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Semi-Intensive & Extensive Beef Production



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(Presentation © S P Marsh)

Semi-intensive & Extensive Beef Production

- Semi-intensive & Extensive beef production
- Compensatory growth
- Systems for autumn and spring born beef calves
- Grazing systems
- Achieving target DLWG's at grass
- Yard finishing



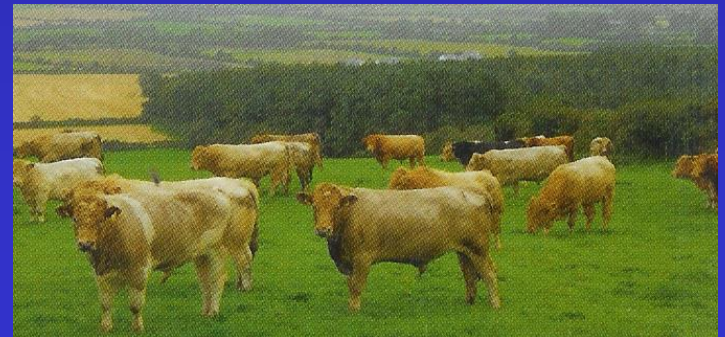
Semi-intensive & Extensive Beef Production

- 46% of cattle in the UK are slaughtered at 24-36 months old (Source: EBLEX Beef Briefing 12/01)
- Autumn born calves
 - Semi-intensive 18-20 month finishing ('out of yards')
 - Extensive 24-30 month
- Spring born calves
 - Semi-intensive 18-20 month ('off grass')
 - Extensive 24-30 month
- Extensive beef production suited to native (British) breeds
- Market premiums required for extensively reared beef



Semi-intensive & Extensive Beef Production

- Forage based systems suitable for all breed types, steers and heifers but not bulls - WHY?
- Extensive systems are NOT suitable for Holstein steers but are VERY appropriate for early maturing breed types i.e. Hereford x Friesian heifers - WHY?
- Cattle are either finished 'out of yards' or 'off grass'. When cattle are 'yard finished' cereals are fed with silage to raise the energy level of the ration



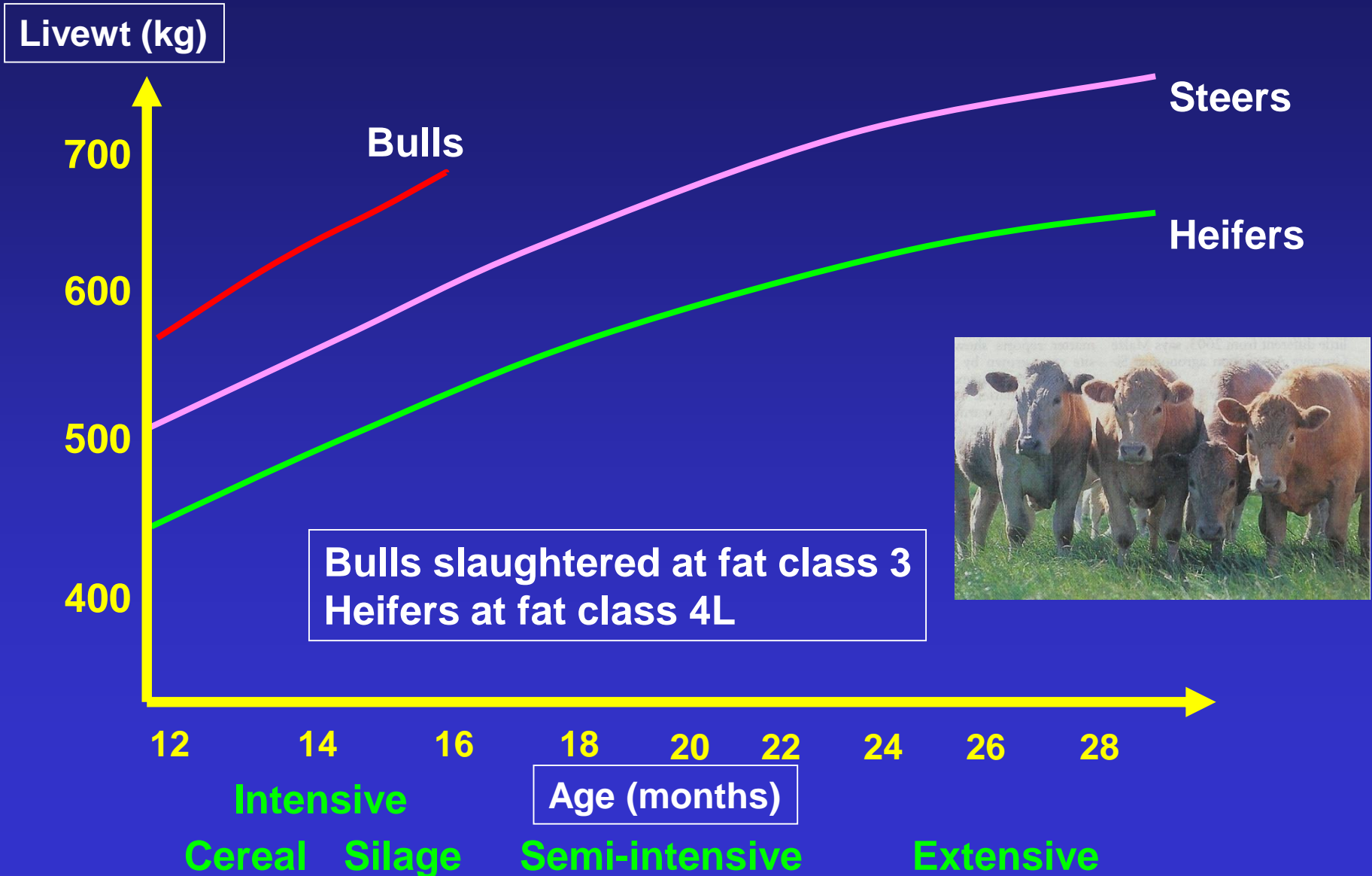
- Later slaughter often results in heavier slaughter wts i.e.

Autumn born Steers	Late maturing breed type i.e. Limousin x Holstein	Early maturing breed type i.e. Hereford x Holstein
18 month system	625kg	575kg
24 month system	675kg	625kg

- Heifers slaughtered at lower weights (~75-100kg lighter) compared to steers
- It can be difficult to achieve slaughter condition (fat class 3-4L) on autumn grazing with late maturing breed steers - WHY?
- Approx 25% of 'extensively reared' cattle are 'intensively finished' for a 3-4 month period due to an inability to finish off grass/silage



Slaughter age/weight relationship in Charolais crosses



- Higher stocking rates with 18 month beef

	Cattle per hectare
18 month beef	3-3.5
24 month beef	2-2.5

- How do the above stocking rates compare to the Intensive Silage Beef system?
- HIGHER gross margins per HEAD with 24-30 month beef but LOWER gross margins per HECTARE
- An extensively reared beef animal may spend its life on 2-4 different farms
- Extensive beef systems utilise compensatory growth

Management from birth to slaughter

The 3 phases of growth

- Rearing

- Rearing from birth to ~150kg. Target is to produce a well grown, weight for age animal, that hasn't had severe health challenges



- Growing (excluding intensive cereal fed bulls)

- Growing from 150 to 500+kg for steers (450+kg heifers) to produce an animal of maximum skeletal frame development ready to be finished. This is the longest and most important phase with target DLWG's of 0.6-1.0kg. This period includes a summer grazing period



- Finishing

- This should last 60-120 days with target DLWG's of 1.1-1.5kg to produce the maximum fleshing possible, with a good finish (fat class 3-4) to maximise carcass weight, grade and KO%

