



The Importance of Diversity in our UK Sheep Breeds

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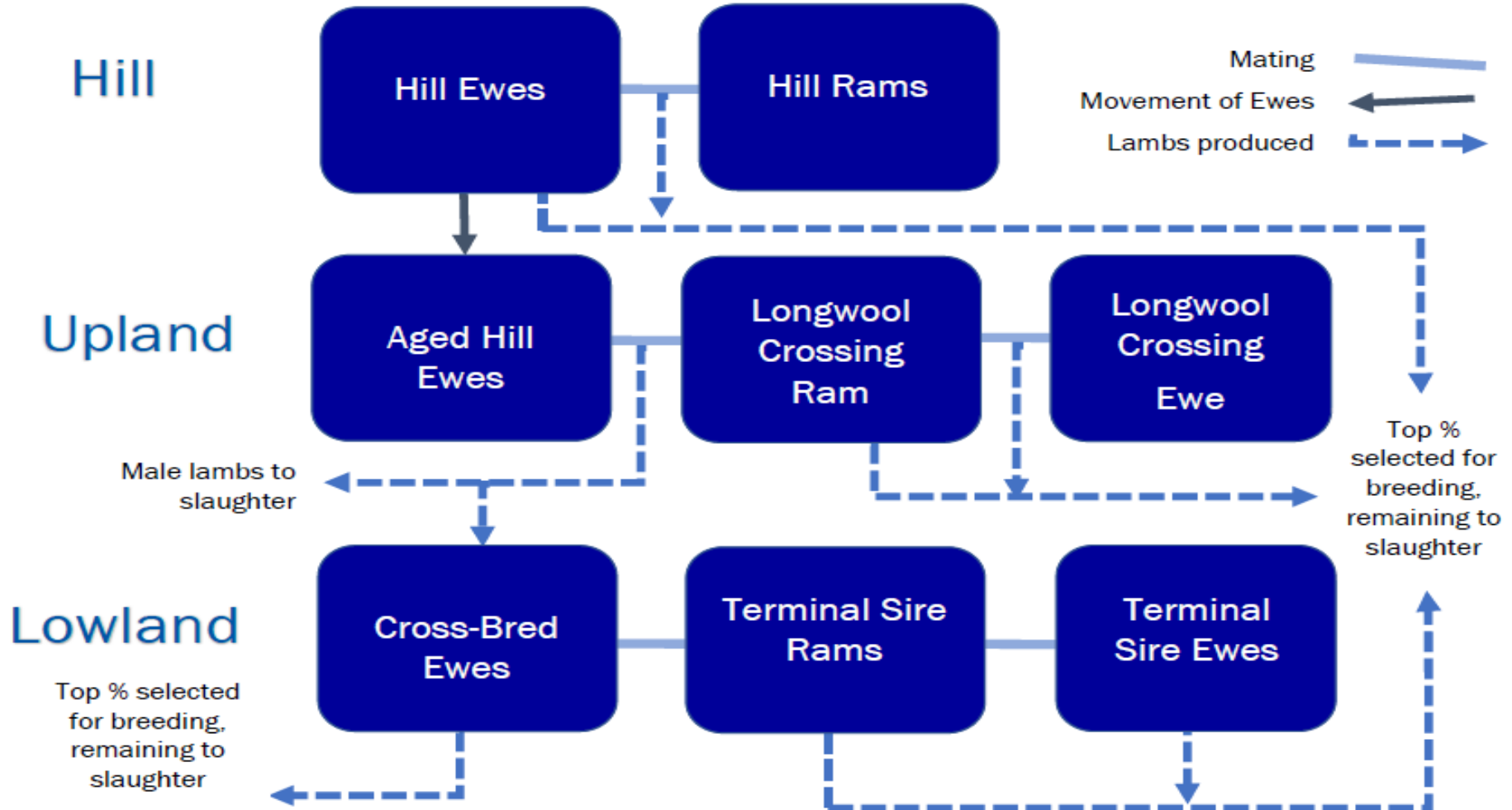


The Stratified Sheep System meeting (Jan 2019)



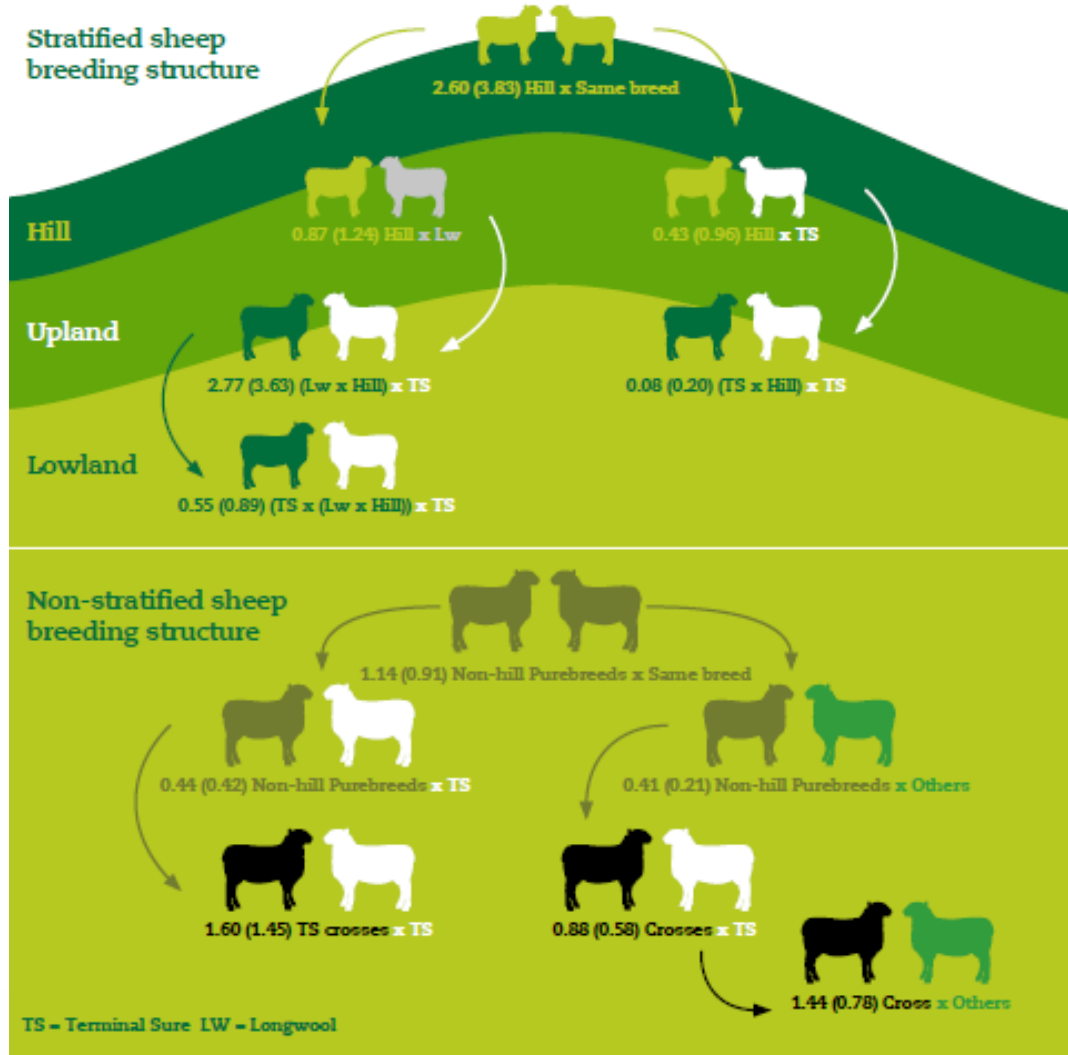


The Stratified Sheep System





Breeding structure



% split between the two structures

