"Improving sheep performance on hills"

at the farm of:

Maurice McHenry and family

The Parks Farm, 134 Whitepark Road, Ballintoy, BT54 6ND

Thursday 14th August 2014

NOTES

Improving sheep performance on hills

Maurice McHenry, Ballintoy, Ballycastle

Today's farm walk aims at providing you with information and tools to inform breeding, feeding and other management decisions

Topics for discussion include:

- Recording and benchmarking performance to inform selection and management
- Breeding strategies for a better ewe efficiency
- Monitoring the importance of sheep grazing for maintaining biodiversity
- Habitat and grazing management on hills
- Feeding hill ewes for performance
- Diagnosis and treatment of lameness in sheep

Farm overview

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210 breeding crossbred ewes + 43 hoggets

Farm area

- Part of Antrim Coast, Glens and Rathlin Environmentally Sensitive Area
- Approx. 120 ha (300 acres):
  - 61 ha heather moorland
  - 32 ha rough moorland
  - 18 ha unimproved grassland
  - 6 ha improved grassland
  - 2 ha species rich grassland wet grazing

Sheep enterprise

- Maurice farms in partnership with wife Marie and son Robert, with seasonal help from family and friends
- All ewes lamb indoors (March/April)
- Most lambs sold as stores
- Small number of lambs finished and sold to abattoir
- AFBI research trials
- Focus Farm

Breeding programme

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Breeds

- Crossbred ewes
- Range of rams used including:

  Scottish Blackface, Swaledale,

  Lleyn, Highlander, Texel and Suffolk
- All replacements homebred

Ram selection

- Rams are selected using performance records (EBVs)
- Main criteria used in ram selection:
  - Prolificacy/maternal ability
  - Carcass quality
  - Worm resistance

Key objectives

- To breed durable ewes from within the flock with the capacity to:
  - increase numbers of lambs weaned per ewe
  - improve lambing ease
- To have a labour efficient, easier-care working system

Benchmarking Farm Performance

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Physical performance

	2012/13	2013/14	2013/14 Average (Hill flocks only)
Number of ewes	252	227	376
Lambs sold/ewe	1.42	1.47	1.01
Concentrates fed (kg/ewe)	61	66	71
Av. carcass weight (kg)	19	18	20
Kg carcass/ha	57	52	52

Benchmarking Farm Performance

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Financial performance (£/ewe)

	2012/13	2013/14	2013/14 Average
Lambs sales *	65	77	73
Replacement costs	15	11	16
Total variable costs	29	50	47
Gross margin/ewe	24	19	13

* Excludes Wool Sales

Breeding strategies for efficient hill flocks

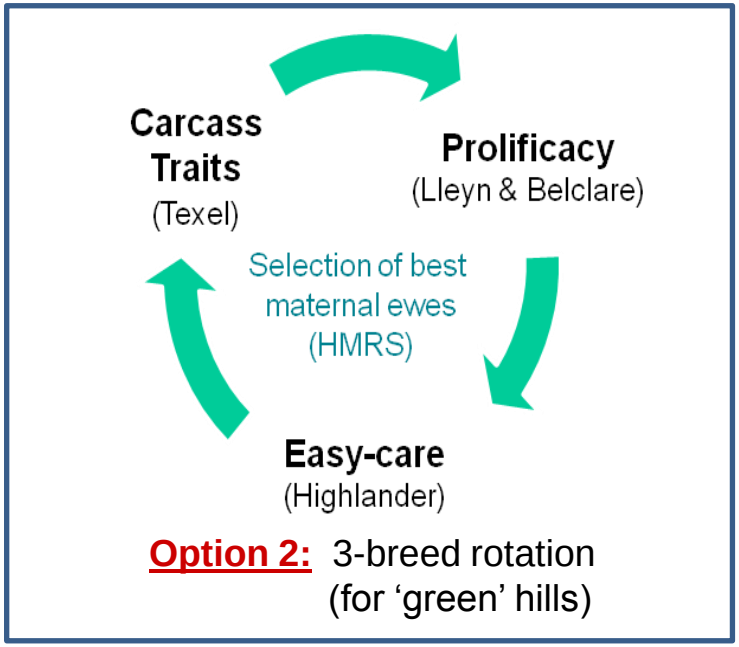
Breeding replacement ewes

- **Poor ewe fertility** and **lamb growth performance** are the main constraints on profitability
- Efficiency of **crossbred ewes** shown to be equal or superior to that of purebred Blackface (BF), in particular Lleyn x BF and Swaledale x BF
- **Rotational breeding strategy**: to introduce additional traits
- Ewes lambed down for the first time at 2 years old
- Crossbred ewes were mated to a range of terminal sire-breeds

