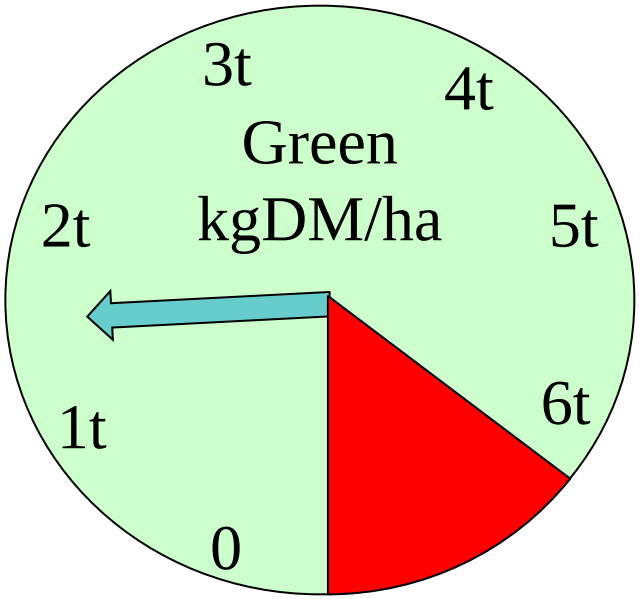
Growth = 19kg/ha/d

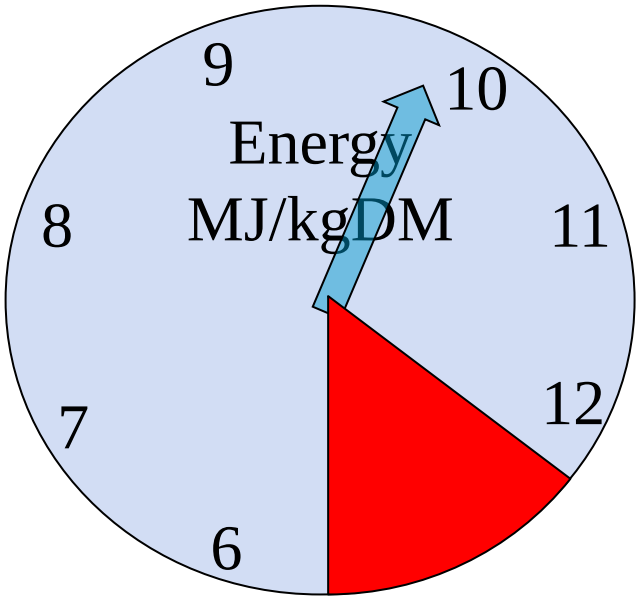
Pasture

- Shannon (Cathcart)
  - Bealey P Ryegrass + White Clover
- Murdoch (Bibbenluke)
  - Hummer Fescue + Clover
- Jeffries (Delegate River)
  - White Clover + Lucerne + Chickory