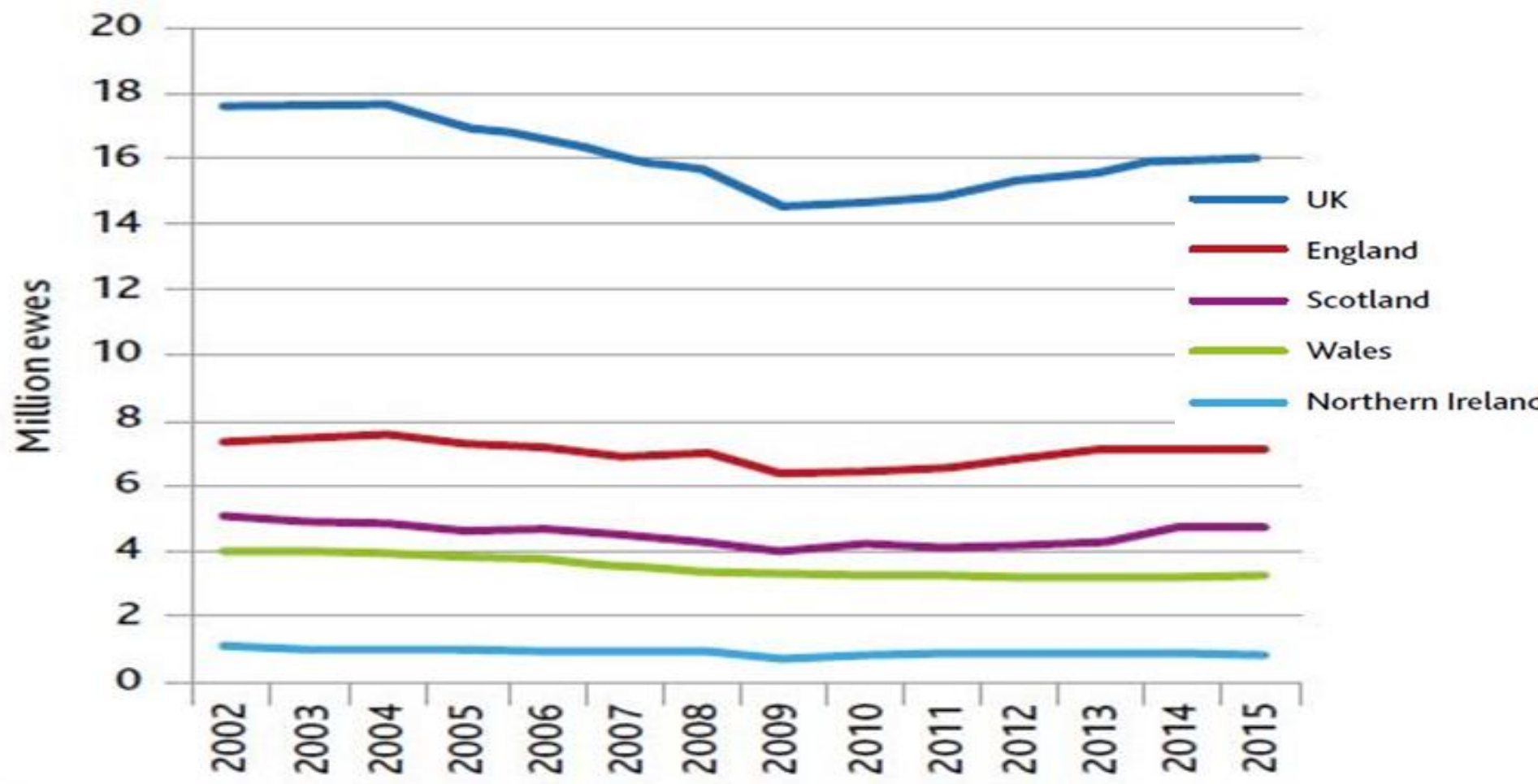
1971	86%	14%
1987	78%	22%
1996	77%	23%
2003	71%	29%
2012	56%	44%