Replacement breeding strategies for hill sheep flocks

Blackface ⟷ **Swaledale**

Option 1: Criss-cross (for 'hard' hills)



Option 2: 3-breed rotation (for 'green' hills)

Breeding strategies for efficient hill flocks

Breeding replacement ewes

Performance of different ewe types on 6 hill flocks (1, 2 and 3 crop ewes)

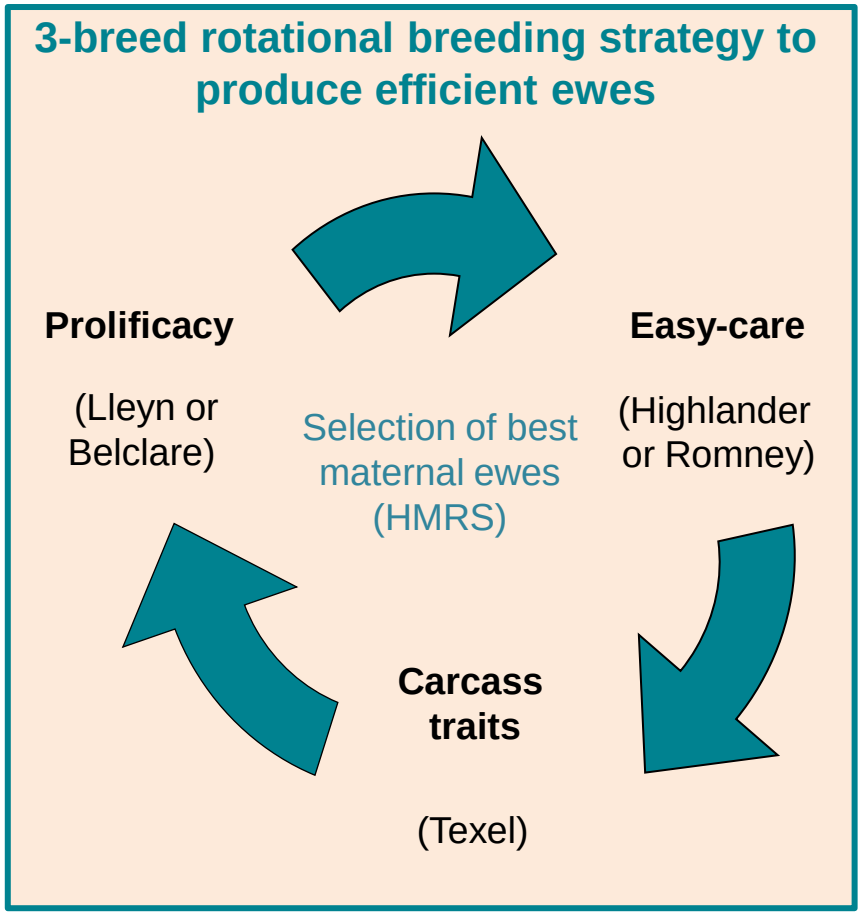
Ewe breed	**Mating weight** (kg)	**Lambs born** (/ewe lambed)	**% ewes needing help**	**Lambs weaned** (/ewe lambed)	**Tot lamb weight weaned** (kg/ewe lambed)	**Ewe efficiency** (kg lamb weaned/kg ewe)
Blackface x	50	1.36	12	1.20	34	0.66
Swaledale x	49	1.56	6	1.37	40	0.80
Belclare x	51	1.59	17	1.32	40	0.72
Highlander x	53	1.63	16	1.35	40	0.77
Lleyn x	52	1.47	17	1.26	36	0.70
Texel x	56	1.47	22	1.21	38	0.67

- **Variability in weaning rates** (> 1.35 for two ewe types)
- **Lambing assistance**: only 6-17% ewes needed help (except Texel x) (usually 20-40% for NI flocks)
- **Efficiencies**: variable, highest for Swaledale x and Highlander x ewes
- Work ongoing to assess their longevity and the effect of terminal sire breeds on those characteristics