Shannon

- Single 18ha paddock measured
- Significant grazing with other stock





Feed Budget

348 lambs

Total Intake

= 348 x 1.7kg/h x 29days

+20% wastage

= 20588 kgDM

= 1143 kgDM/ha

Measured Residual

= 1693 kgDM/ha

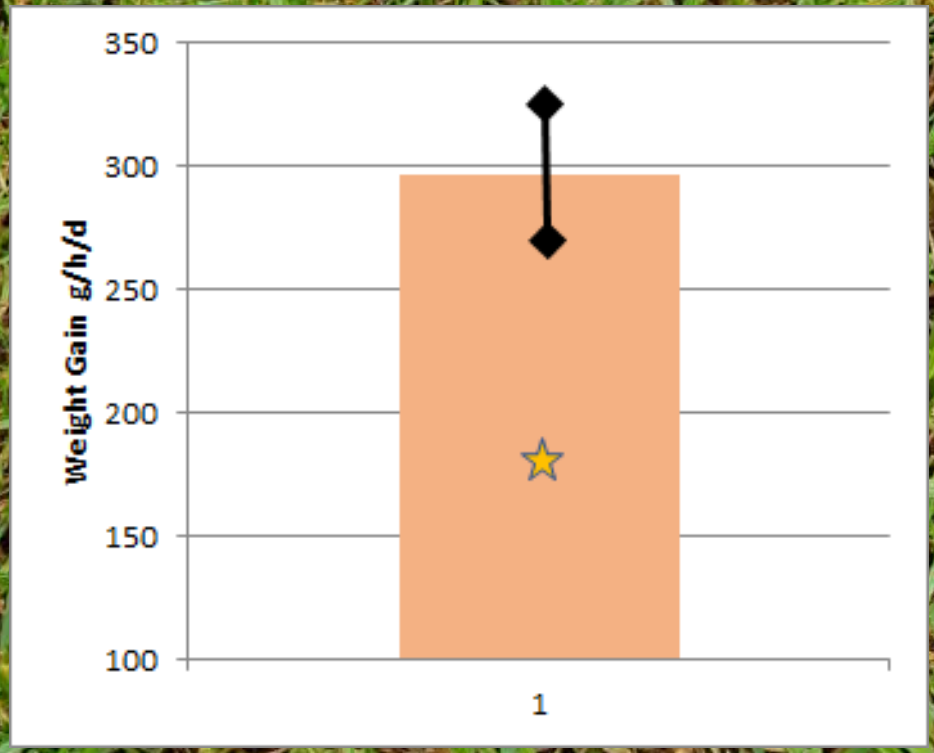
Calculated Growth

= 1143- 2082 + 1693

= 753 kgDM/ha

=26 kg/ha/day

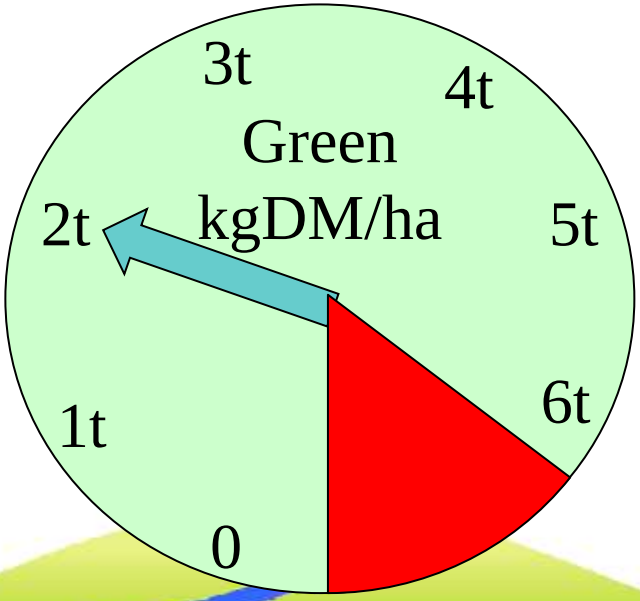
Weight Gain First Grazing

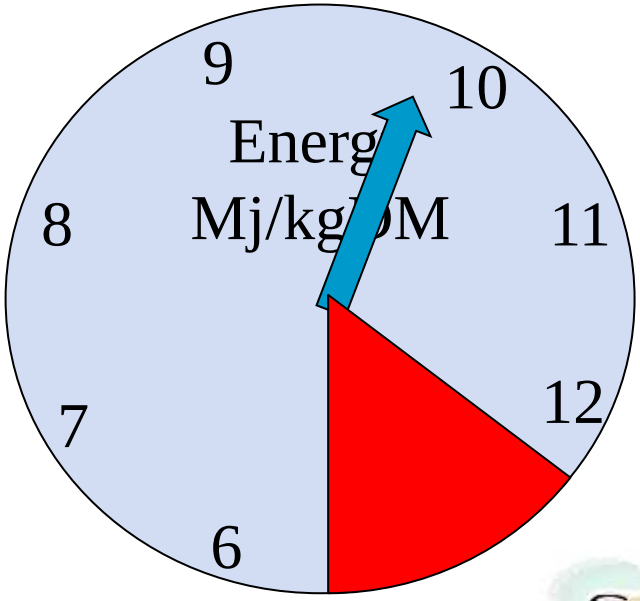


= GrazFeed predicted weight gain

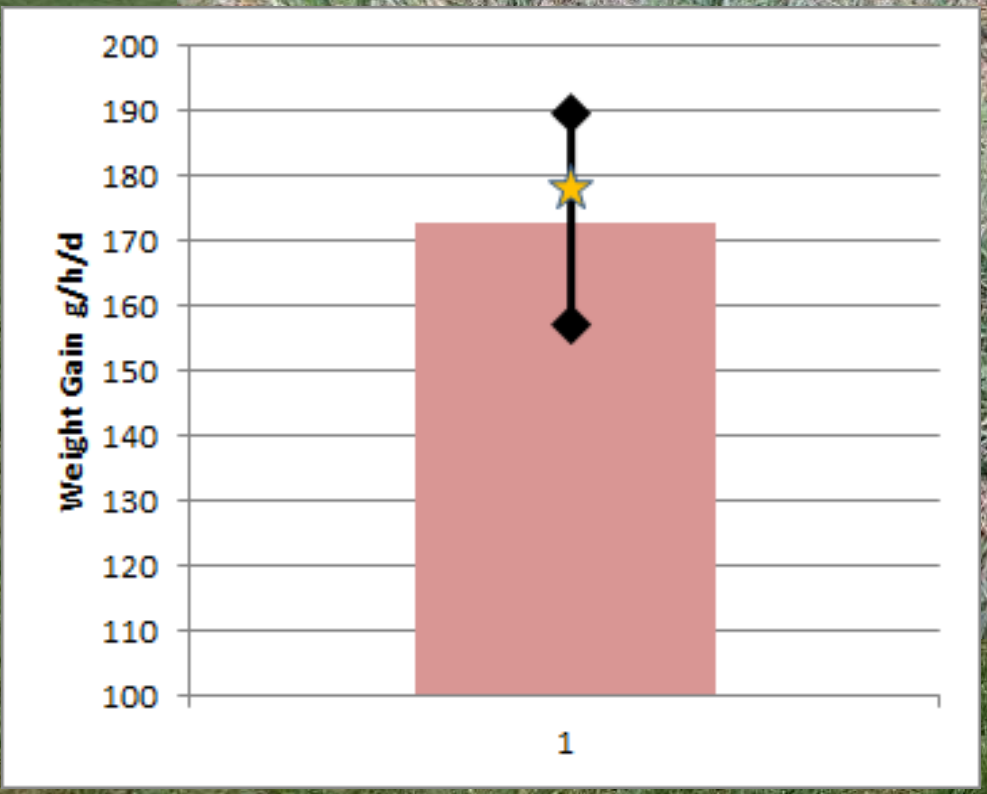
Murdoch

- Single 9ha Paddock
- Significant Grazing with other stock
- Lambs from 11th Dec to 10th Jan





Weight Gain First Grazing



= GrazFeed predicted weight gain

Feed Budget

320 lambs

Total Intake

= 320 x 1.3kg/h x 30days

= 12480 kgDM

= 1386 kgDM/ha

Actual Total Residual

= 1545 kgDM/ha

Calculated Growth

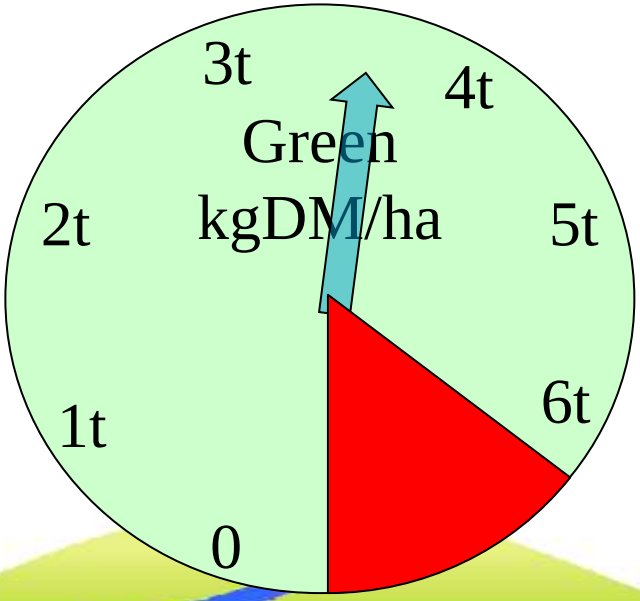
= 1386 – 2166 + 1545

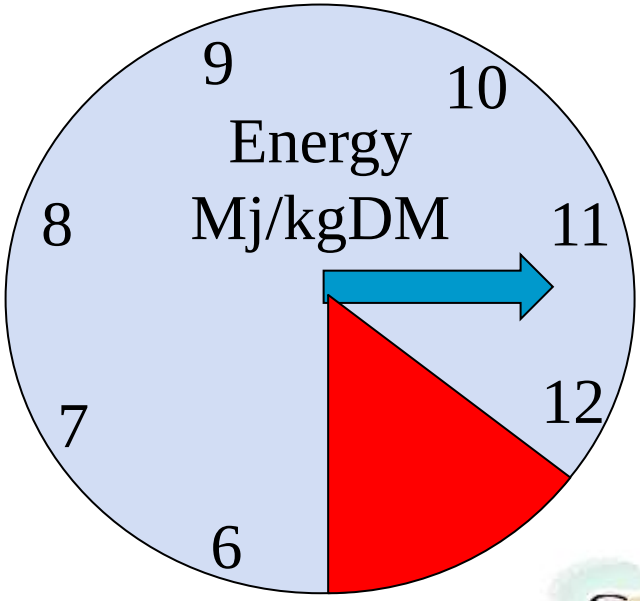
= 765 kgDM/ha

=25 kg/ha/day

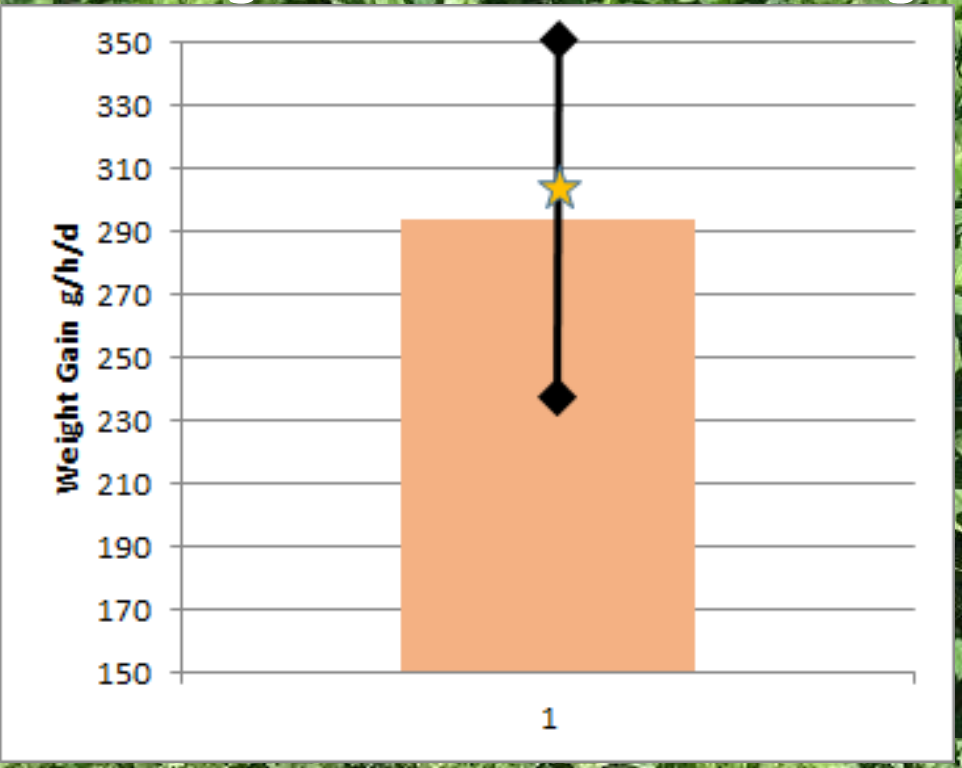
Jeffries

- Single 24ha Paddock
- Some Grazing with other stock
- Lambs from 23rd Oct to 1st Dec at 54 lambs/ha





