Efficient Lamb Production

RamCompare NI – Farm walk
AFBI, Deerpark Farm, Drumilly Road, Loughgall, BT61 8JH
Monday 4th June 2018, 6:00 pm – 8:30 pm

Department of Agriculture, Environment and Rural Affairs

Efficient Lamb Production

Topics for discussion include:

- Ram genetic breeding values:
  - RamCompare and what it has delivered so far
  - Aims and initial findings of RamCompare NI (AFBI flock)
- Consumer trends in lamb consumption and importance of meeting market specifications
- Sheep grazing systems to enhance livestock and land performance:
  - Northern Ireland GrassCheck programme
  - AFBI research on rotational grazing systems

What is RamCompare?

- UK's first progeny test for terminal sires
- Tested more than 120 performance recorded rams in first three years
- Eight commercial farms and one research institute involved with range of systems represented

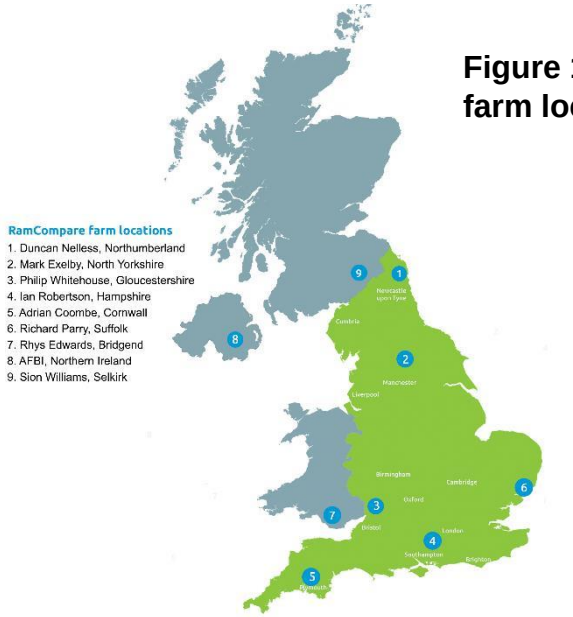


Figure 1. RamCompare farm locations

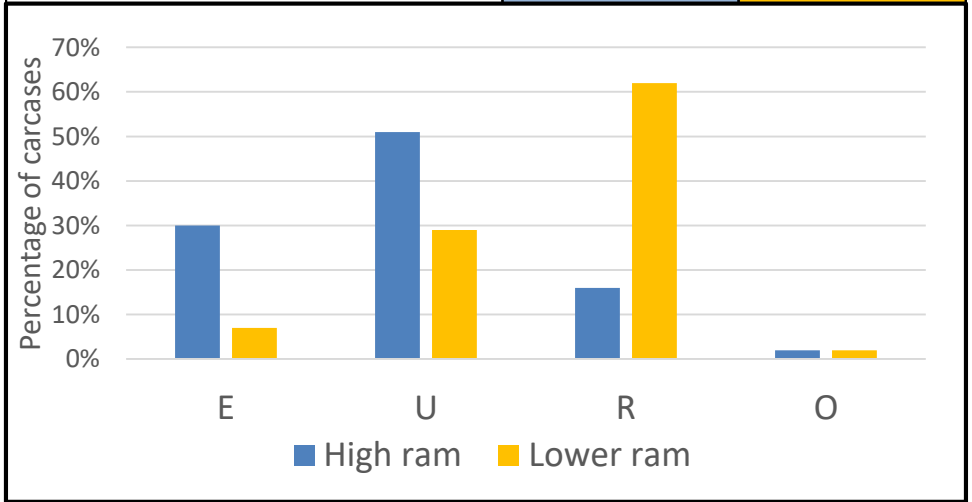
- Data collected from along the supply chain
  - Sire, dam, date of birth, birth weight, rear type and sex
  - Weights at 56 and 90 days, plus sale
  - Ultrasound scan and DNA at 90 days

- Sale date, carcase data
- Primal yields and shear force

What has RamCompare delivered so far?

- Data collected from along the supply chain and used to generate new estimated breeding values (EBVs)
  - Carcase weight
  - Carcase conformation
  - Carcase fat class

	High ram	Lower ram
Number of progeny	57	84
Carcase conformation EBV	2.64	-0.58
Average days to slaughter	114	111