UK ewe numbers

Source: Defra

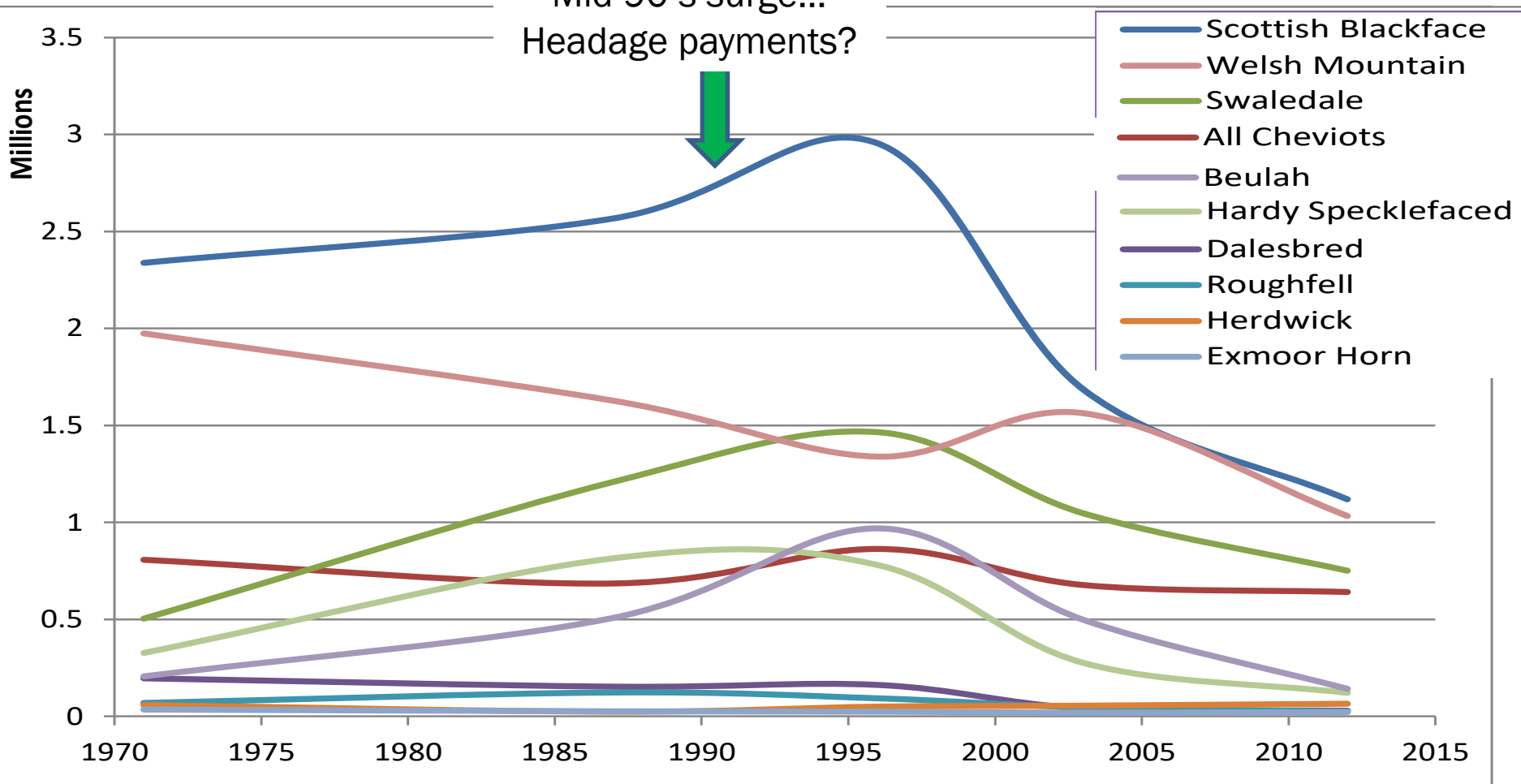




Changing Hill Breed numbers?

Source: Pollot, 2012 (BS)

Mid 90's surge...
Headage payments?



Hill ewes as a proportion of all ewes declined from 57% in 1971 to 31% in 2012.





Disappearing Pure Breeds?

Figures in '000

	1971	1987	1996	2003	2012
Border Leicester	12	28	13	5	4 ↓
Romney Marsh	294	217	159	165	201 ↑
Devon Closewool	127	51	6	7	4 ↓
Devon & Cornwall Longwool	290	28	4	2	2
Whitefaced Dartmoor	39	1	6	5	4 ↓
Greyfaced Dartmoor	33	4	3	4	4
Clun Forest	401	124	44	12	10 ↓
Dorset Horn	59	124	17	12	11 ↓
Kerry Hill	209	47	2	13	10 ↓
Llanwenog	20	3	10	6	7 ↑
Total	1,492	646	273	247	273

"It can be argued that the recent fall in total ewe numbers in Britain has been due to a decline in purebred ewe numbers, with crossbreds remaining numerically much the same. This fall in purebred numbers is heavily influenced by the fall in hill breeds"





Breeds with less than 10,000 ewes

Pollot, 2012

Badger Faced Welsh	Four Teated	Polwarth
Balwen	Friesland	Portland
Berrichon du Cher	Galway	Radnor
Black Welsh Mountain	Glamorgan Welsh	Rouge de l'Ouest
Black Wensleydale	Gotland	Roussin
Bleu de Maine	Greyfaced Dartmoor	Ryeland
Blue Texel	Hampshire Down	Shropshire
Border Leicester	Hartline	Soay
Boreray	Hebridean	Southdown
British Icelandic	Ile de France	Teeswater
British Milkshoop	Lacaune	Torardu
Cambridge	Leicester Longwool	Torwen
Castlemilk Moorit	Lincoln Longwool	Tregaron Welsh Mountain
Charmoise	Llanwenog	Vendeen
Coloured Ryeland	Manx Loaghtan	Welsh Mountain (Nelson)
Continental	Meatline	Wensleydale
Cotswold	Merino	Whitefaced Dartmoor
Devon & Cornwall Longwool	New Zealand Suffolk	Whitefaced Llandoverly
Devon Closewool	Norfolk Horn	Whitefaced Woodland
Dorper	North Ronaldsay	Zwartbles
Dorset Horn	Ouessant	
Dutch Texel	Oxford Down	