Weight Gain First Grazing



= GrazFeed predicted weight gain

Feed Budget

1340 lambs (50740 stock days)

Total Intake

= 50740x1.3kg/d

+20% WASTAGE

= 76590 kgDM

= 3191 kgDM/ha

Actual Total Residual

= 1745 kgDM/ha

Calculated Growth

= 1745 - (3595-3191)

= 1341 kgDM/ha

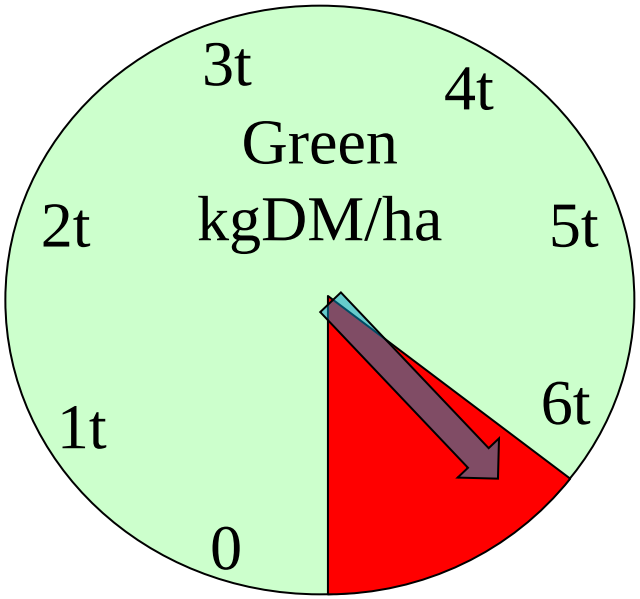
=26 kg/ha/day

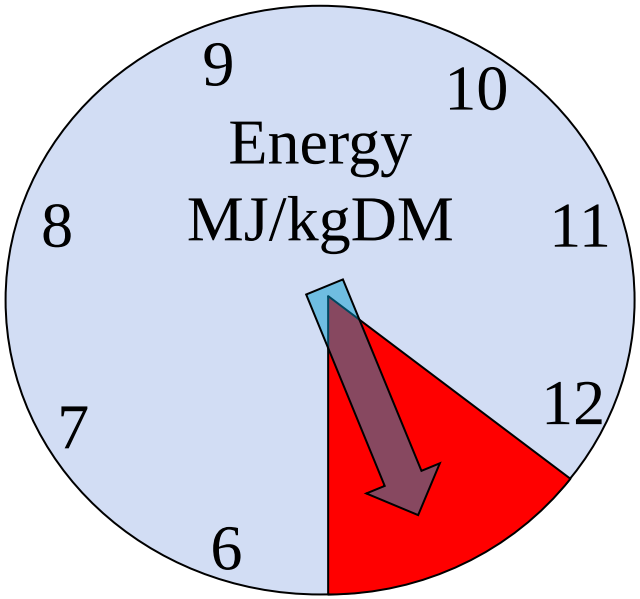
Brassicas

- Shannon (Cathcart)
  - Winfred
- Murdoch (Bibbenluke)
  - Leafmore
- Jeffries (Delegate River)
  - Rape mix

Shannon

- Single 18ha paddock measured





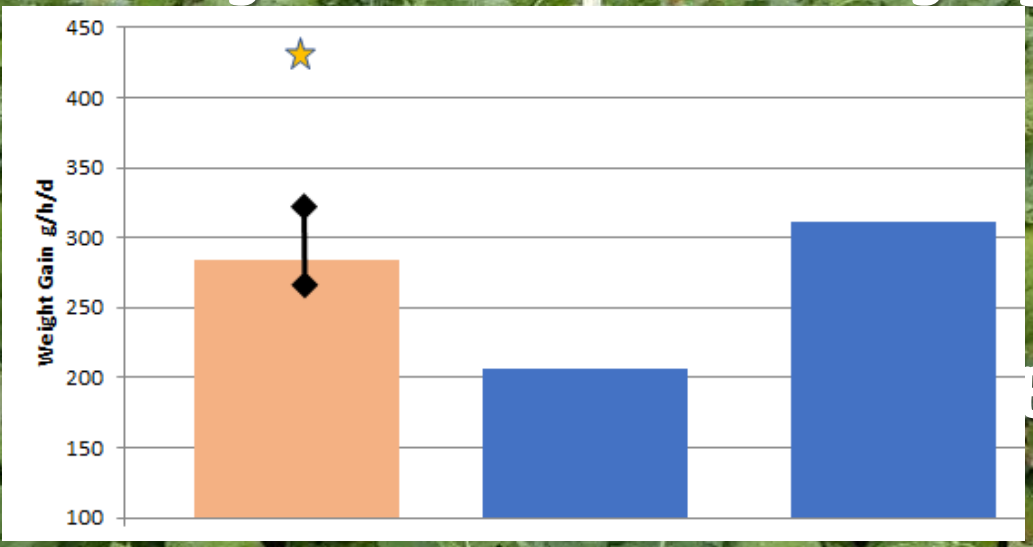

Approx 600 kgDM/ha 13/11/17


6600 kgDM/ha on 20th December 2017

Crop growth.