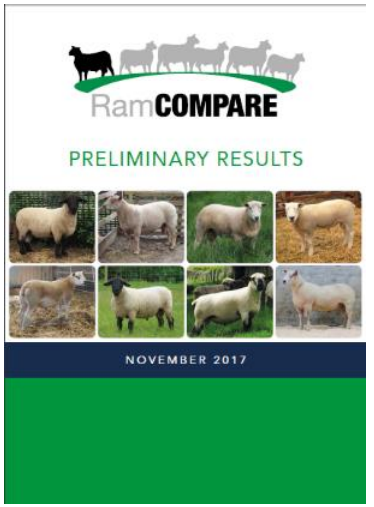


- New carcase merit index

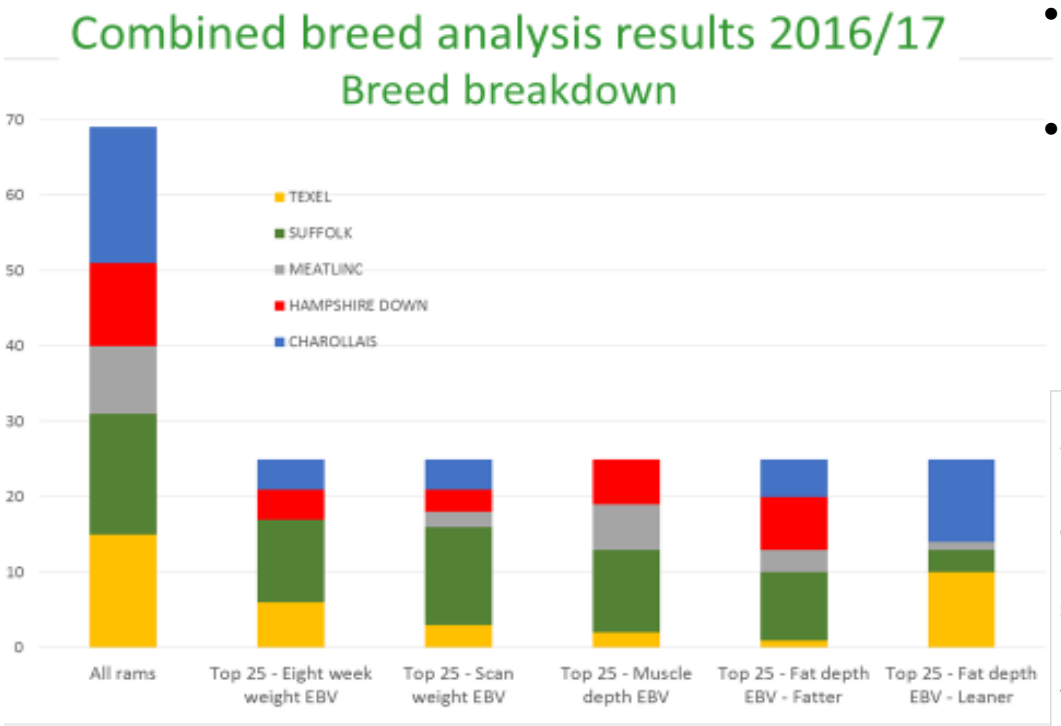
	High ram	Lower ram
Number of progeny	144	71
Carcase merit index	5.90	-5.98
Average carcase value	£79.38	£73.41

Financial value of £5.97 per lamb

– taking into account conformation, fat class and carcase weight

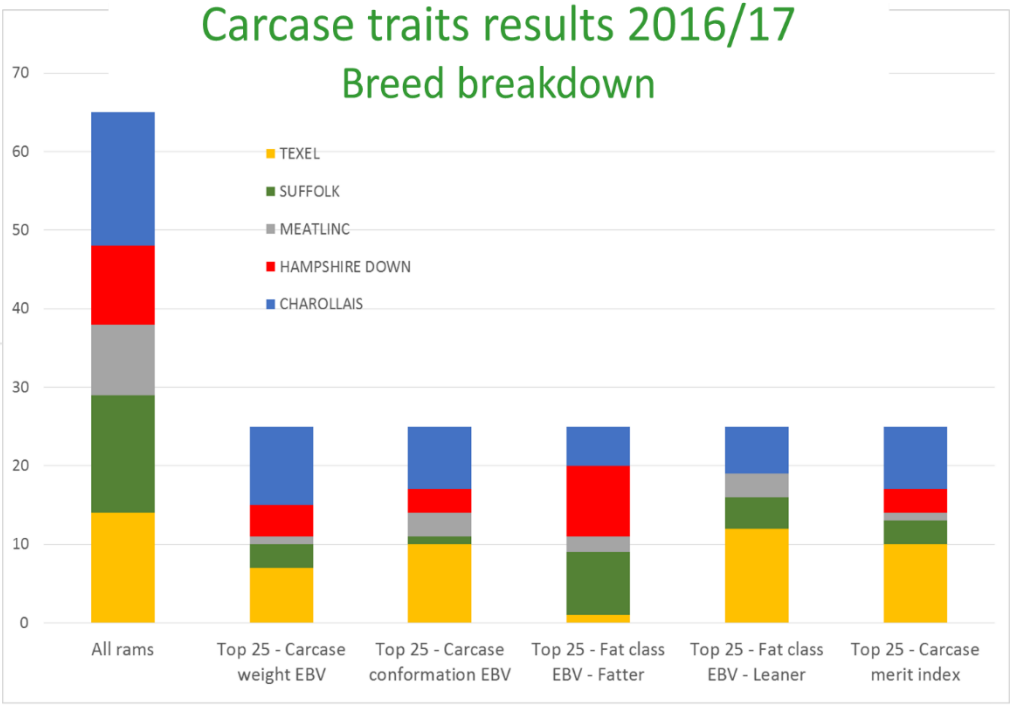


Early results from RamCompare



- Breeds performed slightly differently across the existing EBVs
- For example; Suffolk rams and Texel rams dominated in top 25 for scan weight EBV and leaner fat depth EBV respectively

- Breeds performed slightly differently across the new EBVs
- For example; Texel rams and Suffolk rams dominated top 25 for carcase conformation and fatter fat class EBV respectively



What has RamCompare planned?

1. Making new EBVs widely available

All terminal sire breeds will be analysed using combined breed analysis, like Sheep Ireland, and new RamCompare EBVs will be included.

2. Index with a £ sign

The carcase merit index will be convert to a financial index.