Breeds found on <250 farms

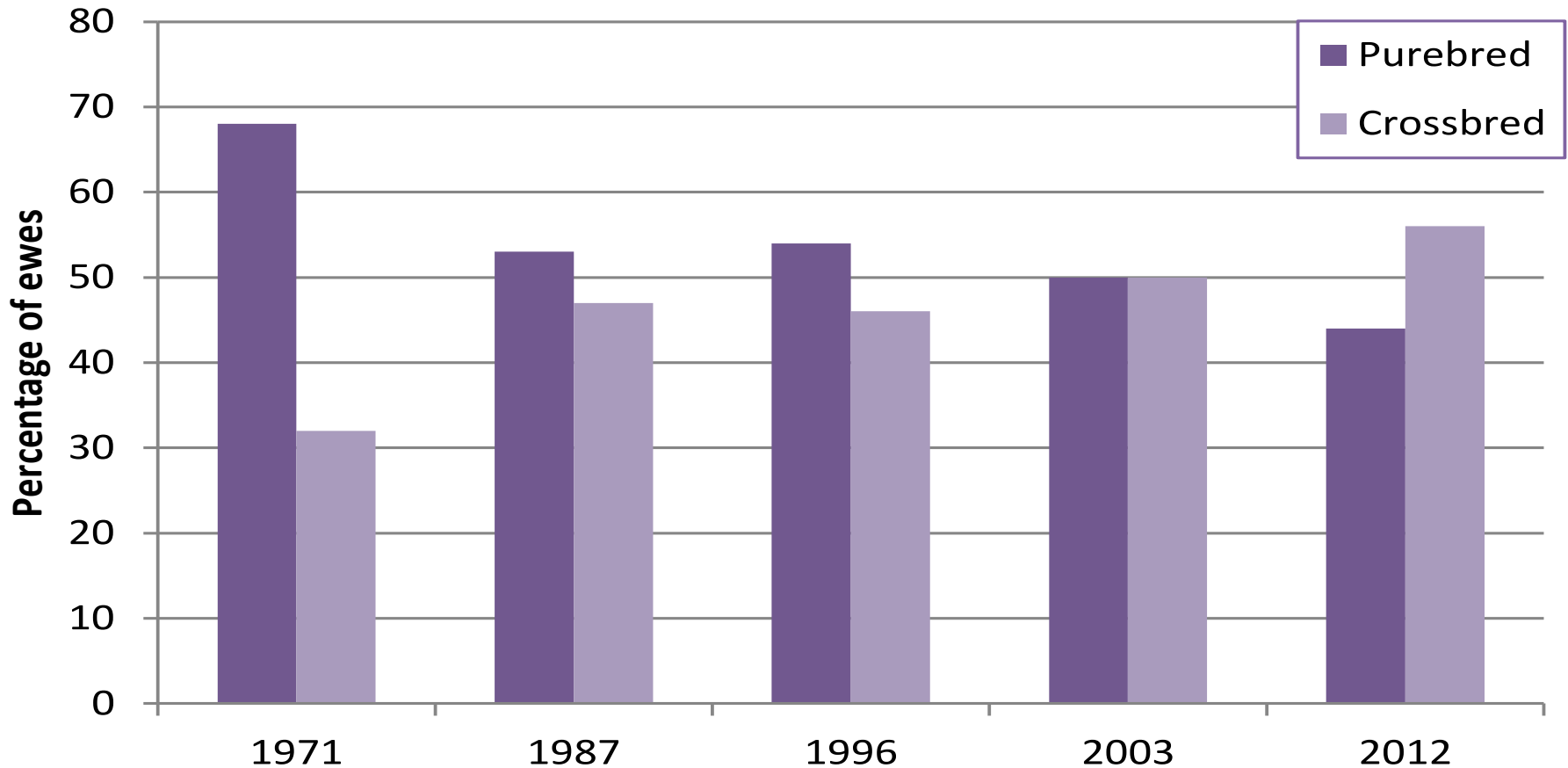
Pollot, 2012

Badger Faced Welsh	Exmoor Horn	Norwegian White
Balwen	Four Teated	Ouessant
Berrichon du Cher	Friesland	Oxford Down
Black Wensleydale	Galway	Polwarth
Bleu de Maine	Glamorgan Welsh	Portland
Blue Texel	Gotland	Radnor
Border Leicester	Greyfaced Dartmoor	Rouge de l'Ouest
Boreray	Hartline	Rough Fell
Brecknock Hill Cheviot	Hebridean	Roussin
British Icelandic	Ile de France	Shropshire
British Milkshoop	Improved Welsh	Soay
Cambridge	Lacaune	South Country Cheviot
Castlemilk Moorit	Leicester Longwool	South Welsh Mountain
Charmoise	Lincoln Longwool	Talybont Wesh Mountain
Clun Forest	Llanwenog	Teeswater
Colbred	Lonk	Torddu
Continental	Manx Loaghtan	Torwen
Cotswold	Meatline	Tregaron Welsh Mountain
Dalesbred	Meatline	Vendeen
Derbyshire Gritstone	Merino	Welsh Mountain (Nelson)
Devon & Cornwall Longwool	Millenium Blue	Wensleydale
Devon Closewool	Monsa	White Faced Welsh
Dorper	New Zealand Romney	Whitefaced Dartmoor
Dorset Down	New Zealand Southdown	Whitefaced Woodland
Dorset Horn	New Zealand Suffolk	Wiltshire Horn
Dutch Texel	Norfolk Horn	



Rise of the Cross Breed?

Source: MLC/Defra/ Eblex Sheep Breed Surveys





Challenges & Opportunities

Challenges

Ensuring reliable parasite and disease control:

- Livestock movements
- Grazing of common land

Phenotype still dominant for making market selection:

- Genotypes ignored or less favoured

Genetically:

- Limited production information
- Dilution of some critical traits (conflict of ag schemes / showing)

Opportunities

Environmental:

- Sustains delicate grassland/plants communities (biodiversity)
- Reduces need to buy in feed / house animals over winter
- Ability to move down hill reduces pasture pressure

Social:

- Sustains traditional, family farm in remote areas
- Provide foundations for rural economies and communities (skillsets)
- Benefits to rural business (tourism, hospitality)

Genetically:

- Maintains valuable traits (mothering ability, hardiness, hefting ability?)
- Allows increased hybrid vigour & heterogeneity through x-breeding



Breakout Questions:

During the meeting, attendees were split into four smaller groups to discuss the following questions:

1. What's wrong with the system?
2. What needs to be done?
3. What are the consequences if we do nothing?

These were looked at in terms of animal health, farm/markets/trade and policy.





Main Conclusions from the day...

1. Concern over flock health status, particularly resistance issues, is resulting in more farmers choosing to run closed flocks.





Alison Braddock

SRUC Veterinary Services





Main Conclusions from the day...

1. Concern over flock health status, particularly resistance issues, is resulting in more farmers choosing to run closed flocks.
2. There is a lack of understanding in the value of upland breed traits within the cross bred ewe, and concern that some of these traits such as hardiness and mothering ability may be becoming weakened.
3. Selling cross bred breeding sheep is a highly important part of hill farming economics – hill farming would struggle to survive without access to breeding stock markets.
4. While stratified breeding and hill farming may be traditional practices there is a lot that can be done to make use of technology and innovation – tradition and innovation can complement each other.
5. The environment and delivery of public goods will be a very important part of the economics of hill farming, but it is important that sheep farming delivering public goods is commercial and productive – commercial sheep farming can deliver conservation objectives, but few farmers want to be conservation graziers.





What do you think?

💡 Do these outcomes agree or disagree with the needs of your organisation/society/business (SSS)?

💡 What disease are important to you

💡 Should we have compulsory scheme to suit all farms or maybe NSA scheme? Why?



5-10 minutes for a quick discussion...





Current research NSA is involved in, that could help secure future farm sustainability...





Current Projects

- 💡 iSAGE –Innovation and Sustainability in the Sheep and Goat sector across Europe (end Feb 2020)
- 💡 Value of grazing livestock on improving soil fertility (public goods)
 - 💡 iSAGE case study
 - 💡 SARIC / NIAB grazing project (leys & livestock)
 - 💡 SEEGSLIP project
- 💡 Wellcome Trust: “FIELD” or Farm-level Interdisciplinary approaches to Endemic Livestock Disease
- 💡 DEFRA UK sheep genetic scoping study
- 💡 Heritage Breeds Project





DEFRA “UK Sheep Genetic Improvement Scoping Study”



💡 One year project Jan-Dec 2018

💡 Partners include Scotland’s Rural College (SRUC), Agriculture and Horticulture Development Board (AHDB), AbacusBio & Centre of Innovation Excellence in Livestock (CIEL)