- Sown 5/08/17
- Biomass 13/11/17 = 600 kgDM/ha
- Biomass 20/12/17 = 6600 kgDM/ha
- Overall Crop Growth rate
  - Sowing to 20/12/17 = 6600 / 138 days
    = 48 kgDM/ha/d
  - Crop growth last 38 days = 158 kgDM/ha/day

Weight Gains each Grazing



351 hd	722 hd	541hd
21/12/17	16/1/18	31/1/18
to	To	To
15/1/18	23/1/18	23/1/18

Feed Budget

22295 lamb grazing days

Total Intake

= 22295 x 1.6kg/d

= 35672 kgDM

= 2229 kgDM/ha

Estimated Total Residual

= 1400 kgDM/ha

Calculated Growth

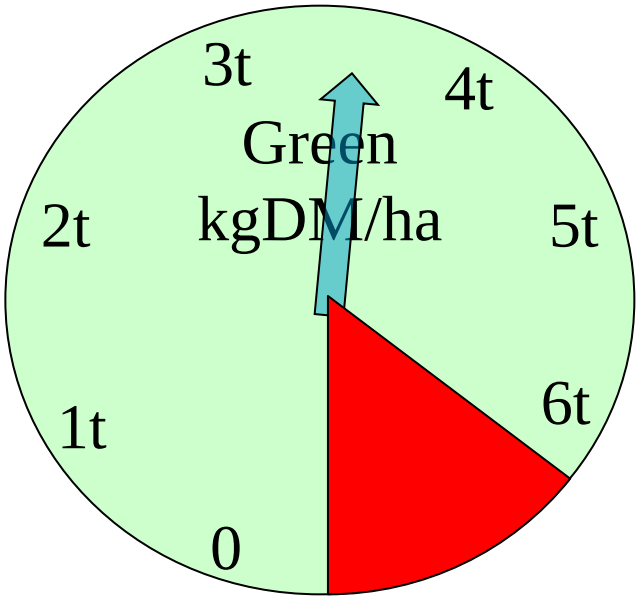
= 2229 - 6600 +1400)

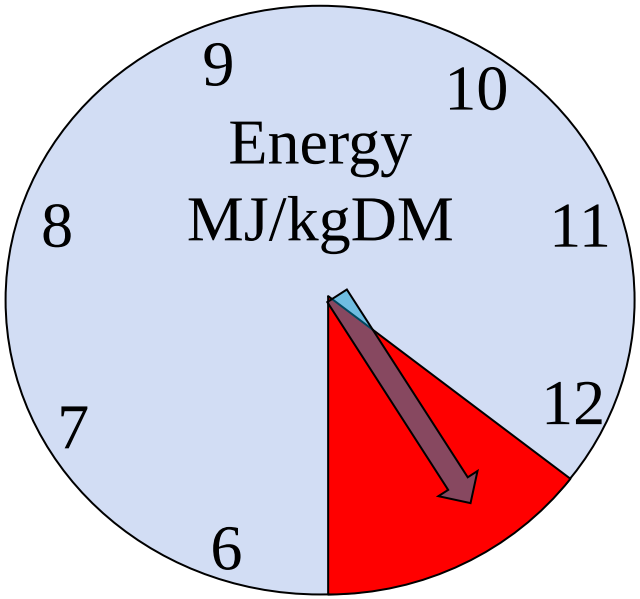
= -2971kgDM/ha

= -46 kg/ha/day ?

Murdoch

- Single 10ha paddock measured



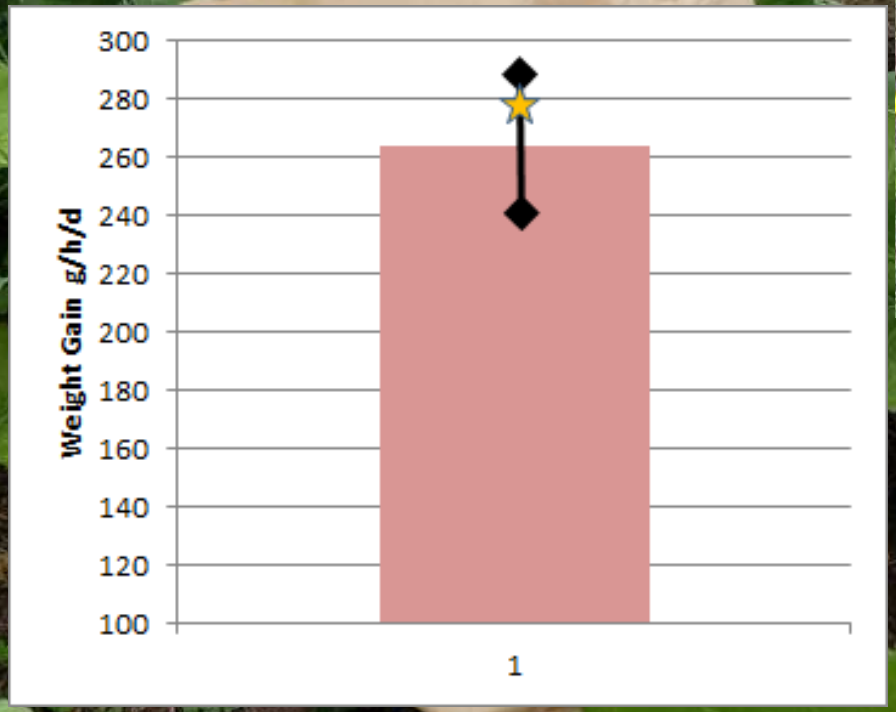



3490 kg DM on 20th December 2017

Crop growth.