Breeding strategies for efficient lowland flocks

Breeding replacement ewes

- **Poor ewe fertility** and **lambing difficulties** are the main constraints on profitability
- Current research is investigating maternal breeding strategies to deliver more lambs with less difficulty
- Rotational breeding strategy: to introduce maternal traits, whilst still delivering high lamb output to market specifications
- Ewes lambed down for the first time at 2 years old
- Crossbred ewes were mated to a range of terminal sire-breeds



Breeding strategies for efficient lowland flocks

Breeding replacement ewes

Performance of composite ewes on 6 lowland flocks (1, 2 and 3 crop ewes)

Sire of dam	**Mating weight** (kg)	**Lambs born** (/ewe lambed)	**Tot lamb birth weight** (/ewe lambed)	**% ewes needing help**	**Mothering ability** (% follows whatever)	**Lambs weaned** (/ewe lambed)	**Tot lamb weight weaned** (kg/ewe)	**Ewe efficiency** (kg lamb weaned/kg ewe)
Lleyn/ Belclare	61	1.81	8.5	14	97	1.52	48	0.79
Highlander	60	1.89	8.5	13	99	1.62	52	0.85
Romney	63	1.92	8.8	17	93	1.58	51	0.83
Texel	62	1.75	8.3	23	98	1.39	45	0.73

- Highest **weaning rates** for Highlander x and Romney x ewes (1.6)
- **Lambing assistance** :13-17% ewes needed help (except Texel x) (usually 20-40% for NI flocks)
- Good efficiencies up to 85% for Highlander x ewes and no effect of age at mating
- Work ongoing to assess their longevity and the effect of terminal sire breeds on those characteristics

Benefits of recording animal performance

- Improve lambing percentage
- Improve grassland management
- Improve growth rate
- Improve ewe longevity
- Improve carcase value
- Provide information to make better decisions

"As a general rule, the most successful man in life is the man who has the best information"

Benjamin Disraeli

Benefits of recording animal performance

	Improve by	Value per ewe
Numbers (per ewe)	0.2 / ewe	£16.00
Stocking rate	1 ewe / ha	£ 6.50
Lamb growth	10%	£ 4.80
Longevity (replacement)	5%	£ 4.00
Carcase Grade	R – U 50%	£ 1.68
	Total	£ 33
Flock value	200	**£ 6,596**

Recording animal performance

How do you manage information?

Notebook
£1

Simple Handheld reader/data collector
£600-£800

High Spec Handheld reader/data collector
£1000-£1500

Handheld EID Tag Reader
£200 - 800

Weighing / Drafting
£400 – £10,000

Computer + Software
£200 - £800

System Cost £400 - £12,000

Selecting ewes for maternal traits

Hillsborough Management Recording Scheme

Objective:

Identify ewes in commercial flocks suited to easier-care systems

Recording requirements and outputs:

Step 1: Simple recording of key traits for easier management (lambing ease, mothering ability, lamb viability)

- *Provision of summary report*

Step 2: Simple recording of lamb live weights

- *Provision of performance index of ewes, with animals ranked on a scale 0-100*

Ewe no:	*52*	Date of lambing:	*21/03/05*
Ewe breed:	*B*	Sire breed (ID)	*LL*
Ewe details			
Age at lambing:	1-yr	(2-yr)	3yr+
Lambing difficulty score:	No help	Little help	Manual delivery: (OK) / Difficult
If helped Why?	Management	(Oversized)	Malpresented
Mothering ability:	(Follows whatever)	Stands well back	Leaves lambs
Lamb details			
Lamb tag no:	22	23	24
Lamb sex:	(M) / F	M / (F)	(M) / F
Fostered to:	Ewe no	Ewe no	Ewe no
Lamb viability:	(Up & suck) / Slow suck / Help suck	Up & suck / (Slow suck) / Help suck	Up & suck / Slow suck / (Help suck)
Date of mortality:			
General ewe problems			
Teat problems:		(Yes)	
Insufficient colostrum:		(Yes)	
Prolapse:		(Yes)	

Working in partnership with industry

Benefits of selecting from performance records

Towards easier care systems

Case study (Hillsborough Management Recording scheme)

Average number of ewes in the flock: 80 (mostly Blackface)

	2007	2008	2010	2013	2014	Trend
Easier management traits						
% ewes lambed unaided	65	55	67	80	84	+
% ewes who follows lamb	77	72	97	97	96	+
% lambs up to suck	93	95	96	94	84	= or -
Productivity traits						
Nb lambs born per ewe	1.42	1.44	1.50	1.50	1.45	+
% lambs born alive	97	98	99	98	96	=