Store wintering on Extensive systems

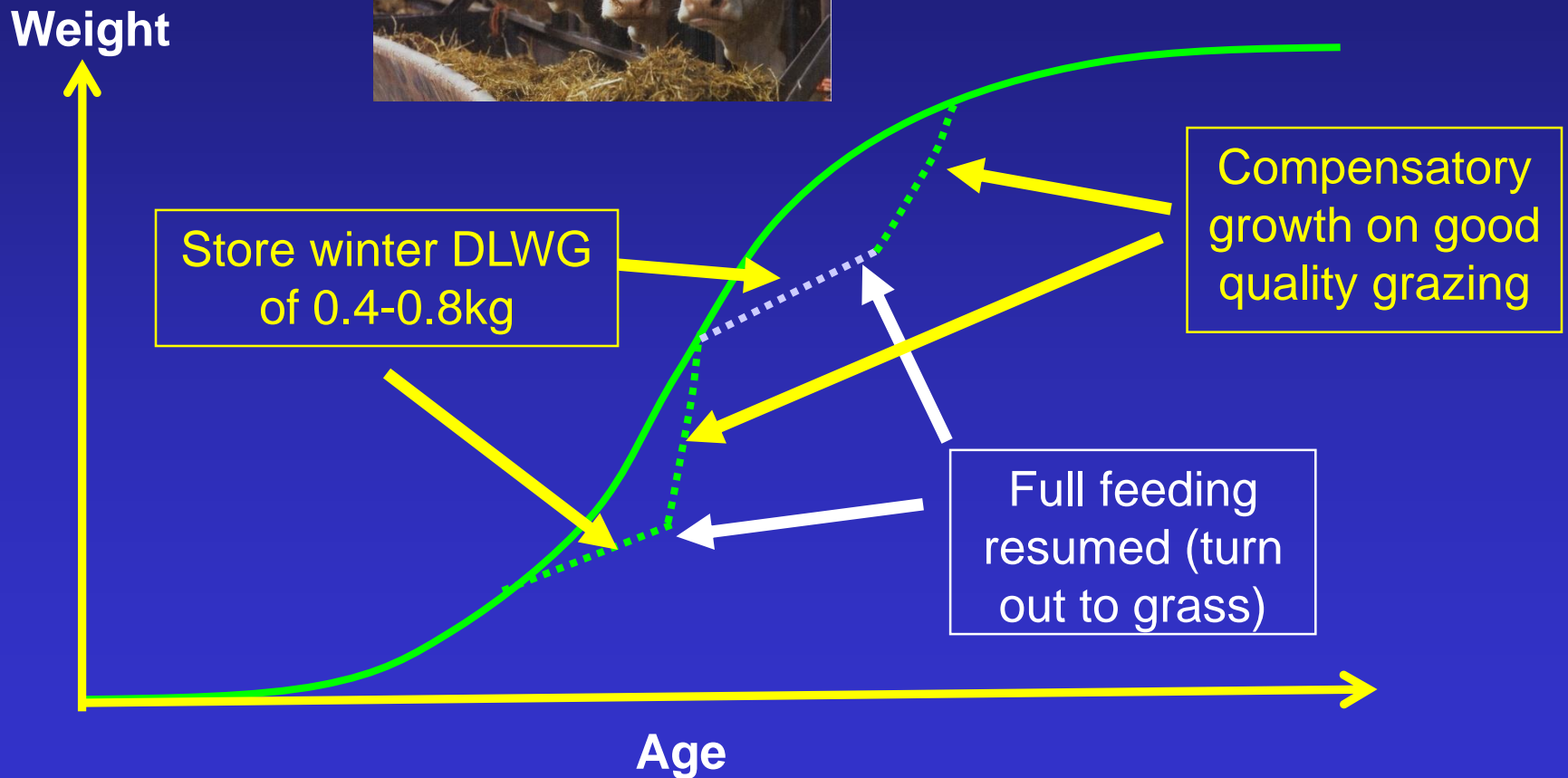
- In extensive beef systems with cattle finished off grass cattle reared during the winter on 'store rations' to optimise compensatory growth at grass at turnout
- 'Store winter' early maturing breed types at DLWG's of 0.4-0.5kg/d and late maturing breed types @ 0.6-0.8kg/d



Compensatory Growth

- If beef cattle have their energy intake restricted, which leads to a slow rate of growth. Then if full feeding is resumed, an increased growth rate is achieved. This is greater than would have been achieved if normal feeding had been carried out during growth and results in the beef cattle being ready for sale at a similar age on a 24+ month system
- To take advantage of this, medium-good quality (65D/10.4ME) silage can be fed during the winter months (called the store period and hence store cattle) and then the cattle turned out onto high quality grass in the spring, compensatory growth with increased growth rates is achieved. Utilising compensatory growth reduces feed costs
- The objective of a store period (which is part of the 'growing phase') is to 'grow frame', especially with early maturing breeds, with DLWGs of 0.4-0.8kg prior to the 'finishing phase'. Store rations should be high in fibre (from forage) and low in starch

Compensatory growth on a 24+ month beef system



Autumn born calves

- Calves artificially reared to weaning at 6-9 weeks old. Silage introduced at 3 months old and fed with 2-3kg of concentrates/head/day
- Target weight at turnout of 200kg+. Calves below 200kg will need to be fed concentrates



Calf rearing



200kg Friesian steers

Autumn born calves

Semi-Intensive

- An 18 month beef system with the cattle spending 6 months indoors, 6 months at grass and then 6 months indoors
- Cattle slaughtered in the spring 'out of yards' at 550-625kg.



Autumn born calves

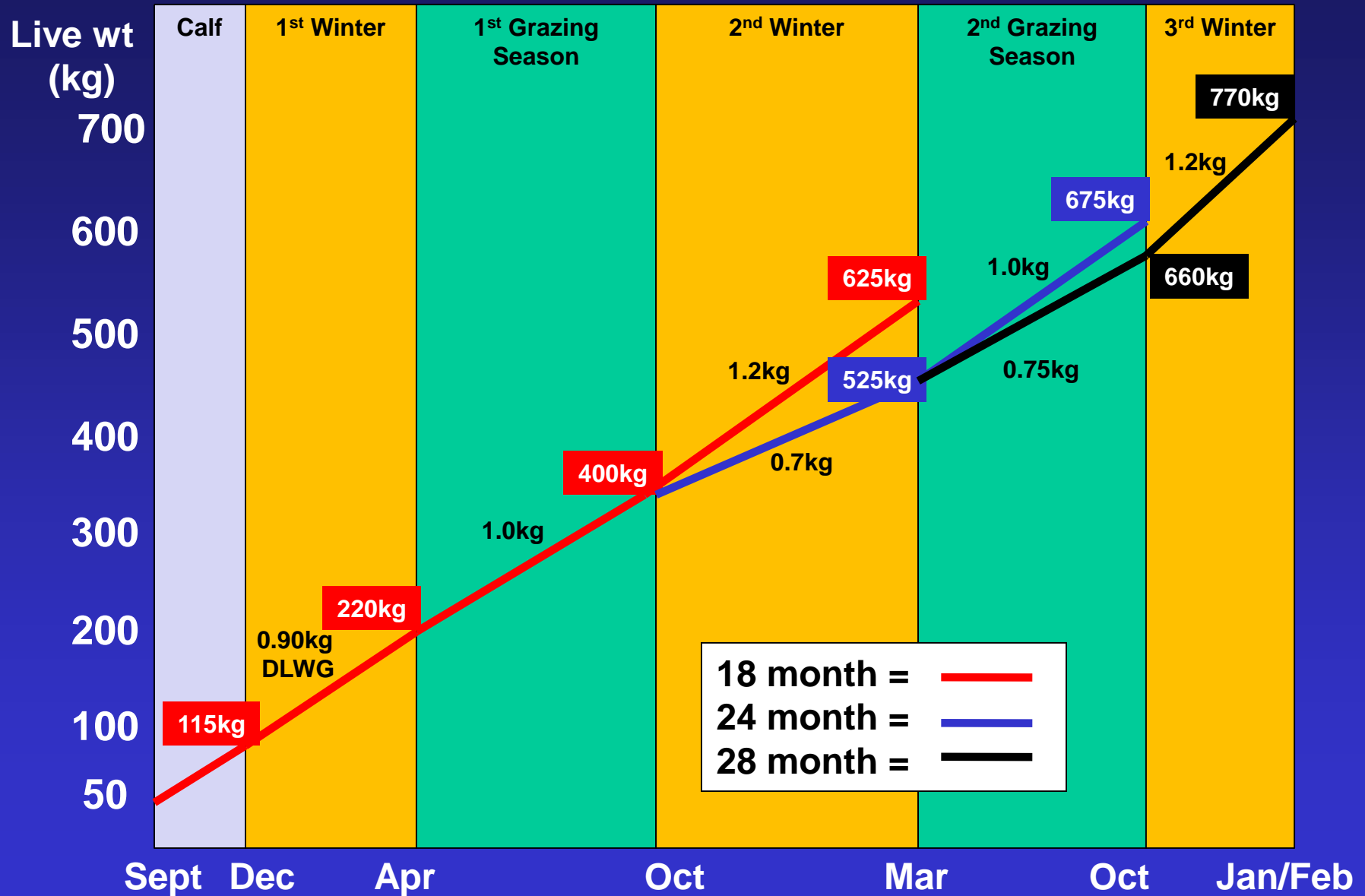
Extensive

- Cattle have 2 or 3 summers at grass and this system utilises compensatory growth
- Cattle either finished 'off grass' in the autumn at ~24 months old or 'out of yards' in spring at ~30 months



Continental cross dairy-bred Autumn born steers

Targets for 18, 24 & 28 month systems



(Adapted from EBLEX Beef Action for Profit – Better Returns from Continental-cross Steers)

Spring born calves

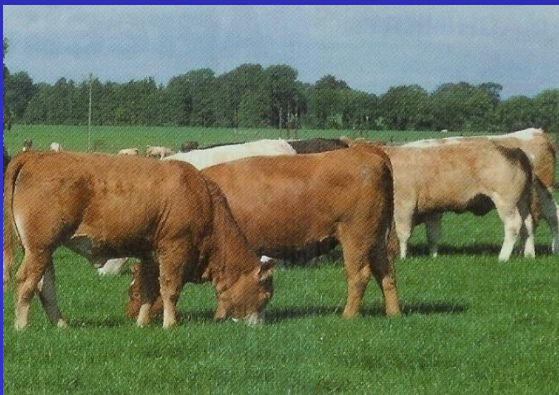
- Calves artificially reared to weaning at 6-9 weeks old. It is possible to turn out calves in mid-summer at 3 months old. At pasture they should be fed ~2kg of concentrates per head per day
- Calves housed at 6-7 months old at approx 200-220kg



Spring born calves

Semi-Intensive

- An 18 month beef system with the cattle slaughtered 'off grass' in the autumn at 450-525kg.
- Late maturing breed types i.e. Charolais x Holstein steers, are unlikely to reach slaughter condition off 'autumn grazing' in 18 month semi-intensive systems - WHY?



