



Elmore & District Machinery Field Days Incorporated

ABN 75 434 841 804

Where farmers look for good ideas

# Ewes for the future

– fertility, lambs & wool

Report – from trial start Jan 2015 to Feb 2018



The team from the Campaspe Lamb Producers Group and sponsors after lamb marking 2015

## Key cooperating sponsors



## Product support sponsors



48 Rosaia Road | PO Box 27 | Elmore Victoria 3558 Australia  
Tel 03 5432 6176 | Fax 03 5432 6388 | Email [info@elmorefelddays.com.au](mailto:info@elmorefelddays.com.au) | [www.elmorefelddays.com.au](http://www.elmorefelddays.com.au)

### Trial committee & contact details

<b>Ged McCormick</b> Chairman sheep committee	0418 505 345 EFD (03) 5432 6176	info@elmorefielddays.com.au	Elmore Events Centre Rosaia Road Elmore Vic 3558
<b>Max Williams</b> EFD ewe trial committee	0428 341 667 Home (03) 5436 9254		Elmore Vic 3558
<b>Roger Trewick</b> EFD ewe trial committee	0428 326 190 Home (03) 5432 6190	peperton@bigpond.net.au	"Pepperton" Minto Road Elmore Vic 3558
<b>Candice Cordy</b> Landmark Bendigo	0408 963 109 Office (03) 5448 3881	candice.cordy@landmark.com.au	Landmark 148 Midland Hwy Epsom Vic 3551
<b>Athol Frederick</b> formerly Landmark Bendigo	0428 510 518	atholwool@gmail.com	
<b>Kieran Ransom</b> formerly DPI Bendigo	0419 320 824 Home (03) 5443 1871	kieran.ransom@bigpond.com	19 Neale St Bendigo Vic 3550
<b>Jim Walsh</b> Veterinary & nutrition advisor			Coopers Animal Health

### Trial outline

Six breed types of ewes are being compared for prime lamb and wool production. A total of 252 ewe lambs from 6 breed-types, each represented by 42 ewes are being joined to terminal sire rams. Each breed type group was randomly selected from 3 properties, 14 ewe lambs per property after an allowance for culling. Selection preference was true commercial flocks rather than commercial flocks attached to studs. The ewes are normally run together as one mob, except when lambing in their separate breed groups or after pregnancy scanning when dry ewes, ewes carrying singles and ewes carrying multiples are separated for differential feeding to match targets suggested in the 'Lifetime Ewe' program. Dry ewes may be run separately until weaning to avoid overfeeding. It is planned to run the trial for at least four adult lambings; with satisfactory progress the trial could be extended.



The breed-types are listed below.

<b>Breed type</b>	<b>Background</b>
Border Leicester x Merino Crossbred ewes	The most common prime lamb mother in the Elmore and northern districts. The time ewes were sourced with the help of the Victorian State Committee of the Australian Border Leicester Association.
Multimeat x Merino Crossbred ewes	Multimeats are a composite breed based on White Suffolk genetics. They supply rams that are DNA tested to carry 2 copies of the Booroola fertility gene. These rams breed first cross ewes from Merinos. The first cross lambs carry one copy of the gene. Multimeat breeders claim these ewes consistently rear 30% more lambs than normal crossbreds.
Cashmore-Oaklea Performance Maternal (Composites)	Cashmore-Oaklea Performance Maternal (Composites) have bred sheep from the following breeds: Coopworth, Border Leicester, East Friesian, Finn, SAMM (South African Meat Merino), Texel, Poll Dorset, White Suffolk, Merino, Corridale, NZ Romney and Perendale. They have achieved a reputation for good lambing percentages that are assisted by the hybrid vigour between the various breeds.
Merino Loddon Valley	The second most common prime lamb mother in the Elmore and northern districts. Rams are predominantly Peppin genetics but some studs contain some South Australian Merino genetics. Ewes were sourced with the help of the Loddon Valley Stud Merino Breeders Association from three properties in northern Victoria that use Loddon Valley Merino rams.
Leahcim Merinos	Leahcim is a South Australian Merino stud that has a long history of selecting a meat type merino with low wrinkle, bare points, no need to mules but with high quality wool. The stud sells 700 rams annually and many studs and commercial flocks in Victoria are introducing Leahcim genetics.
Centre Plus Merino	Centre Plus is a group breeding scheme and registered Merino stud and in Central West NSW that aims to produce dual purpose sheep. This Merino strain has achieved a good reputation from the high dual purpose and fine wool index ASBVs on the Sheep Genetics Australia website.

**The Elmore Field Days sheep trials committee need to script read results before they are passed on to the media by participating groups. They are concerned that selected information may be used out of context without presenting the full situation and results. When breed groups use the results in their promotions it is expected the Elmore Field Days will be acknowledged.**

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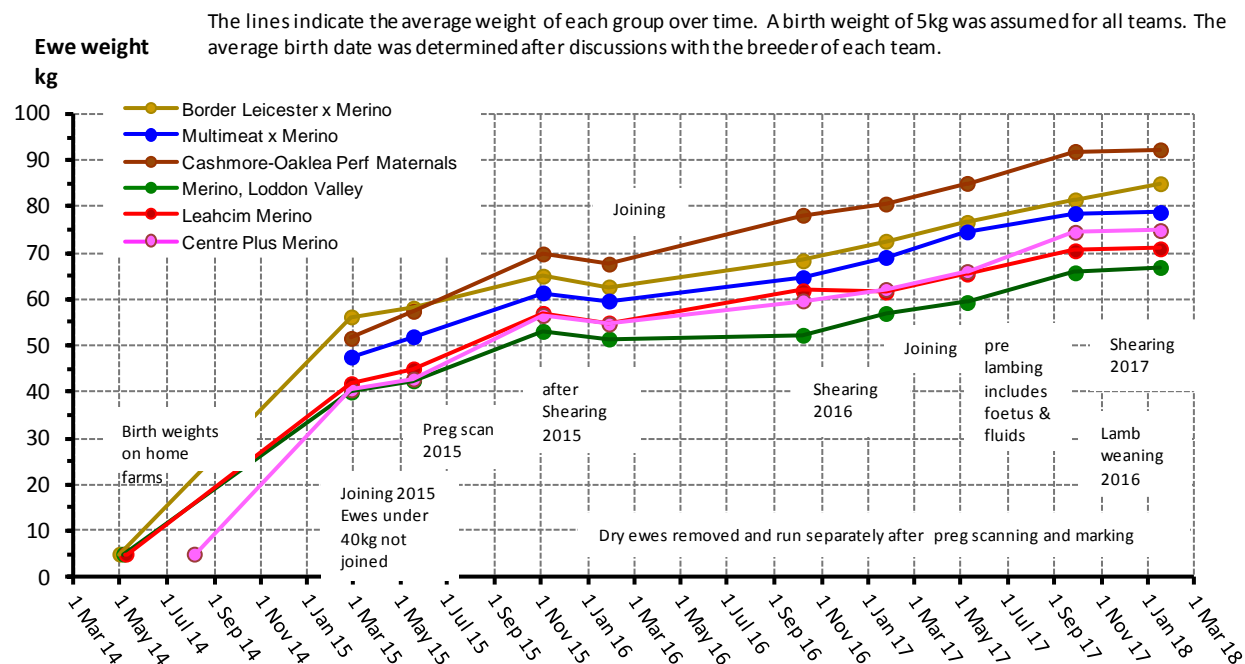
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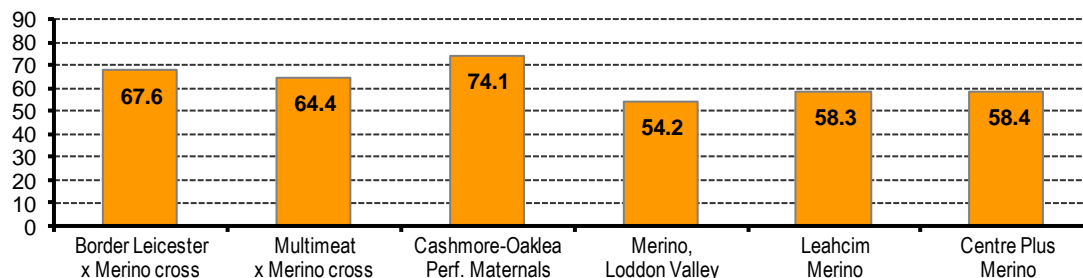
## Section 1. Summary to February 2018

### Ewe weight and condition score

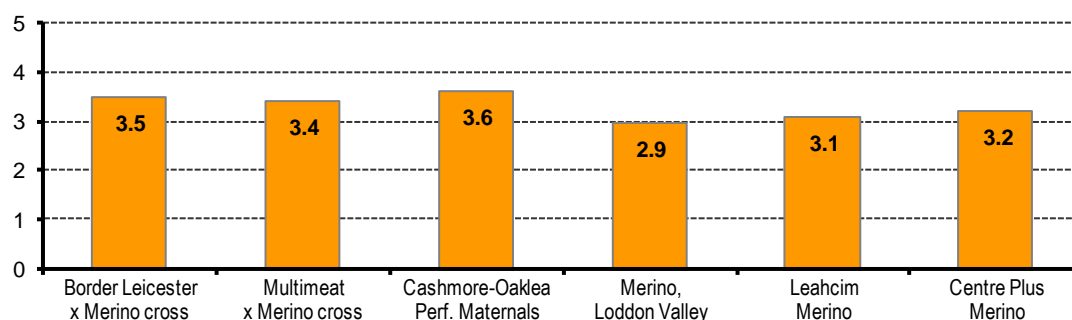
#### Ewe weights, fleece free, from birth on farms of origin and after arrival at Elmore



#### Ewe weight at joining, as adults, fleece free, aver of 2016 and 2017



#### Ewe condition score at joining, as adults, aver of 2016 and 2017



## Lambing percentage

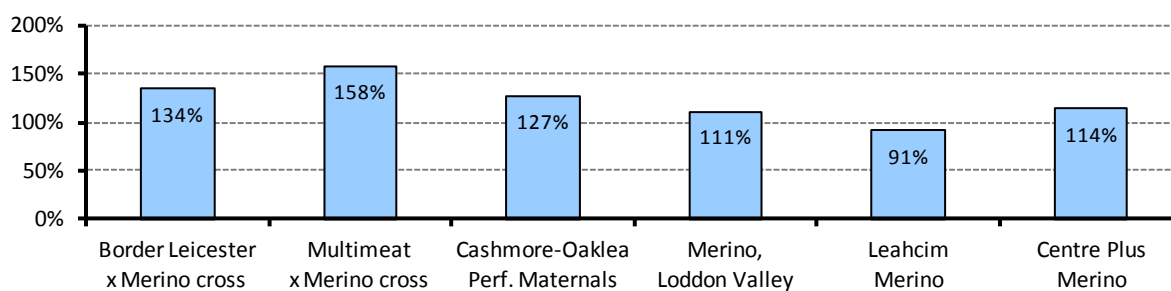
### Seasonality of breeding

Lambing percentages are influenced by many factors including seasonality of breeding season, ewe condition score, live weight, nutrition around joining time, nutrition 4 to 6 months before joining as well as the seasonality of the breeding season. In this trial numbers of ewes are also limited.

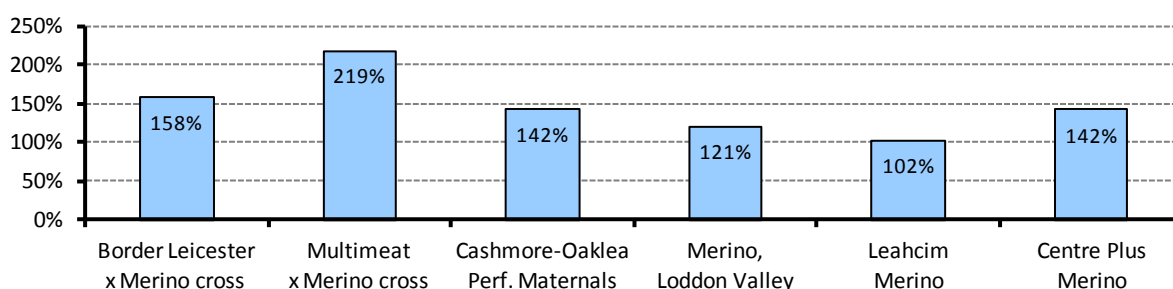
This Elmore trial was not designed to compare the seasonality of breeding season between the ewe groups, but rather how the breed groups perform in typical northern Victorian conditions. Joining times in northern Victoria are commonly from early November to late January, a few farms may join as late as February. The joining times at Elmore thus reflect local farm management.