Sheep grazing and biodiversity (1)

Overview

- Research has demonstrated that livestock grazing of hill and upland vegetation benefits biodiversity
- Balance is required, both overgrazing and undergrazing can result in loss of plant and animal diversity
- Moorland habitats should be sustainably grazed by livestock, to provide benefits to hill farmers and the environment

Key objectives of current project

- To determine the impact of livestock grazing on vegetation structure and composition of hill and upland habitats
- To evaluate the effects of current grazing regimes and moorland management on habitats and biodiversity
- To determine the value of hill vegetation as a food resource

Sheep grazing and biodiversity (2)

Grazing trials

Methods

- Four grazing exclosures (8m x 8m) on study areas on 4 hill research farms
- Measurements taken May-October 2013 & 2014
- Vegetation heights taken every month
- Vegetation samples taken during grazing season
- Botanical monitoring of permanent quadrats
- Habitat surveys of overall study areas

Sheep grazing and biodiversity (3)

Habitat survey

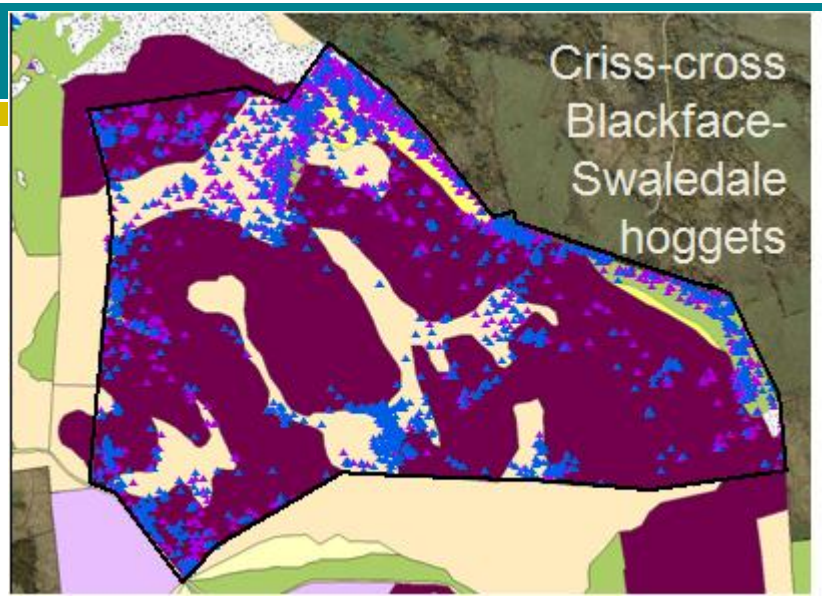
Habitat map of farm

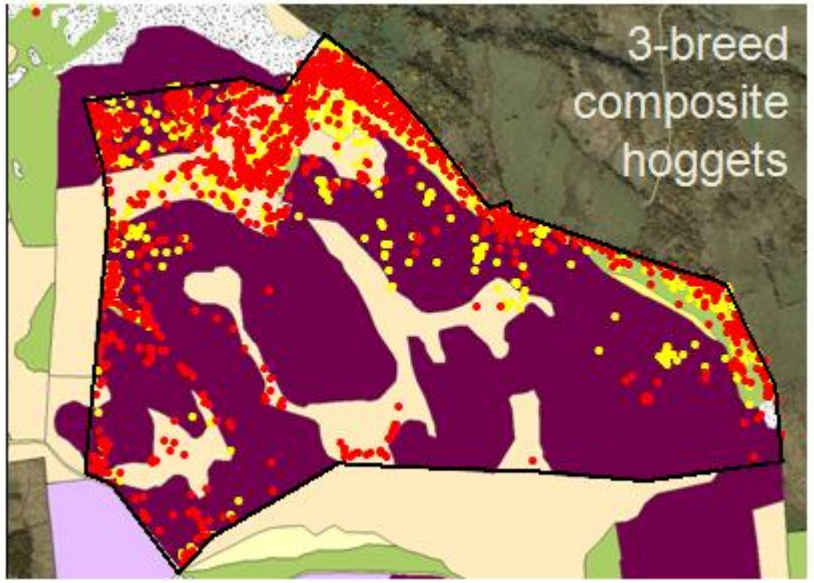
Habitat type

- Wet heath
- Burnt heather
- Dry heath
- Degraded heath
- Marshy grassland
- Gorse scrub
- Bracken
- Semi-improved grassland
- Improved grassland
- Exclosure position

