A Closer Look at Stocking Rate for Expanding Dairy Herds

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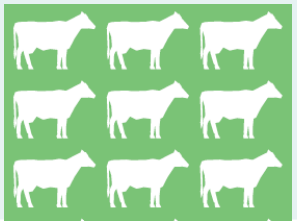
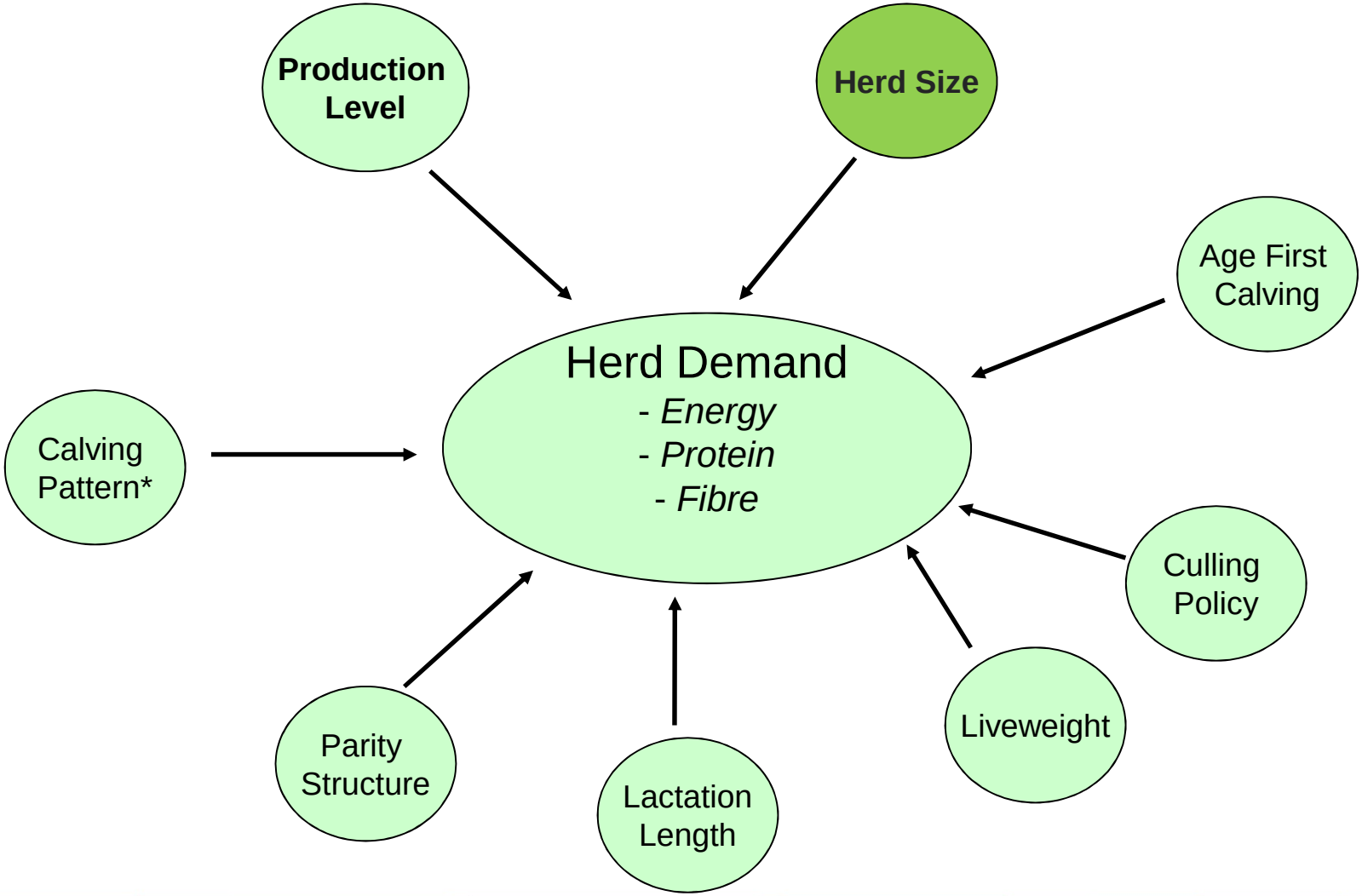
Stocking Rate = Cows/Forage Ha

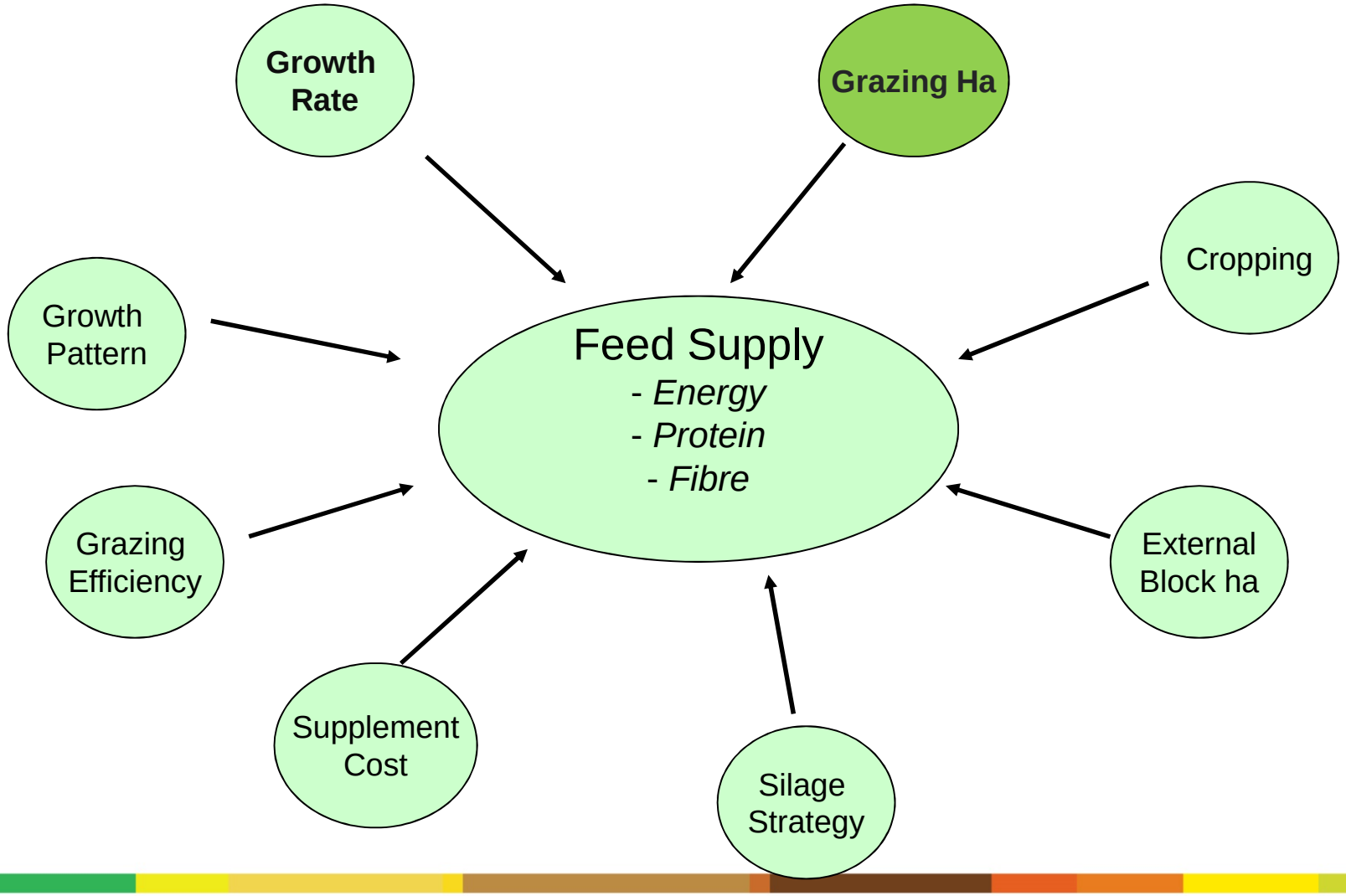
Demand	v	Supply
Cows	v	Ha
Feed Intake	v	Forage DM
		

‘One size does not fit all’

What determines farm feed demand?



What determines farm feed supply?