3. Develop days to slaughter EBV

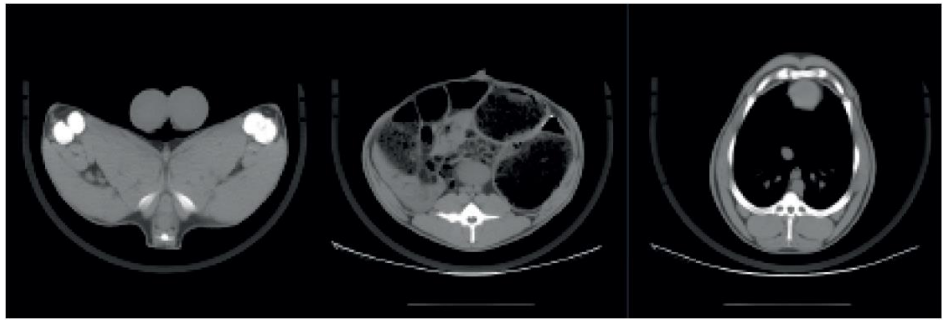
The data from the first two years didn't demonstrate enough variation to develop an EBV. It will be developed as more data becomes available.

4. Validate new computed tomography (CT) derived traits

New EBVs are being generated from historical and on-going CT images

- eye muscle area and depth
- intramuscular fat
- spine length

Interesting rams will be selected for RamCompare and their progeny taken through to primal yielding and shear force testing to understand the commercial benefit.

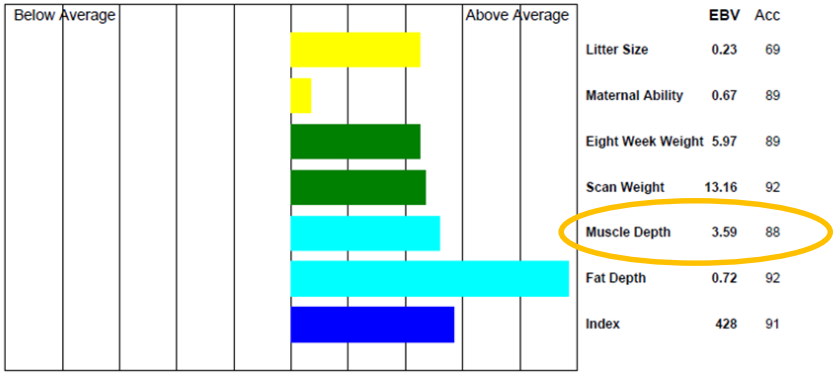


RamCompare rams used in NI in 2017

TEXEL

DRINKSTONE TOP GUN PJP1202836
Sire: DRINKSTONE PUNT GUN PJP09090
Dam: PJP1000122

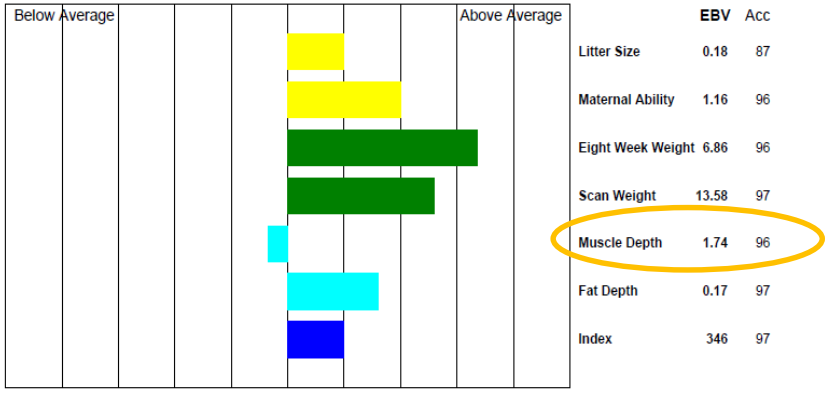
Ultrasound Scanned: Yes
Date of Birth 23/02/2012



	EBV	Acc
Litter Size	0.23	69
Maternal Ability	0.67	89
Eight Week Weight	5.97	89
Scan Weight	13.16	92
Muscle Depth	3.59	88
Fat Depth	0.72	92
Index	428	91

GAYNES ROLLS ROYCE CMG1000086
Sire: GAYNES NERO CMG073017
Dam: CMG06126

Ultrasound Scanned: Yes
Date of Birth 14/03/2010



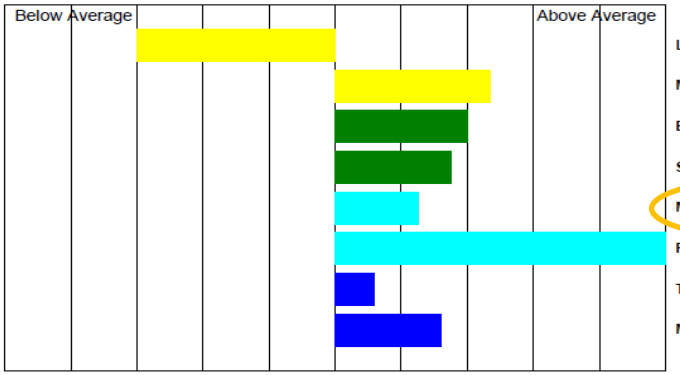
	EBV	Acc
Litter Size	0.18	87
Maternal Ability	1.16	96
Eight Week Weight	6.86	96
Scan Weight	13.58	97
Muscle Depth	1.74	96
Fat Depth	0.17	97
Index	346	97

