



# Semi-Intensive & Extensive Beef Production





#### Simon P Marsh

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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



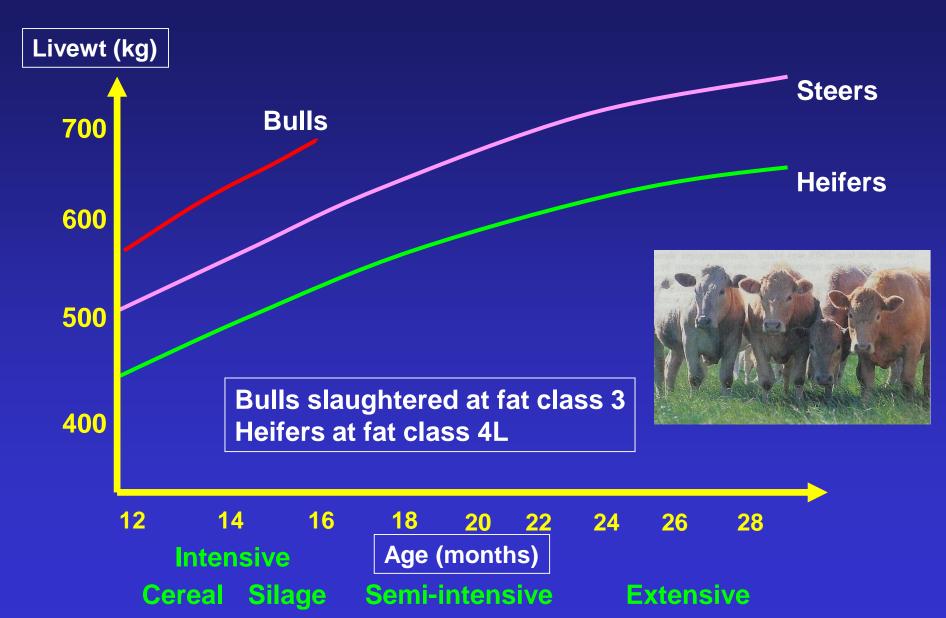
•	Later slaughter often results in heavier slaughter wts i.e.			
	Autumn born Steers	Late maturing breed type i.e. Limousin x Holstein	Early maturing breed type i.e. Hereford x Holstein	
	18 month system	625kg	575kg	
	24 month system	675kg	625kg	

- 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 carcase 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