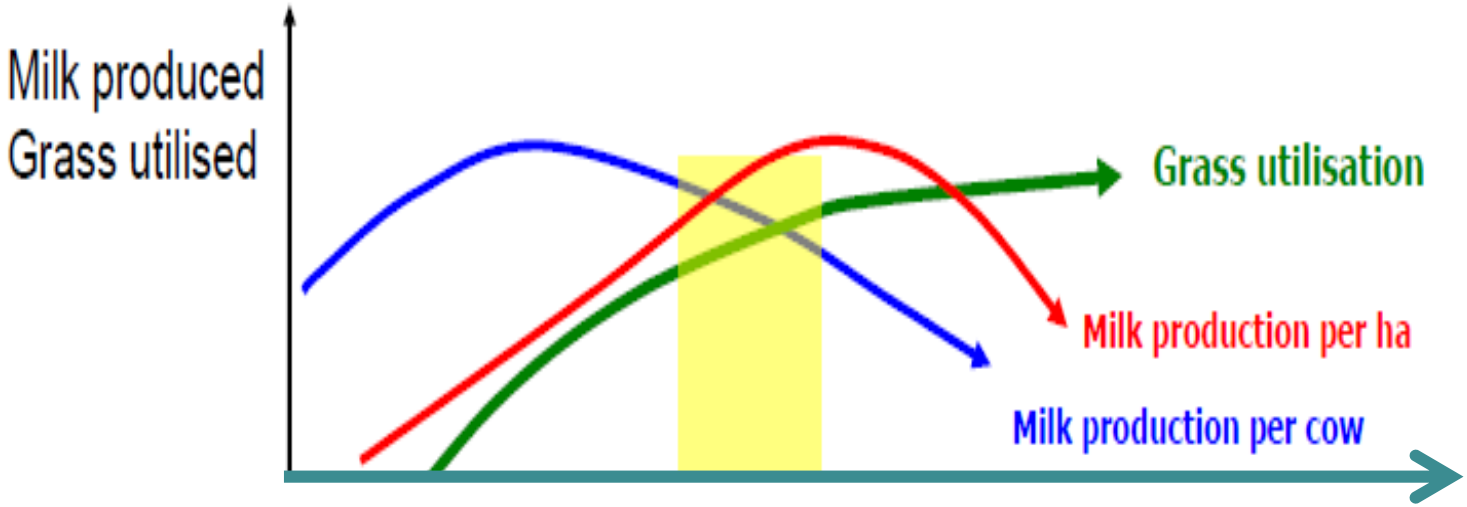
Session Outline

- Stocking Rate – what the research says:
  1. Effect on milk solids per cow and per ha
  2. Effect on grass production per ha
  3. Effect on feed cost and farm profit

- Stocking Rate – what happens at farm level:
  - Feed cost and grass growth effects

- Case Study of an expanding dairy farm
  - Outline of current situation
  - Assessing the options
- Discussion and conclusions

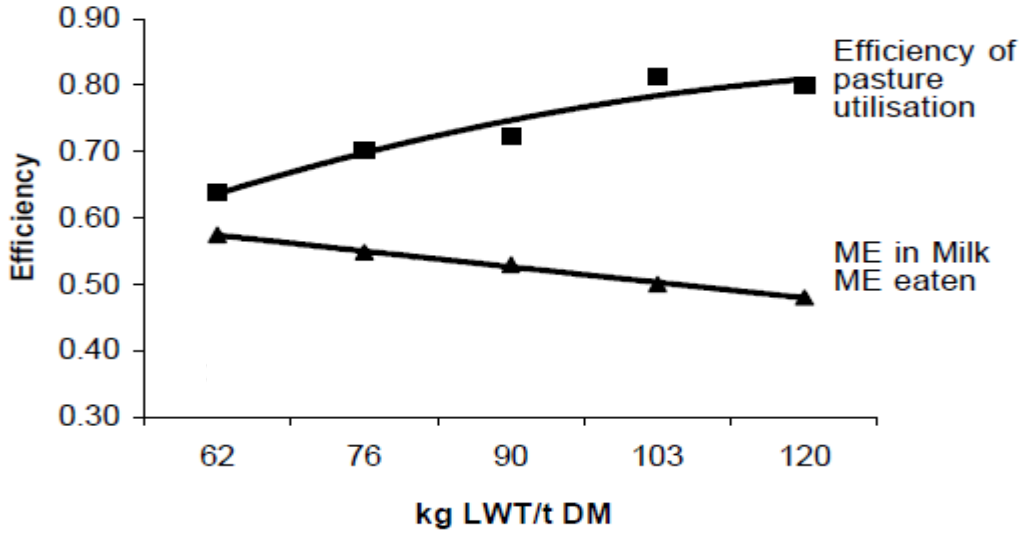
Stocking Rate and Milk Output per cow, per Ha



‘Diminishing return once grass utilised is at max’

Comparative Stocking Rate

Figure 1 The effect of stocking rate on the efficiency of pasture utilisation, the gross efficiency of milk production and the efficiency of the whole farm system.



- Target is 85-95kg per tonne DM available
- Enough for >80% liveweight as annual milk solids yield

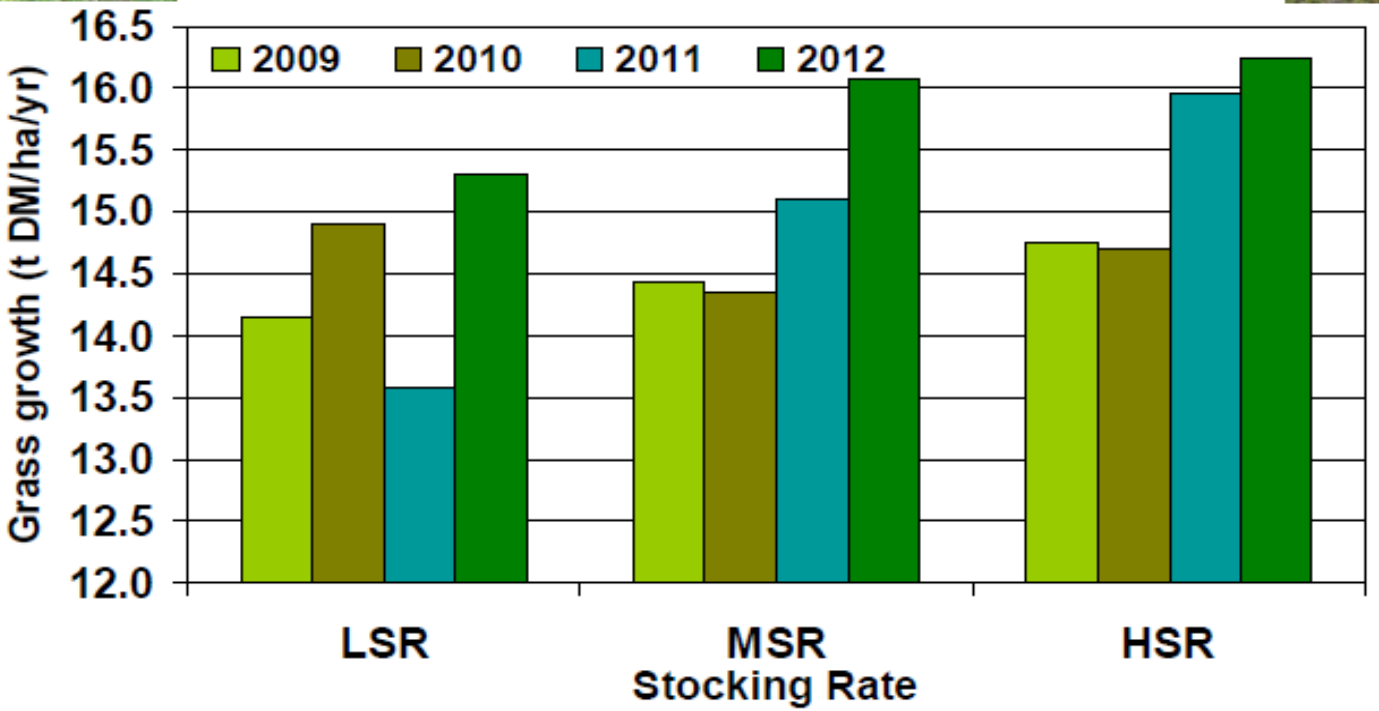
Table 1: Stocking rate that optimises profit on farms growing different amounts of pasture and feeding different amounts of concentrate/cow.

The proposed stocking rate for a resilient system is highlighted.