BLUP RUN : 14/05/2018
Produced by Signet Breeding Services
Stoneleigh Park, Kenilworth, Warwickshire, CV8 2TL Tel: 0247 647 8829

SUFFOLK

DERRYLOMAN PRINCE OF PEACE LHY:16:00552
Sire: PERRINPIT PEACEMAKER P50:J58
Dam: LHY:12:004

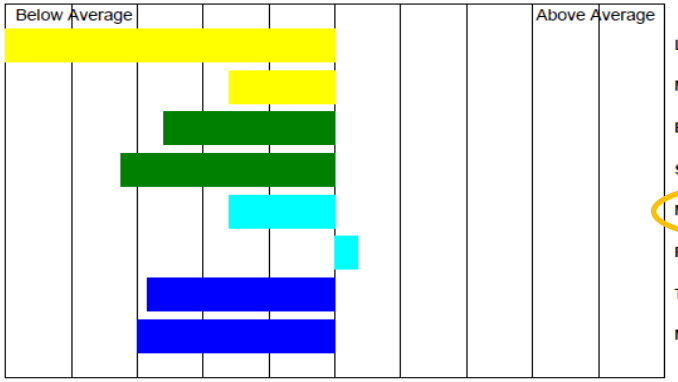
Ultrasound Scanned: Yes
Date of Birth 31/01/2016



	EBV	Acc
Litter Size	-0.07	57
Maternal Ability	5.63	53
Eight Week Weight	7.48	77
Scan Weight	14.23	81
Muscle Depth	5.43	81
Fat Depth	1.46	82
T. Sire Index	4.61	79
Maternal Index	307	59

CAIRNESS GOLDEN TOUCH 33H:D108
Sire: COLLESSIE CUT ABOVE 416:A14
Dam: 33H:W78

Ultrasound Scanned: No
Date of Birth 15/01/2004



	EBV	Acc
Litter Size	-0.16	90
Maternal Ability	2.53	71
Eight Week Weight	3.26	93
Scan Weight	5.83	94
Muscle Depth	2.23	94
Fat Depth	0.44	94
T. Sire Index	1.76	93
Maternal Index	133	79

BLUP RUN : 12/04/2018
Produced by Signet Breeding Services
Stoneleigh Park, Kenilworth, Warwickshire, CV8 2TL Tel: 0247 647 8829

Sheep Ireland rams used in NI in 2017

TEXEL

IE042805000914J, CASTLE KELLY AJAX, ILI1700914, TX17502

Texel (100%), Pedigree, 10-FEB-17, R3 (44%) T5 (49%), Twin

Current EuroStars *(Published On: 25-MAY-2018)*

Index	Value	Accuracy	Percentile	Stars
Replacement	-.601	44	50	★★★
Terminal	1.156	49	93	★★★★★
No. Lambs Born	-.385	41	32	★★
Daughter Milk	.824	35	80	★★★★
Survivability	1.312	45.2	94	★★★★★
Days to Slaughter	.81	57	5	★

IE044561202970E, FOUNDRY ALEXANDER, PXI1702970, TX17551

Texel (100%), Pedigree, 06-FEB-17, R1 (39%) T3 (42%), Twin

Current EuroStars *(Published On: 25-MAY-2018)*

Index	Value	Accuracy	Percentile	Stars
Replacement	-2.11	39	13	★
Terminal	.488	42	60	★★★
No. Lambs Born	-.061	34	58	★★★
Daughter Milk	-.716	35	33	★★
Survivability	-.278	38.6	22	★★
Days to Slaughter	-8.748	49	97	★★★★★

SUFFOLK

IE041594601136F, PBH1701136

Suffolk (100%), 16-JAN-17, R3 (42%) T3 (45%), Triplet

Current EuroStars *(Published On: 25-MAY-2018)*

Index	Value	Accuracy	Percentile	Stars
Replacement	-.318	42	60	★★★
Terminal	.299	45	45	★★★
No. Lambs Born	.548	37	79	★★★★
Daughter Milk	.414	39	81	★★★★★
Survivability	1.364	42.2	95	★★★★★
Days to Slaughter	-.581	52	14	★

IE041594601112E, PBH1701112

Suffolk (100%), 30-DEC-16, R3 (46%) T4 (47%), Twin

Current EuroStars *(Published On: 25-MAY-2018)*

Index	Value	Accuracy	Percentile	Stars
Replacement	-.749	46	47	★★★
Terminal	.547	47	68	★★★★
No. Lambs Born	1.136	46	96	★★★★★
Daughter Milk	.351	44	79	★★★★
Survivability	1.234	46	93	★★★★★
Days to Slaughter	-9.621	53	100	★★★★★

AFBI Sheep Flock

Profile

- 340 composite breeding ewes (flock genotyped in 2017)
- Cross-breeding strategy for maternal ewe type using:
  - Lleyn, Belclare, Highlander, Texel, Suffolk rams
- Average ewe mature weight: 61 kg

Lambing and feeding systems

- All ewes are housed in January & lamb indoors (March - April)
- 50+ Individual lambing pens
- Grassland platform of 36 ha
- Main platform currently in 4 paddock rotational grazing system

Fig. 1: Lambing facilities at Hillsborough

Performance data collected

Ewe performance
Ewe body weight &
Body condition score
(mating, mid pregnancy, 6 wks post lambing, weaning)
Scanned litter size
Ewe health
Cull data

Lambing data
Birth weight
Sex
Lambing difficulty
Mothering ability
Lamb viability

Lamb performance
Growth (birth to slaughter)
Carcass data
Meat quality

Fig. 2: Recording eight week lamb weights at Loughgall

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RamCompare NI – What is it?