- Sown 5/10/17
- Biomass 20/12/17 = 3490 kgDM/ha
- Crop Growth rate
  - Sowing to First graze = 45kg/ha/d

Weight Gain First Grazing



= GrazFeed predicted weight gain

Feed Budget

252-304 lambs
(14476 stock days)

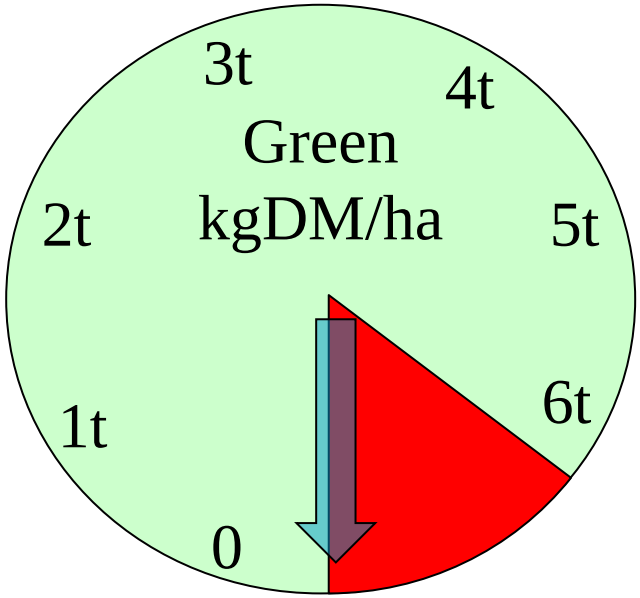
Total Intake
= 14476x1.5kg/d
= 21714 kgDM
= 2171kgDM/ha

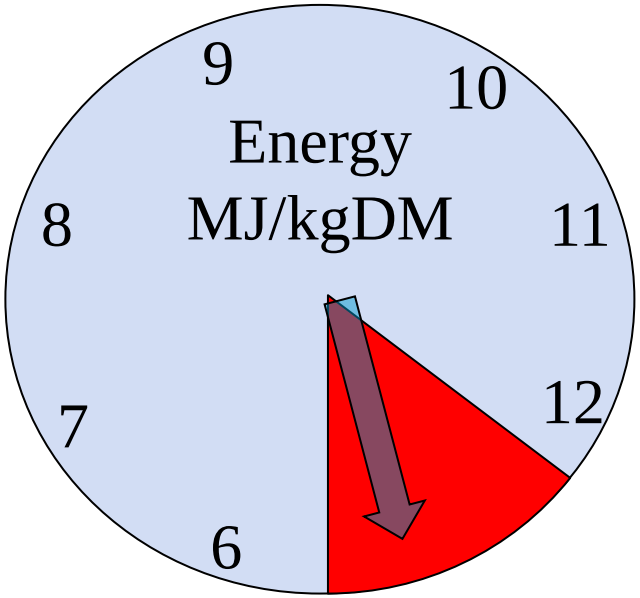
Actual Total Residual
= 1293 kgDM/ha

Calculated Growth
= 2171 -3490 +1293)
= -26kgDM/ha
= Nil Growth

Jeffries

- Single 26ha paddock measured






7389 kg DM/ha on 10th January 2018

Wagga Wagga Feed Quality Service

Specimen Type: Forage

			0001	0002	0003	0004
			Shannon Windred Brassica	Shannon HP Pasture	Murdoch Brassica	Jeffries Brassica
Results	**Units**	**LOR**	Fresh Forage Brassica	Fresh Ryegrass Pasture	Fresh Forage Brassica	Fresh Forage Brassica
Dry Matter	%	0.5	11.6	22.5	15.9	18.4
Moisture	%	0.5	88.4	77.5	84.1	81.6
Neutral Detergent Fibre (NIR)	%	10	21	58	17	19
Acid Detergent Fibre (NIR)	%	4	14	33	10	13
*Water Soluble Carbohydrate (NIR)	%	4.0	22.4	14.8	29.7	31.8
Crude Protein (NIR)	%	2.0	20.2	10.9	11.8	7.3
Inorganic Ash (NIR)	%	3	9	8	8	8
Organic Matter (NIR)	%	75	91	92	92	92
DMD (NIR)	%	39	84	66	87	86
DOMD (NIR)	%	38	78	62	80	79
*AFIA Grade			no grade	A3	no grade	no grade
Metabolisable Energy (NIR)	MJ/kg DM	4.3	12.8	9.7	13.3	13.1

Target level for this ME would be 16-17% CP.

Feed Budget

1252 lambs
(46324 stock days)