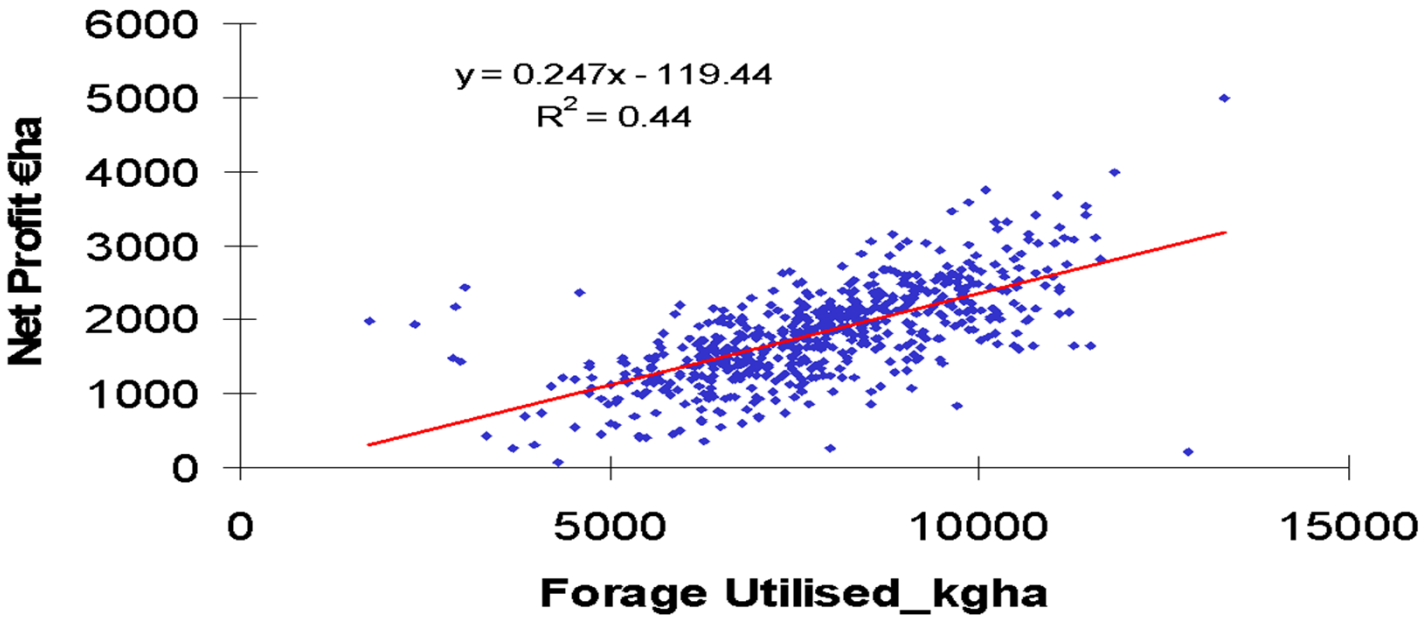
	Pasture grown, t			
t Concentrate DM/cow	10	12	14	16
0.00	1.5	2.0	2.3	2.6
0.25	1.7	2.1	2.4	2.8
0.50	1.8	2.2	2.5	3.0
0.75	1.9	2.3	2.7	3.1
1.00	2.0	2.4	2.9	3.2
1.25	2.1	2.5	3.0	3.4
1.50	2.2	2.6	3.1	3.5

*All of these stocking rates equate to 85 kg live weight/t feed DM available.

Research- Does high SR lead to more grass growth?

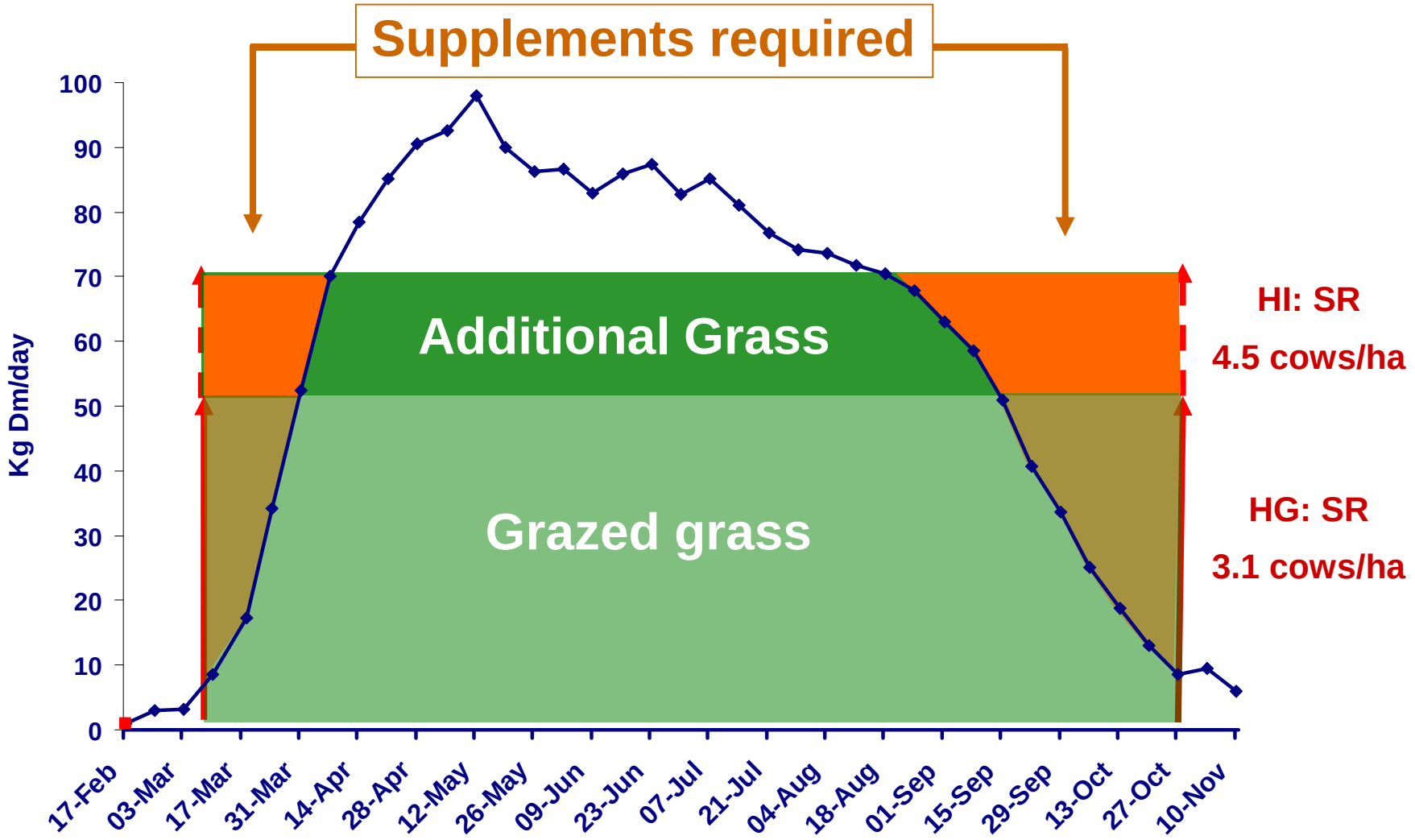


Grass utilised and Farm Profit per ha

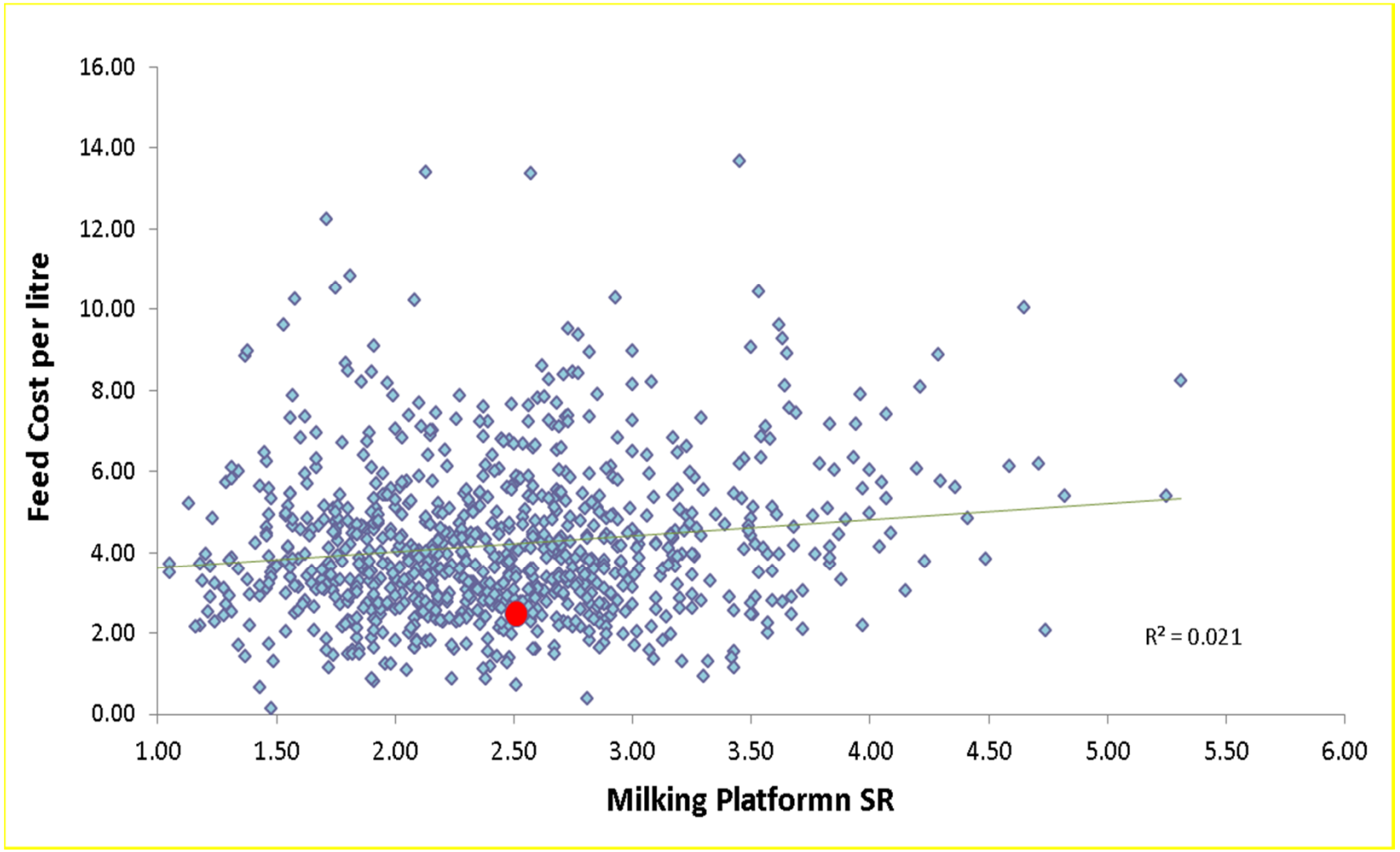


‘Stocking rate’ effect is really a ‘grass utilised’ effect

Stocking Rate & Feed Supplements



Farm Level- How does Stocking Rate Relate to Feed Costs?