- Northern Ireland's first RamCompare progeny test flock
- **Primary aim:** Evaluate the effect of sire EBV for muscle & finishing diet on lamb performance, net feed efficiency (**NFE**) & meat quality (80 lambs)
- Monitoring progeny from high & low EBV sires from birth to slaughter (376 lambs)

Fig. 4: RamCompare NI lambs were obtained by AI from sires recorded with Signet or Sheep Ireland.

Fig. 3: Precision Feeding system at Hillsborough

- Investigate the **dynamics of NFE** in growing lambs using individual feed intake system with:
  - 20 forage feed boxes
  - 6 concentrate feeders
  - 5 water intake systems

Novel genetic and phenotypic data

Computer Tomography measurements:

- Eye muscle area
- Intramuscular fat
- Gigot shape
- Muscle to bone ratio
- Muscle to fat ratio

Fig. 5: Computer tomography scanning

RamCompare NI – Preliminary Lamb Performance

Mean lambing date: 04-03-2018

Table 1: Lambing data

Breed	Suffolk		Texel	
EBV	**High**	**Low**	**High**	**Low**
No. ewes lambed	58	52	60	73
% ewes assisted	31%	42%	27%	27%
Avg. No. lambs born alive	1.8	1.7	1.8	1.8

***Preliminary data**

- Similar litter sizes
- Progeny to high muscle EBV sires did not require more assistance at birth
- Lamb viability higher for high muscle EBV progeny

Table 2: Lamb performance: birth to 8 week

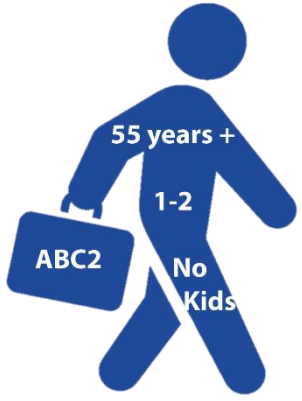
Breed	Suffolk		Texel	
EBV	**High**	**Low**	**High**	**Low**
Birth weight (kg)	4.8	4.7	4.8	4.7
8 week weight (kg)	23.8	23.5	23.8	22.7
Average daily gain (g/d)	287	279	283	269

***Preliminary data**

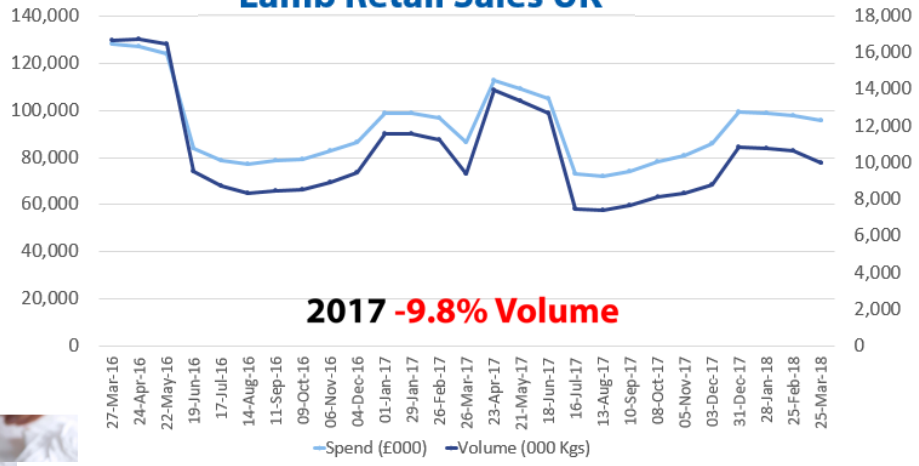
- Similar birth weights for across breed & index
- Lamb growth higher for high muscle EBV

More data to be collected

Lamb Consumer Trends



Lamb Retail Sales UK



Consumer Challenges

- Environmental
- Animal Welfare
- Social Media
- Health Scares
- Convenience
- Price
- Ethical Concerns
- Fast Food
- Alternatives
- Vegetarian
- Negative Press
- Flexitarian

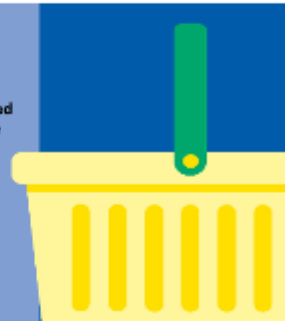
Driving the Discounters

4 in 5

Shoppers say they have visited a variety discounter for some grocery shopping in the past months

£1

In every £7 will be spent at a discounter



Online 'Natives'

40%

of all British shoppers say they have bought some of their food and groceries online

6 in10

shoppers say that it is likely that they will shop online in the next two to three years

At Your Convenience

9 in 10

shoppers claim to have visited a convenience store in the last month

83%

of convenience store shoppers say they could be encouraged to buy more food-to-go at their main convenience store