Most sheep in Australia are seasonal breeders. They join more readily in the autumn than late spring to early summer. The breeds in this trial differ in their seasonality of breeding. Border Leicester x Merino (BL x M) cross ewes are well known to be more seasonal breeders than merinos. The Cashmore – Oaklea Performance Maternals would also be expected to be highly seasonal breeders due to their background that includes Border Leicesters, Coopworths and Romneys.

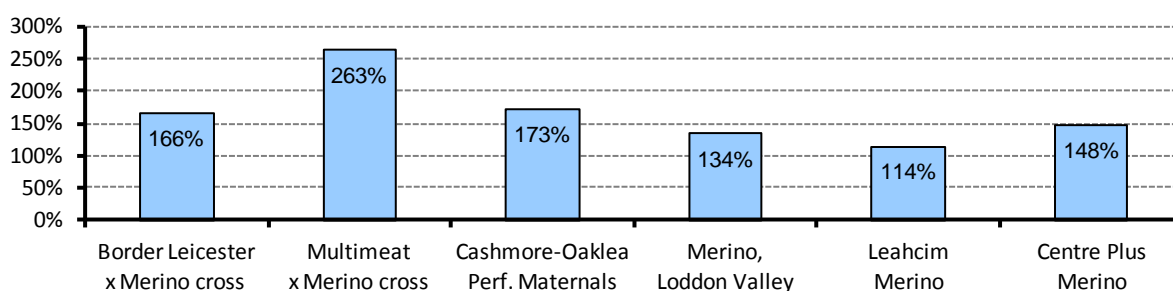
### Lambs marked per ewe joined, adult ewes, average 2016 & 2017 lambings



### Lambs born per ewe joined, adult ewes, average 2016 & 2017 lambings



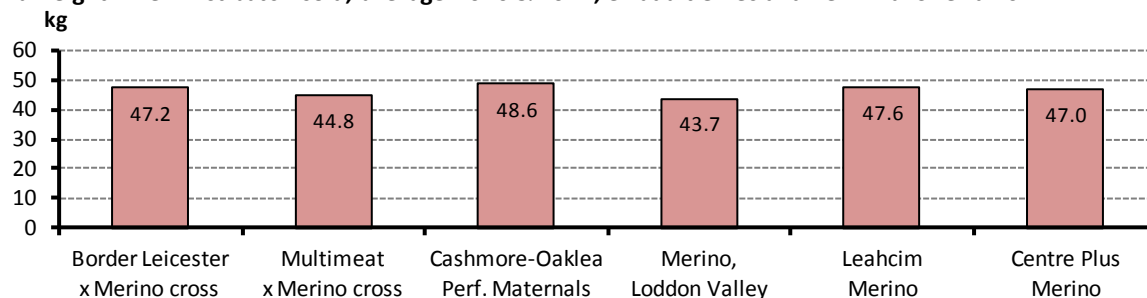
### Lambs scanned per ewe joined, adult ewes, average 2016 & 2017 lambings



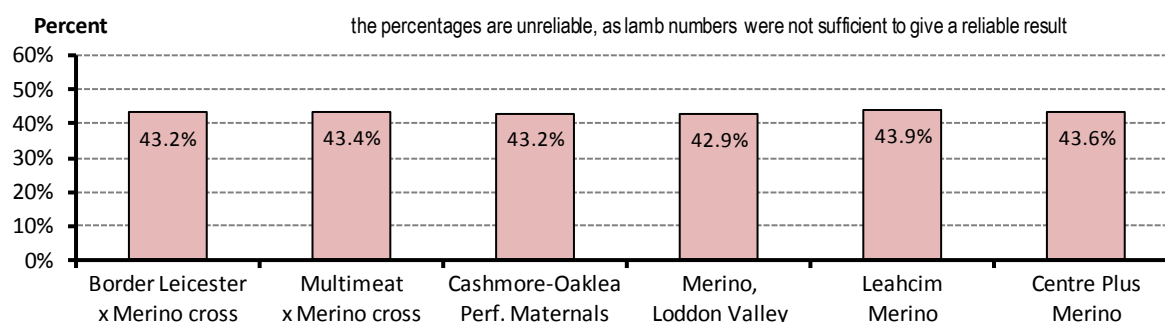
## Lambs & carcase

Lamb weights when first batch sold. No adjustments have been made to account for more multiple births in some breeds. Twins and triplets grow slower than singles, especially up to weaning.

### Lamb weight when first batch sold, average 2016 & 2017, ex adult ewes and Terminal Sire rams

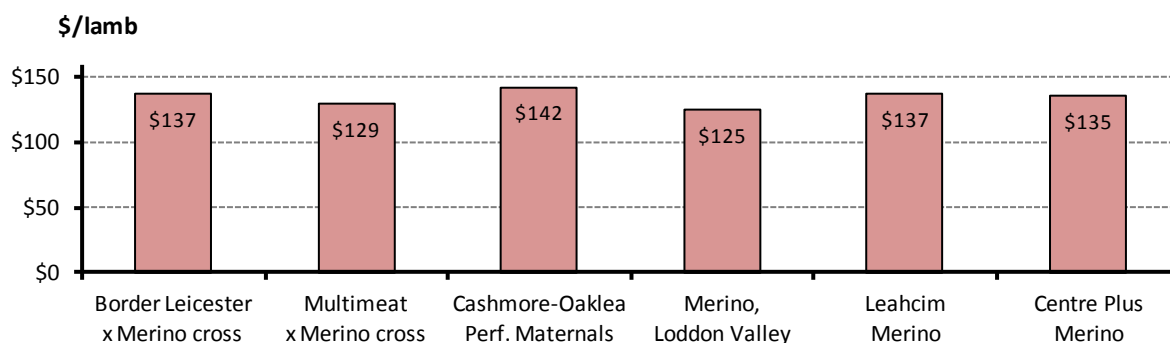


### Lamb dressing percentage, average of 1st batch of 2016 lambs in Jan 2017



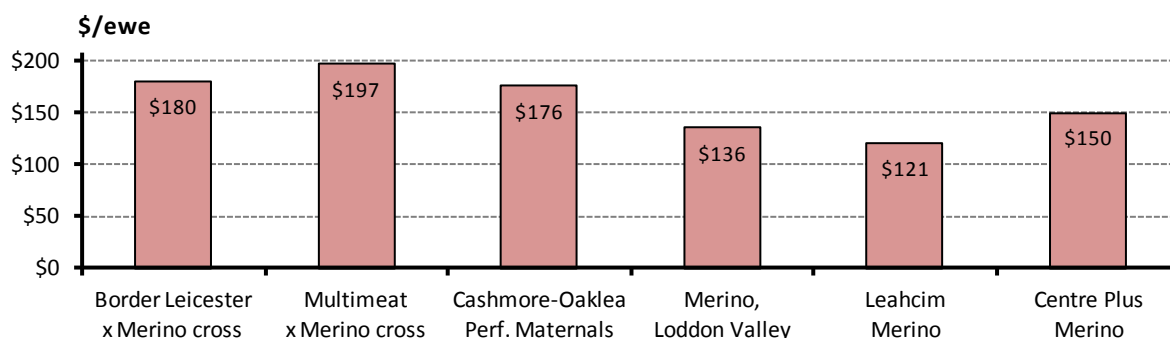
The lamb price – value per head was calculated from their live weights when the first batch was marketed, their dressing percentage, carcase price per kilo and skin value. Skin prices of all lambs, regardless of breed, were given the same price per head.

### Lamb price Aver 2016 & 2017 drop, incl skins, \$/lamb



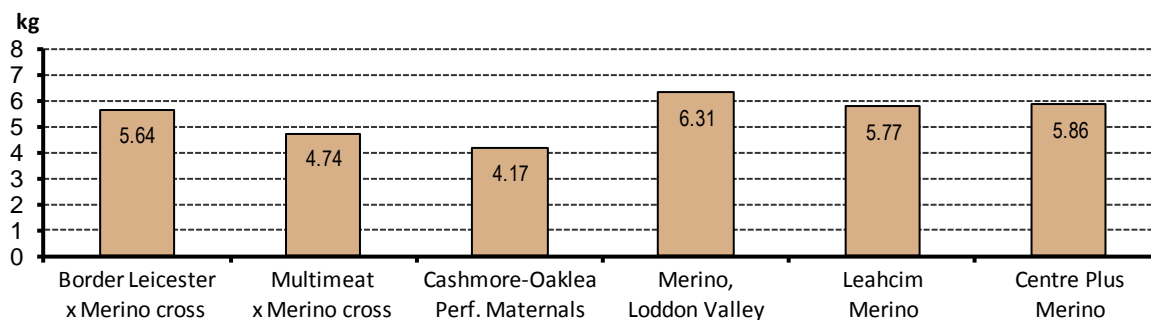
The lamb returns per ewe were calculated from the lamb price per head plus skin value, the percentage of lambs marked and an allowance for lamb deaths between marking and sale.

### Lamb returns per ewe, Aver 2016 & 2017 drop, incl skins, \$/ewe

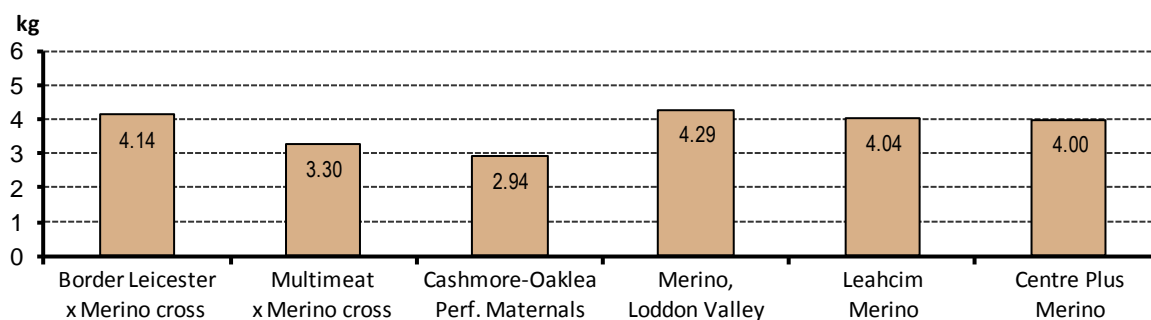


## Wool

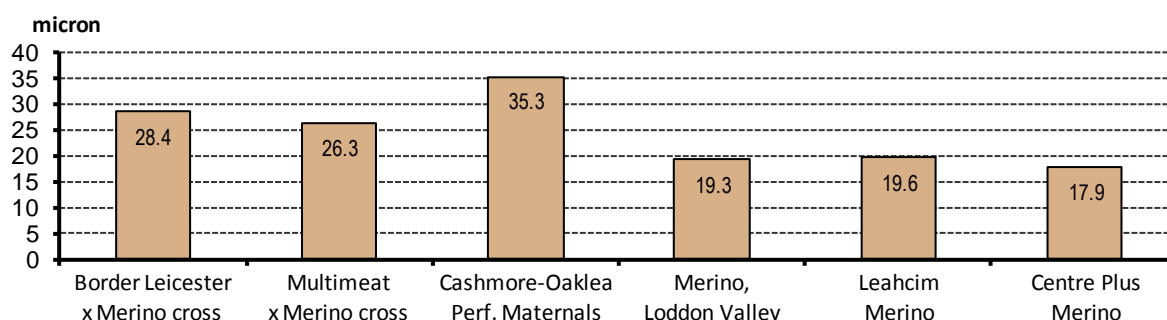
Greasy fleece weight as adult ewes, average 2016 & 2017 shearings



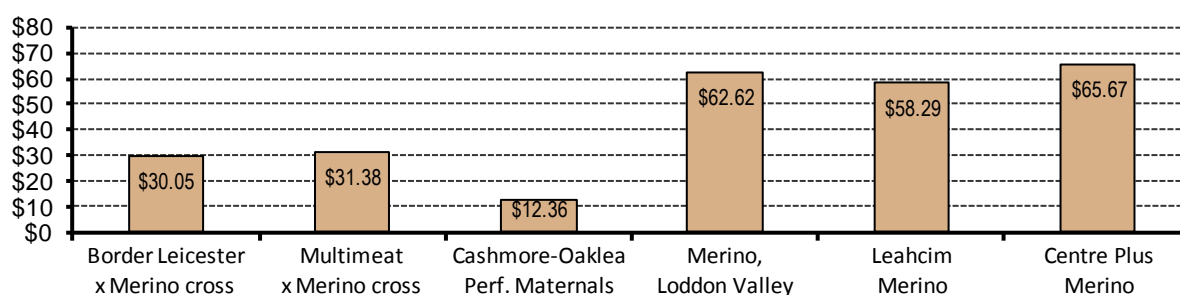
Clean fleece weigh as adult ewes, average 2016 & 2017 shearings



Wool Fibre diameter as adult ewes, average 2016 & 2017 shearings



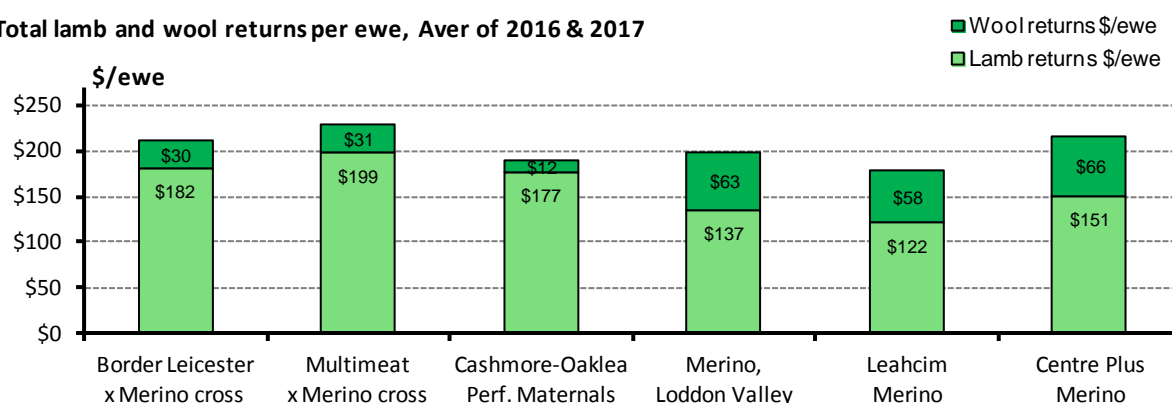
Fleece value as adult ewes, \$/head, average 2016 & 2017 shearings



### Total lamb and wool returns per ewe and DSE estimate

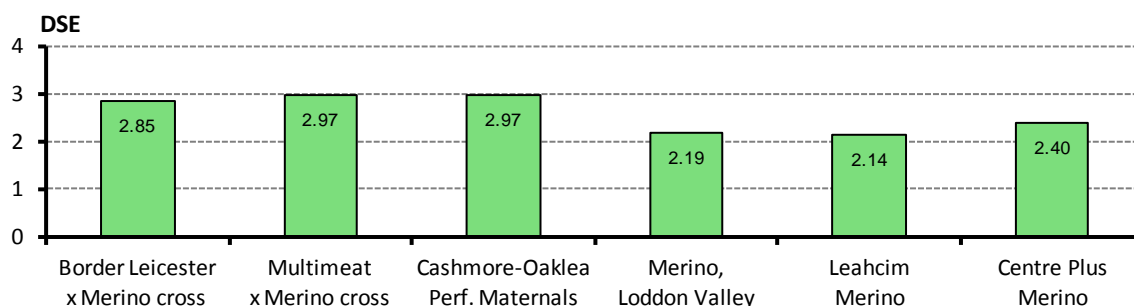
The total lamb and wool returns per ewe were averaged for the 2016 and 2017 season to give the average total returns per ewes. Lamb returns per ewe were calculated from the lambing percentage and lamb price per head for each breed.

#### Total lamb and wool returns per ewe, Aver of 2016 & 2017



The DSE (dry sheep equivalent) per ewe indicates the feed per ewe and lambs marked for the six breeds. This calculation allows for the extra feed needed with higher lambing percentages and higher ewe live weights. One DSE is the amount of feed energy needed to maintain a dry sheep at 50kg live weight for one year; it equates to about 400 kg dry matter of pasture eaten. A DSE rating of 2.14 would thus equate to about 850 kg of pasture eaten while a rating of 2.97 would equate to about 1190 kg of pasture.

#### DSE rating per ewe & lambs marked & grown to sale, Aver 2016 & 2017





## Section 2: Results in detail

### Background

#### Ewe breeds and management

What's the best sheep type for a combination of prime lamb and wool production? This question has been debated by sheep producers for years. In January 2015, the Elmore Field Days trial, Ewes for the Future – fertility, lambs & wool, began. The trial aims to compare the merits of six alternative sheep types in the Northern Victorian environment at Elmore. The results will assist sheep producers determine the merits of a number of ewe breed alternatives for prime lamb and wool production. The main characters of interest are lambing percentages, lamb growth rates and wool production.

Six ewe types, three 'crossbred' and three 'merino', are being compared:

Breed type	Background
Border Leicester x Merino Crossbred ewes	The most common prime lamb mother in the Elmore and northern districts. The time ewes were sourced with the help of the Victorian State Committee of the Australian Border Leicester Association.
Multimeat x Merino Crossbred ewes	Multimeats are a composite breed based on White Suffolk, Border Leicester and several other breeds genetics. They supply rams that are DNA tested to carry 2 copies of the Booroola fertility gene. These rams breed first cross ewes from Merinos. The first cross lambs carry one copy of the gene. Multimeat breeders claim these ewes consistently rear 30% more lambs than normal crossbreds.
Cashmore-Oaklea Performance Maternals (Composites)	Cashmore-Oaklea Performance Maternals (Composites) have bred sheep from the following breeds: Coopworth, Border Leicester, East Friesian, Finn, SAMM (South African Meat Merino), Texel, Poll Dorset, White Suffolk, Merino, Corridale, NZ Romney and Perendale. They have achieved a reputation for good lambing percentages that are assisted by the hybrid vigour between the various breeds.
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Leahcim Merinos	Leahcim is a South Australian Merino stud that has a long history of selecting a meat type merino with low wrinkle, bare points, no need to mules but with high quality wool. The stud sells 700 rams annually and many studs and commercial flocks in Victoria are introducing Leahcim genetics.
Centre Plus Merino	Centre Plus is a group breeding scheme and registered Merino stud and in Central West NSW that aims to produce dual purpose sheep. This Merino strain has achieved a good reputation from the high dual purpose and fine wool index ASBVs on the Sheep Genetics Australia website.

Ewe lambs, 2014 drop were delivered to the Elmore Field Days by early January 2015. They were fed a high-quality diet to reach a suitable joining weight in late February 2015, when they were joined to White Suffolk rams. The aim is to run them together except during lambing. Ewes are shorn in early October each year at the Elmore Field Days and when appropriate, carryover lambs are shorn in early December. The table below shows key management dates.

Lambing	Seasonal year	Ewe age at lambing	Join date	Mid lambing date
1 <sup>st</sup>	2015	15 mths	late Feb 2015	Aug 2015
2 <sup>nd</sup>	2016	2 yrs	late Jan 2016	July 2016
3 <sup>rd</sup>	2017	3 yrs	early Jan 2017	June 2017
4 <sup>th</sup>	2018	4 yrs	early Dec 2017	May 2018
5 <sup>th</sup>	2019	5 yrs	early Nov 2018	April 2019

Are the ewes in the trial representative of the breed group? Ewes representing each breed were sourced from 3 properties because of the genetic and farm background variability between flocks within a breed. All ewe lambs in this study came from flocks nominated by breed society representatives. Sheep breeds are composed of many bloodlines, there are genetic differences between bloodlines, flocks within bloodlines as well as individuals in an individual flock. For example, the Merino breed covers a wide range of types from those with a focus on very fine wool to those with a focus on dual purpose meat and wool characters. These results therefore, only apply to the sheep at Elmore and they may or may not be truly representative of the breeds in general.

#### Comparing lambing percentages in ewe trials

Trials at Trangie by the NSW Dept Agriculture found big differences between Merino bloodlines in lambing percentages when all ewes were reared together from conception to the end of the trial. Similar differences no doubt exist in other breeds. However issues arising from ewe trials comparing lambing percentages include:

- Does the level of nutrition in early life as a foetus and as young lamb up to weaning and from weaning until entry to this trial, affect mature body size, wool production and lambing percentages later in life? Overall, Australian and New Zealand research, in four trials with merino sheep, indicate the nutrition of the young merino ewe, from a foetus to weaning has zero or at most small long term effects on subsequent reproduction under commercial farm conditions. However, two trials in Britain with local breeds indicated that under nutrition as a young lamb lowered lambs born per ewe joined by around 4 to 5%. It was suggested this was due to a higher rate of embryo or foetal mortality during pregnancy rather than differences in dry ewes or number of eggs shed per ewe.
- How does hybrid vigour affect lambing percentage?. Hybrid vigour is well known in Border Leicester x Merino cross ewes. What is less known is the hybrid vigour when Merino strains are crossed. NSW Dept Agriculture research conducted from 1975 to 2000 indicated that when Merino bloodlines were crossed the average values of ewe or maternal hybrid vigour, expressed through a ewe being a pure bloodline or cross bloodline, were 1.2% for fertility (wet versus dry ewes), 2.9% for litter size (singles, twins or triplets), 6.8% for lamb survival and 8.2% for lambs weaned. These NSW Dept Agriculture merinos were initially purchased in the early 1970s when merino bloodlines were more defined than present day merino studs as artificial insemination and the use of rams from other studs may have reduced differences between these traditional bloodlines. Reviews of research worldwide indicate average hybrid vigour of 14% in number of lambs weaned when any two breeds are crossed. This may have implications for the Merino flocks where some studs have used rams from diverse sources for many years.
- Seasonality of breeding season. Some breeds, especially Border Leicester x Merino cross and the Cashmore – Oakley Performance Maternals are regarded to be more seasonal breeders than Merinos. The choice of lambing time may thus put some breeds at an advantage or disadvantage to others.
- Lambing management, for example not separating singles or twins after pregnancy scanning within each breed group, might disadvantage breeds with a higher percentage of twins.
- The ewes in the trial were first joined as ewe lambs. The question then arises: What effect did lambing as a ewe lamb have on lambing in the following years? Did lambing as ewe lambs penalise those ewes so they had a lower lambing percentage the following year? An analysis in the previous

trial indicated that lambing as a ewe lamb had no deleterious effects on lambing percentages in subsequent years. Several other trials have given similar results.

## The Elmore environment

The ewes are run on the Elmore Field Days site 3 km east of Elmore in northern Victoria. The long term average rainfall is 466 mm. The rain is winter dominant. Most sheep grazing is on annual pastures growing between late autumn and spring and dry pasture residues and crop stubbles over the summer. Annual crops of cereals, oilseeds and grain legumes are normally sown in late autumn and harvested in early summer. Summer storms in some years provide extra green feed from dry-land lucerne and green summer weeds. The trial sheep mostly grazed annual green pasture in the winter – spring growing season and dry pasture and crop residues in the summer. There was some dry-land lucerne that provided additional summer feed

### Notes 2015 season

Dry seasonal conditions were mostly experienced from March 2015 to April 2016. During joining and up to a month prior to lambing in 2015 joined ewes were fed a supplement of Coprice sheep pellets (1.4 kg/head/week, fed every few days) and hay. Prior to lambing the Coprice pellet ration was increased to 2.8 kg/head/week. Green pasture available improved immediately prior to lambing and during lambing the GrazFeed computer program predicted the ewes were eating about 1.0 to 1.3 kg green pasture DM per day. The ration was then reduced to 1.4 kg/head/week of pellets plus hay. Lambing ewes were supplementary fed with Coprice sheep pellets and hay in their separate lambing groups during the 2015 lambing. The supplement was stopped several weeks after marking and commenced again just prior to weaning to train the lambs to readily take supplementary feed. There were no cases of Pregnancy Toxaemia (Twin Lamb Disease) during lambing, even though some ewes scanned with triplets or quads. Weaned lambs were fed Coprice pellets in the few weeks between weaning in mid October and their sale as store-finisher lambs a few weeks later.

### Notes 2016 season

From early December 2015 ewes were fed Coprice pellets (2.0 kg/head/week, fed twice per week) and high quality hay (2.0 kg/head/day fed in big bales twice per week) at pasture. In early March 2016 the ewes were confined to one paddock and fed Coprice pellets (average intake 3.7 kg/head/week, fed twice per week) and high quality hay (7.7 kg/head/day fed in big bales twice per week). The ewe weighing in early May indicated some crossbred breeds rapidly put on weight while the merino types maintained or slowly lost weight. It was obvious that some crossbred breeds were hogging the limited supply of pellets in the lick feeder. Ewes were then separated into condition score groups and fed according to 'Lifetime Ewe' principles to reach target condition scores before lambing. Pasture supply increased rapidly due to the April-May rains. Supplementary feeding ceased when ewes were divided into their lambing paddocks in mid June when the average pasture feed on offer was about 1400 kg green DM per hectare. From lambing onwards no supplements were fed due to the adequate amounts of green feed. The June – July lambing resulted in few lambs reaching heavy slaughter weights by the seasonal dry-off. The prime lambs were shorn in early December 2016 and finished on Coprice pellets. They were sold in two batches when they reach suitable weights in early 2017.

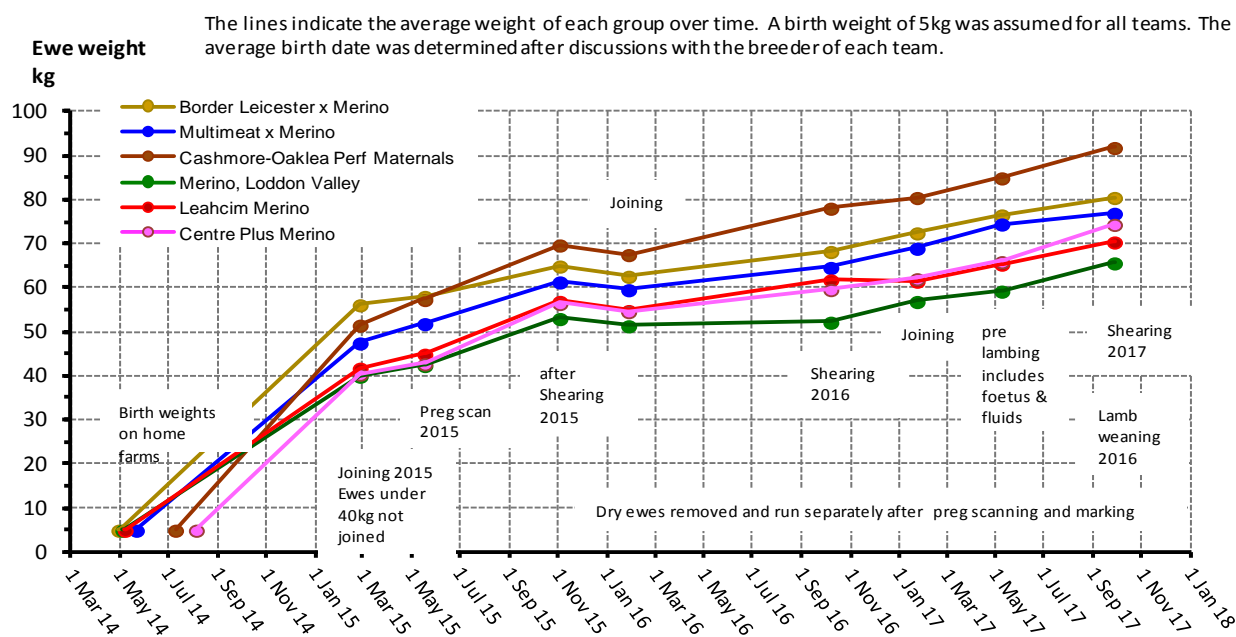
### Notes 2017 season

Very good seasonal conditions existed during the 2017 season. Ewes were fed a supplement of oaten hay from late January to early May. The seasonal break occurred in late April and hay feeding finished when ewes were drafted into their breed group lambing paddocks on 9 May. The lambing paddocks averaged 2 t/ha of green feed at the start of lambing. The excellent pasture conditions resulted in excellent lamb growth until weaning in late October. The dry spring resulted in pastures drying off about 2 weeks earlier than normal, but overall it was a very good season. Approximately 60% of lambs were sold in wool in November while the remaining lambs were sold in early February 2018 after being fed Coprice pellets from late November.

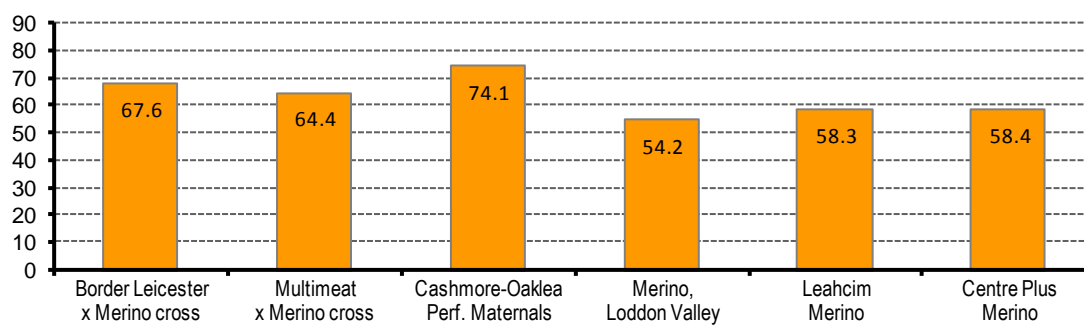
## Results

### Ewe weight & condition score

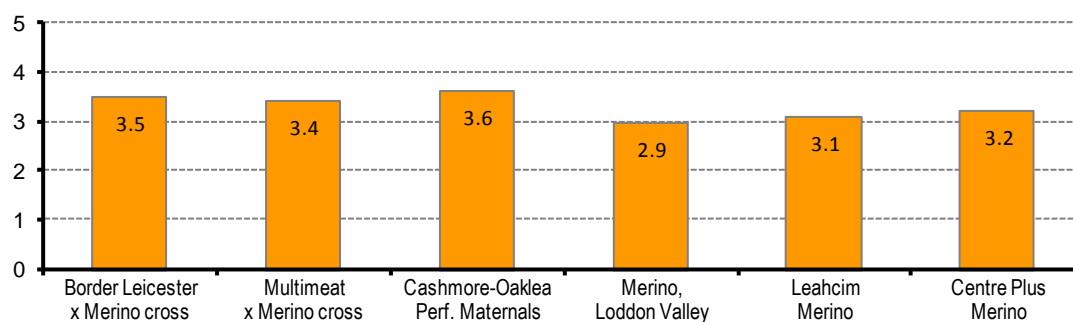
#### Ewe weights, fleece free, from birth on farms of origin and after arrival at Elmore



### Ewe weight at joining, as adults, fleece free, aver of 2016 and 2017



### Ewe condition score at joining, as adults, aver of 2016 and 2017



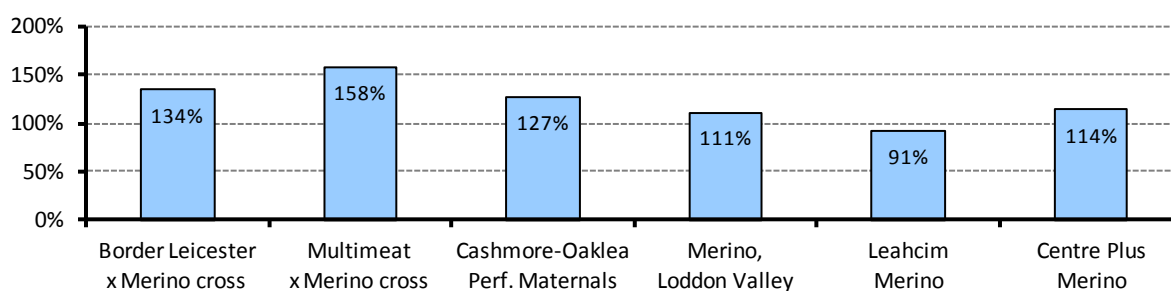
### Ewe weight kg (fleece free) and condition score at each joining

Team	Border Leicester x Merino, kg	Multimeat x Merino, kg	Composites Cashmore-Oaklea, kg	Merino, Loddon Valley, kg	Leahcim Merino, kg	Centre Plus Merino, kg
Ewe weight, 1 <sup>st</sup> joining as ewe lambs, 2015 lamb drop,	58.4	48.8	52.7	42.2	43.9	41.4
Ewe weight at joining, 2016 lamb drop	62.7	59.7	67.6	51.4	54.9	54.7
Ewe weight at joining, 2017 lamb drop	72.6	69.1	80.6	57.0	61.6	62.1
Ewe condition score, 1 <sup>st</sup> joining as ewe lambs, 2015 lamb drop,	3.5	3.0	2.9	2.7	2.7	2.8
Ewe condition score at joining, 2016 lamb drop	3.2	3.1	3.4	2.8	3.0	3.1
Ewe condition score at joining, 2017 lamb drop	3.7	3.6	3.8	3.1	3.1	3.3

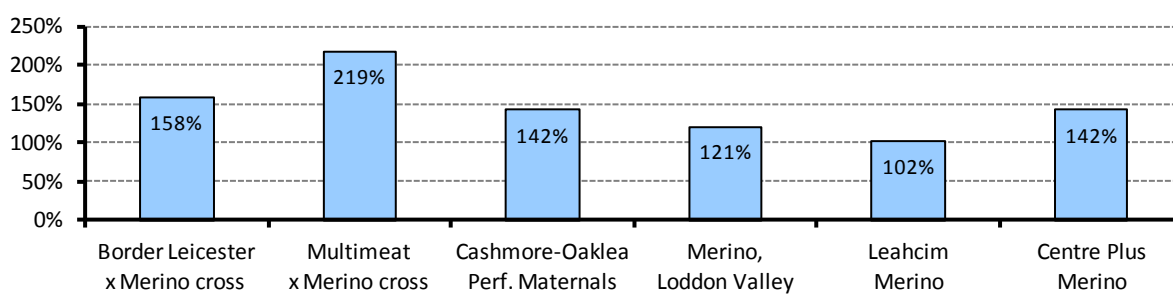
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## Lambing details

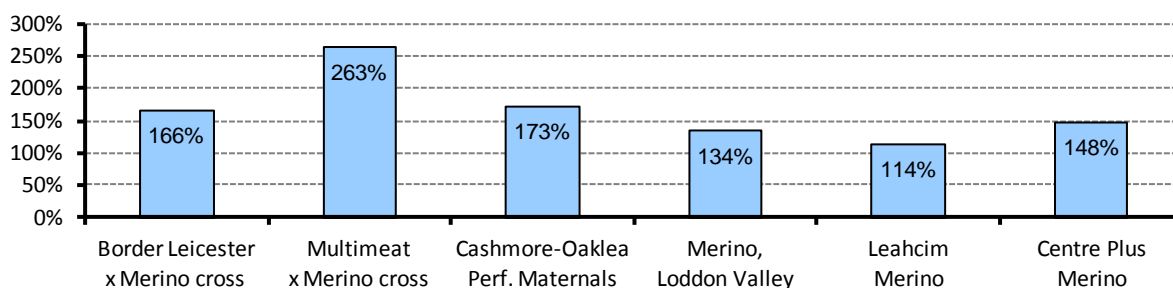
Lambs marked per ewe joined, adult ewes, average 2016 & 2017 lambings



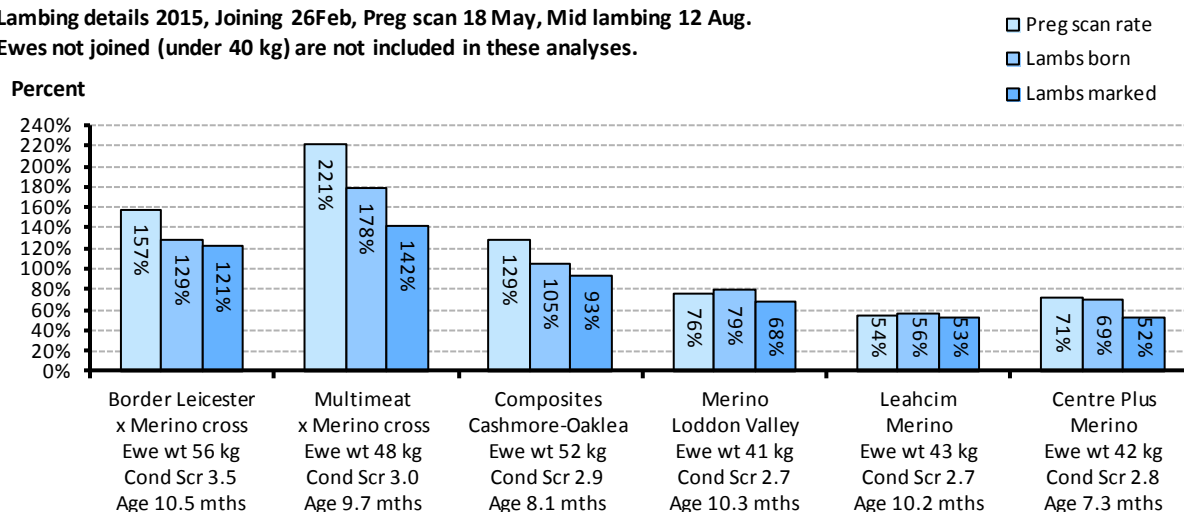
Lambs born per ewe joined, adult ewes, average 2016 & 2017 lambings



Lambs scanned per ewe joined, adult ewes, average 2016 & 2017 lambings

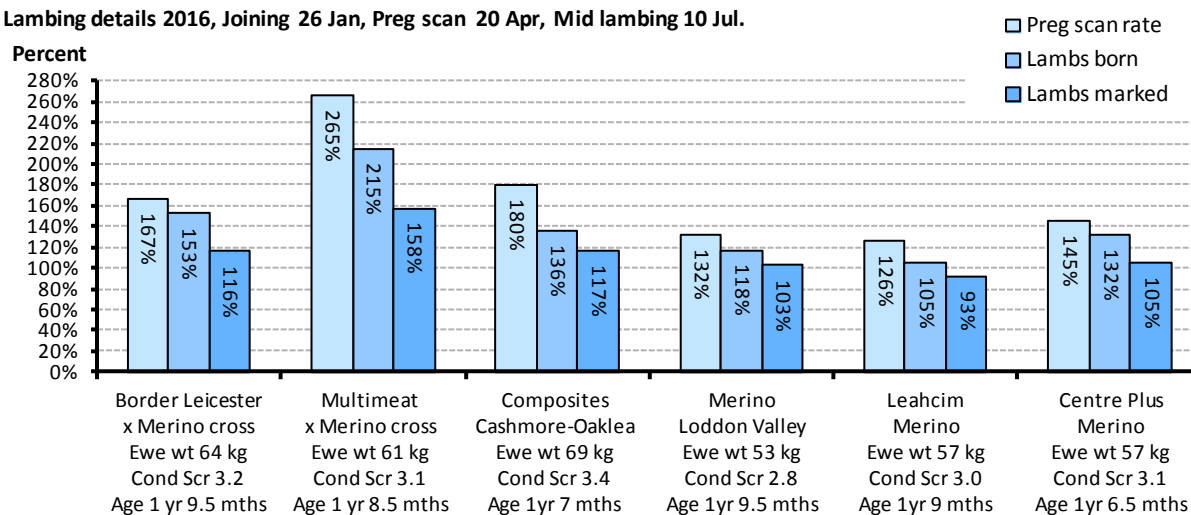


**Lambing details 2015, Joining 26Feb, Preg scan 18 May, Mid lambing 12 Aug.**  
**Ewes not joined (under 40 kg) are not included in these analyses.**



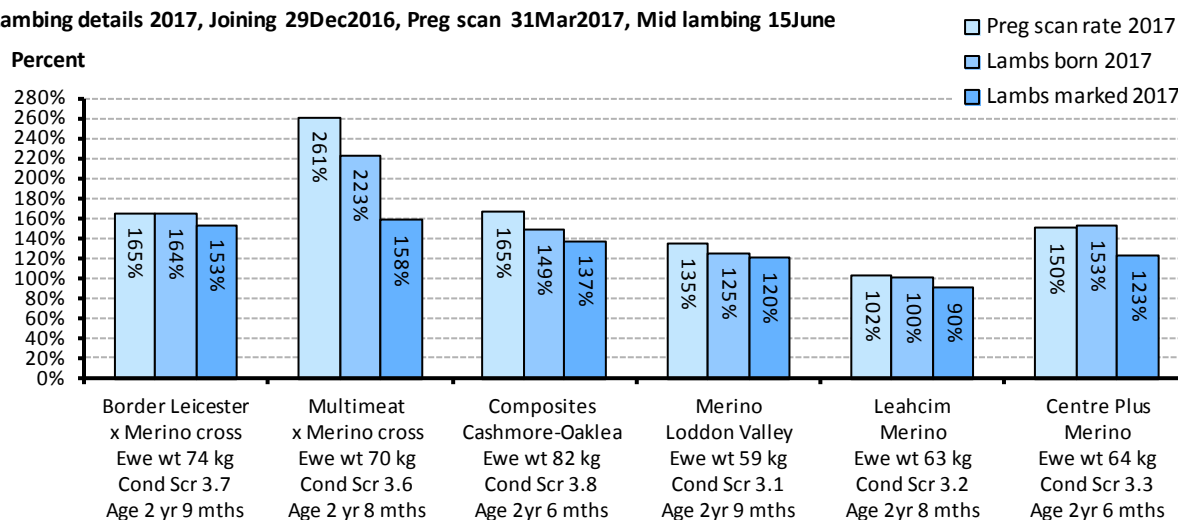
*Details at joining: Ewe weight - fleece free, condition score and age at joining*

**Lambing details 2016, Joining 26 Jan, Preg scan 20 Apr, Mid lambing 10 Jul.**



*Details at joining: Ewe weight - fleece free, condition score and age at joining*

**Lambing details 2017, Joining 29Dec2016, Preg scan 31Mar2017, Mid lambing 15June**



*Details at joining: Ewe weight - fleece free, condition score and age at joining*



## Embryo mortality

During lambing dead lambs were picked up at least daily, this was added to the number of lambs marked to calculate the number of lambs born. It is obvious there are some large differences in some breeds between the pregnancy scanning rate and the number of lambs born. This suggests embryo-foetal mortality may be a factor in some breeds – assuming the pregnancy scanning and estimates of lambs born were accurate. All ewes received the full Coopers Campylobacter vaccine program, a New Zealand developed vaccine to prevent abortions caused by the Campylobacter bacteria, mainly a problem in young ewes. An experienced veterinarian suggested the cause as higher embryo-foetal mortality in ewes carrying multiple births may be due to competition for a limited supply of nutrients from the placenta by multiple embryos-foetuses.

## Seasonality of breeding season

Lambing percentages are influenced by many factors including seasonality of breeding season, ewe condition score, live weight, nutrition around joining time, nutrition 4 to 6 months before joining as well as the seasonality of the breeding season. In this trial numbers of ewes are also limited.

This Elmore trial was not designed to compare the seasonality of breeding season between the ewe groups, but rather how the breed groups perform in typical northern Victorian conditions. Joining times in northern Victoria are commonly from early November to late January, a few farms may join as late as February. The joining times at Elmore thus reflect local farm management.

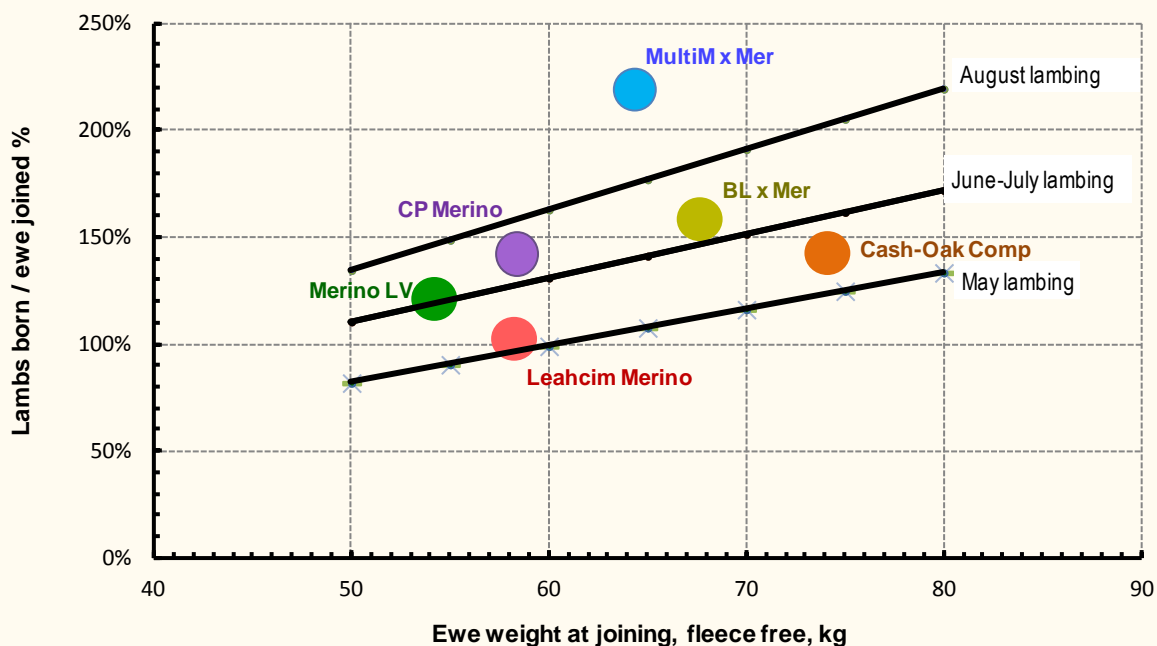
Most sheep in Australia are seasonal breeders. They join more readily in the autumn than late spring to early summer. The breeds in this trial differ in their seasonality of breeding. Border Leicester x Merino (BL x M) cross ewes are well known to be more seasonal breeders than merinos. The Cashmore – Oaklea Performance Maternal would also be expected to be highly seasonal breeders due to their background that includes Border Leicesters, Coopworths and Romneys.

For example in a trial at Rutherglen in the 1970s Border Leicester x Merino cross ewes at 70 kg weight and lambing in May would be expected to lamb down at 115% lambs born per ewe joined. Ewes lambing 4 months later in August at the same weight would be expected to lamb at 190%, an increase of 75% (see graph below). This conclusion was reached by a six year trial with two groups of BL x M cross ewes running at several stocking rates with three times of lambing over 6 years.

### Number of lambs born and its relation to ewe weight at joining

**The lines** indicate the relationship between the number of lambs born and ewe weight at joining for three lambing times for Border Leicester x Merino ewes in an experiment at Rutherglen in the 1970s.

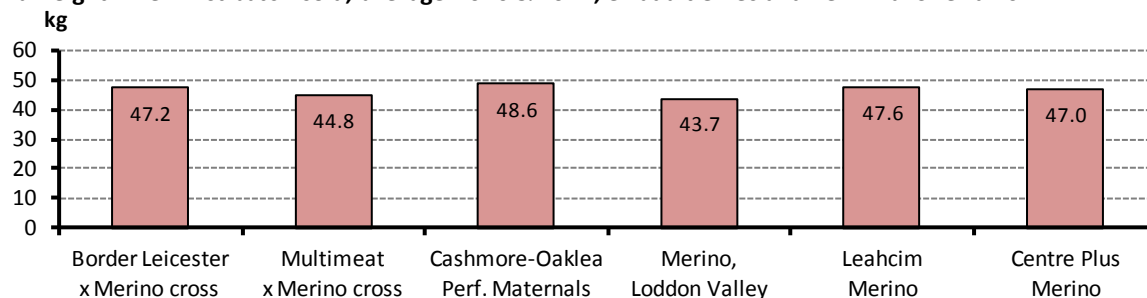
**The dots** are Elmore data and indicate the average ewe weight and average number of lambs born for each breed over the first two adult lambings in June and July



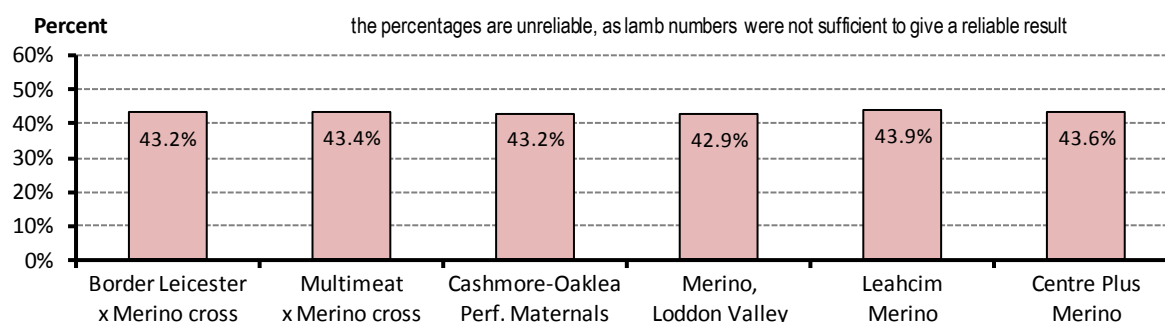
## Lambs & carcase

No adjustments have been made to account for more multiple births in some breeds. Twins and triplets grow slower than singles, especially up to weaning.

### Lamb weight when first batch sold, average 2016 & 2017, ex adult ewes and Terminal Sire rams

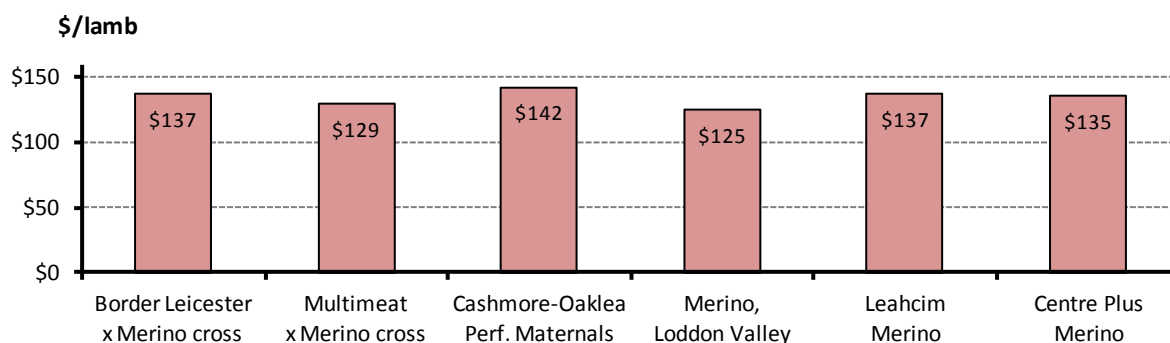


### Lamb dressing percentage, average of 1st batch of 2016 lambs in Jan 2017



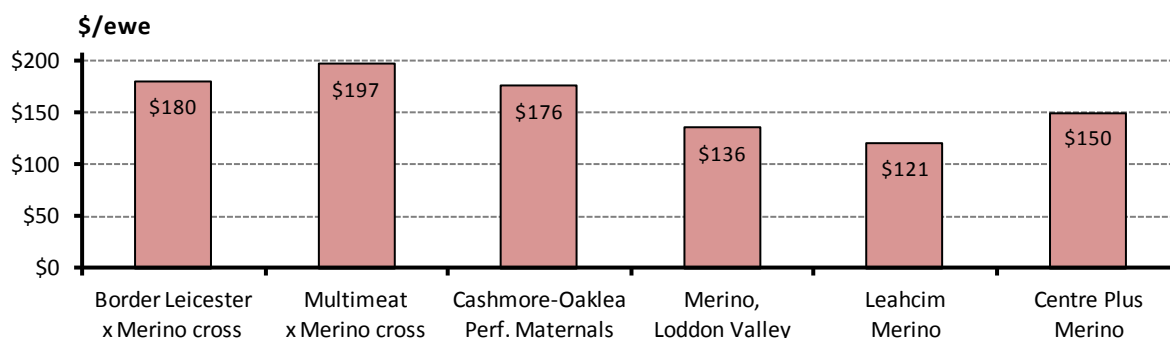
The lamb price – value per head was calculated from their live weights when the first batch was marketed, their dressing percentage, carcase price per kilo and skin value. Skin prices of all lambs, regardless of breed, were given the same price per head.

### Lamb price Aver 2016 & 2017 drop, incl skins, \$/lamb



The lamb returns per ewe were calculated from the lamb price per head plus skin value, the percentage of lambs marked and an allowance for lamb deaths between marking and sale.

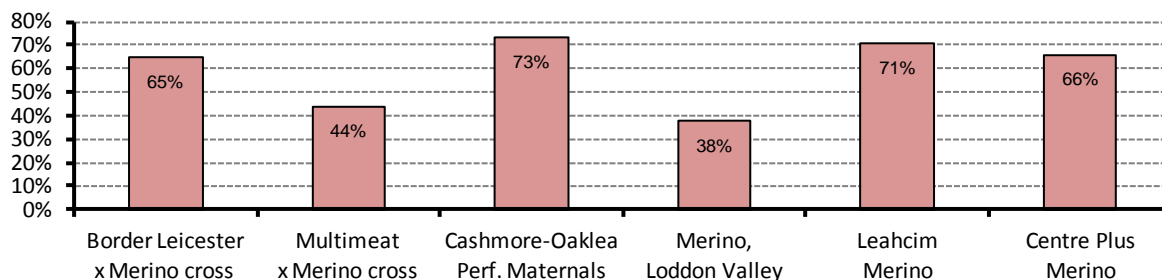
### Lamb returns per ewe, Aver 2016 & 2017 drop, incl skins, \$/ewe



### Percent lambs sold in first batch

Prime lambs were sold when they reached a target weight regardless of the ewe group. No adjustments have been made to account for more multiple births in some breeds. Cut off lamb live weights for the first draft were 47.0 kg in 2016 and 46.5 kg in 2017.

#### Percent lambs sold in first batch, average 2016 & 2017 drop



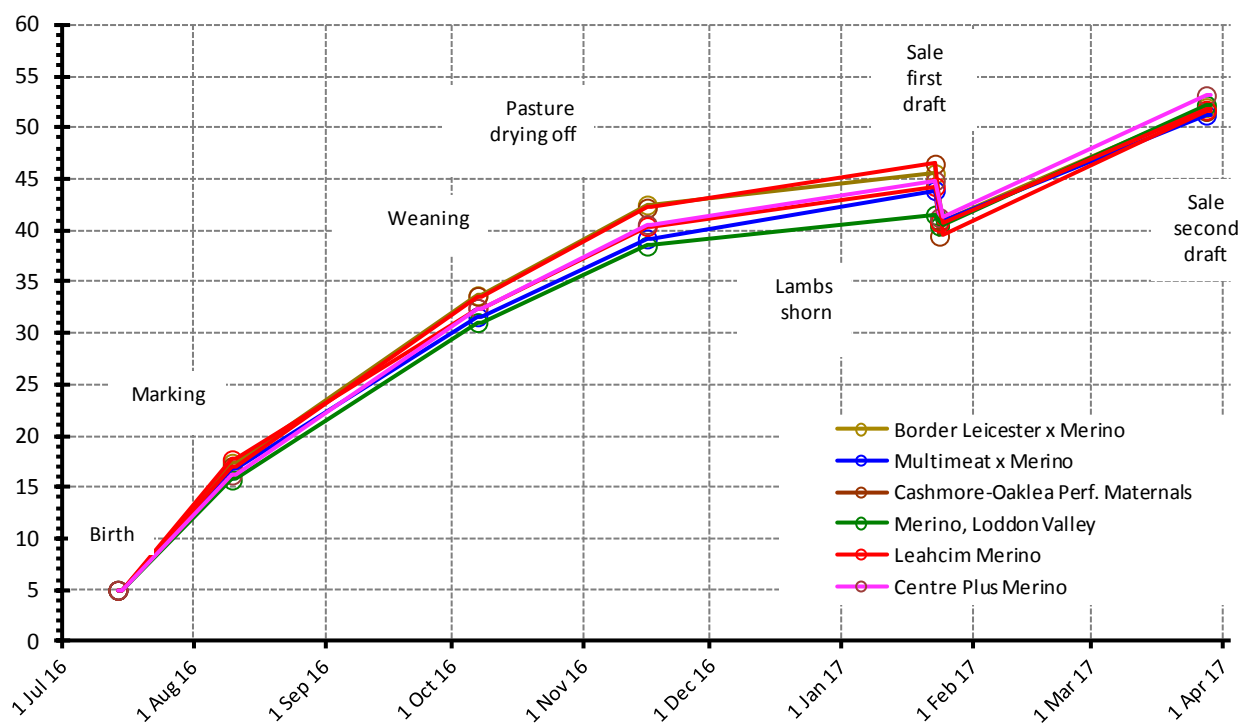
#### Lamb weight, average all lambs in breed group, when first batch sold

Team	Border Leicester x Merino, kg	Multimeat x Merino, kg	Composites Cashmore-Oaklea, kg	Merino, Loddon Valley, kg	Leahcim Merino, kg	Centre Plus Merino, kg
2015 drop, (from ewe lambs, new from home farm, range of ages, weights and condition) born on average 15 Aug, weight 11 Dec prior to being sold as stores	34.4	30.6	31.0	33.4	32.9	32.5
2016 drop, born on average 14 Jul, weight 23 Jan 2017 prior to sale of 1 <sup>st</sup> batch	45.9	44.3	46.8	41.9	44.6	45.2
2017 drop, born on average 18 Jun, weight 6 Nov prior to sale of 1 <sup>st</sup> batch	48.5	45.3	50.4	45.5	50.5	48.7

### Lamb weights, fleece free, from birth to sale, 2016 drop

Note: All lambs were by White Suffolk rams. Lambs were not weighed at birth, the assumed birth weight was 5 kg. There will be differences between the breeds and birth type (singles, twins or triplets). For example; it was obvious that the Multimeat x Merino cross ewes reared at least several sets of triplets that were lighter at birth,

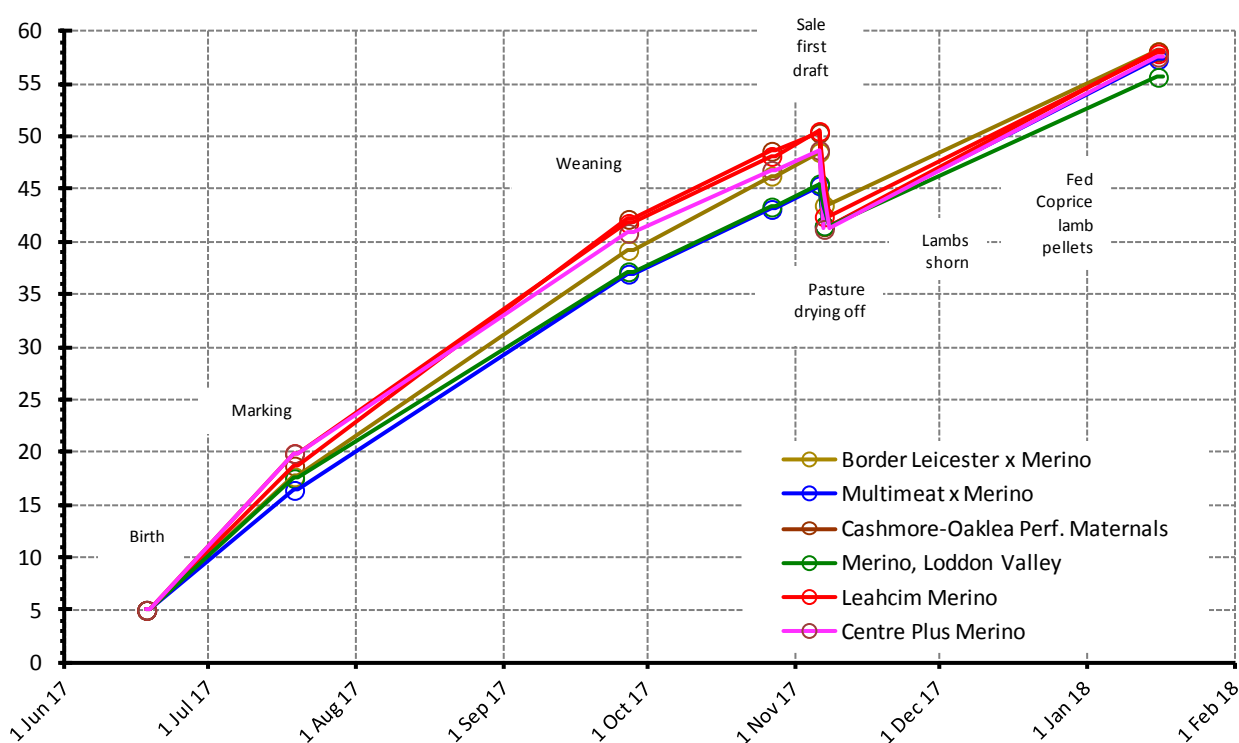
#### Lamb weight kg



### Lamb weights, in wool, from birth to sale, 2017 drop

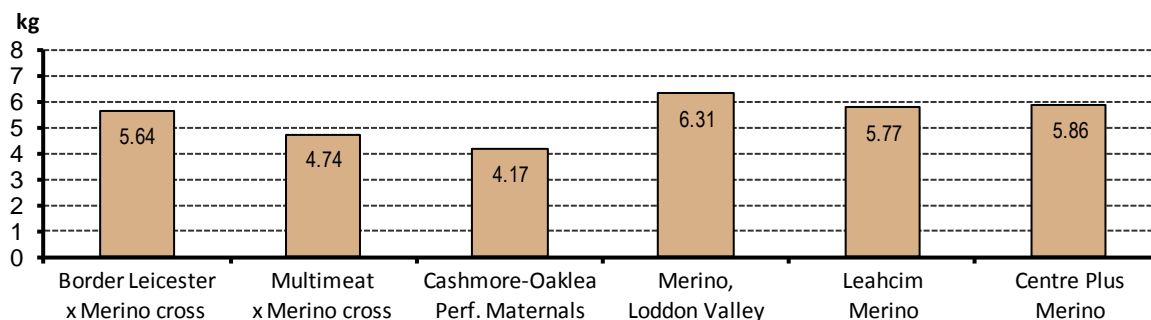
Note: All lambs were by Poll Dorset rams. Lambs were not weighed at birth, the assumed birth weight was 5 kg. There will be differences between the breeds and birth type (singles, twins or triplets). For example; it was obvious that the Multimeat x Merino cross ewes reared at least several sets of triplets that were lighter at birth,

#### Lamb weight kg

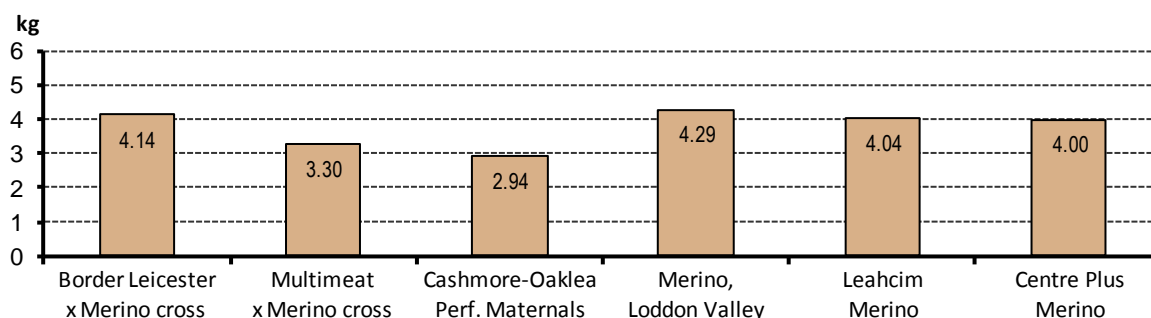


## Wool

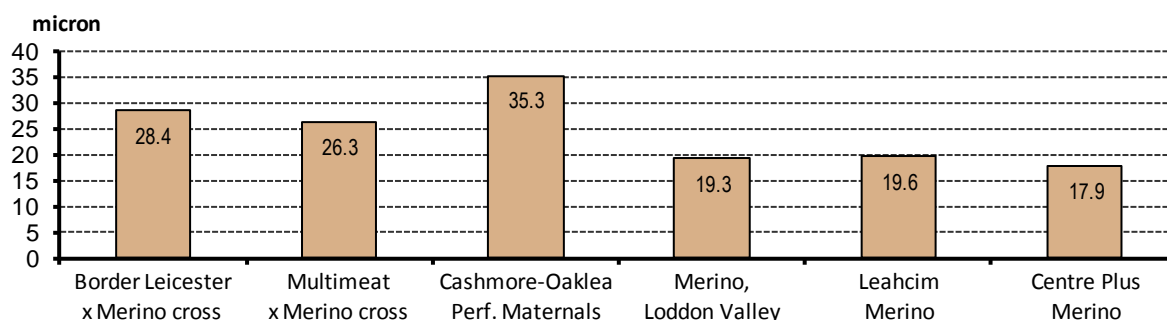
Greasy fleece weight as adult ewes, average 2016 & 2017 shearings



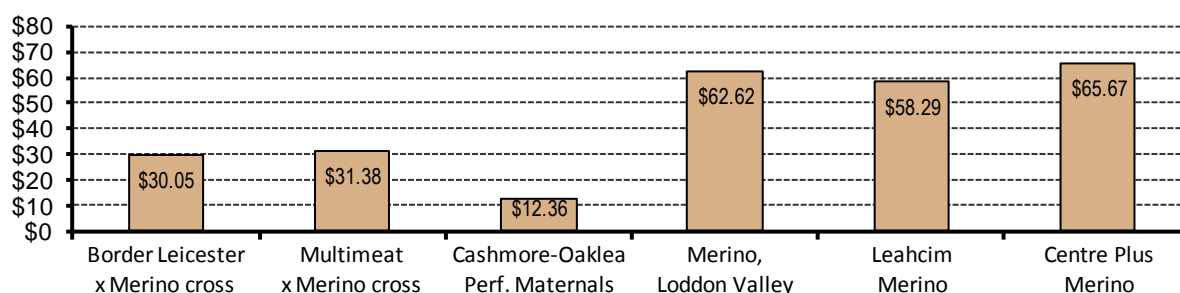
Clean fleece weigh as adult ewes, average 2016 & 2017 shearings



Wool Fibre diameter as adult ewes, average 2016 & 2017 shearings



Fleece value as adult ewes, \$/head, average 2016 & 2017 shearings





### Calculating wool value

Wool returns were calculated each year using average wool prices for each diameter and type over the 12 months prior to shearing. Discounts or premiums have been applied after bale core measurements of strength or length were available (listed below, full core tests are listed later in this report). The core test visual appraisal (AWEX ID) indicated all fleece wools were of high quality both years, thus no discounts were applied for colour or vegetable matter faults. Pieces and bellies wool were given 12% and 18% yield reductions from the fleece wool yield of each breed. Clean wool prices for pieces and bellies were 11% and 18% below their fleece wool prices.

Average bale core measurements, 2016 & 2017 shearings, strength and length, used to assist with wool valuations.

Breed	Border Leicester x Merino cross	Multimeat x Merino cross	Composites Cashmore -Oaklea	Merino Loddon Valley	Leahcim Merino	Centre Plus Merino
Strength n/kt	34	34	31	31	33	36
Length mm	110	109	114	108	109	117

### Fleece wool, results each year clean fleece weight (CFW) and fibre diameter (micron)

Team	Border Leicester x Merino, kg	Multimeat x Merino, kg	Composites Cashmore-Oaklea, kg	Merino, Loddon Valley, kg	Leahcim Merino, kg	Centre Plus Merino, kg
2015 drop, CFW kg	3.43	2.77	2.51	3.36	3.34	3.44
2016 drop, CFW kg	3.88	3.17	3.00	3.90	3.71	3.64
2017 drop, CFW kg	4.39	3.42	2.88	4.69	4.37	4.36
2015 drop, micron	27.7	25.8	33.0	18.3	18.6	17.5
2016 drop, micron	27.7	25.7	35.3	18.8	19.0	17.5
2017 drop, micron	29.2	26.9	35.4	19.7	20.1	18.3
2015 drop, fleece yield, adjusted to Schlumberger %	74.1	68.4	68.4	68.9	71.3	67.8
2016 drop, fleece yield, adjusted to Schlumberger %	74.4	71.0	75.5	71.3	71.2	69.6
2017 drop, fleece yield, adjusted to Schlumberger %	75.6	71.0	68.9	73.5	73.1	70.5

### Shearers score of wool combing and occupational health and safety

Each sheep was scored by its shearer for wool combing and occupational health and safety (OHS).

(i) Wool combing; each ewe was scored using the system: 1. Good commercial combing, should be most of sheep  
2. Some fault, light dermo, colour, cotted, sticky on points, but still reasonable combing. 3. Very hard to shear, heavy dermo, colour, fleece rot, cotted, flyblown etc, should be very few. The scoring was converted to a scale with 100% being the best.

(ii) OHS (Occupation health and safety). They are given a score of either Y – Weight OK or N – Excessive weight. The scoring was converted to a scale with 100% being the best.