Case Study

Effect of changing stocking rate on annual feed budget costs

Case Study Farm

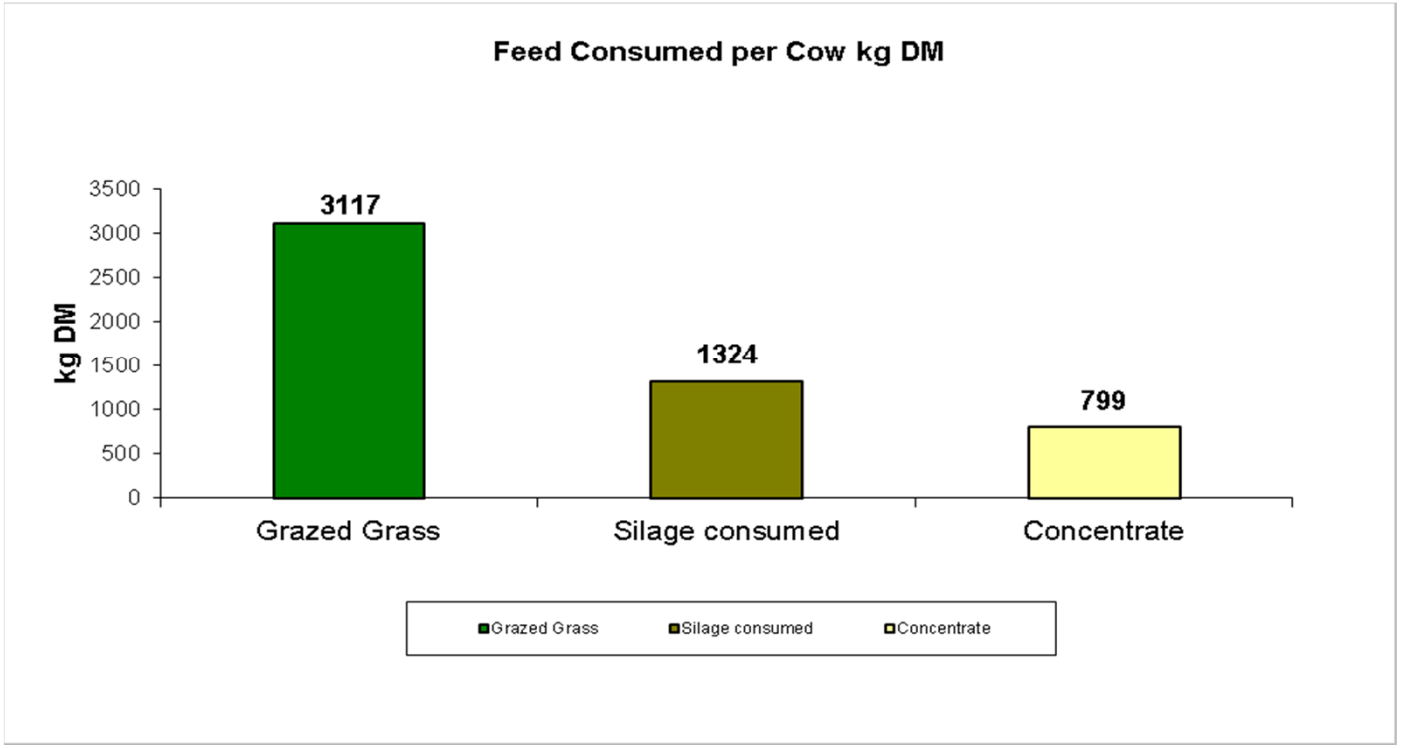
- Milking Platform 42 ha
- External block 22 ha

- 100 cows spring calving
  - 376kg MS sold per cow (491k litres total)
  - 32 replacement heifer units

- Grazing SR 2.38
- Whole Farm SR 2.01
- Annual grass production 10.5t DM

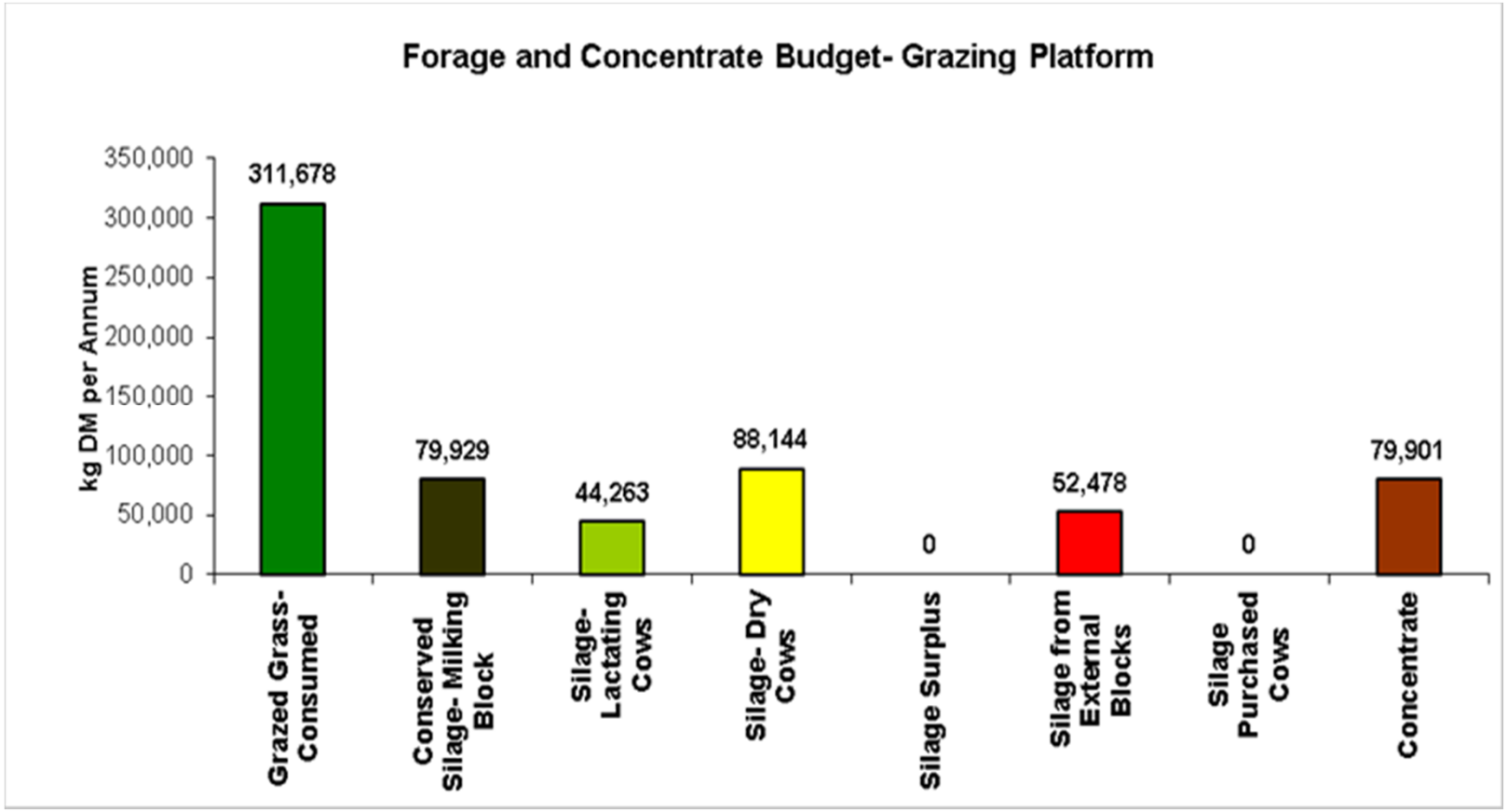
- Current feed purchases:
  - Concentrate €26,010(4.8cpl)
  - Forage purchase €0

Current Annual Feed Budget



Approximately 4.5t forage DM per cow

Annual Feed Budget



Surplus forage 4 tDM

Proposal

- Increase herd size to 130 cows (30%)
  - 40 heifers reared per year

- Milking platform and outside ha remain the same

- Milking platform SR 3.10 LU per ha
- Whole Farm 2.59 LU per ha

- **Evaluate 4 options for additional feed:**
  - Grow winter feed as 1st cut silage (standing crop)
  - Buy maize silage on contract
  - Rent some extra land and zero graze
  - Invest in grass growth and grazing infrastructure

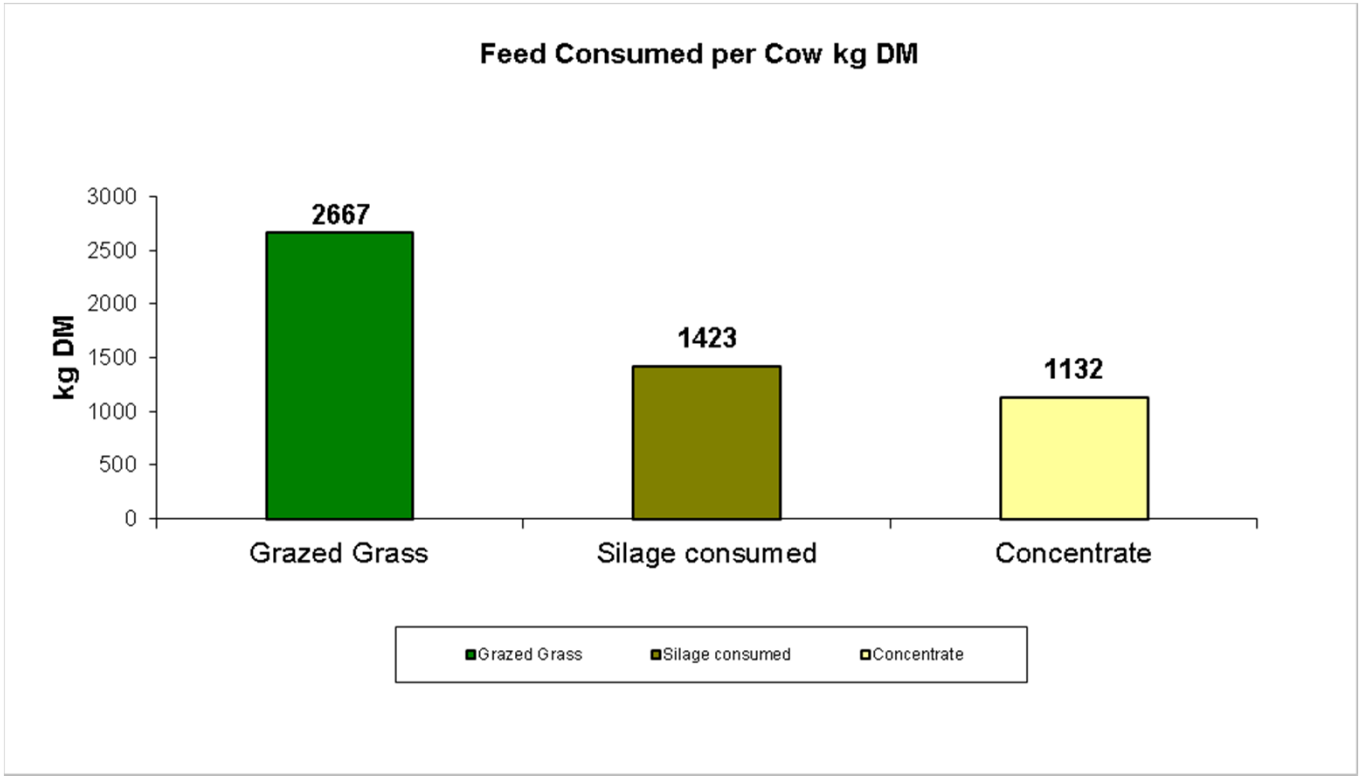
Options to be valued by group

Standing Silage Crop?	Contract Maize?
Zero Grazing?	Grow More Grass?