💡 NSA facilitated all farmer facing workshops used to gather data

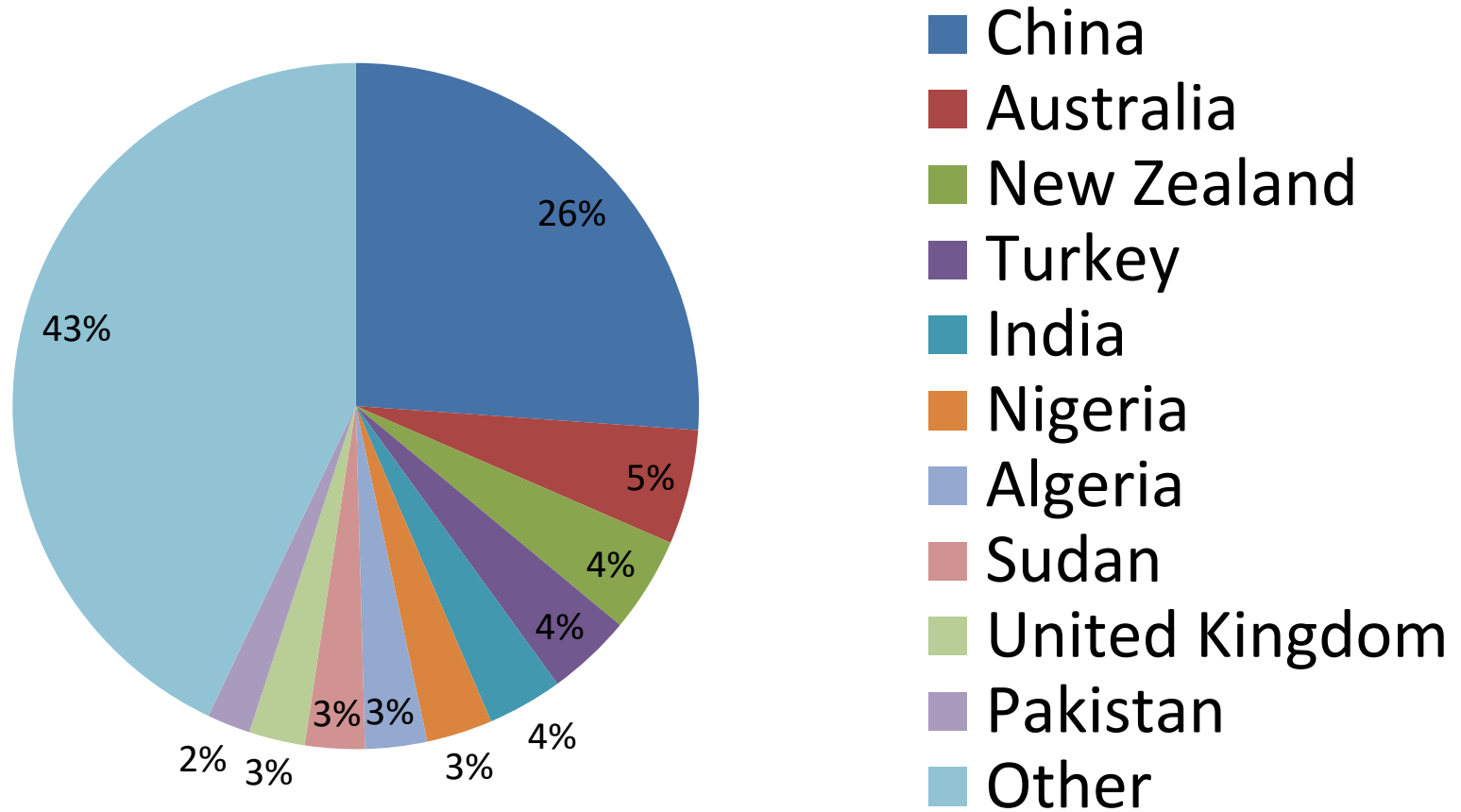
💡 Report has been submitted to DEFRA

💡 Results to be used for larger 4 year project (if funded)



Highlights of the results: Literature review

Figure 1: Major global sheep meat producers, 2016 (FAO)





Highlights of the results: Literature review



- 💡 Differences in the size, structure, policies, subsidies and environments make it difficult to directly compare success or efficiencies between countries, of their respective sheep genetic improvement programmes
- 💡 Results demonstrate there is an economic case for further investment in the form of a Sheep Genetic Improvement Network to be deployed under current/existing providers with additional oversight from technical advisory committees
- 💡 Measures need to be taken to increase active farmer involvement in and industry uptake of genetic improvement (to include education, knowledge transfer and policy interventions to incite farmer participation and support)
- 💡 A review of payment structures within national breeding programmes may be of value





Highlights of the results: Traits



Three breeding goals have been built to deliver genetic gain:

- 💡 **Maternal Lowland** strong emphasis on scan weight and litter size. Slight emphasis on maternal weaning weight, lamb survival (direct & maternal) and ewe longevity (£0.24/ewe mated)
- 💡 **Maternal Upland** strong emphasis on scan weight, litter size, maternal weaning weight and lamb survival direct (£0.12/ewe mated)
- 💡 **Terminal breeding** programmes focused selection emphasis on lean weight, scan weight, resulting in reducing subcutaneous fatness. (slight emphasis on feed intake, lamb survival and IMF%) (£0.40/ewe mated)

Note: All responses are very sensitive to changes in lamb value & increased lamb feed costs





What do you think?

💡 What's your opinion of incorporation of genetics into your system/society/organisation?

💡 What are you using?

💡 What do you require?

5 minutes for a quick discussion and feedback session on your thoughts...





British Heritage Sheep

“New Tastes from Old Traditions”

Project Aim: A strategic proposal to promote and protect the UK’s native sheep breeds, add value to sheep supply chains, and enhance landscapes, rural communities and the environment

Challenge threats to the sheep sector:

1. The threat to the genetic viability of our native sheep breeds
2. The threat to the landscape and communities of the uplands



THE PRINCE'S
COUNTRYSIDE
FUND

Solution - Maintain the focus on Standard lamb, but celebrate the untapped diversity of UK Sheep Meat.

We can promote this by using ABC:

Age – lamb, hogget, mutton

UK Heritage Breed

British Countryside/Landscape – e.g. Lake District, Yorkshire Dales, South Wales Salt Marshes, etc.

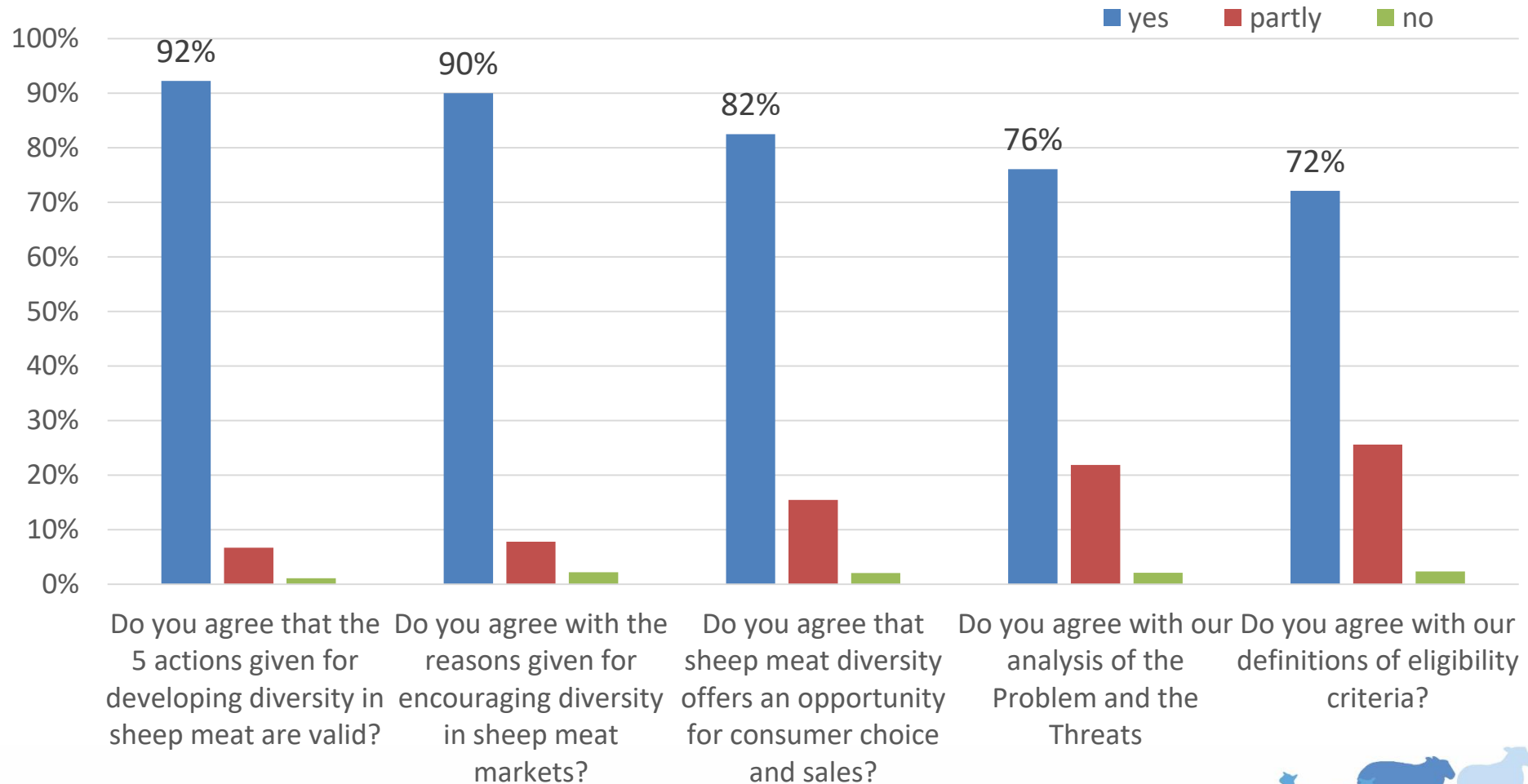
How can this help?

- Enhance farm income, provide new markets, support & encourage local supply chains, ensure the financial and genetic viability of our traditional UK heritage breeds and help maintain traditional farming systems which have developed in harmony with the environment and created our iconic British landscapes





British Heritage Sheep Industry Support for this project





Highlights of the results: Consumers



Through tasting trials held by NSA, consumers:

- 💡 Overwhelmingly agreed that in older sheep, breed offered a large new range of flavours and textures
- 💡 Overwhelmingly agreed that there were real flavour differences in different ages of sheep of the same breed
- 💡 Unanimously agreed that all these variables tasted really good





Highlights of the results: Public Opinion



From a YouGov survey of 2,000 people who ate meat, there was strong support for the idea of Heritage Sheep and the diversity it offered...

but what about young people and non-lamb eaters?



This suggests the scheme may enable an expansion of the whole sheep meat market rather than the replacement of Standard Lamb.





What do you think?



What are your feelings on the Heritage Breeds work in relation to your organisation/society/business?

5 minutes for a quick discussion and feedback session on your thoughts...





Common Themes and Next Steps...

Finally think about the session as a whole...

- 💡 What common themes should we, as an organisation be pushing? ... (5mins to have a quick discussion)

Aim: Produce an 'action list' for industry to take away and work on





Questions?...





In the Pipeline...



With most research funding, application approval takes time. So, there are a number of projects where proposals have been submitted, but we are waiting on confirmation of funding in order to begin:

1. EXPERIMENTAL NETWORK for ecosystem and biodiversity research – Submitted March 2018
2. Modelling breeding strategies for Gastro intestinal nematode resilience – Resubmission due this year
3. ProArctic Sheep Project: learning from good practice (<http://www.interreg-npa.eu/>) – Submitted November 2018
4. Erasmus Project: Production of an online organic education module – Due to be submitted Feb 2019
5. 'Preventing Lamb Mortality due To Watery Mouth Disease: A Study of the Neonatal Lamb Gut Microbiome in Health and Disease' – Liverpool University – Discussions planned Feb 2019
6. EuroSheep project (Seven partner countries, invited via SAC) – Submitted Jan 2019