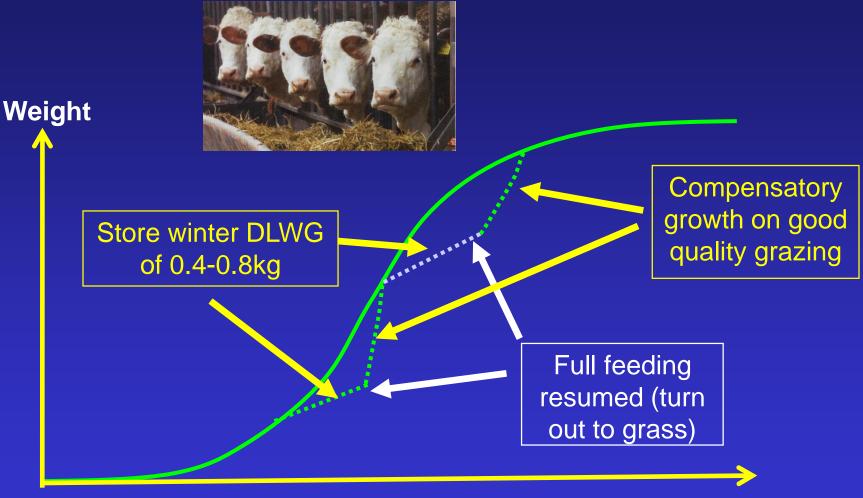




### **Compensatory Growth**

- 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



Age

### 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







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

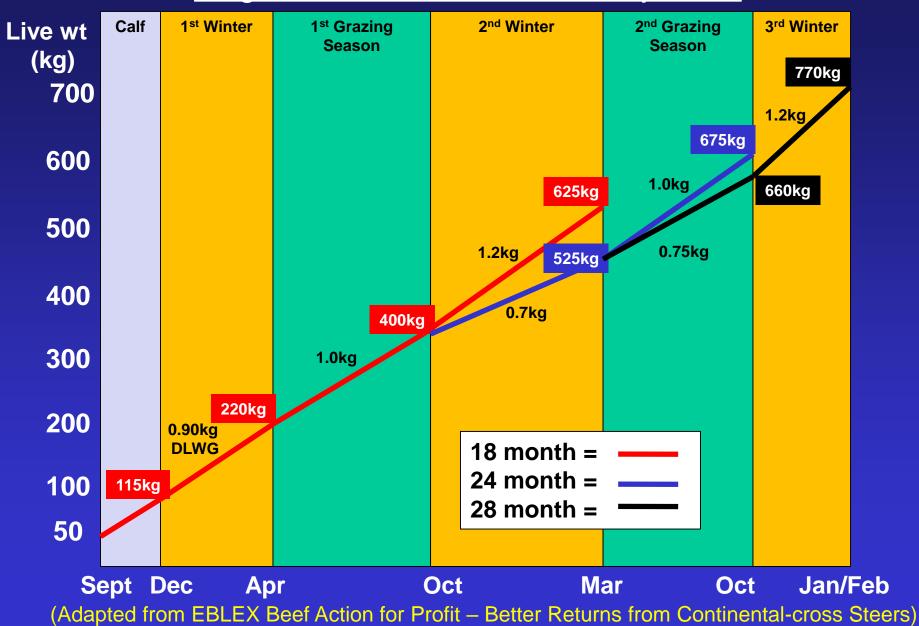
#### Extensive

- 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





#### <u>Continental cross dairy-bred Autumn born steers</u> <u>Targets for 