Spring born calves

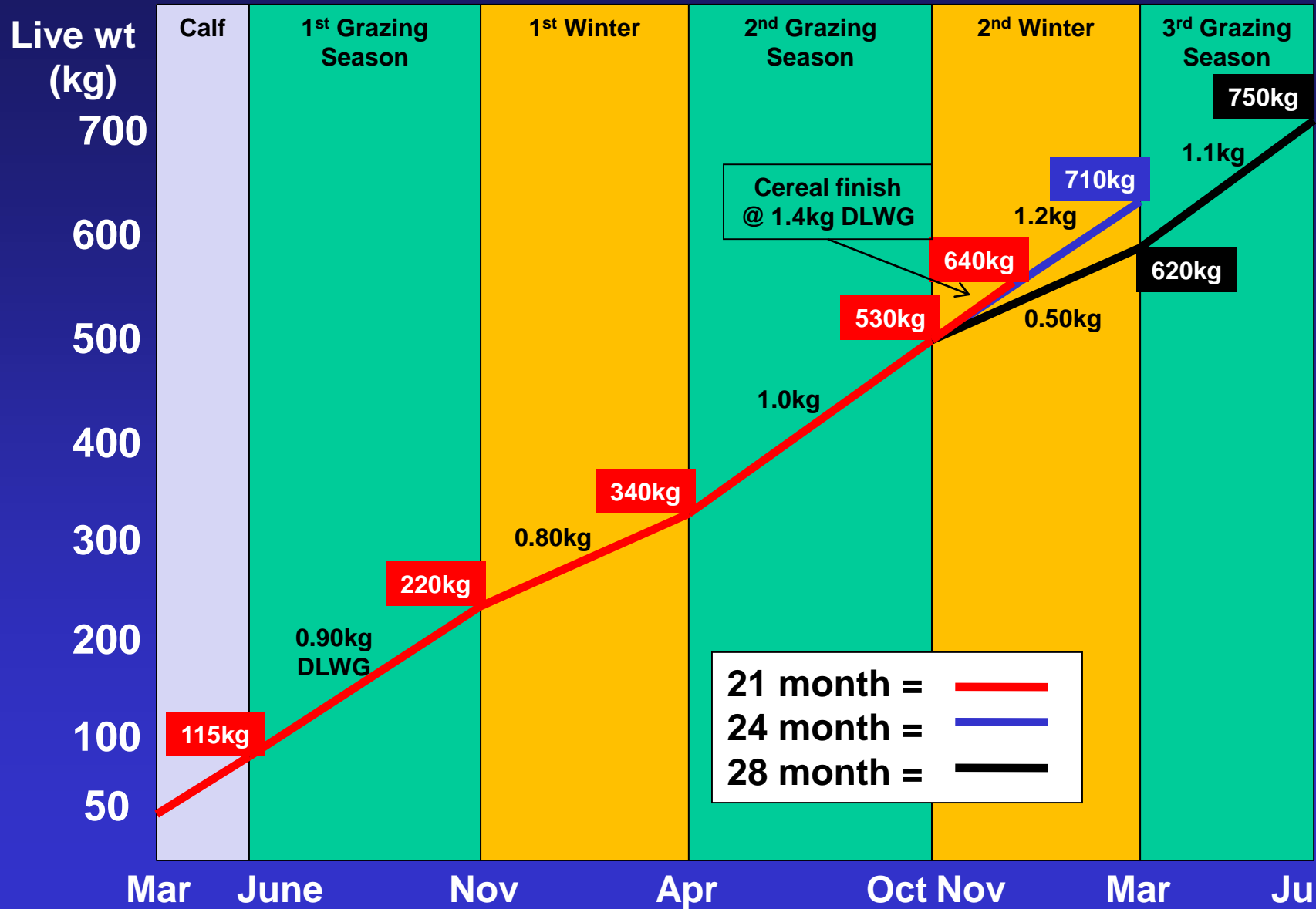
Extensive

- 24-30 month systems with cattle either finished 'out of yards' in the spring at 2 years old or 'off grass' in autumn at 30 months
- Cattle have 2 or 3 summers at grass and these systems utilise compensatory growth
- The common system for spring born late maturing breed types is '24 month beef' i.e. finishing the cattle 'out of yards' in the Spring



Continental cross dairy-bred Spring born steers

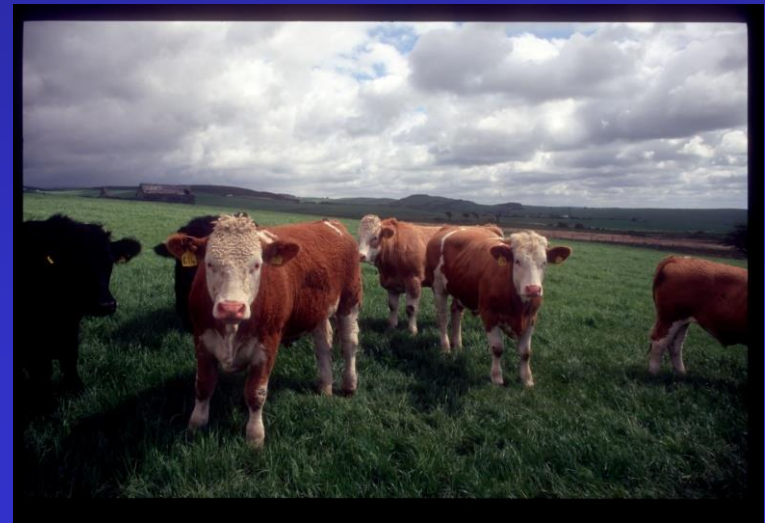
Targets for 21, 24 & 28 month systems



(Keane et al., 2003)

Grazing systems

- Grazing systems
 - Set stocking (continuous grazing)
 - Strip grazing
 - Rotational
 - 5-10 day paddocks
 - Leader-follower
 - Paddock
 - 1 day or ½ day paddocks



Continuous grazing (Set stocking)