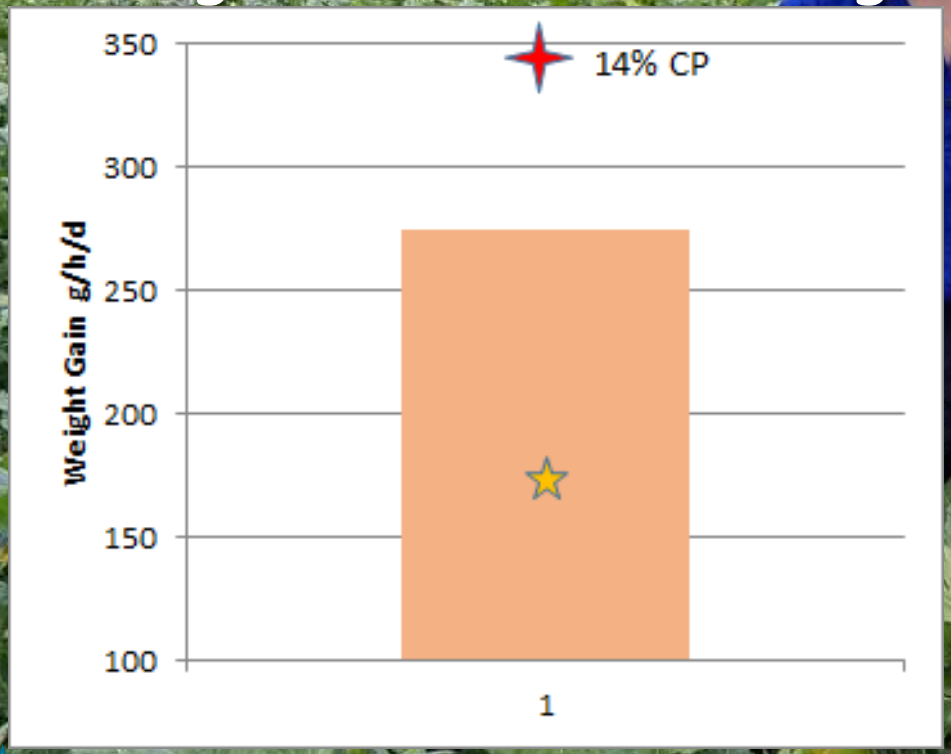
Total Intake
= 46324x1.5kg/d
= 69486 kgDM
= 2672 kgDM/ha

Actual Total Residual
= 1620 kgDM/ha

Calculated Growth
= 2672 – 7389 +1620
= -3097kgDM/ha
= -70 kg/ha/day

Need to review the sampling method. Likely the initial pasture sample was not representative of the paddock.