18, 24 & 28 month systems</u>



## 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

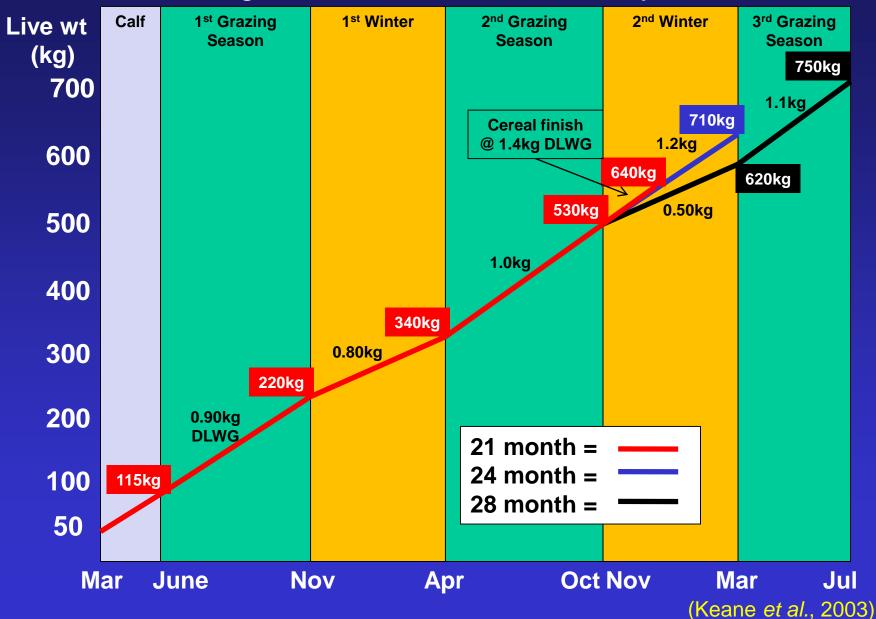
#### Extensive

- 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



# Grazing systems

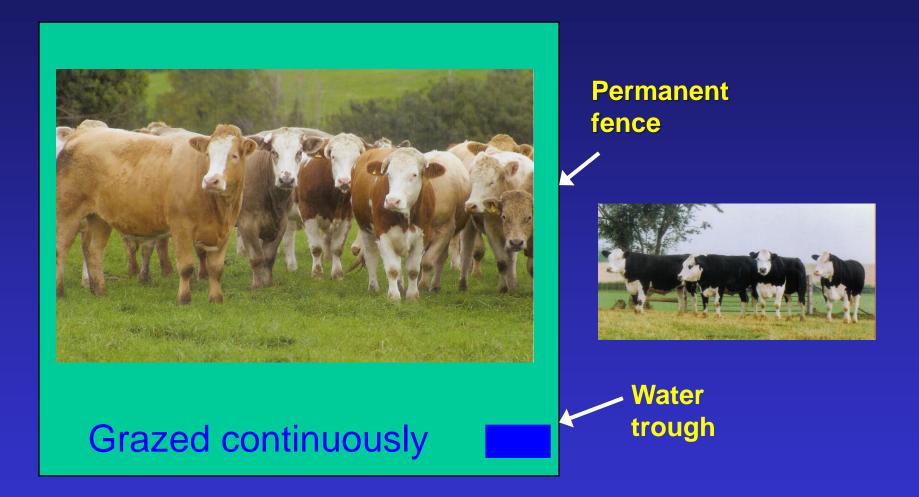
- Grazing systems
  - Set stocking (continuous grazing)
  - Strip grazing
  - Rotational
    - 5-10 day paddocks
    - Leader-follower
  - Paddock
    - 1 day or 1/2 day paddocks





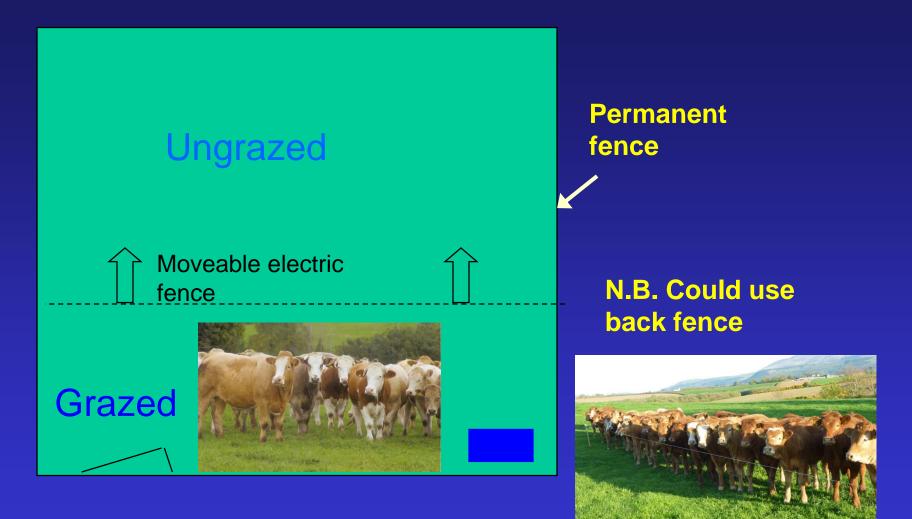


# Continuous grazing (Set stocking)



Target sward height = 6-9cm

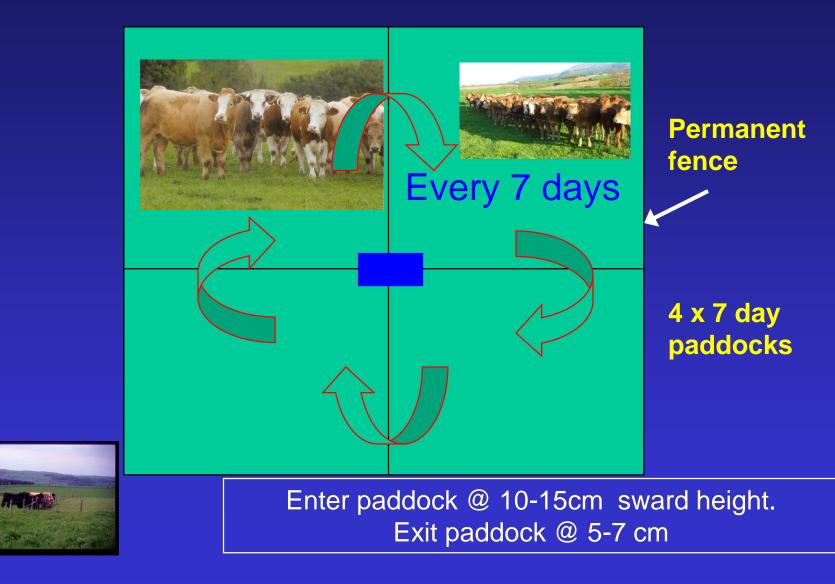




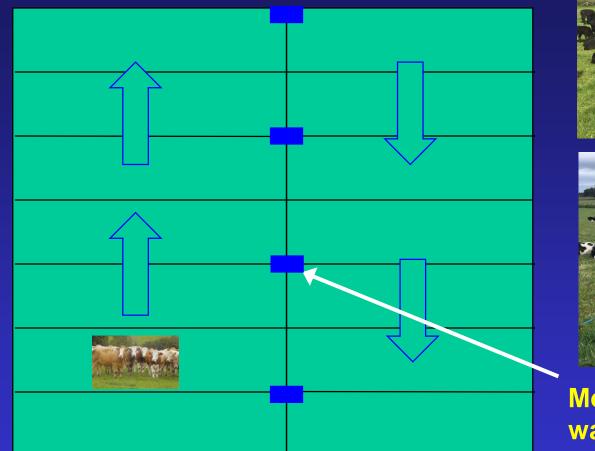
The fence is moved once / twice per day

### **Rotational Grazing & Leader Follower**

#### Ideal for farms with cattle in their 1<sup>st</sup> and 2<sup>nd</sup> grazing season



# Paddock grazing for beef cattle





# Movable or permanent water troughs



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

Exit paddock @ 1,500kg DM/ha

No tracks required!

#### 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)



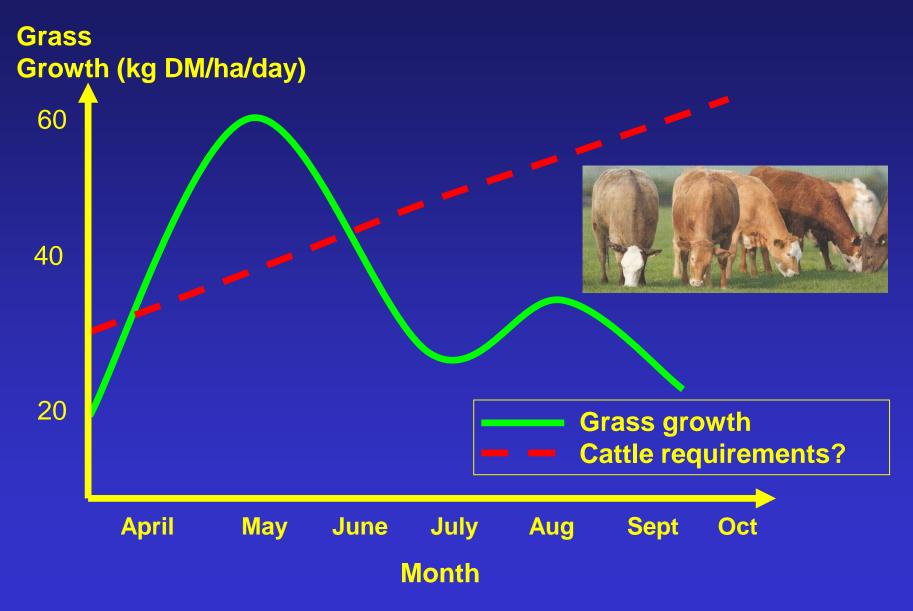
### Management of beef cattle at grass

- 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)



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)	Set Stocking (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

