



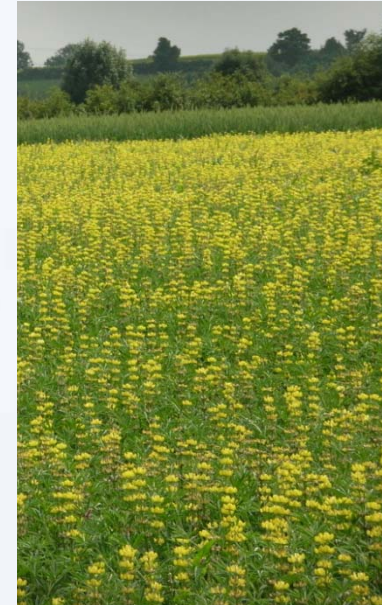
Comparison of the performance of finishing beef cattle offered grass silage and legume / cereal wholecrop silage either alone or in combination with grass silage

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Introduction (I)

- Key issues for beef production

- ▲ Low profitability
- ▲ High input costs
 - ▲ Fuel
 - ▲ Fertilizer
 - ▲ Feed



- Grass silage basal forage during the winter feeding period
- Inclusion of other ensiled forages e.g. maize silage in the diet have produced beneficial effects on animal performance and may reduce winter feeding costs

Introduction (II)

- Legumes
 - ▲ Reduce dependency on artificial fertiliser
 - ▲ High protein source
- Cereals
 - ▲ High energy value crop
- Problems can arise with ensiling legumes
- Limited information available on performance of finishing beef cattle offered legume/cereal wholecrop silage

Objectives

- Evaluate the effect of offering continental steers legume/cereal wholecrop silage during the winter finishing period on:
 1. Animal performance
 2. Carcass characteristics

Materials and Methods (I)

10 treatments – 5 forages x 2 concentrate levels

Five forage treatments – all offered *ad libitum*

- Lupin/triticale silage
- Vetch/barley silage
- Lupins/triticale: grass silage 70:30 ratio (DM basis)
- Vetch/barley: grass silage 70:30 ratio (DM basis)
- Grass silage

Two concentrate levels

- 2 kg/head/day
- 5 kg/head/day

Materials and Methods (II)

- Crops sown in mid April and harvested in September 2007
- Eighty continental cross steers
 - mean initial live weight 557 ± 32 kg
 - mean age 18.5 ± 1.2 months
- Animals allocated to 10 treatments, balanced for breed, initial weight and farm of origin
- Slaughtered in 4 batches after 105, 119, 126 & 140 days on experiment

Assessments

Animal performance

Feed intakes

Live weight gain

Carcass characteristics

Weight

Conformation

Fat classification

Statistical Analysis

- 5 x 2 factorial design
- Analysed using REML
- Co-variants used, genotype, initial weight and farm of origin
- Results adjusted to fat class (3)



RESULTS

Chemical composition of experimental forages

	Forage		
	Grass silage	Lupins/triticale	Vetch/barley
Dry matter (g/kg fresh)	251.4	290.6	303.7
Chemical composition (g/kg DM)			
Ammonia (g/kg total N)	88.2	117.4	140.0
Acetic Acid	15.9	19.6	41.8
Crude Protein	122.3	96.9	146.6
Starch	5.60	112.30	101.30
pH	3.87	4.04	4.68

Effect of alternative forages on feed intake and animal performance

	Forage					sed	Sig
	GS	L/T	L/T:GS	V/B	V/B:GS		
Forage intake (kg/day)	5.79 ^a	5.98 ^{ab}	6.34 ^{bc}	5.84 ^a	6.19 ^{bc}	0.110	***
Final live weight (kg)	664 ^b	638 ^a	650 ^{ab}	631 ^a	643 ^a	9.4	***
Live weight gain (kg/day)	0.92 ^c	0.67 ^{ab}	0.76 ^{bc}	0.59 ^a	0.69 ^{ab}	0.080	***

GS = Grass silage; L/T = Lupins/triticale; L/T:GS = lupins/triticale:Grass silage (70:30 DM ratio);
V/B = Vetch/barley; V/B:GS = Vetch/barley:Grass silage (70:30 DM ratio).

SDMI = Silage dry matter intake; LWG = Liveweight gain

Effect of alternative forages on carcass characteristics

	Forage					sed	Sig
	GS	L/T	L/T:GS	V/B	V/B:GS		
Carcass weight (kg)	366 ^b	347 ^a	353 ^a	344 ^a	348 ^a	4.5	***
Carcass gain (kg/day)	0.52 ^d	0.33 ^a	0.41 ^c	0.35 ^{ab}	0.38 ^{bc}	0.043	***
Dressing proportion (g/kg)	557	543	544	546	543	8.0	NS
Conformation class γ	3.35	3.37	3.41	3.19	3.11	0.174	NS

GS = Grass silage; L/T = Lupins/triticale; L/T:GS = lupins/triticale:Grass silage (70:30 DM ratio);
V/B = Vetch/barley; V/B:GS = Vetch/barley:Grass silage (70:30 DM ratio).

γ ; E, U, R, O, P = 5,4,3,2,1

Effect of concentrate level on animal performance

	Concentrate level (kg/day)		sed	Sig
	2	5		
Forage intake (kg/day)	6.58	5.47	0.075	***
Final live weight (kg)	626	664	6.3	***
Live weight gain (kg/day)	0.59	0.87	0.054	***

Effect of concentrate level on animal carcass characteristics

	Concentrate level (kg/day)		sed	Sig
	2	5		
Carcass weight (kg)	339	365	3.0	***
Carcass gain (kg/day)	0.30	0.50	0.029	***
Dressing proportion (g/kg)	54.1	55.2	0.54	NS
Conformation class γ	3.24	3.33	0.116	NS

γ ; E, U, R, O, P = 5,4,3,2,1

Conclusions

- Finishing cattle offered high quality grass silage had on average 26% higher live weight gain than cattle offered legume/wholecrop silage
- Animals offered 5kg of concentrate had an increased animal performance relative to animals offered 2kg/head/day

Acknowledgements

- I would like to thank:

