

# Developing sustainable hill sheep systems

Aurélie Aubry<sup>1</sup>, Melanie Flexen, Ronald Annett, Desmond Irwin  
 Agri-Food and Biosciences Institute, Northern Ireland  
 (<sup>1</sup>Aurelie.aubry@afbini.gov.uk, AFBI, Hillsborough, Co. Down, BT26 6DR)

## 1. Introduction

- For the hill sheep sector to remain competitive, there is a need to improve ewe and lamb performance and to better understand the impacts of grazing on hill habitats to maximise the sustainable utilisation of resources and inform agri-environment schemes
- The aims of this study were 1) to investigate the performance of composite hill ewe genotypes and 2) to investigate their impact on hill vegetation

## 3. Results

- Mature 3B ewes were heavier than CC ewes but had lower BCS (Table 1)
- Conception rate was high (average 0.95) regardless of breed or age of the ewe
- CC ewes required less assistance at lambing (Table 1)
- Similar weaning rates regardless of breeding strategy, despite highest weaning rates for Highlander x ewes (+0.25 lambs compared to Blackface x ewes)
- Similar efficiency (kg lamb/kg ewe) for both strategies, with the benefit of slightly heavier lambs from 3B ewes cancelled out by higher ewe live weight (Table 1)
- There was no evidence of sheep grazing mature heather or soft rush during the summer period
- Sheep were shown to be utilising young heather, especially on recently burnt areas

**Table 1.** Effects of breeding strategy on ewe and lamb performance (1 to 4 crop ewes)

	Three-breed composites	Criss-cross horned ewes	P
Ewe mature mating weight (kg)	61.5	57.0	***
BCS at mating	3.65	3.77	***
Litter size/ewe lambed	1.51	1.40	0.02
Lamb birth weight (kg)	3.99	3.92	NS
Lambed unassisted (%)	76	90	0.09
Lamb weaning weight (kg)	31.4	30.0	NS
Lamb live weight gain (g/d)	223	211	0.02
No. weaned/ewe lambed	1.23	1.17	NS
Efficiency <sup>1</sup>	0.67	0.66	NS

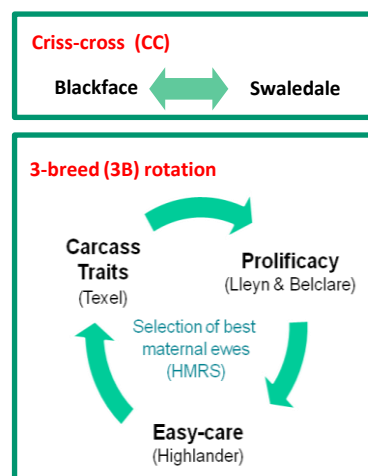
<sup>1</sup> weight of lamb weaned / ewe body weight (kg)

## Acknowledgments

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## 2. Methods

- Two maternal breeding strategies were both implemented at 6 hill farms in Northern Ireland (Figure 1), and animal performance was monitored since 2009
- Up to 4 grazing exclosures (6mx6m) per farm were established at 4 of those farms since 2012
- Plant species composition, herbage biomass and vegetation height were monitored between May-Oct 2013 and 2014



**Figure 1.** Replacement breeding strategies implemented at hill sheep flocks

## 4. Implications

- Ewes criss-crossed between Blackface and Swaledale rams are more suitable for hard hill conditions than 3-breed composites because they:
  - can maintain a good body condition on hill habitats
  - require less assistance at lambing
  - show higher selection of heather habitats (complementary data obtained using GPS collars)
- Site-specific prescriptions may be necessary in the longer term to ensure that heather and rush-dominated areas are more utilised by sheep through changes in stocking rates, grazing periods and field closures