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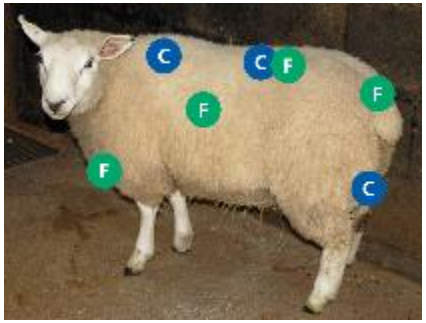
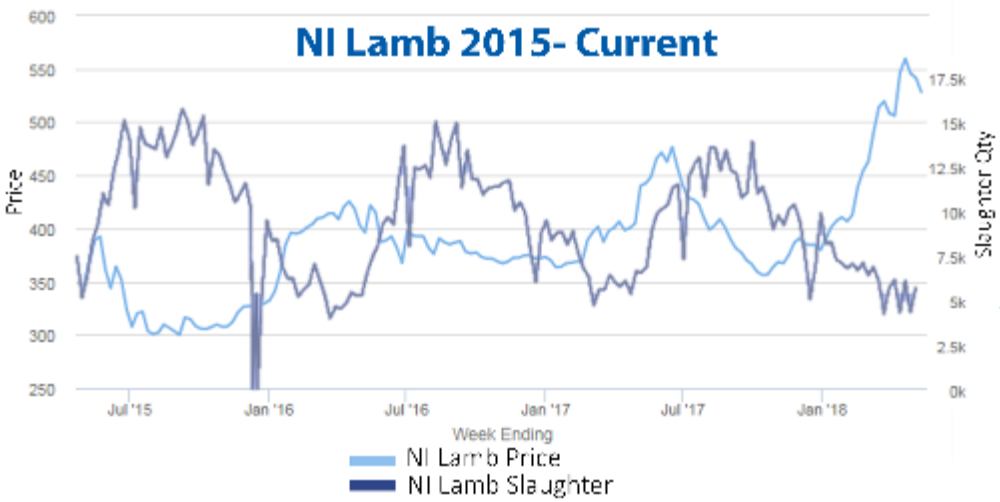
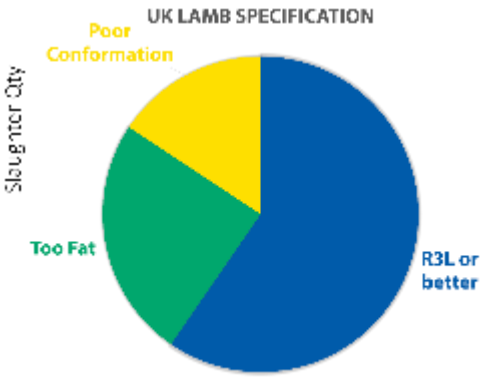
Meeting Specification

Handling Points







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GrassCheck

- Long term grass growth and quality monitoring project
- Grass growth forecasting:
  - 7 day
  - 14 day
- Network of 48 commercial dairy, beef and sheep grass monitor farms
- Range of systems, land type, growth potential & management intensity

Fig. 1: 2018 GrassCheck farm network

Fig. 2: Latest info available at agrisearch.org/GrassCheck

Grass growth

Grass quality

Weather data

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GrassCheck - 2017

- Annual growth in 2017 23% higher than long-term average
- Good growth evident across all farms – **regardless of system & land type ability to achieve +10t DM/ha**
- Significant variation in growth profile county to county