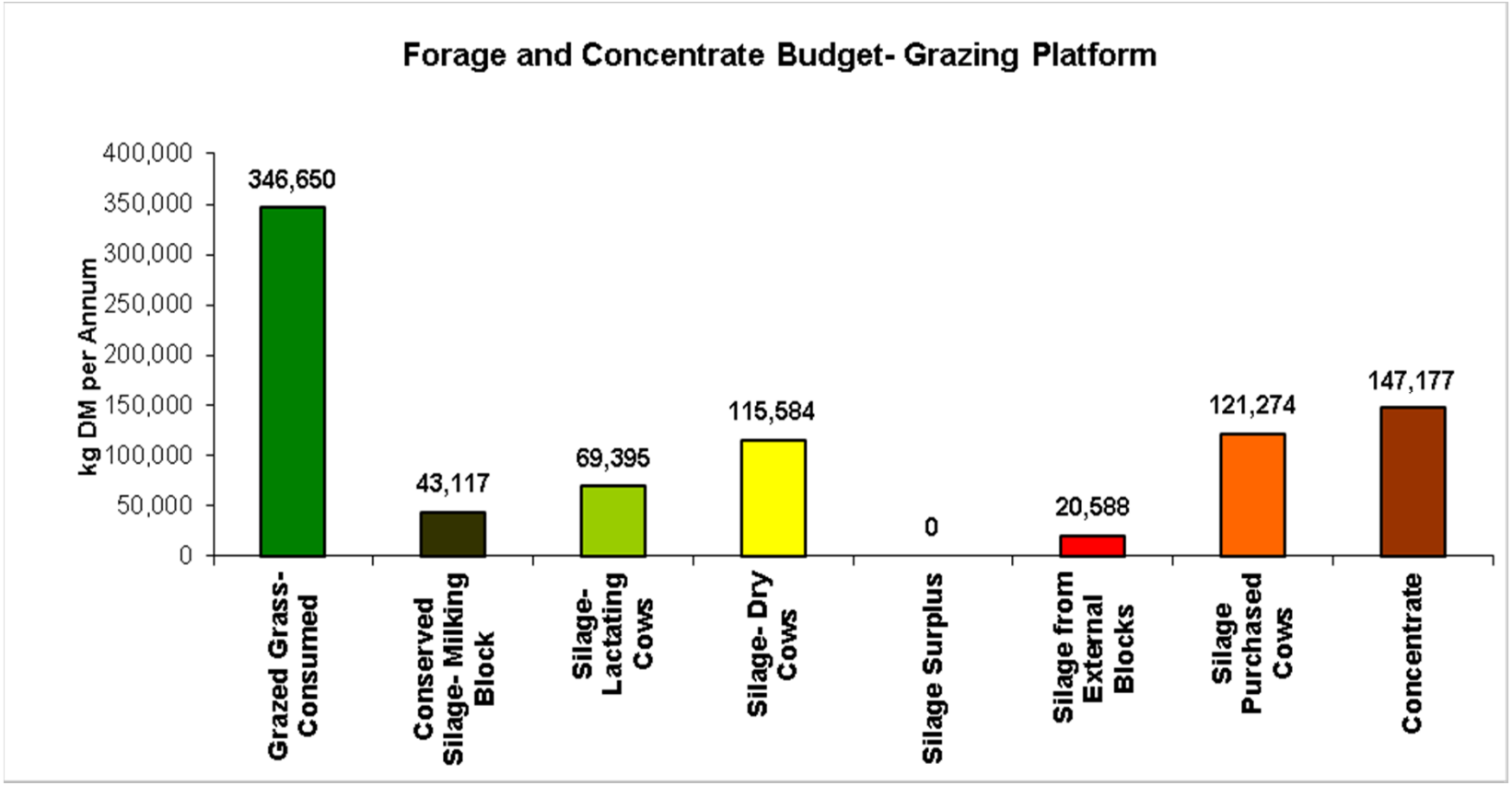
See slides 32-36

Discussion

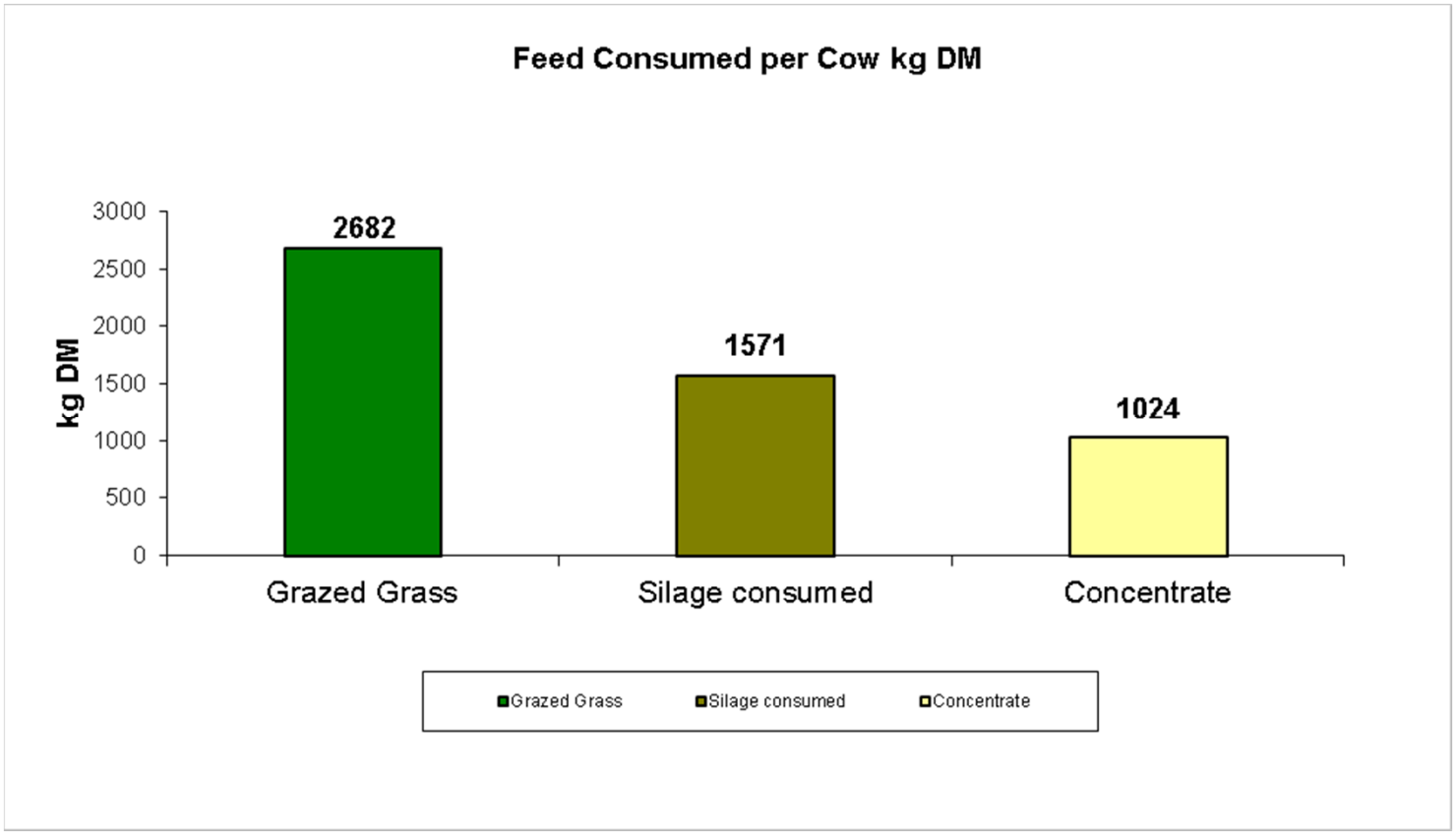
Expand and grow first cut silage as standing crop



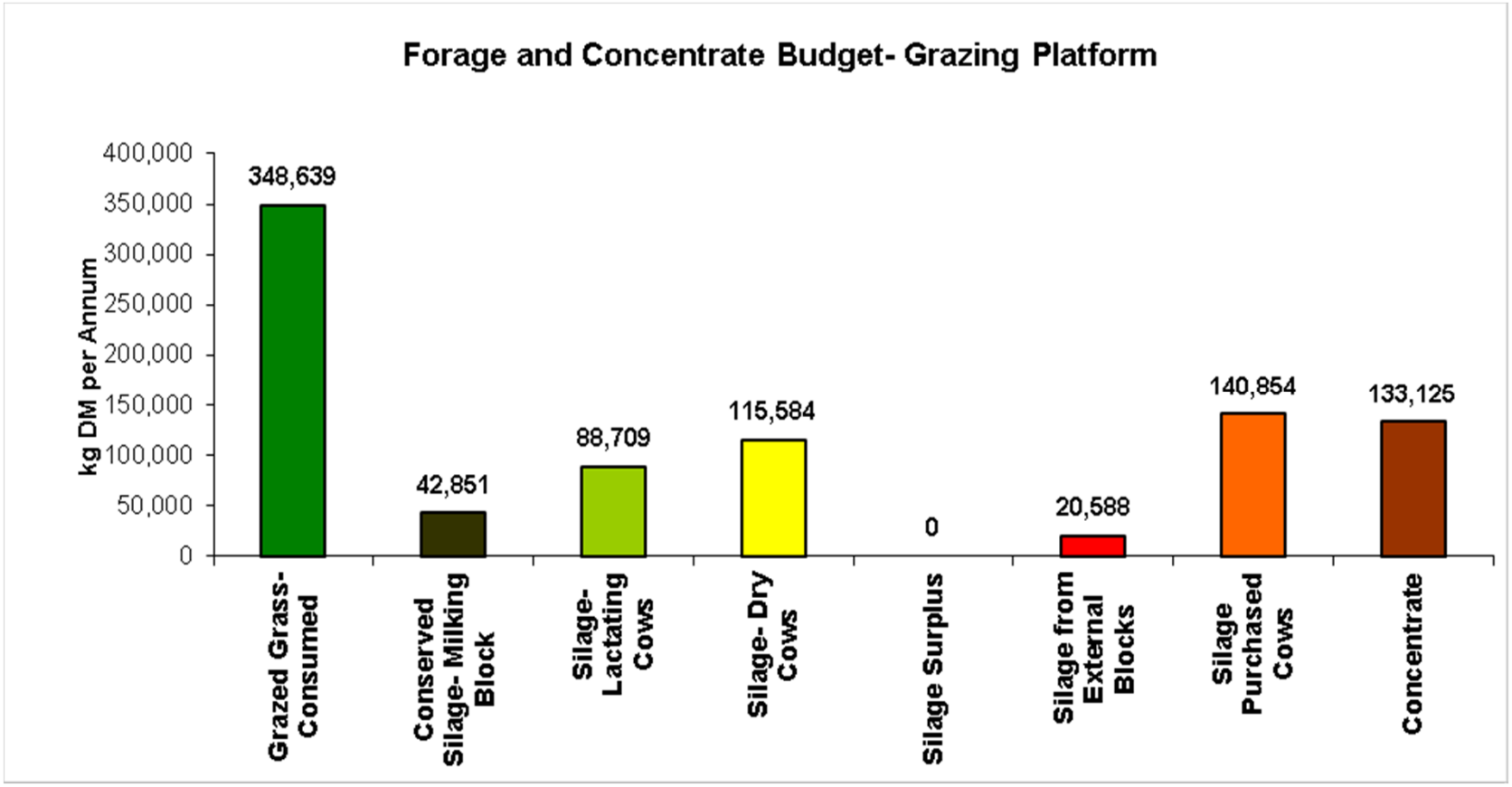
Expand and grow first cut silage as standing crop



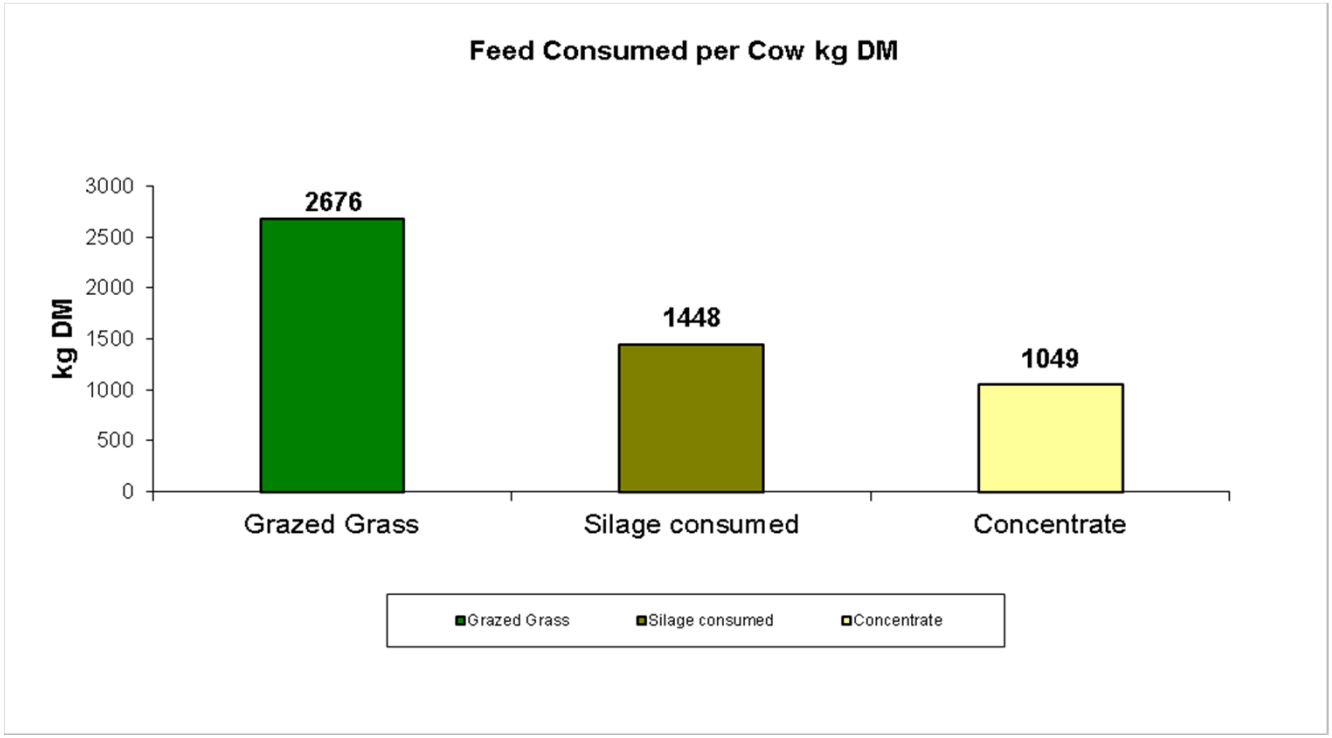
Buy Maize


Feed Consumed per Cow kg DM
kg DM
3000
2500
2000
1500
1000
500
0
2682
1571
1024
Grazed Grass
Silage consumed
Concentrate
Grazed Grass
Silage consumed
Concentrate