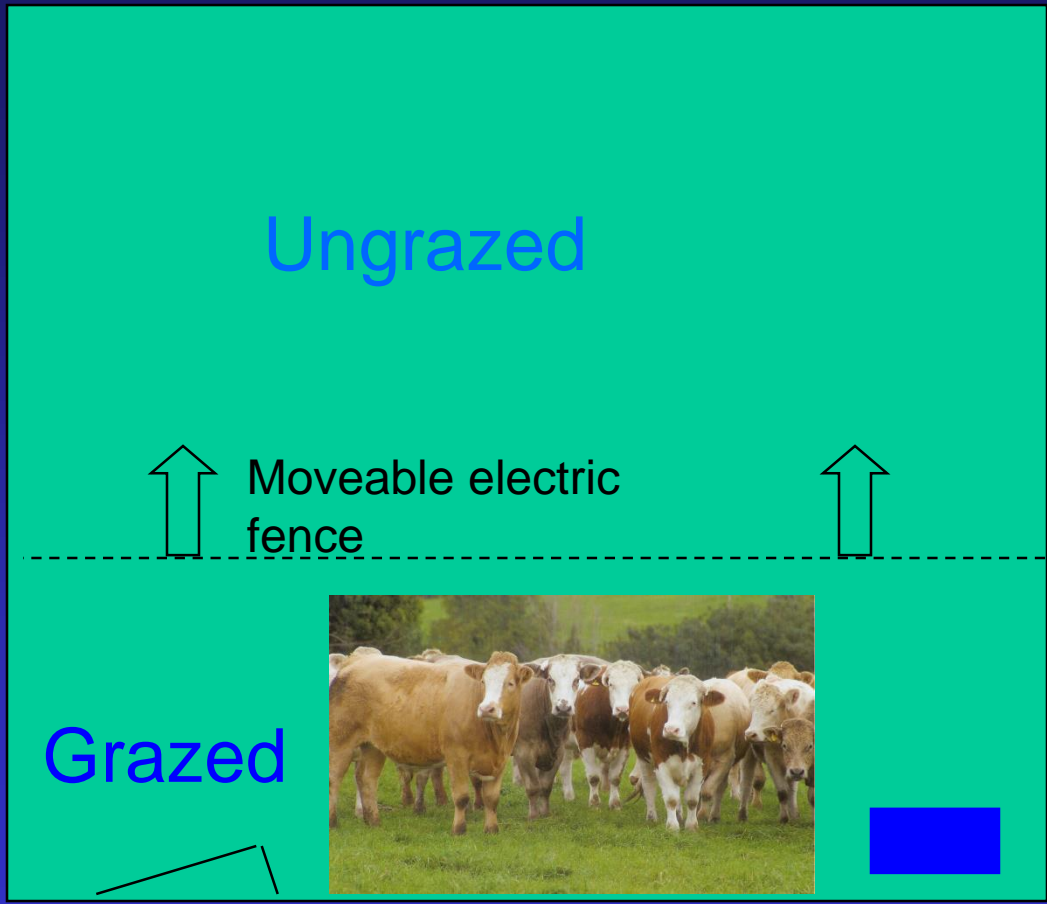
Permanent fence



Water trough

Target sward height = 6-9cm

Strip grazing



Permanent fence

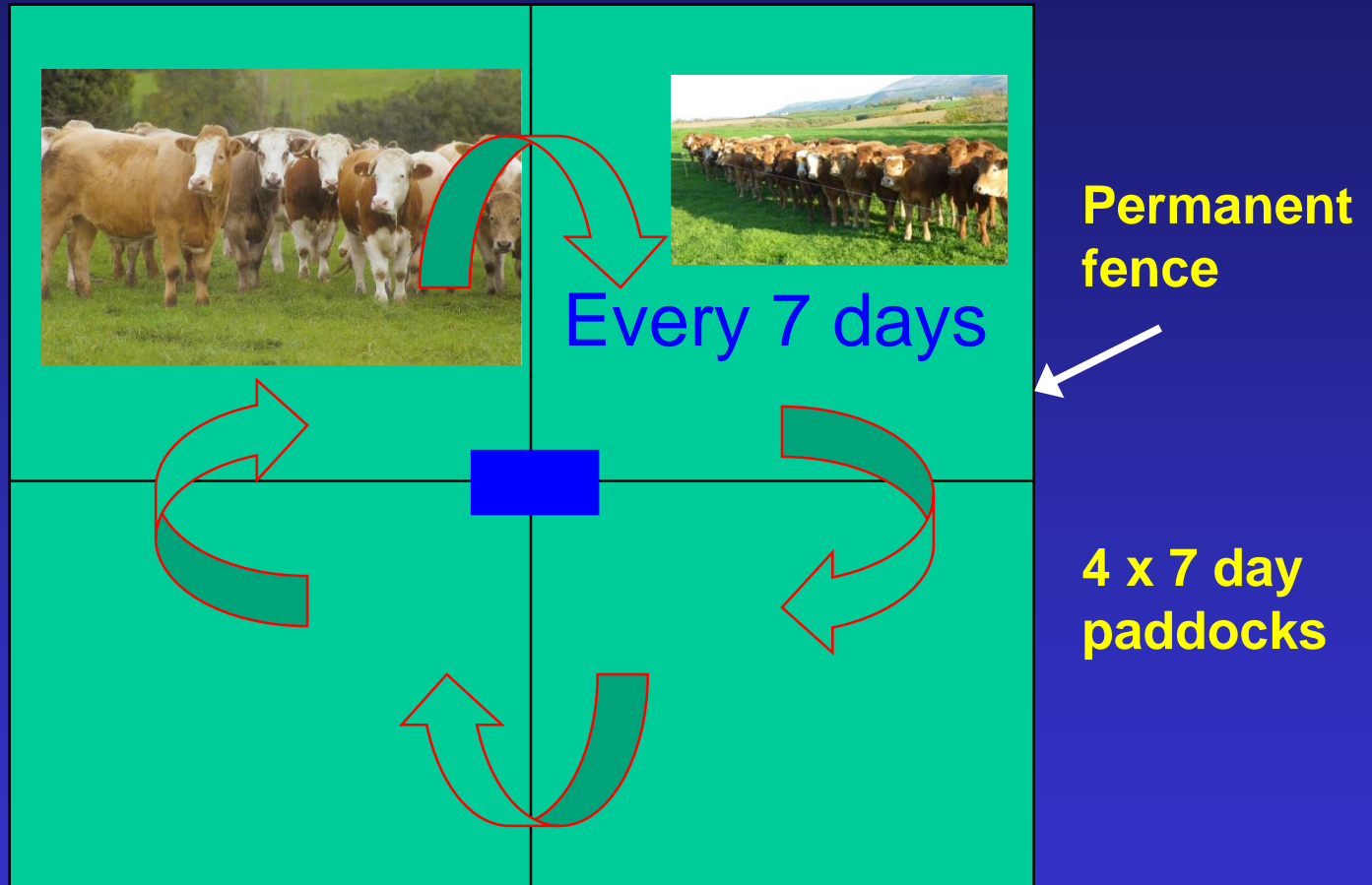
N.B. Could use back fence



The fence is moved once / twice per day

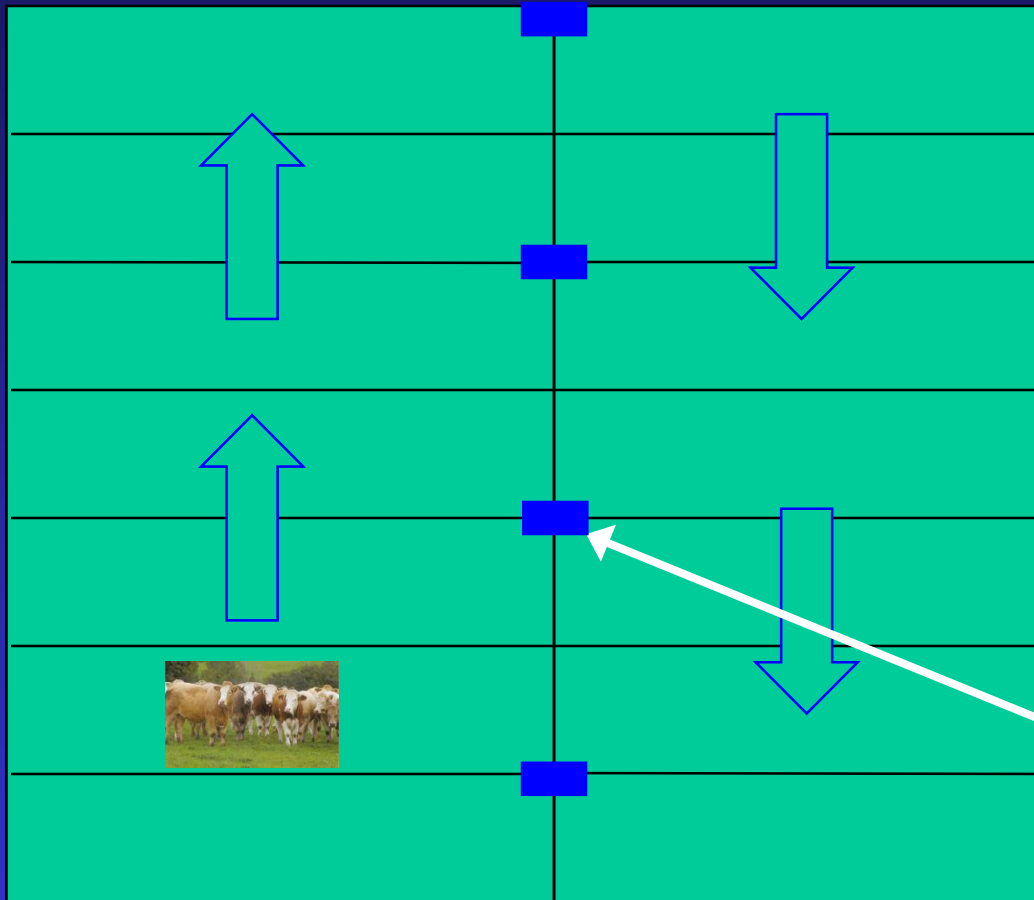
Rotational Grazing & Leader Follower

Ideal for farms with cattle in their 1st and 2nd grazing season



Enter paddock @ 10-15cm sward height.
Exit paddock @ 5-7 cm

Paddock grazing for beef cattle



Movable or permanent water troughs



No tracks required!

Enter paddock @ 2,500-3,000 kg DM/ha.

Exit paddock @ 1,500kg DM/ha

Set stocking versus Rotational/Paddock

Rotational/Paddocks	Set Stocking/Continuous
Easier to control grass height	Less fences & water troughs
Can conserve excess grass	Easier to combine grass with rotation
Increased grass utilisation (+50-90%)	Less poaching

Set stocking versus Rotational versus Paddock

Strategy	Annual yield (t DM/ha)	Utilisation (%)	Useable yield (t DM/ha)	Percentage increase
Set stocking	8.5	50	4.3	
Rotational	10.2	65	6.6	56%
Paddock	10.2	80	8.2	92%



(Source: EBLEX BRP Manual No. 8)