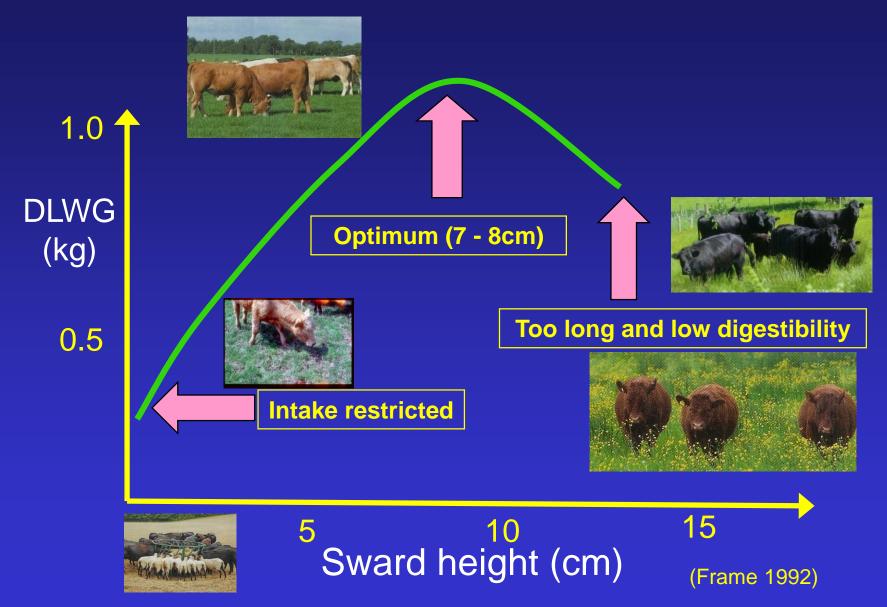




#### (Source: EBLEX BRP Manual No. 8)

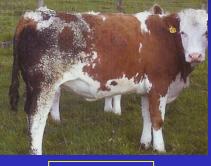


# DLWG's at a range of sward heights with set stocking



- 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)
   <u>Guideline Grazing Stocking Rates</u>

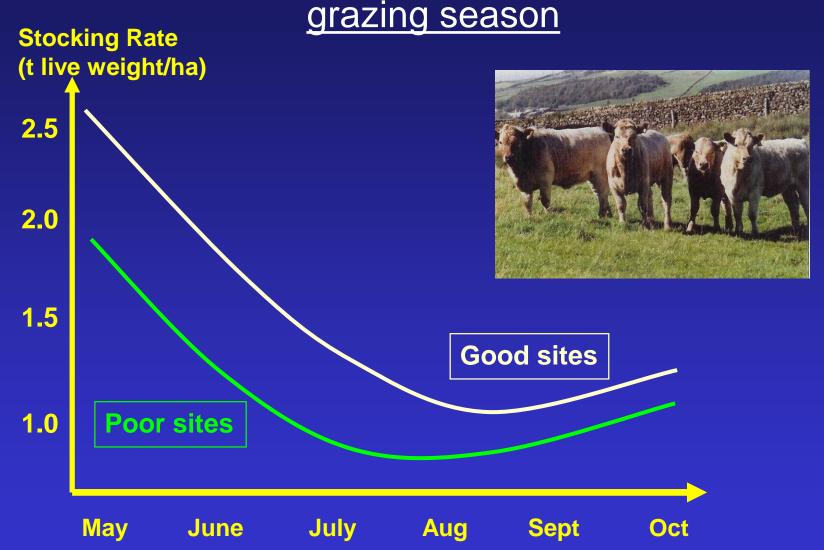
	kg live wt/ha
Turnout to mid June	2,000-2,500
Mid June - End August	1,500-2,000
Early Sept to Housing	1,000-1,500



PGE

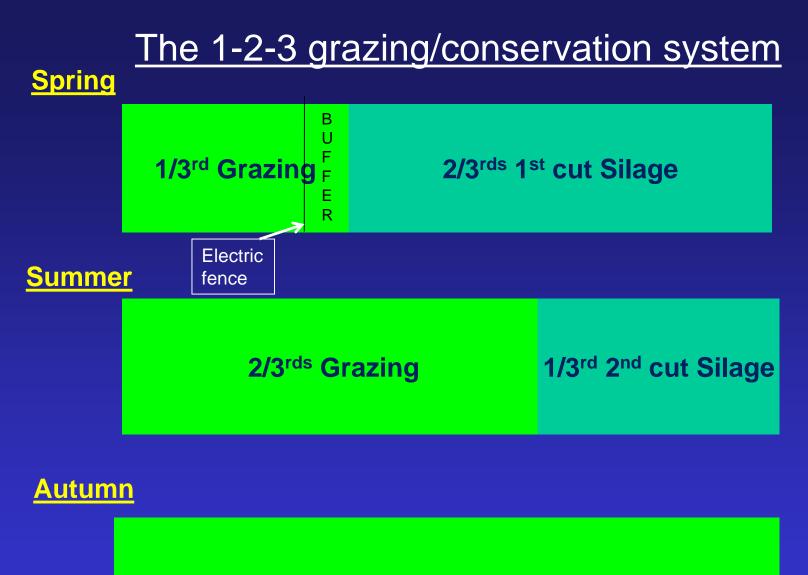


# Recommended pattern of stocking during the



- 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





Grazing

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



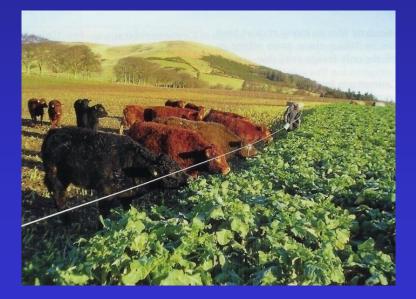


 Optimise compensatory growth at grass. 'Store winter' early maturing breed types @ 0.4-0.5kg/day and late maturing breed types @ 0.6-0.8kg/day

- 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!