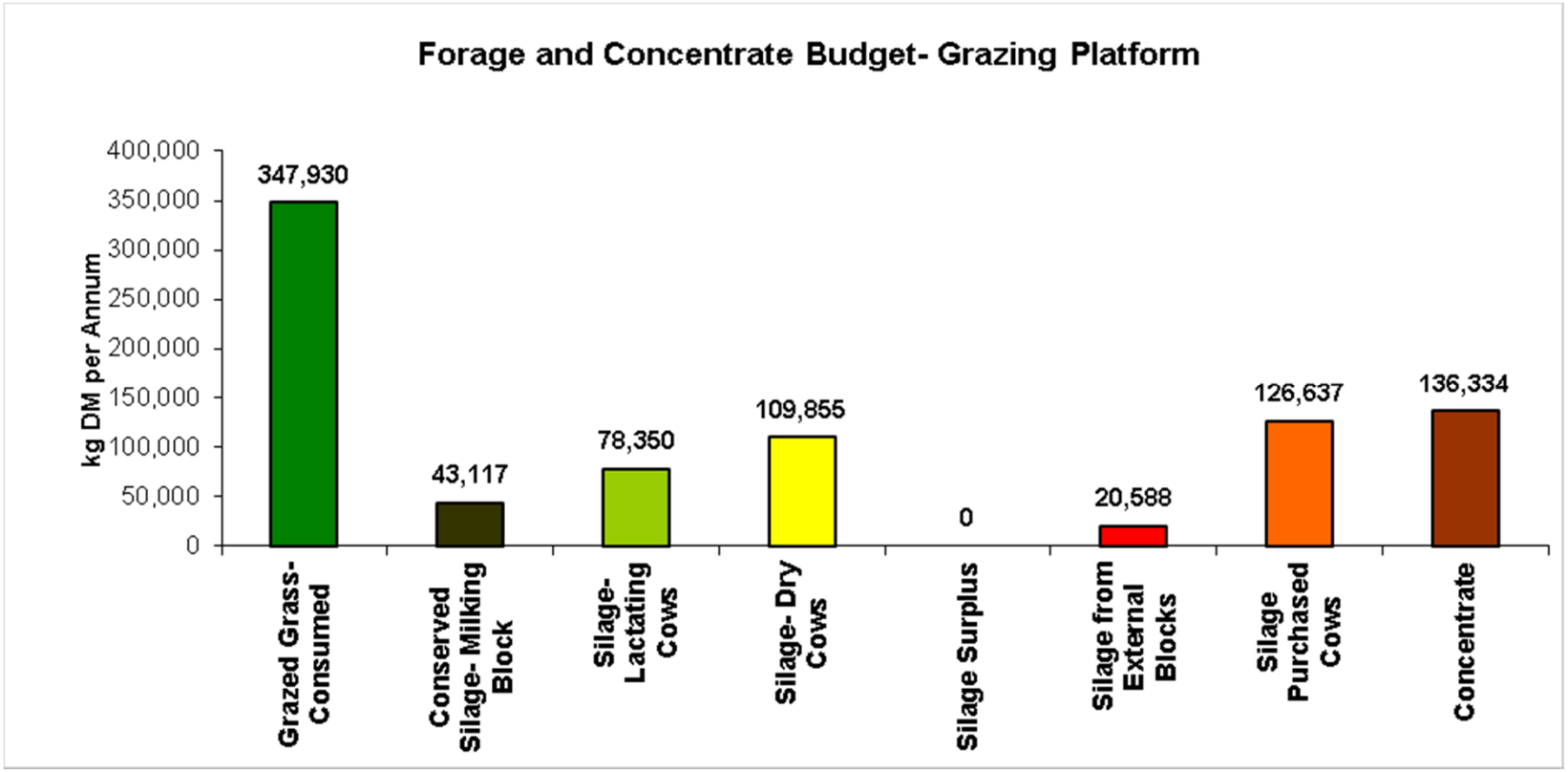
Buy Maize


Forage and Concentrate Budget- Grazing Platform
kg DM per Annum
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
348,639
42,851
88,709
115,584
0
20,588
140,854
133,125
Grazed Grass- Consumed
Conserved Silage- Milking Block
Silage- Lactating Cows
Silage- Dry Cows
Silage Surplus
Silage from External Blocks
Silage Purchased Cows
Concentrate