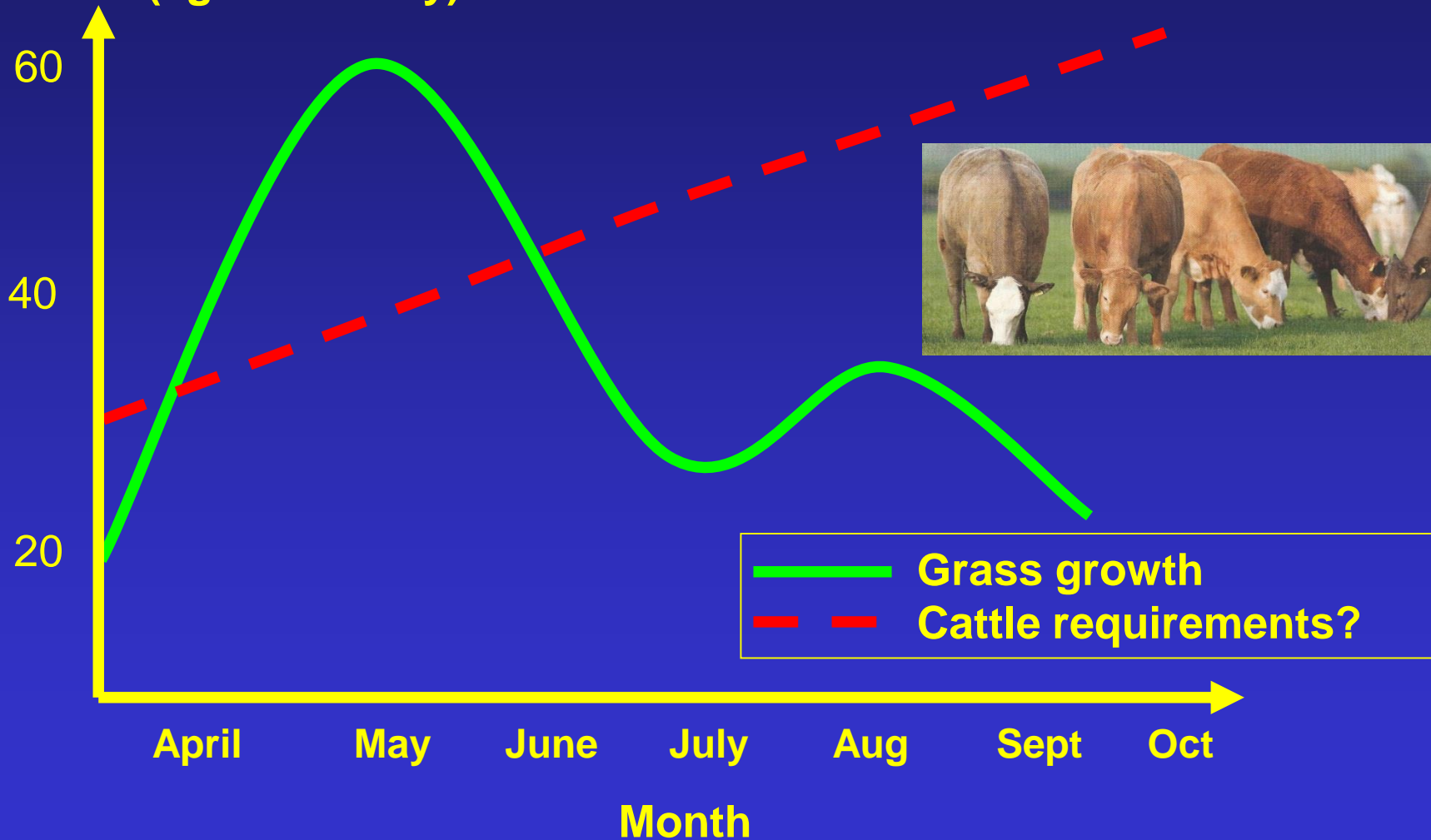
Management of beef cattle at grass

- Grass growth is seasonal
- Highest growth is usually in MAY
- The target DLWG at grass is 1.0kg



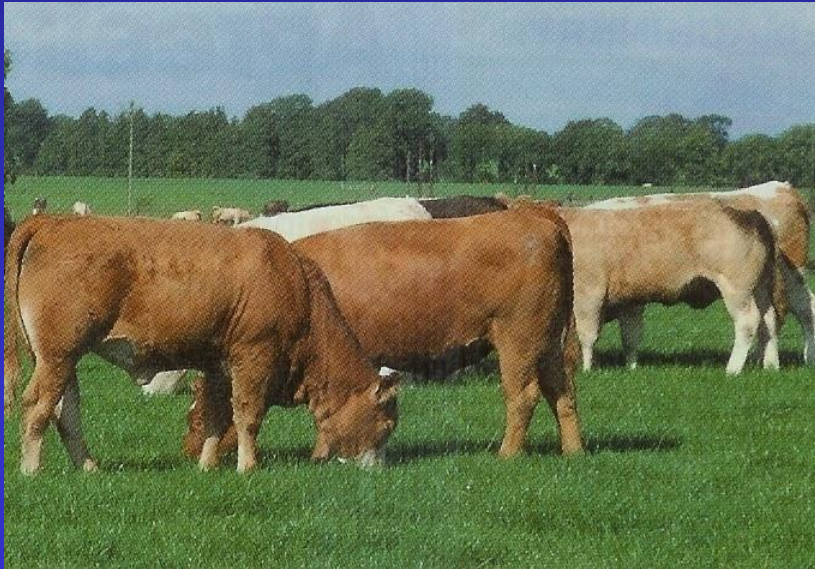
Seasonal production of grass (beef & sheep farms)

**Grass
Growth (kg DM/ha/day)**



Beef cattle at grass on recorded units
seldom achieve the target DLWG of
1.0kg per day

WHY?

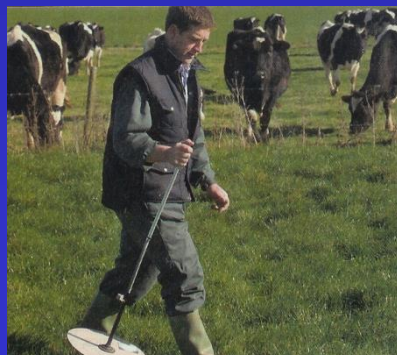


How to achieve target DLWGs at grass

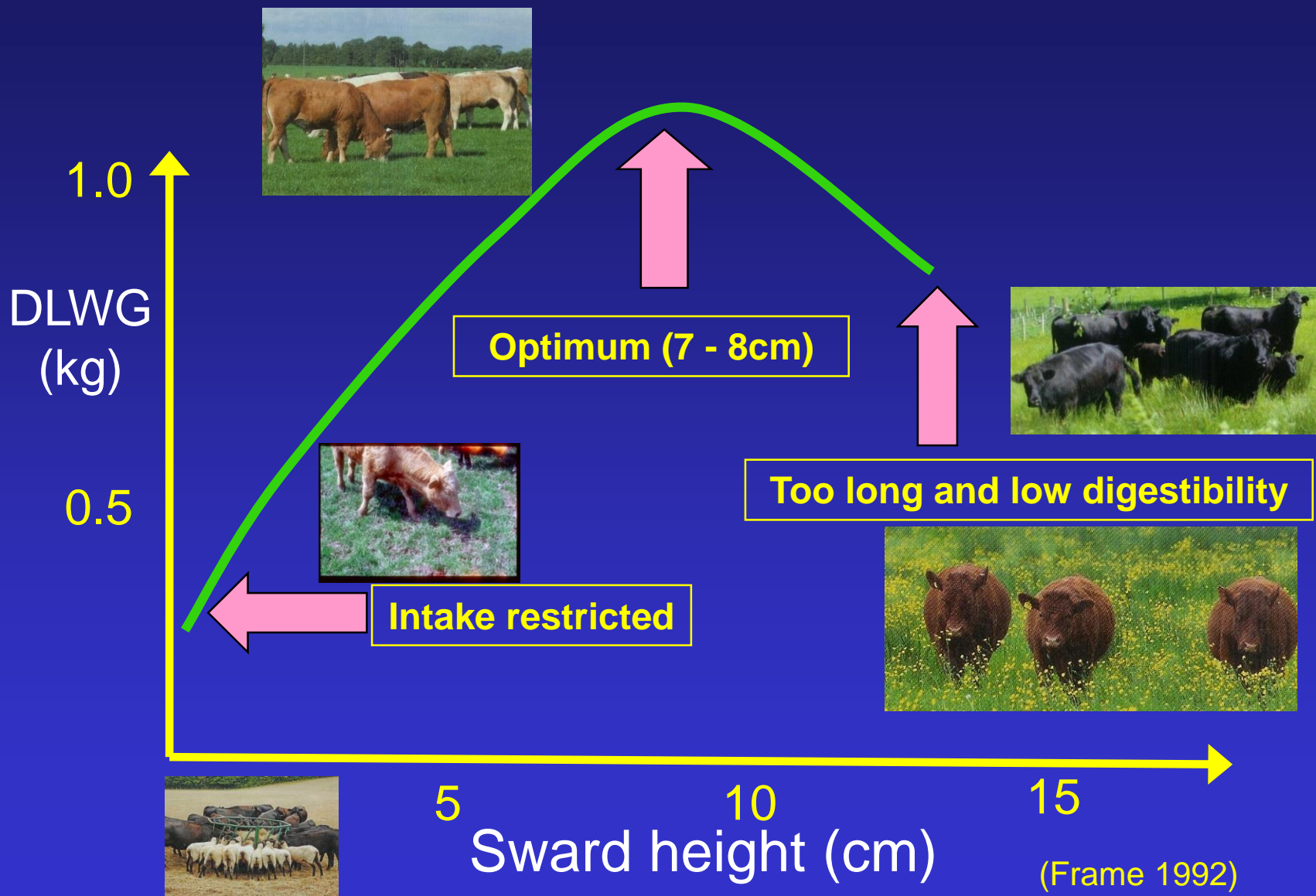
- Monitor grass availability to maintain a leafy pasture at target sward heights

Class of stock	Grazing period	Rotational grazing		Set stocking (cm)
		Pre-graze (cm)	Post-graze (cm)	
Cows and calves	Turn-out - May	10-14	5-6	5-6
	June-July	12-15	7-8	7-9
	Aug-Nov	12-15	8-9	7-9
Growing/finishing	Turn-out - May	10-12	5-6	5-6
	June-July	10-14	6-7	6-7
	Aug-Nov	10-15	7-8	7-8

(Source: EBLEX BRP Manual No. 8)



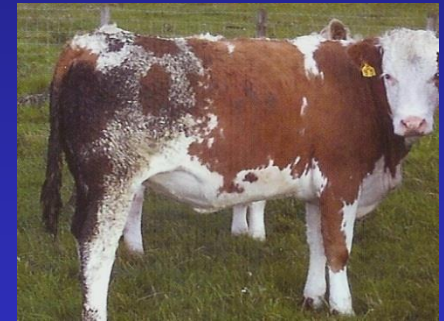
DLWG's at a range of sward heights with set stocking



- Graze cattle on 'dense' Perennial Ryegrass/White Clover swards
 - Clover has the potential to fix 150kgN/ha/yr worth ~ £130/ha
 - Intakes can increase by 20% with a 25% increase in DLWG with a clover rich sward
- Prevent liver fluke, gut and lung worm problems. Cattle in their first grazing season have no immunity to gut and lung worm
- Set target stocking rates (kg liveweight/ha)

Guideline Grazing Stocking Rates

	kg live wt/ha
Turnout to mid June	2,000-2,500
Mid June - End August	1,500-2,000
Early Sept to Housing	1,000-1,500

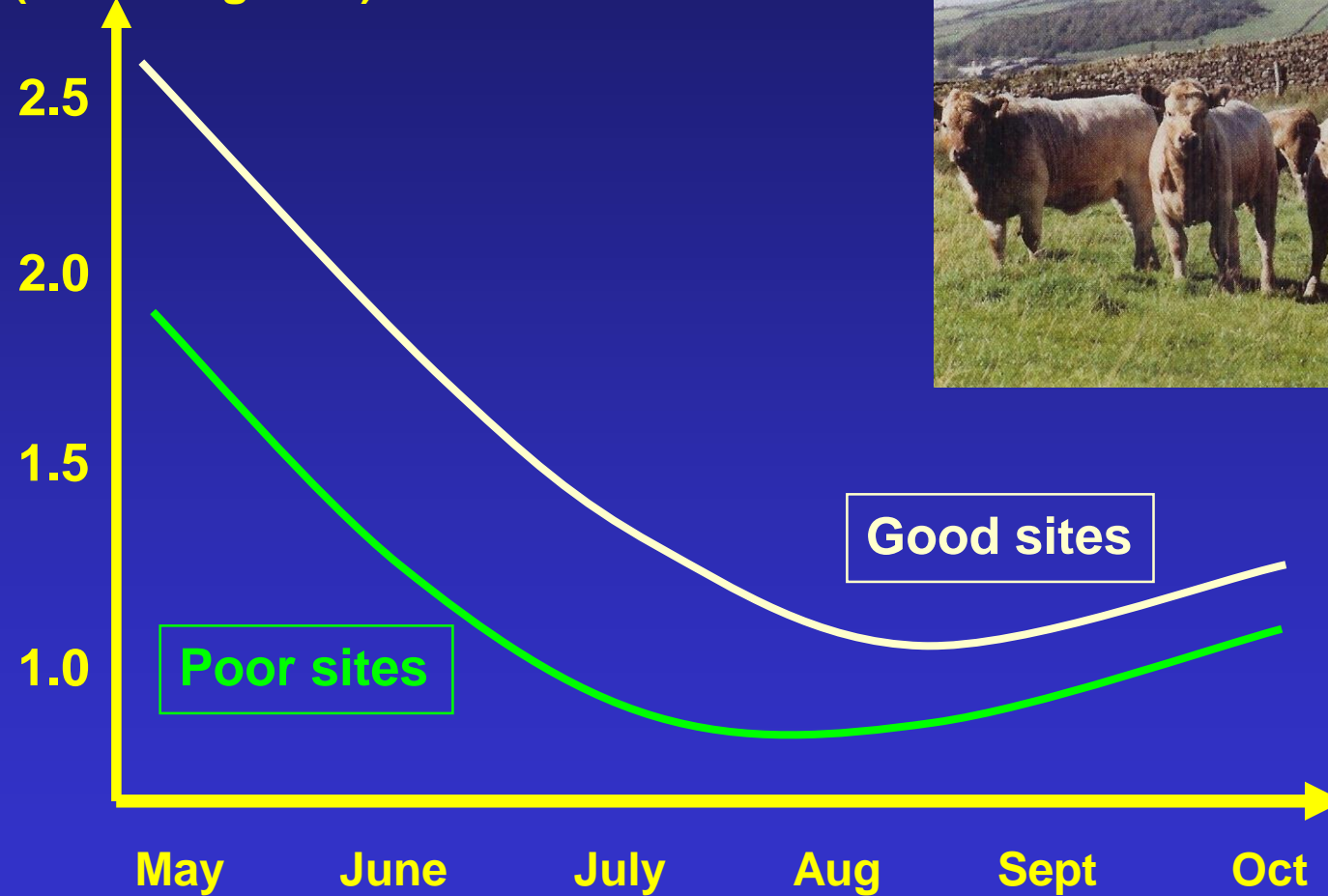


PGE



Recommended pattern of stocking during the grazing season

Stocking Rate
(t live weight/ha)



Good sites

Poor sites

- Manage grassland with a 1-2-3 grazing & conservation strategy
- Fence off approximately 20% of the initial grazing area. If grazing availability is subsequently good then this can be made into silage



The 1-2-3 grazing/conservation system

Spring



Summer



Autumn



- Apply early and frequent applications of Nitrogen fertiliser within NVZ constraints, OR encourage and maintain clover. Aim for 30+% clover in swards



- Optimise compensatory growth at grass. ‘Store winter’ early maturing breed types @ 0.4-0.5kg/day and late maturing breed types @ 0.6-0.8kg/day

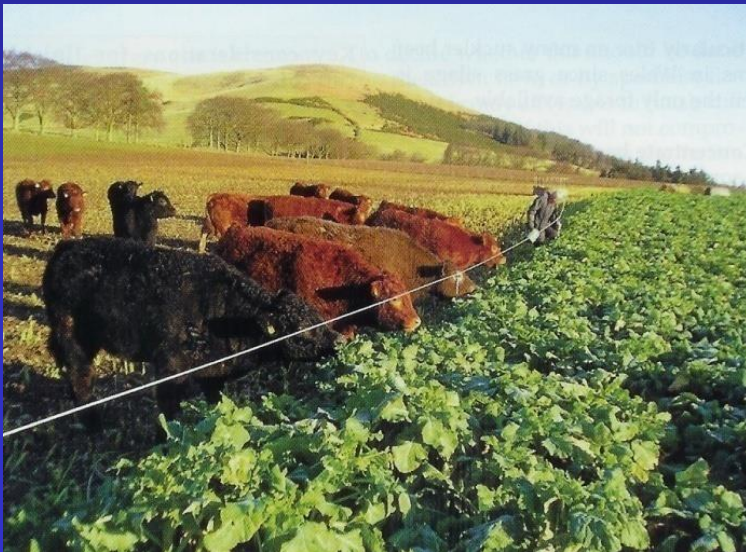
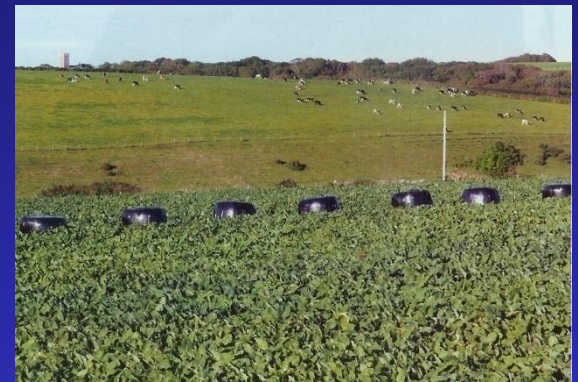
- Strategic use of concentrates/buffer (forage) feeding
 - 2-3 weeks post turnout to cattle <200kg live weight and prior to housing for yard finishing cattle
 - Offer forage when sward heights below 5cm, especially from mid summer
 - Feed concentrates to finishing cattle grazing low (<5cm) sward heights and to cattle finishing off autumn grass



- Extended grazing

- Early turnout of some stock on to silage fields?