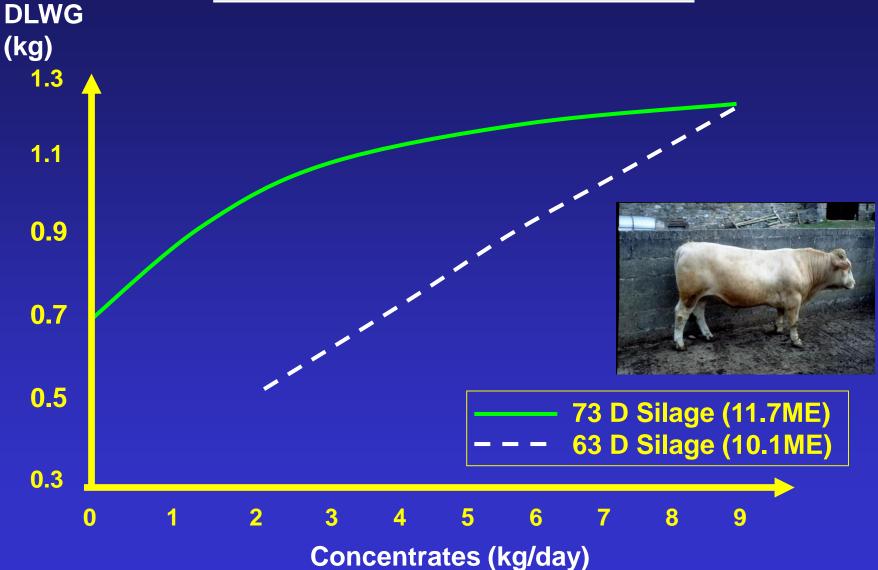
# Yard finishing

- 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





# <u>The effect of silage quality and level of concentrate feeding</u> on the rate of DLWG in beef cattle





# 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 carcase weight @ 53% KO grading O+/R 3/4L	330	
Holstein carcase 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

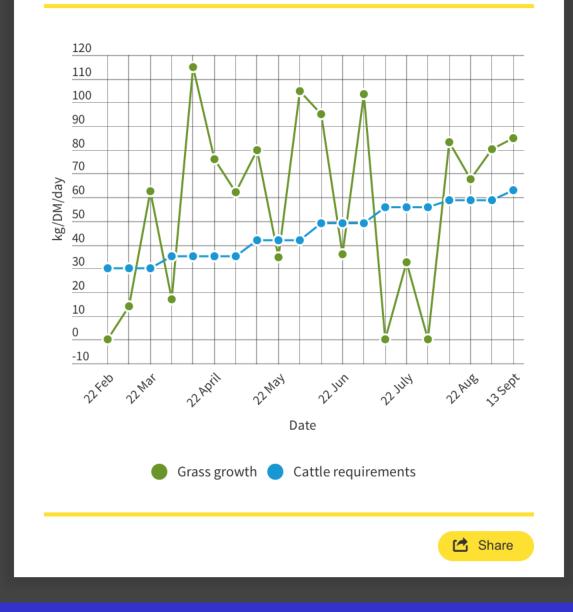






26 September 2017

## Grass growth and demand





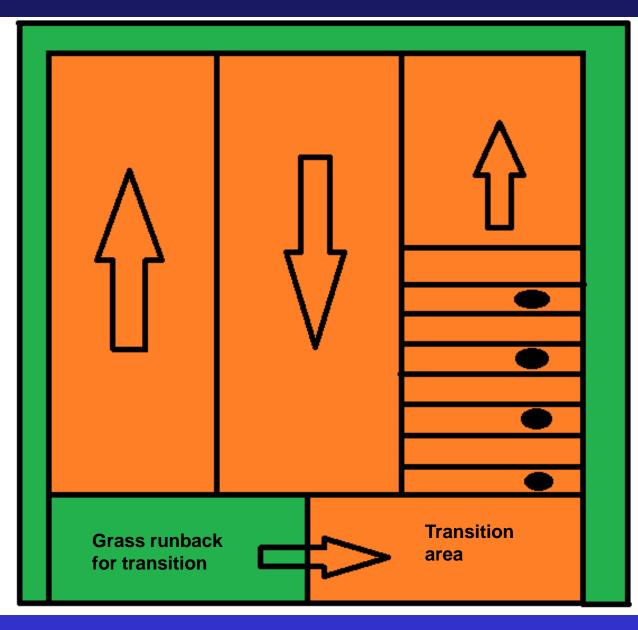






30 October 2017

## Transitioning cattle onto fodder beet



Green = Grass runback Orange = Fodder beet Black circles = Silage bales Arrows = direction of grazing