Monitoring grazing behaviour

Differences among sheep breeds





- Appropriate level of grazing is crucial to maintain diverse hill habitats
- Breed selection: for improved production but also for optimised utilisation of hill areas
- Research ongoing at 6 hill farms in NI using GPS collars to investigate breed differences in terms of
  - Habitat preferences
  - Foraging areas covered
  - Within-breed differences
  - Seasonal differences
  - Effect of topography

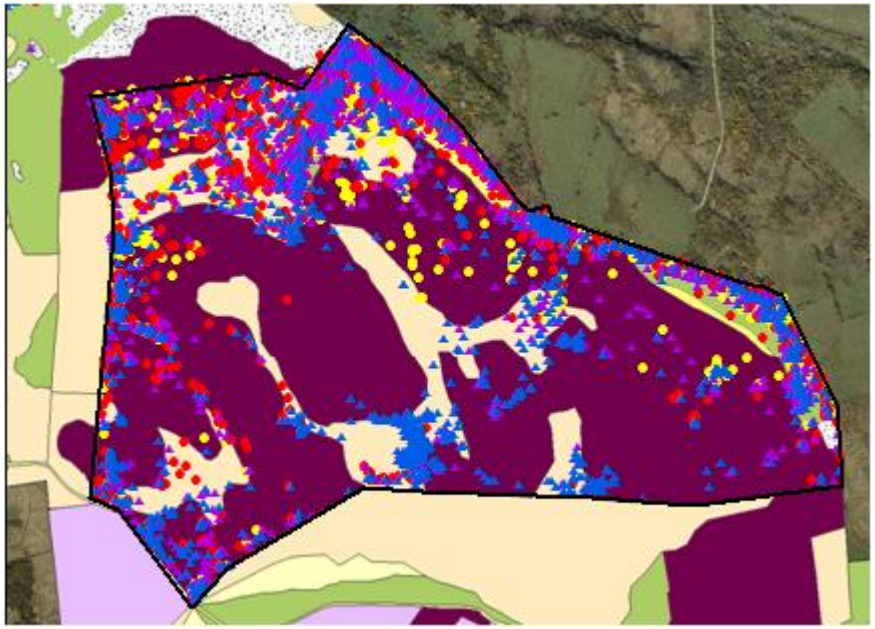
Pictures: locations of 4 hoggets 1st to 22nd July 2014

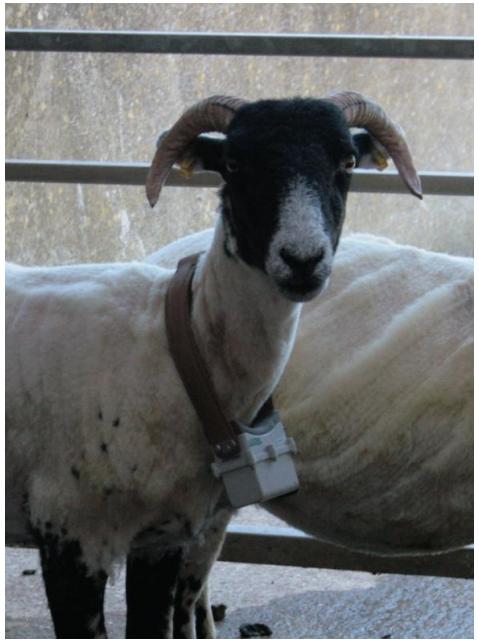
Monitoring grazing behaviour

Differences among sheep breeds

Previous research indicates that

- All breeds selectively graze grass first when available
- Traditional upland breeds (BF, BF x S) show higher selection of heather habitats compared to other cross bred ewes





Challenges

- Not all time spent grazing
- Local influential factors (e.g. Water points)
- Weather conditions

Findings can help to refine grazing strategies and inform breeding selection to make best use of hill areas

Habitat Management

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Heather moorland (61 ha)

- Grazing period: 1 March – 31 October
- Stocking density 0.3 LU/ha

Rough moorland grazing (32 ha)
Unimproved grassland (18 ha)

- All year grazing
- Stocking density 0.75 LU/ha

Improved grassland (grass/clover) (6 ha)

- Grazing period:
  - April-Sept (with 3 weeks rest)
  - Nov-Dec (tupping)
- Reseeding on a “need to” basis

