

Dairy-4-Future

PROPAGATING INNOVATIONS
FOR MORE RESILIENT DAIRY FARMING
IN THE ATLANTIC AREA

Experimental
Farm



Crichton Royal, Scotland, UK

*High Energy and Standard Energy
Dairy Systems at Crichton Royal Farm*

Objective: Develop, implement and provide information regarding sustainable breeding and management systems for dairy cattle.

Objectives include finding ways to improve production health and welfare of UK dairy herds and measuring different systems' effects on the environment.



Experimental systems

The two contrasting systems which are currently being examined are and High Energy (HE) and Standard Energy (SE) rations with 100% housing for lactating cows. The Holstein cows consuming each diet are of either high (Select - S) or moderate (Control - C) genetic merit, giving effectively four herds across the two diets.

System 1 – SE ration + C genetic merit

• Cows and milk production

- Dairy cows: 36
- Milk produced: 323,552 litres
- % fat and protein content: 4.02 % / 3.17 %
- Milk produced / cow / year: 8,988 litres

• Diet (kg / cow / year)

- Grass silage: 3,013 kg DM - Hay: 286 kg DM
- Maize silage: 757 kg DM – Others: 628 kg DM
- Concentrates: 2,847 kg

GHG EMISSION
kg eq CO₂ I⁻¹ FCPM

1,24

System 1 – SE ration + S genetic merit

• Cows and milk production

- Dairy cows: 57
- Milk produced: 537,825 liters
- % fat and protein content: 4.46 % / 3.37 %
- Milk produced / cow / year: 8,436 litres

• Diet (kg / cow / year)

- Grass silage: 2,963 kg DM - Hay: 281 kg DM
- Maize silage: 744 kg DM – Others: 617 kg DM
- Concentrates: 3,103 kg

GHG EMISSION
kg eq CO₂ I⁻¹ FCPM

1,13

System 3 – HE ration + C genetic merit

• Cows and milk production

- Dairy cows: 44
- Milk produced: 395,608
- % fat and protein content: 3.6 % / 3.22 %
- Milk produced / cow / year: 8,991 litres

• Diet (kg / cow / year)

- Grass silage: 1,655 kg DM - Hay: 197 kg DM
- Maize silage: 480 kg DM – Others: 377 kg DM
- Concentrates: 4,782 kg

GHG EMISSION
kg eq CO₂ I⁻¹ FCPM

1,29

System 4 – HE ration + S genetic merit

• Cows and milk production

- Dairy cows: 55
- Milk produced: 620,352
- % fat and protein content: 4.02 % / 3.44 %
- Milk produced / cow / year: 11,279 litres

• Diet (kg / cow / year)

- Grass silage: 2,452 kg DM - Hay: 292 kg DM
- Maize silage: 711 kg DM – Others: 559 kg DM
- Concentrates: 4,782 kg

GHG EMISSION
kg eq CO₂ I⁻¹ FCPM

1,08