- Alternative forage crops (brassicas)

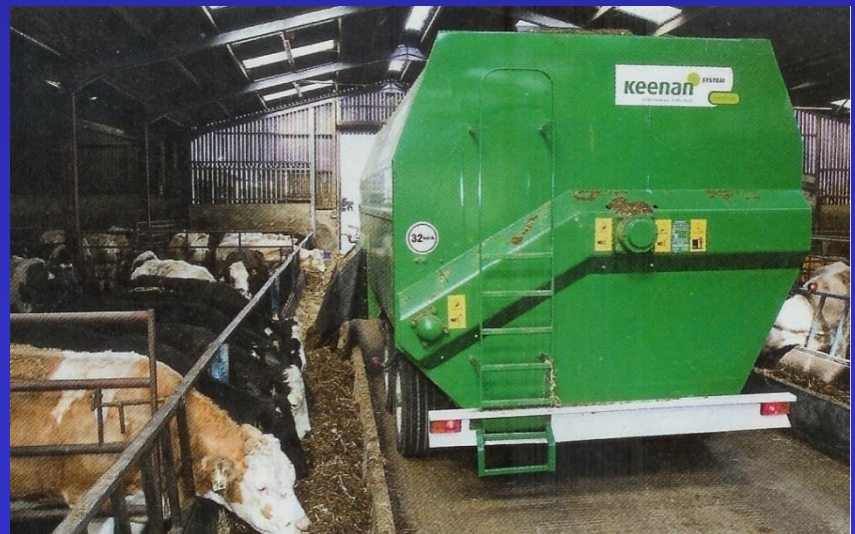
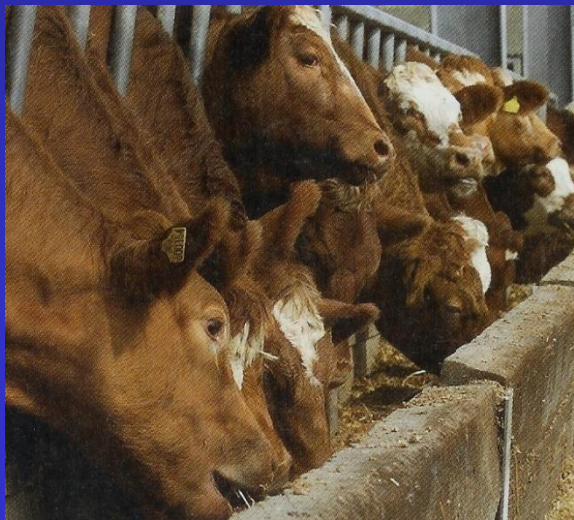


Sometime factors beyond our control
influence cattle DLWGs!



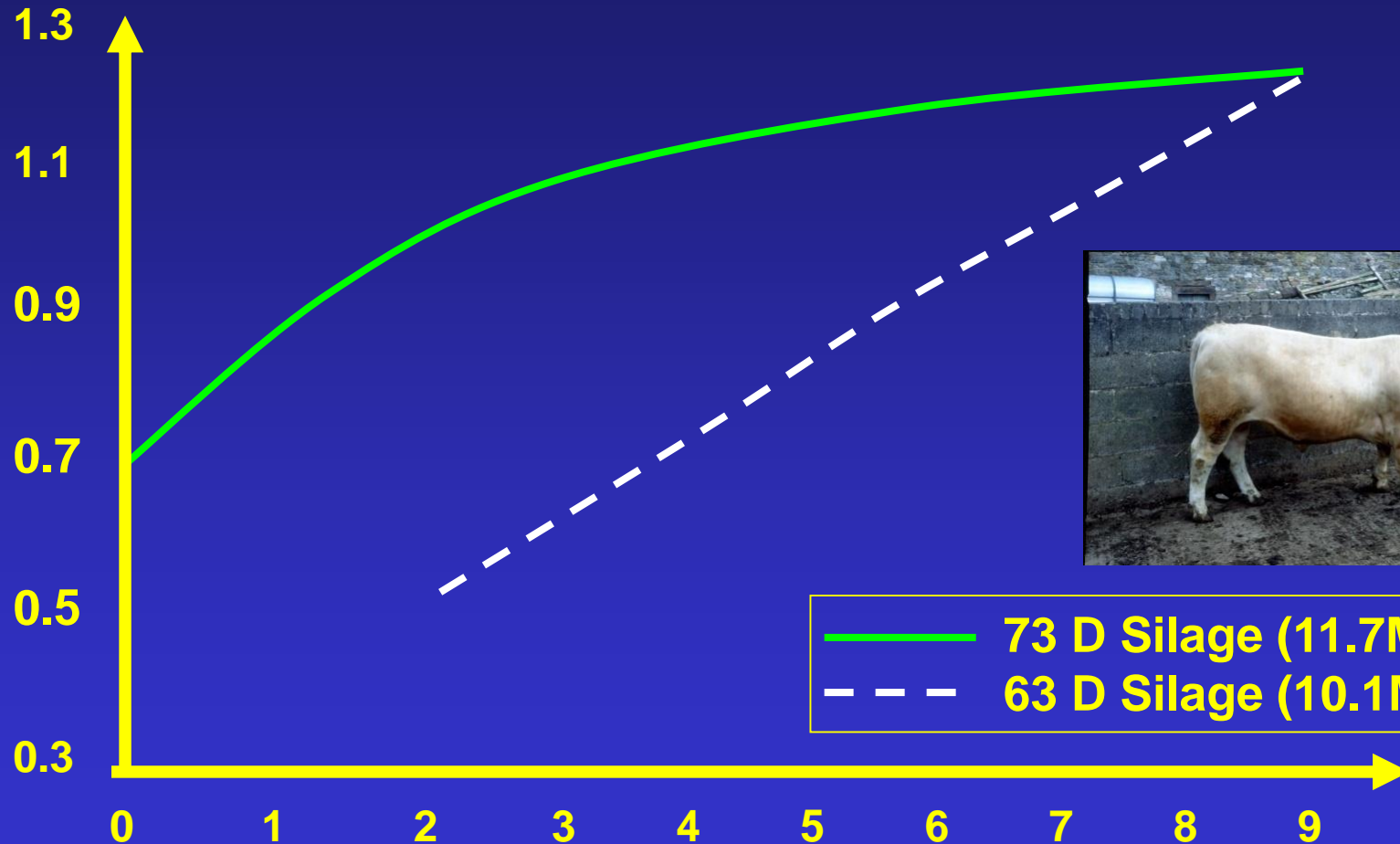
Yard finishing

- Cattle finished 'out of yards' fed *ad lib* good quality silage plus 2 to 6kg concentrates/head/day to achieve target DLWG's of 1.0-1.2kg. Cattle selected for slaughter at fat class 3-4L
- Quantity of concentrates fed determined by silage quality



The effect of silage quality and level of concentrate feeding on the rate of DLWG in beef cattle

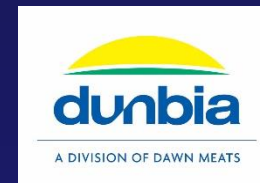
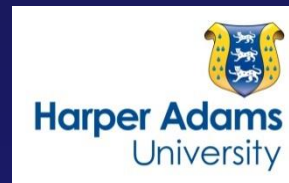
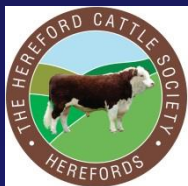
DLWG
(kg)



— 73 D Silage (11.7ME)
- - - 63 D Silage (10.1ME)



Concentrates (kg/day)

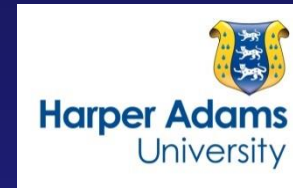


Low cost out door forage system for dairy-bred beef October born calves finished June/Aug @ 20-22 months old

A BREXIT BEEF SYSTEM!

Performance targets	kg	kg/day
Live weight of reared calf at end of 3 months rearing period	120	
Live weight at turnout in March	180	
- Target DLWG at grass		>1.0
Live weight at end of October	370	
- Target DLWG on fodder beet		>0.7
Liveweight at end February	460	
- Target DLWG at grass during second grazing season		1.3
Liveweight at slaughter @ 20-22 months old	620	
Hereford x Fr carcass weight @ 53% KO grading O+/R 3/4L	330	
Holstein carcass weight @ 50% KO grading P+/-O 3	310	