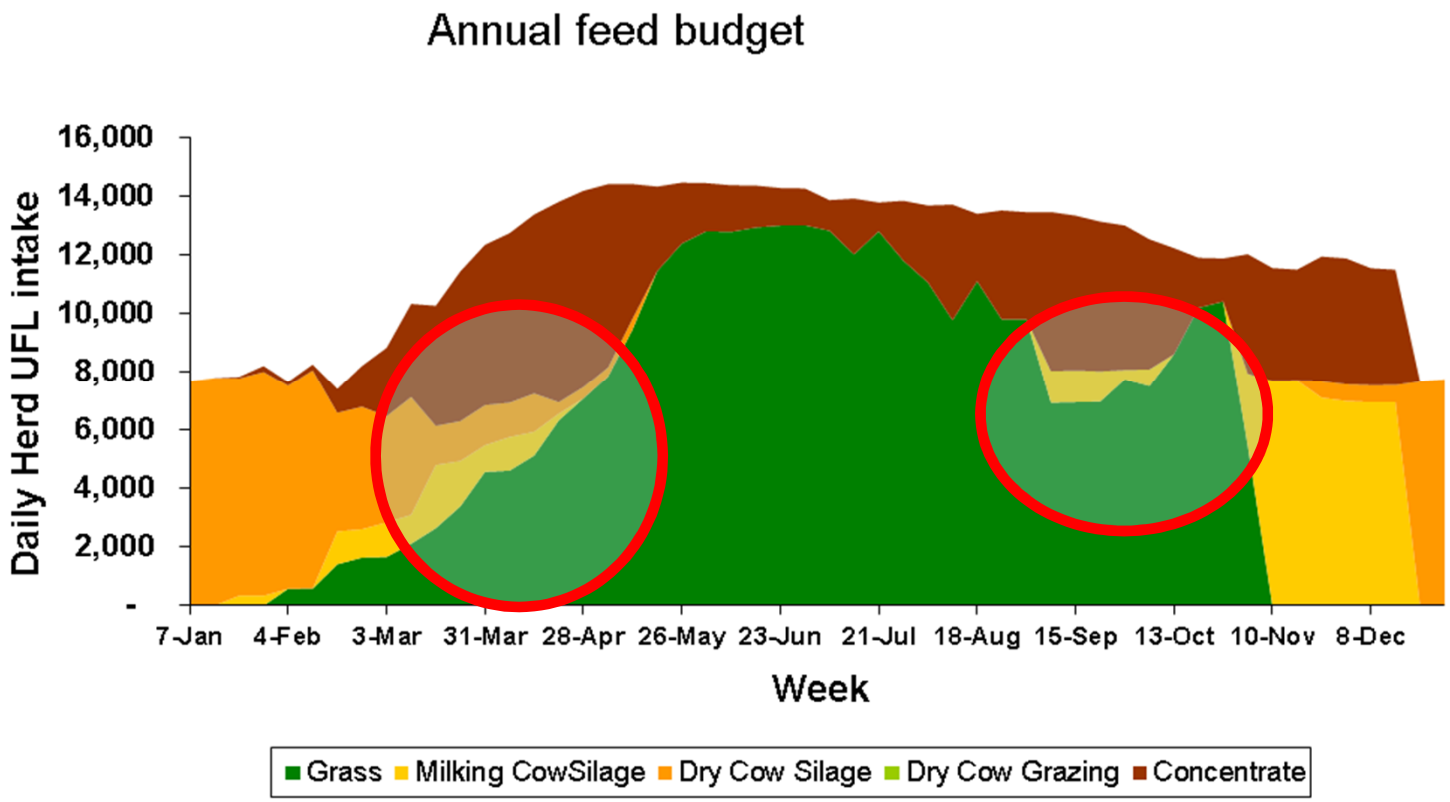
Zero Grazing



Zero grazing

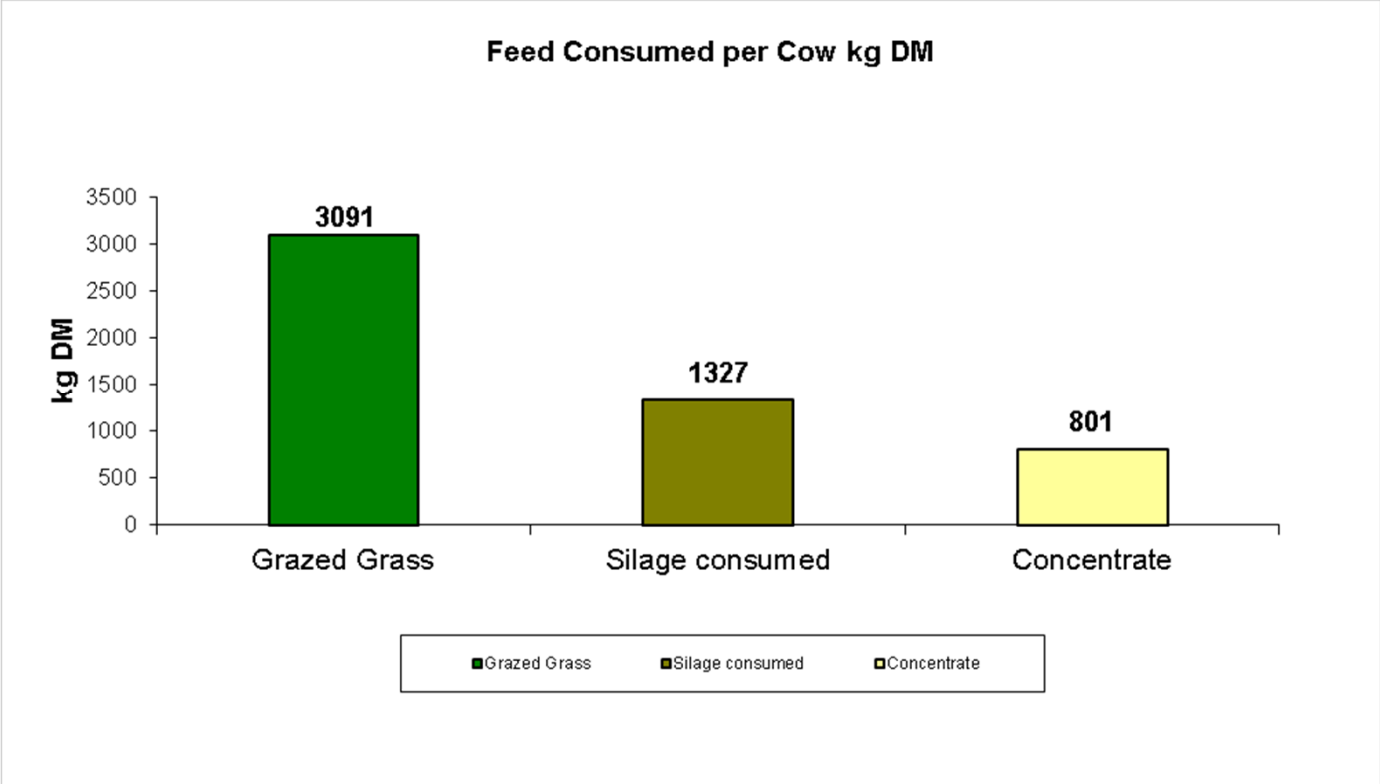


Zero Grazing- Pattern of forage input

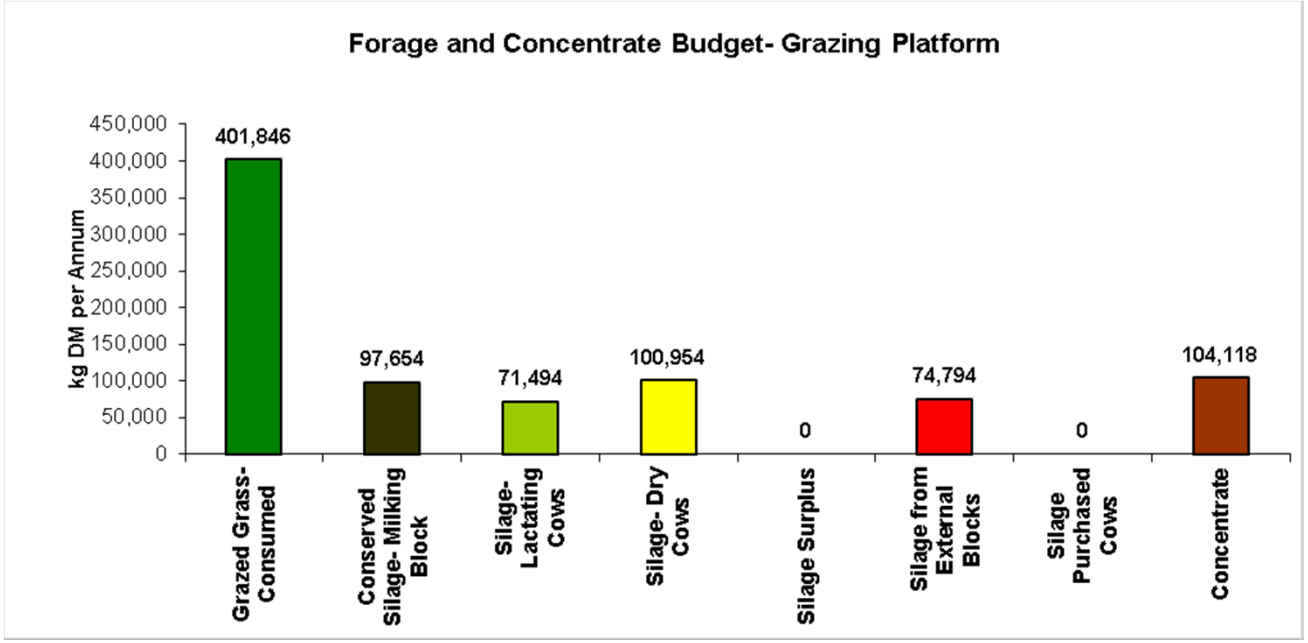


Zero grazing only applicable to 25-30% of imported forage in this scenario

Increase grass growth



Increase grass growth



Forage surplus 30tDM (135 high quality silage bales)

Grazing SR 3.10 Farm SR 2.59

Feed and Overhead Costs* for Different Expansion Options

	Silage	Maize	Zero Grazer	More Grass
Meal Purchase	45740	41822	42721	33246
Imported forage costs	17458	20798	16139	0
Extra Feed Cost	**37188**	**36610**	**32850**	**7235**
Bank Loan Buildings	10700	10700	10700	10700
Bank Loan Grassland				11400
Machinery costs			5730	
Additional cow costs	7200	7200	7200	6900
Own ha silage cutting	-2847	-2860	-2847	3070
Net Diff overheads	**€15053**	**€15040**	**€20783**	**€32070**

*Relative to current position

Marginal cash change (whole farm) before own labour

Base Milk Price cpl	Silage	Maize	Zero Grazer	More Grass
26	-€10160	-€7945	-€11552	€9767
30	-€3783	-€1352	-€5175	€17121
34	€2586	€5232	€1194	€24464

Where €2800 capital is borrowed to fund herd expansion

Key Targets for Optimum Farm Stocking Rate

- 14.5+ tonnes of grass dry matter grown per ha
- Utilise 80 to 85% of grown (11+ per ha)

- 85 to 90% home-grown feed
- 280 days at grass

- Cows yielding 80 to 85% of weight as milk solids
- 80% of total LU as milking cows

- 5.0 tonnes forage DM per LU equivalent

‘Invest in grass at high and low milk prices’

Group worksheets for costing options

Grow a Standing Crop of Grass Silage

1. Calculate farm forage deficit	
2. How many ha of 1st cut silage?	
3. Cost of growing the crop	
Land Rental	€
Fertilizer	€
Slurry	€
Harvest + transport	€
Other	€
Total Forage cost	**€**
Extra Concentrate	**€**
Total Additional Feed Cost	**€**

Guideline 6tDM per ha first cut

Purchase Maize on Contract

1. Calculate farm forage deficit	
Add +10% for maize intake	
Total maize DM required	-
2. Options for purchase	***Fresh tonnes needed***
a) €44 per t @ 25% DM	
b) €48 per t @ 32% DM	
3. Total cost @ 27% DM *or*	-
Total cost @ 32% DM	-
Extra Concentrate (minus extra maize DMI)	-
Total Additional Feed Cost	**€**

Rent some extra land and zero graze

1. Calculate farm forage deficit	
2. How many ha @ 10.5 t DM?*	
3. Cost of growing the grass (totals)	
Land Rental	€
Fertilizer	€
Slurry	€
Other	€
4. 75% grass as silage @ €40 per tDM harvest	€
5. Annual cost zero grazer for remaining 25%	€
6 Extra concentrate total	€
Total Additional Feed Cost	**€**

Guideline 80-85% utilised

Invest in extra grass growth and grazing infrastructure

1. Calculate farm forage deficit	
2. Extra tonnes DM per ha (whole farm 64 ha)*	
3. Reseed 48 ha	€
4. Soil fertility (extra to reseeding)	€
± 5t lime per ha for 45 ha over 2yrs	€
0.75 bags 16% P per acre for 3yr 55 ha	€
1 bag 0:7:30 on 45 ha for 3 yrs	€
5. Extra slurry + contractor cost	€
6. Infrastructure cost (roads etc.)	€18,000
6. Total Additional Cost	**€**
Annual cost over 7 years	**€**

*Guideline 80-85% utilised