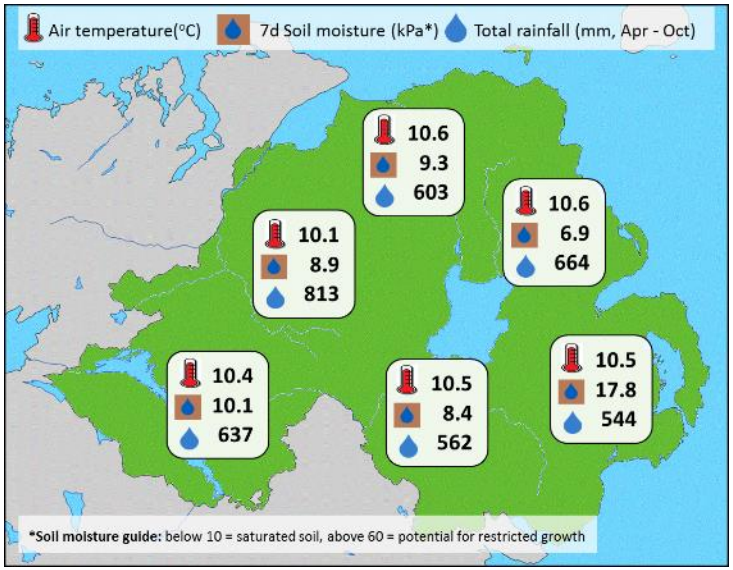

Fig. 4: Regional climatic variation in 2017

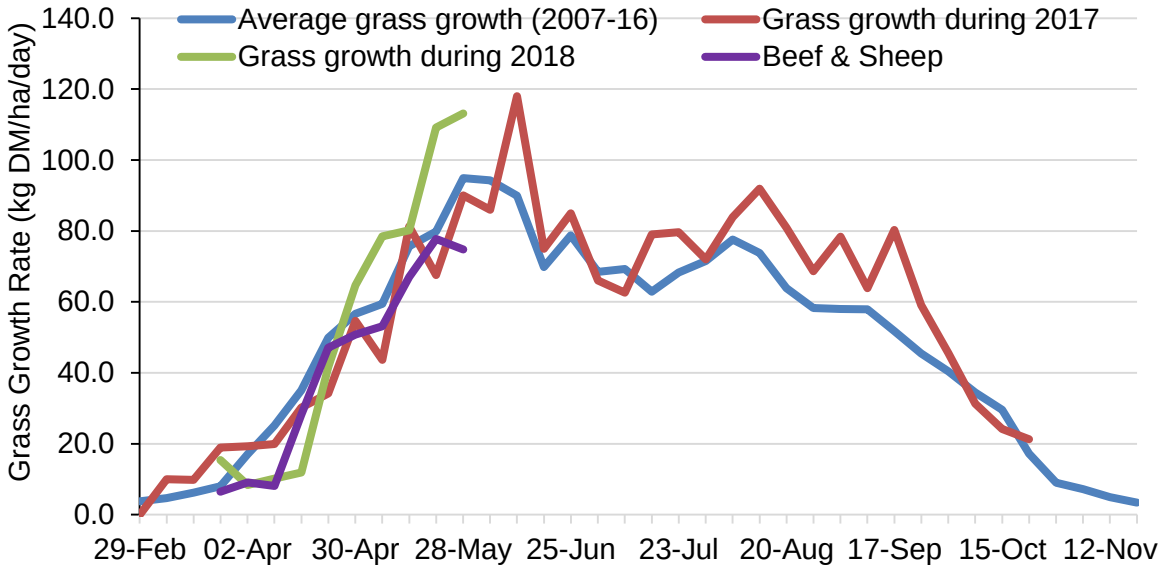

Fig. 3: Annual grass growth curve

Table 1: Grass growth and quality data for 2017

	Plots	Dairy	Beef & Sheep
Yield (t DM/ha)	13.8	12.9	11.3
Growth rate (kg/ha/d)	59.7	55.8	50.8
Dry matter (%)	15.3	16.5	11.4
ME (MJ/kg DM)	11.3	11.4	11.4
Crude protein (%)	19.5	19.0	14.4

"Lamb from Grass"

Project aims:

- Identify realistic targets for lowland sheep systems:
  - Grass production,
  - Utilisation,
  - Animal performance,
  - Outputs per hectare,

Currently estimated only 4.1 tn/ha/yr utilised

- Evaluate 4- versus 8-paddock rotational grazing systems

Six lowland flocks across Northern Ireland in project

- Mid-season lambing flocks
- Range of land type & ewe breed type

Table 2: Grazing targets on pilot farms

Pre-weaning	
Pre-graze sward height	8-10 cm
Post-graze sward height	4 cm
Post-weaning	
Pre-graze sward height	8-10 cm
Post graze sward height	5-7 cm (Lambs) 4 cm (Ewes)

Fig. 5: Aerial view of rotational grazing paddocks

Fig. 6: Grazed residuals

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Crosby Cleland, Brookmount Farm, Saintfield

Farm Profile

- 770 breeding ewes
- 170 acres of grassland
- Tesco lamb supplier

Ewe breeds:

- Primarily Lleyn with Highlander & Belclare cross
- Introducing Aberfield cross this year

Ram breeds:

- Terminal sire: Primera, NZ suffolk, NZ suff tex & Meatlinc
- Maternal sire: Lleyn & Aberfield

Housing / handling systems

- All ewes lamb indoors (March/April) on expanded metal flooring
- Individual pens (12 hours at lambing)
- Shearwell Farmworks recording & EID systems
- Labour efficiency: 1 labour unit & seasonal staff, with limited farm machinery
- All ewes & lambs turned out 2-3 days of age, weather permitting

Fig. 7: GrassCheck farmer – Crosby Cleland

Tag Number	Management Note	Sire Breed	Weigh Date	Weight (kg)
10481	29dsNZ4	Suffolk NZ	24/05/2018	25.00
10493	24dA20	Aberfield	24/05/2018	23.00
10494	24dA20	Aberfield	24/05/2018	22.50
10498	31tsA20 keep	Aberfield	24/05/2018	28.00
10513	36sPratt	Primera X	24/05/2018	19.00
10518	25dsA20 adopt 8884	Aberfield	24/05/2018	22.50
10521	27tdA20 keep	Aberfield	24/05/2018	23.50
10522	31tdA20	Aberfield	24/05/2018	25.00
10549	26dPratt	Primera X	24/05/2018	23.00
11325	31dPratt keep	Primera X	24/05/2018	23.00
11326	17dNZ4	Suffolk NZ	24/05/2018	16.00
11498	20tdNZ4 keep	Suffolk NZ	24/05/2018	16.00

Fig. 8: Data recording on-farm

Brookmount Farm – 2018 Grazing Season

- Average tonnes grown to date: 2.6 tn/ha (Mar – May)
- Average farm cover: 2461 kg DM/ha
- Grazing days ahead: 16.1 days

- Stocking rate: 15 ewes/ha
- Live weight per hectare: 1217 kg

- Huge variation in paddock yields (1.9 to 3.9 tn/ha)