Low cost out door forage system for dairy-bred beef







26 July 2017



30 August 2017

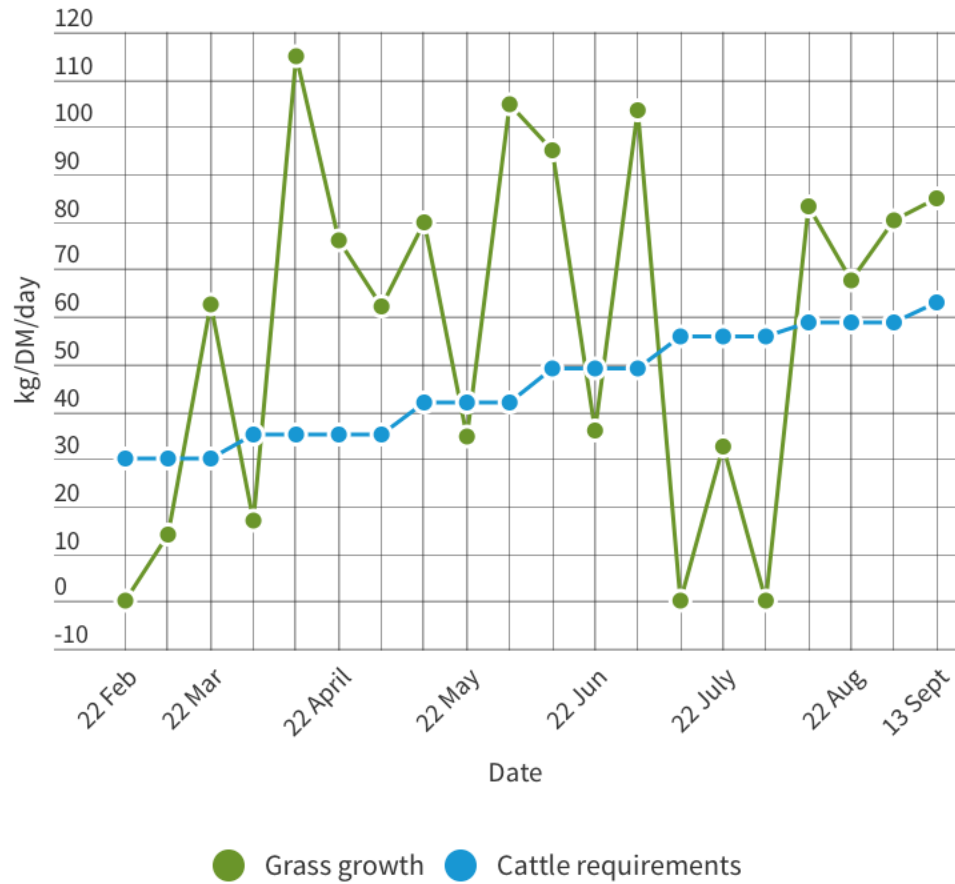


6 September 2017



26 September 2017

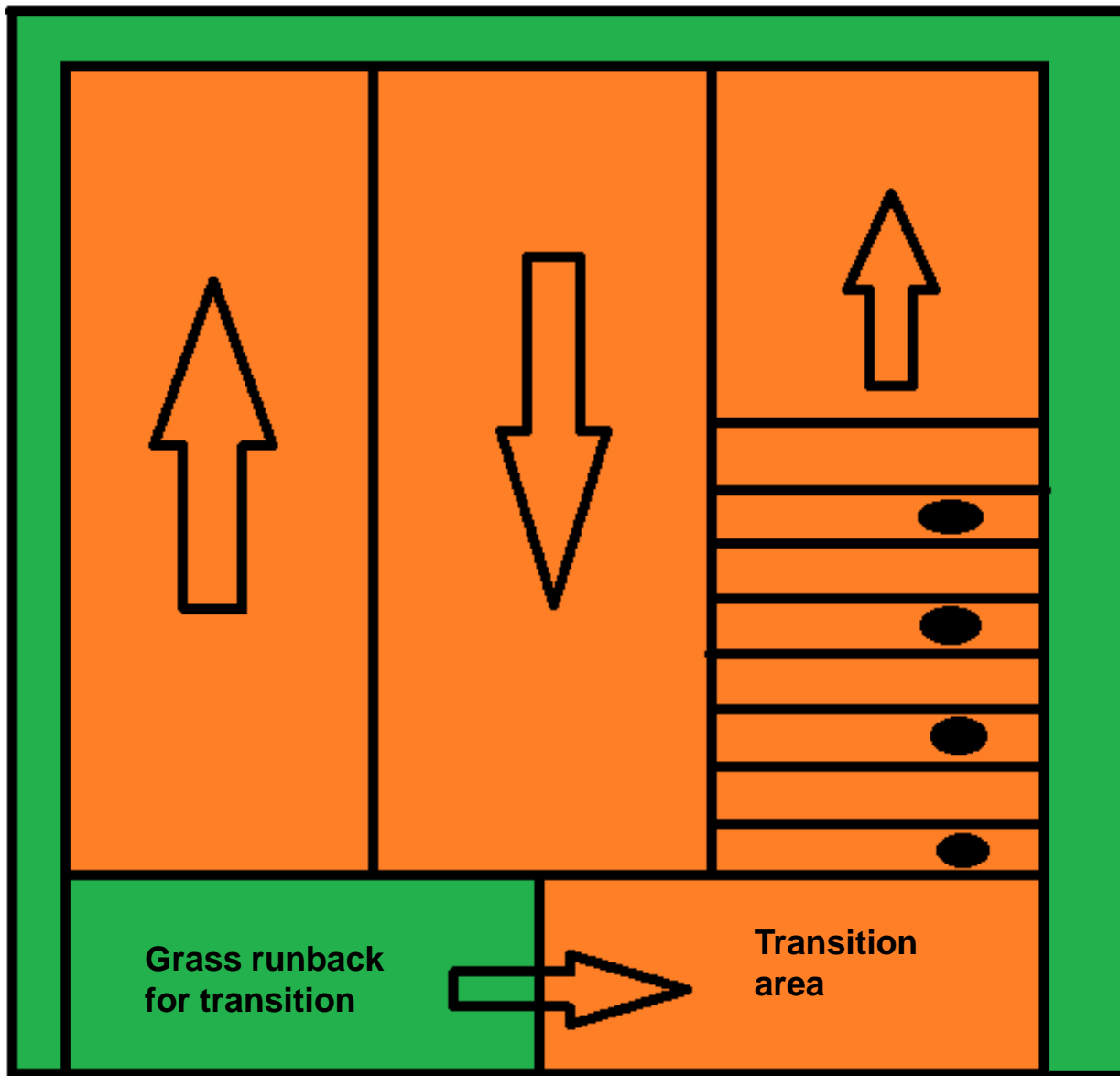
Grass growth and demand





30 October 2017

Transitioning cattle onto fodder beet



Green = Grass runback

Orange = Fodder beet

Black circles = Silage bales

Arrows = direction of grazing



4 December 2017



14 December 2017



8 March 2018



21 March 2018



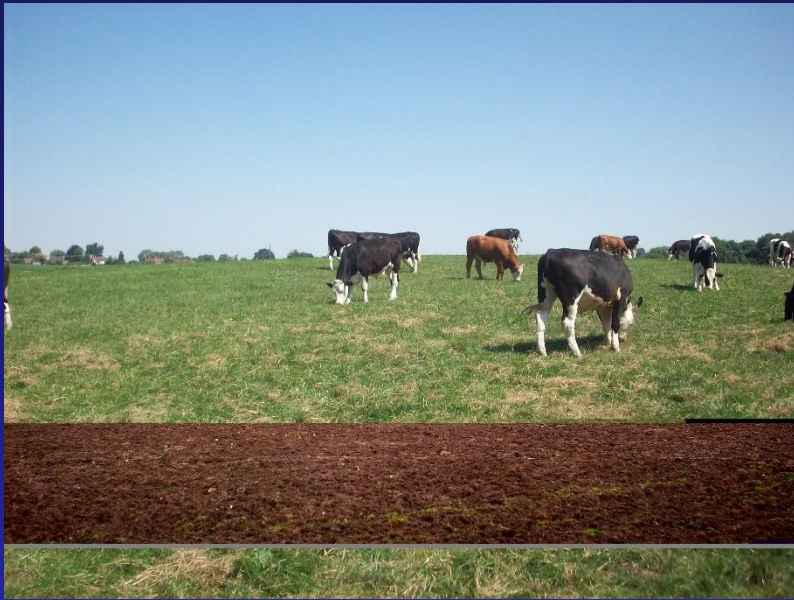
12 May 2018



7 June 2018



12 June 2018



7 July 2018



29 August 2018



- Supplementary feeding of 5kg of concs commenced on the 21st of August





- Remaining 5 Holsteins slaughtered 10 Jan 2019

Overall cattle performance

	Hereford x Hol/Fr	Holstein-Friesian
Slaughter age (days)	730 (23.9mo)	774 (25.4mo)
Slaughter wt (kg)	623	633
Carcase wt (kg)	321.3	317.9
Kill out %	51.6	50.2
DLWG from birth (kg) ¹	0.792	0.760
Daily carcass gain from birth (kg)	0.441	0.412
Conformation ² (1-7)	3.0 (O+)	1.6(P+/-O)
Fat classification ² (1-7)	3.5 (3/4L)	2.6 (2/3)
Carcass price (£/kg)	3.52	3.01
Carcass value (£)	1,131	957

1. Assumes birth weight of 45kg
2. EUROP carcass classification: Conformation: P+=1 and E=7. Fat class: 1=1 and 5H=7

Further Information available on the EBLEX website

- EBLEX Beef BRP Manual 4. Beef production from the dairy herd.
- EBLEX BEEF AND SHEEP BRP MANUAL 8 (2013) Planning grazing strategies for Better Returns.
- EBLEX Beef BRP Manual 7 Feeding growing and finishing cattle for Better Returns.
- EBLEX Better Returns Programme (2008) Out-wintering on forage crops.
- EBLEX BEEF AND SHEEP BRP MANUAL 1 (2008) Improving pasture for Better Returns.
- EBLEX Beef Action for Profit. Better Returns from Continental-Cross Steers & Heifers



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