Weight Gain First Grazing



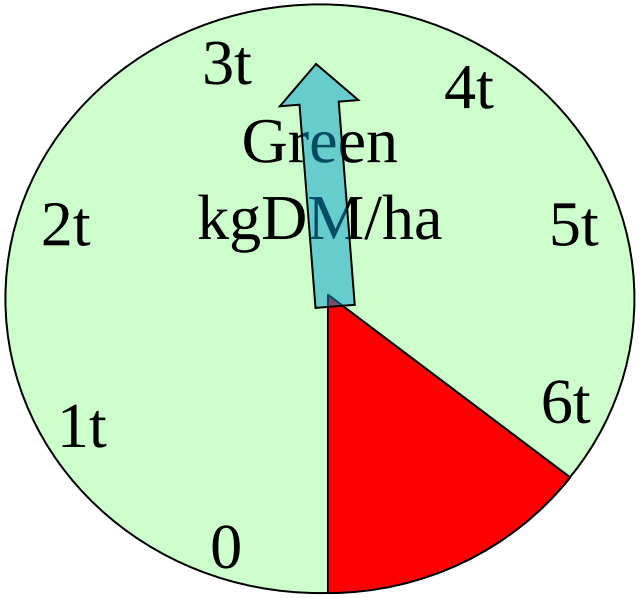
= GrazFeed predicted weight gain

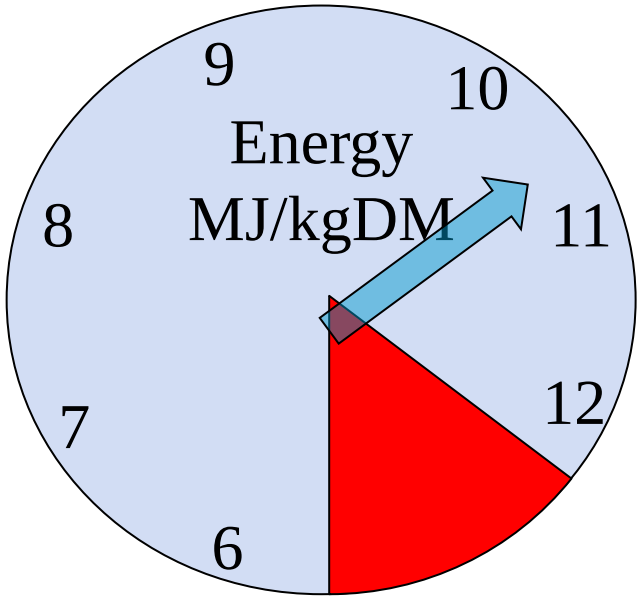
= Prediction with balanced protein

Yelds Plantain

Yelds Plantain

- Two 8ha paddock grazed in rotation
- Single paddock assessed

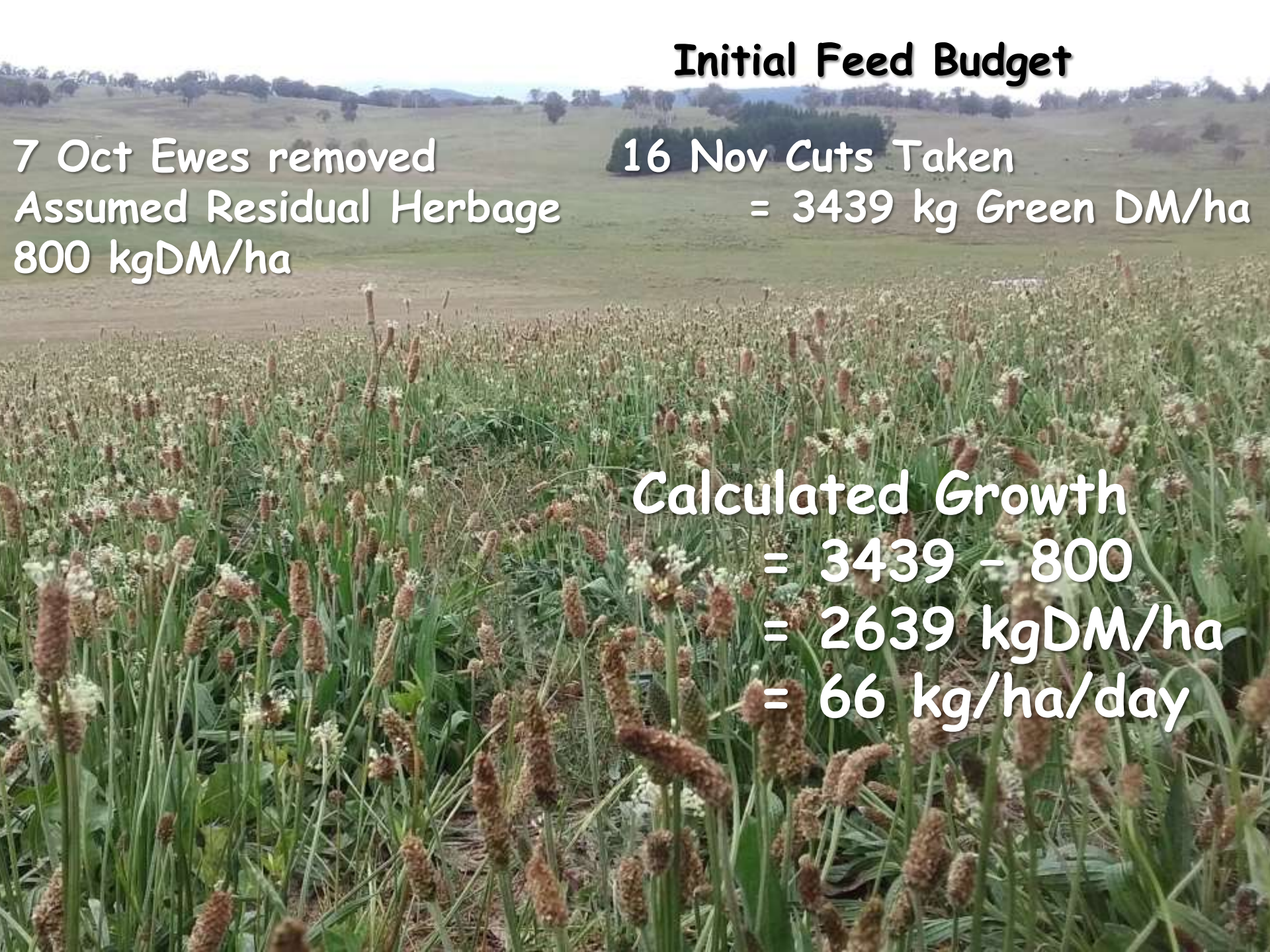




Initial Feed Budget

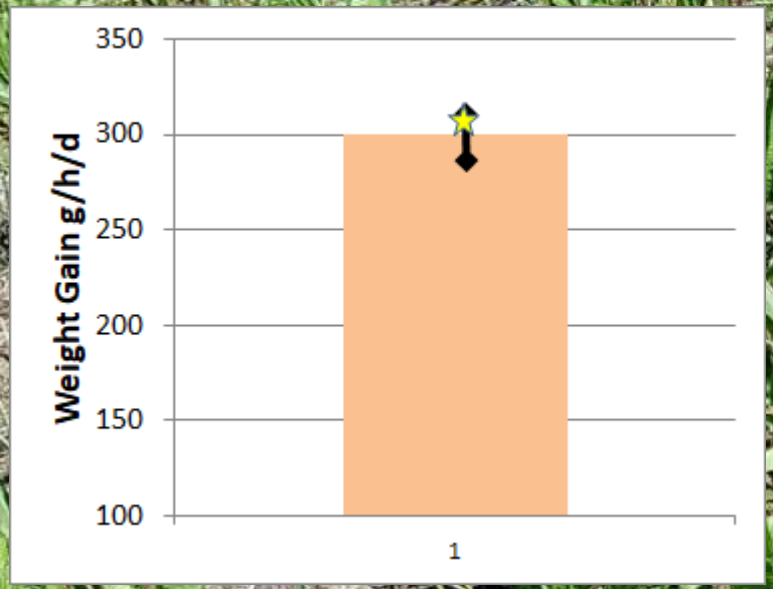
7 Oct Ewes removed
Assumed Residual Herbage
800 kgDM/ha

16 Nov Cuts Taken
= 3439 kg Green DM/ha



Calculated Growth
= 3439 – 800
= 2639 kgDM/ha
= 66 kg/ha/day

Average Weight gain over two grazing periods



11/11 to 8/12/2017
And
19/12/2017 to 16/1/2018
66 days total
55 grazing days

478 lambs for 55 grazing days
(26290 stock days)

Total Intake
= 26290x1.7kg/d
= 44693 kgDM

Less Supplement
= 6930 kgDM
= 37763 kgDM
= 4720 kgDM/ha

Actual Total Residual
= 1130 kgDM/ha

Calculated Growth
= 4720 - 3439 + 1130
= 2411 kgDM/ha
= 37 kg/ha/day

Where to from here?

- More measurements next summer
  - Improved sampling of larger paddocks
  - More feed quality sampling.
- Calculation of the economic return from the crop/pastures tested