### 4 December 2017







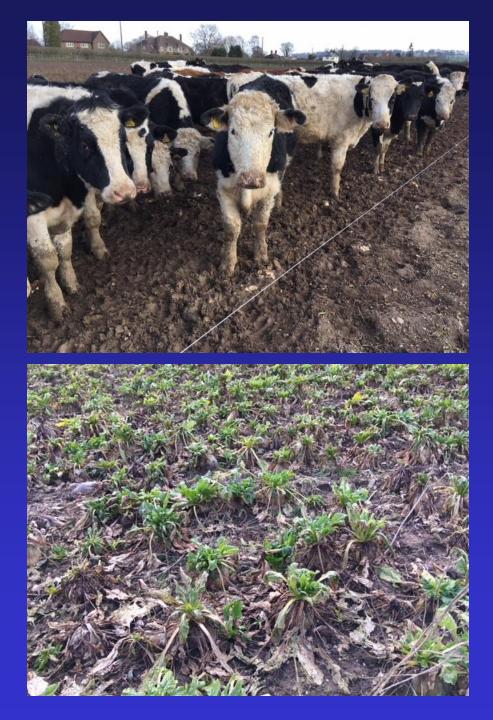
## 14 December 2017

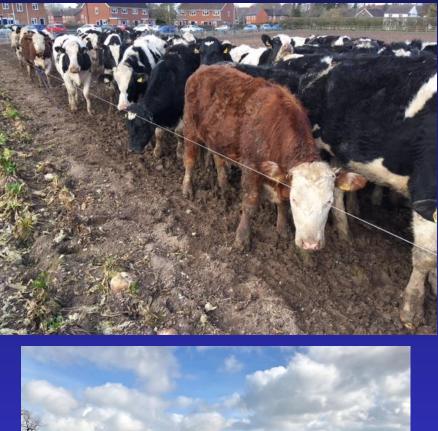






8 March 2018







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 21<sup>st</sup> 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) <sup>1</sup>	0.792	0.760
Daily carcase gain from birth (kg)	0.441	0.412
Conformation <sup>2</sup> (1-7)	3.0 (O+)	1.6(P+/-O)
Fat classification <sup>2</sup> (1-7)	3.5 (3/4L)	2.6 (2/3)
Carcase price (£/kg)	3.52	3.01
Carcase value (£)	1,131	957

1. Assumes birth weight of 45kg

2. EUROP carcase classification: Conformation: P+=1 and E=7. Fat class: 1=1 and 5H=7





### **Pioneering beef trial launched**

In a first of its kind trial Harper Adams University is investigating whether they can finish dairy-bred beef from forage based diets by 20-21 months. *Farmers Weekly* will be following their progress over the next year. In the first article, Rhian Price reports on the initial results

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LIVESTOCK BEEF

Cattle bounce back after poor growth rates

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How a sheep farmer has

havled feed costs

Kp29

The hard interaction of the second s

Edited by Hayley Parrott | 020 8652 3086 | hayleus

Livestock

Last October, work to investi-gate the feasibility of a low-cost dairy beef production system was launched at Harper Adams Uni-versity, with the aim of maximising output from forage and minimising minimized actions. coupter from forage and minimising winnering costs. The trial involves Ansumo-born Hereford cross Holstein-Friesian and Holstein-Friesian steers, and is being kel by Adas and Harper Adams with finding from AHDB Ber? & Lamb with additional app-port from the Hereford Catle Soci-ey and Dumbia. It is the first stal of air tradicionally opproach consistent batter backscally opproach consistent batter backscall b barley-beef systems. The aim is to finish animals by

21 months old - and therefore eliminase the costs associated with a second winter - using a rotational grazing system and ourwintering animals on fodder beet. Twelve months in and at the end of their first summer grazing period, Rhian Price visited the university to find out how the animals are performine to date.