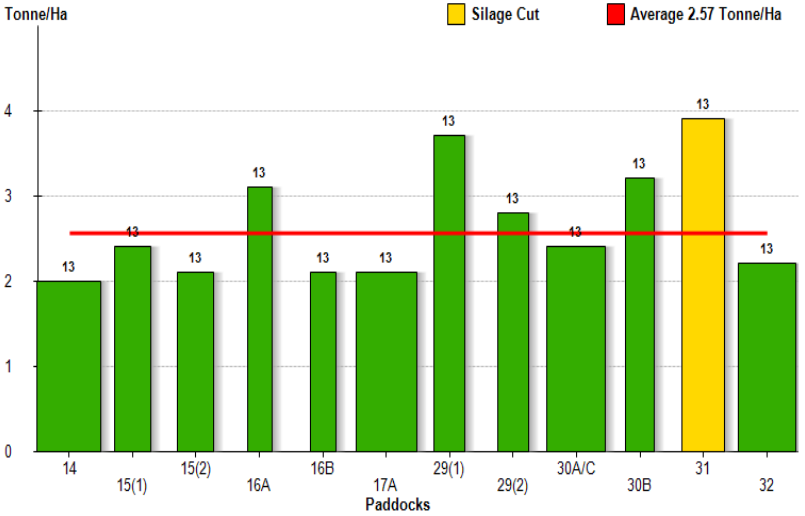


Fig. 9: Variation in grass production across paddocks

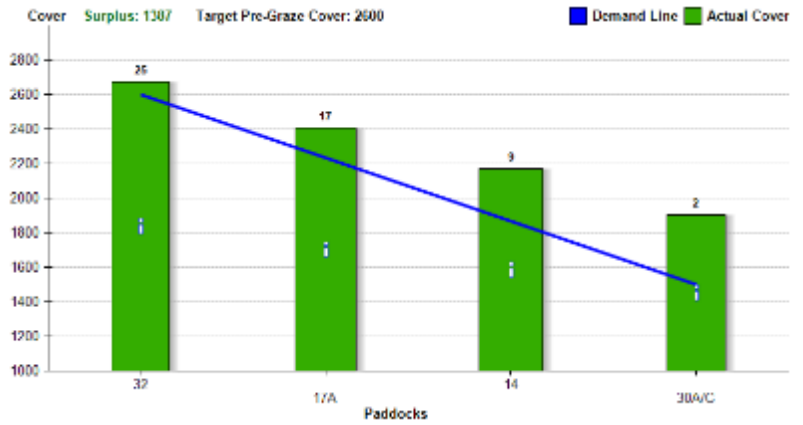
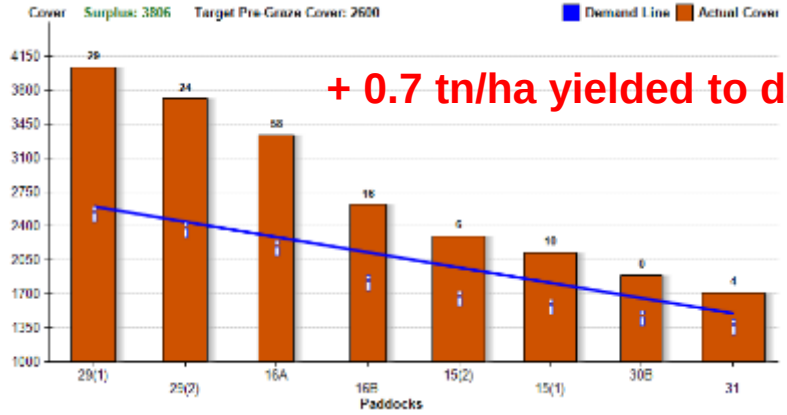


Fig. 10: 4-paddock rotational system



+ 0.7 tn/ha yielded to date

Fig. 11: 8-paddock rotational system

More productive swards in 8 paddock system
Excess grass removed for silage to date: 2.9 tn/ha

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Brookmount Farm – 2018 Lamb Performance

Lambing Data

- Mean lambing date: 22-03-2018
- Born litter size: 2.2 lambs per ewe
- Average birth weight: 4.15 kg

Singles: 6.1 kg Twins: 4 kg Triplets: 3.8 kg

Table 3: Six week animal performance in 4 v 8 paddock system

	4 Paddock System	8 Paddock System
No. ewes & lambs	87 ewes 154 lambs	89 ewes 159 lambs
Land Area	6 ha	6 ha
Stocking rate	15 ewes/ha	15 ewes/ha
Ewe weight (kg)	62.8	64.9
Ewe BCS (1- 5 scale)	3.5	3.5
Average daily gain (g/d)	246	244
Lamb weight (kg)	14.6	14.3

***Preliminary data**

Table 4: Six week animal performance – Sire breed effects

	NZ Suffolk Cross	Aberfield Cross	Meatlinc Cross
Birth weight (kg)	4.0	4.1	4.4
Average daily gain (g/d)	251	242	234
Lamb weight (kg)	14.6	14.3	14.2

***Preliminary data**

Future Plans

- Monitor lamb performance to slaughter
- Post-weaning use a leader-follower grazing system
- Run the system again in 2019

Rotational grazing provides opportunity to:

- **Grow more grass**
- **Increase stocking rate per hectare**
- **Increase liveweight gain per hectare**

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Key messages

- New carcase merit index shows high carcase merit progeny to deliver + £3 - 4 per lamb
- Data from alongside the supply chain can be used to develop EBVs for commercially important traits
- Select rams with good EBV for traits that best suit your system & that enable you to better meet market specifications
- Good grass growth evident across all farms – ability to achieve +10t DM/ha in 2017
- Huge variation in grass production across fields
- 8 paddock rotational system delivers more productive swards (+0.7 tn/ha yielded to date) & 2.9 tn of valuable winter feed

Regular measurement is key: grass covers, grass quality and animal performance