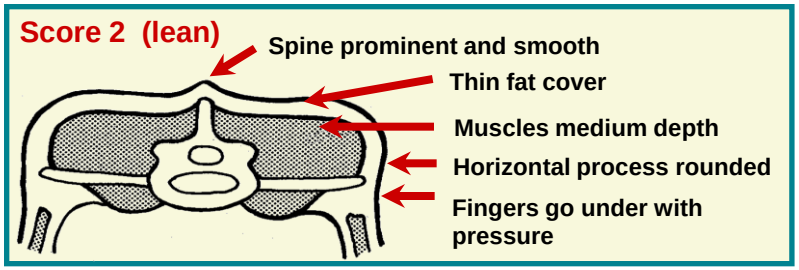
Species-rich wet grassland (2 ha)

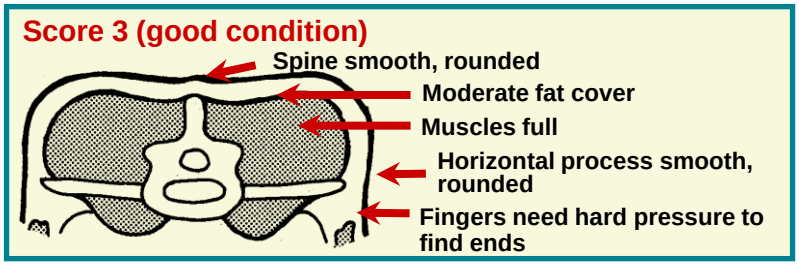
- Grazing period 16 May – 31 December
- Stocking density 1.0 LU/ha

Feeding Hill ewes for performance

Ewe management – Pre mating

- Body condition at mating is critical:
  - Target for hill ewes 2.5-3.0
  - Flush ewes in poor condition (<2.0)
- Increasing body condition by one condition score
  - 8 weeks grazing good quality grass
  - Increase of 7kg-10kgs liveweight for mature lowland ewe (55kg +)





Feeding Hill ewes for performance

Ewe management – Nutrition pre mating & early pregnancy

- Feed ewes according to body condition

Ewe body condition score		Sward height	DM intake Kg per day
Low	2.0 or below	5 - 7	1.0 - 1.2
Optimum	2.5 - 3.0	4 - 5	0.7 - 0.8

- First six weeks are critical for embryo survival
  - Avoid stress and sudden dietary changes 3 weeks post mating
  - Maintain condition score in early pregnancy
  - Where grass supply is inadequate offer additional feed

Feeding Hill ewes for performance

Ewe management – Selenium supplementation

- Assess mineral status of ewes
  - Blood sample 6-8 weeks before mating (Selenium, Cobalt, Iodine)
  - AFBI research found 50% hill ewes sampled had inadequate selenium (Se) status
- Benefits of Se supplementation of ewes
  - Se supplementation 4-6 weeks before mating improves ewe fertility
  - Higher growth rates, heavier lambs at weaning
  - Ewe body weight and condition maintained more efficiently, higher overall lamb output
- Sources available
  - Organic and inorganic
  - Injectable, boluses, drenches and feed additives

Diagnosis and treatment of lameness in sheep

Towards better treatment and prevention

Do you know the cause?

- Lameness can cause long-term pain and increase production and treatment costs
- Main issues identified in NI sheep flocks surveyed:

Shelly hoof

Scald

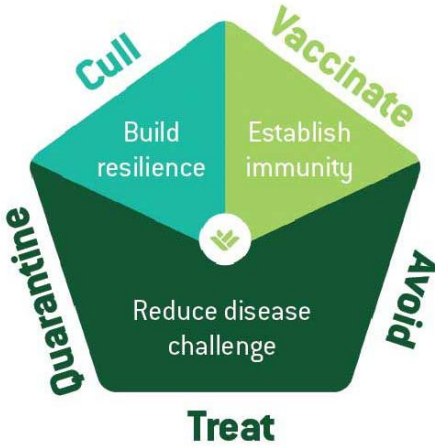
Footrot

Toe granulomas ('strawberry')

Key points

- Separate lame sheep and treat last, record/mark treated animals
- Clean and disinfect foot shears and treatment area, and dispose of any hoof trimmings

'Stamp out lameness'



Booklet available to:

- Better diagnose the cause
- Identify appropriate treatment options
- Know how to prevent the conditions

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