-

8.2 te field t disions became very poor. Mr Radley says the winner was a mark con-

ee months rearing period

at grass

d grazing season

arcass weight @ 53.5%K0 335

50.5%K0 grading P+/-0.3 315



LOOK OUT FOR

bufi0 a ewe p30 New antibiotic targets set p32

Sheep farmer increases output

### **Dairy-beef study sees** fter being dubious a promising gains off grass to how animals would perform at the start of

ing ing/o

120

460

620

	Hareford citoes	Haistels
	Holstein-Frizelan	Fries in a
Liv eweight at start 22 October 2016	61.6	60.8
Weight at 20 Jan	139	140
Daily Eveweight gain (DLWG) (start 20 January)	0.87	0.97
Weight at turnout (8 March)	191	183
OLWG 20 Jan to 8 Mar	0.89	0.92
Weight at 3 April	197	192
OLWG 8 March to 3 April	53.0	0.36
Weight at 6 September	343	327
0LWG 3 April to 6 September	0.94	0.97
Overall DLWG 20 Jan to 6 September	0.89	0.82

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WEEKLY

Maize guide: Advice on

varieties and establishment

need for peer producers to we gat animals monthly. "If you get a slightly below growth rate I don't tend to panic because I'm a believer in compensa-(e) or DAD TA3. However, in June, grass growth plummered due to the dry condi-tions, with growth rates dipping below 20kg DM/ha in July for three worker.

Steers on the trial have averaged about 0.9kg a day since turnout

(4.6t DM/ha).

Marsh, who adds this highlights the

need for beef producers to weigh

products that is a baging of the second seco observation and a second secon

GRASS QUALITY				
	23 Hay 2017	7 September 2017		
Jøy matter	18.40%	20.70%		
ME	13.7 M.Mkg	12.4 H.Mg		
3-value	85.50%	2220%		
Crude protein	18.40%	18.40%		



### TRIAL BACKGROUND

HULL BALKNERUUNU 4 Anual 70 Ausmin America Aive – 35 Hensford aross Holmin-Finisaria and 35 Heinstein-Frissian – er archer stall Alleving efferters tande and 35 Heinstein-Frissian – er archer stall Alleving efferters and and an antibiotistic and an antibiotistic and an anti-metal and antibiotistic and antibiotistic and antibiotistic and a start of Bag allevine more of more and allevine and starter concreture up to anasolitic and antibiotistic and antibiotistic and an antibiotistic anomative distance and antibiotistic historial and annihistic and analysis and antibiotistic and antibiotistic historial and annihistic and analysis and antibiotistic and antibiotistic historial and antibiotistic and antibiotistic and a Agelin weighting 1920 g on anearge. The field ana agalitistic 11 packolokis using electric frequency and antibiotistic historial antibiotistic antibiotistic antibiotistic antibiotistic antibiotistic historial antibiotistic antibiotistic antibiotistic antibiotistic antibiotistic historial antibiotistic antib Come back negative, which means Camb back negative, which means Robervey, RJ, Morea 1997 the back negative stars and back negative stars and stars paramet degrees and stars parameters and stars par em 20

MitMatsherkerkeri MitMatsherkerkerkerkerkerkerkerkerkerkerkerkerke	systems." AHDB will be inviting produc- ens to come and see the system in action at an open day on 20 December. More information can be found online at www.beefindlamb.ahdb. one.uk/evens.

3 NOVEMBER 2017 \* FARMERSWEEKUY 29





\*Aniller of tool it "Version of the second op sufficient gins coven. Mr joes and Mr Math expected significant compensative growth would occur due to the module growth rates on lodder best and they were proved right. So far in the first 50 days as grow, Hendowl coust 15 days of themas have growth at 15 days. sen have had in do enne-work inp animah posching the field, movied susponzy waar-stra-ad back-fanced. The visal part is the field because you car't per heretor, and fieldbling is long sus field we surved cardie true cross Foliwain Pdeniam have grown at day and now weigh 55482, which the p animals bening this at 2.0488 to merg Mr Marsh believes the high daty it gains are down to manive comps



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### Days Till Searce and Days Citt allocate 58age = 13p/kg DM, Conkermans = 20p/kg Total = 8.5 x 12 + 1.5 x 20 = 61.32 Total = 8.5 x 12 + 1.5 x 20 = 61.32

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# 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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