Results are shown below

Breed	Border Leicester x Merino cross	Multimeat x Merino cross	Composites Cashmore -Oaklea	Merino Loddon Valley	Leahcim Merino	Centre Plus Merino
<b>Shearers wool combing score</b>						
2016 shearing	94%	95%	91%	90%	89%	93%
2017 shearing	100%	100%	94%	100%	92%	100%
<b>Shearers OHS score</b>						
2016 shearing	97%	98%	73%	100%	100%	100%
2017 shearing	100%	100%	82%	100%	100%	100%

## 2016 Bale core test results

Breed	Border Leicester x Merino cross	Multimeat x Merino cross	Composites Cashmore -Oaklea	Merino Loddon Valley	Leahcim Merino	Centre Plus Merino
Bale brand	AAAFX	AAAFX	AAACX	AAAM	AAAM	AAAM
<b>Fibre diameter</b>						
Micron um	28.3	26.0	34.6	19.2	19.5	17.5
CV %	20.1	21.2	22.5	17.2	17.9	17.1
Std Dev FD	5.7	5.5	7.8	3.3	3.5	3.0
Comfort factor (% fibre under 30um)	67.8	81.6	31.1	99.5	99.4	99.7
Curvature	59	69	61	56	50	57
<b>Yield</b>						
VM %	.2	.2	.3	.4	.3	.3
Sch dry yield %	75.4	68.7	71.6	71.6	71	69.3
<b>Staple</b>						
Length mm	112	111	108	109	108	119
CV%	16	20	15	11	13	11
Strength n/kt	30	36	24	21	29	38
Hauteur mm	90	88	98	75	79	84
<b>Position of break</b>						
Tip %	14	8	42	8	16	2
Mid %	84	71	56	89	79	85
Base %	2	21	2	3	5	13
<b>AWEX ID</b>	XF5E	XF5E	XF5E	MF4E	MF4E	MF4E

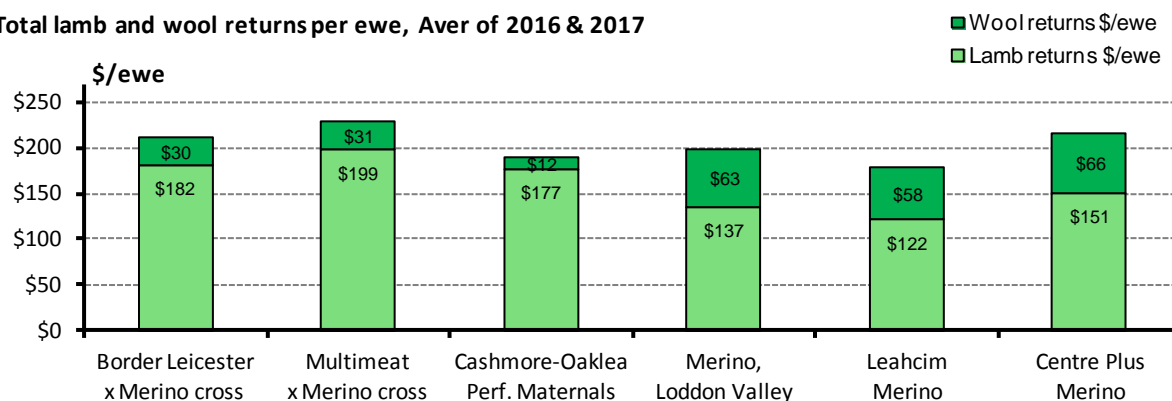
## 2017 Bale core test results

Breed	Border Leicester x Merino cross	Multimeat x Merino cross	Composites Cashmore -Oaklea	Merino Loddon Valley	Leahcim Merino	Centre Plus Merino
Bale brand	AAAFX	AAAFX	AAAX	AAAM	AAAM	AAAM
<b>Fibre diameter</b>						
Micron um	28.8	26.9	34.3	20.0	20.7	18.5
CV %	20.1	20.4	23.0	18.5	17.4	17.3
Std Dev FD						
Comfort factor (% fibre under 30um)	64.5	76.8	32.9	99	98.6	99.4
Curvature	61	67	59	59	55	59
<b>Yield</b>						
VM %	.3	.2	.1	.4	.2	.4
Sch dry yield %	76.8	71.0	69.1	73.5	73.2	70.2
<b>Staple</b>						
Length mm	108	106	120	106	110	115
CV%	11	10	17	8	17	10
Strength n/kt	37	32	38	40	37	34
Hauteur mm	95	89	105	84	88	85
<b>Position of break</b>						
Tip %	20	6	23	10	22	12
Mid %	70	78	64	77	47	67
Base %	10	16	13	13	31	21
<b>AWEX ID</b>	XF5E	XF5E	XF5E	MF4E	MF4E	MF4E

### Total lamb and wool returns per ewe and DSE estimate

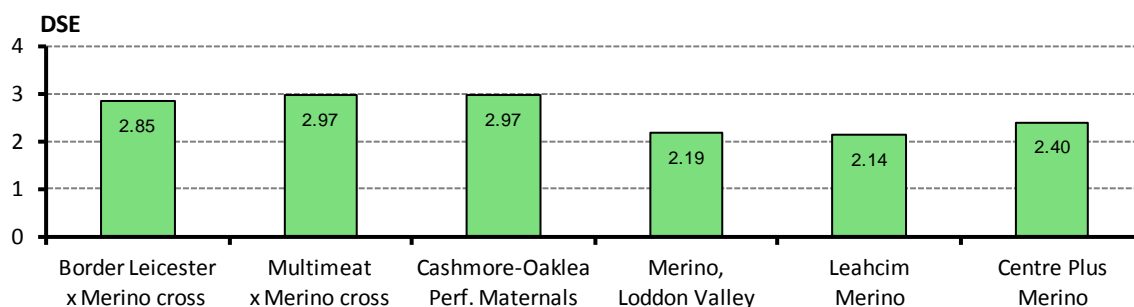
The total lamb and wool returns per ewe were averaged for the 2016 and 2017 season to give the average total returns per ewes. Lamb returns per ewe were calculated from the lambing percentage and lamb price per head for each breed.

#### Total lamb and wool returns per ewe, Aver of 2016 & 2017



The DSE (dry sheep equivalent) per ewe indicates the feed per ewe and lambs marked for the six breeds. This calculation allows for the extra feed needed with higher lambing percentages and higher ewe live weights. One DSE is the amount of feed energy needed to maintain a dry sheep at 50kg live weight for one year; it equates to about 400 kg dry matter of pasture eaten. A DSE rating of 2.14 would thus equate to about 850 kg of pasture eaten while a rating of 2.97 would equate to about 1190 kg of pasture.

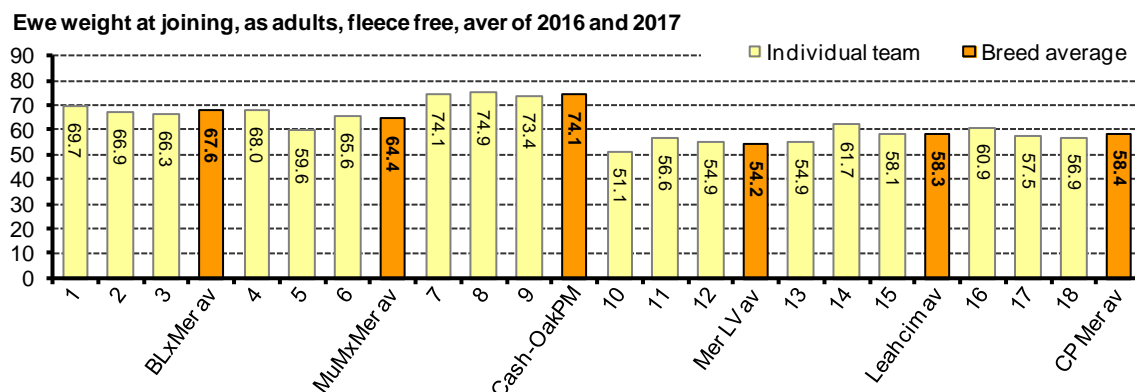
#### DSE rating per ewe & lambs marked & grown to sale, Aver 2016 & 2017



## Section 3 Additional details by team and breed

### Ewe weight

Ewe weight at joining, kg fleece free, for individual teams within breed

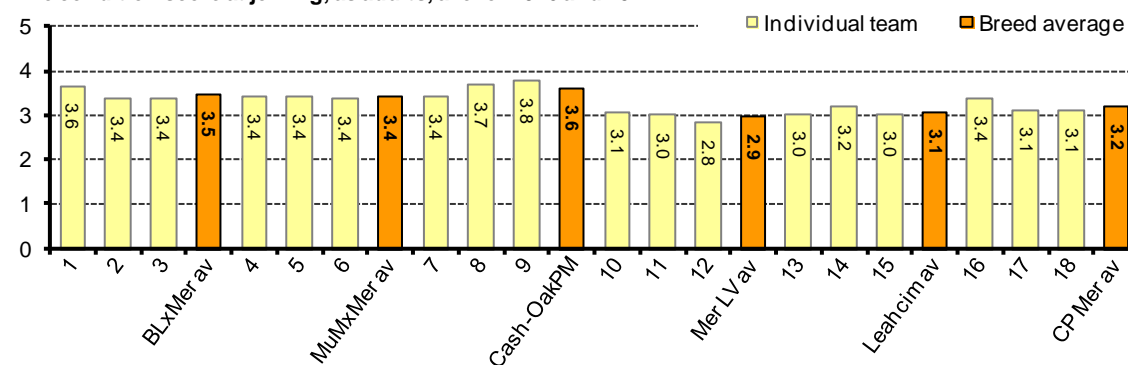


### Ewe weight at joining each year, kg

	Team	2015 lambing -ewe lambs	2016 lambing	2017 lambing	Adult ewes, 2 year average
	Date	26Feb2015	28Jan2016	23Jan2017	
Border Leicester	team 1	63.8	64.3	75.1	69.7
x Merino XB	2	52.1	61.1	72.8	66.9
	3	59.4	62.7	69.8	66.3
Breed average		58.4	62.7	72.6	67.6
Multimeat	4	54.0	63.3	72.6	68.0
x Merino XB	5	<b>40.9</b>	54.5	64.6	59.6
	6	51.5	61.1	70.1	65.6
Breed average		48.8	59.7	69.1	64.4
Cashmore-Oakley	7	57.2	66.0	82.1	74.1
Performance Mat-s	8	55.5	70.7	79.0	74.9
	9	45.2	66.1	80.6	73.4
Breed average		52.7	67.6	80.6	74.1
Merino,	10	37.5	48.5	53.8	51.1
Loddon Valley	11	43.0	54.0	59.2	56.6
	12	46.0	51.8	58.0	54.9
Breed average		42.2	51.4	57.0	54.2
Leahcim Merino	13	39.9	51.7	58.2	54.9
	14	47.4	57.6	65.9	61.7
	15	44.5	55.6	60.6	58.1
Breed average		43.9	54.9	61.6	58.3
Centre Plus Merino	16	41.2	57.3	64.5	60.9
	17	43.5	53.6	61.4	57.5
	18	39.6	53.2	60.6	56.9
Breed average		41.4	54.7	62.1	58.4

## Condition score

Ewe condition score at joining, as adults, aver of 2016 and 2017



Ewe condition score at joining each year

	Team	2015 lambing -ewe lambs	2016 lambing	2017 lambing	Adult ewes, 2 year average
	Date	26Feb2015	28Jan2016	23Jan2017	
Border Leicester	team 1	3.89	3.41	3.88	3.64
x Merino XB	2	3.08	3.04	3.69	3.36
	3	3.62	3.23	3.54	3.38
Breed average		3.53	3.23	3.70	3.46
Multimeat	4	2.97	3.04	3.77	3.40
x Merino XB	5	2.85	3.25	3.55	3.40
	6	3.07	3.14	3.57	3.36
Breed average		2.96	3.14	3.63	3.39
Cashmore-Oakley	7	3.15	3.12	3.68	3.40
Performance Mat-s	8	3.03	3.50	3.82	3.66
	9	2.59	3.63	3.88	3.75
Breed average		2.92	3.41	3.79	3.60
Merino,	10	2.56	3.04	3.08	3.06
Loddon Valley	11	2.73	2.86	3.11	2.98
	12	2.70	2.54	3.08	2.81
Breed average		2.66	2.81	3.09	2.95
Leahcim Merino	13	2.61	2.92	3.13	3.02
	14	2.79	3.00	3.32	3.16
	15	2.67	3.04	3.00	3.02
Breed average		2.69	2.98	3.15	3.07
Centre Plus Merino	16	2.83	3.32	3.38	3.35
	17	2.84	3.00	3.21	3.10
	18	2.61	2.92	3.25	3.09
Breed average		2.76	3.08	3.28	3.18

## Pregnancy scanning



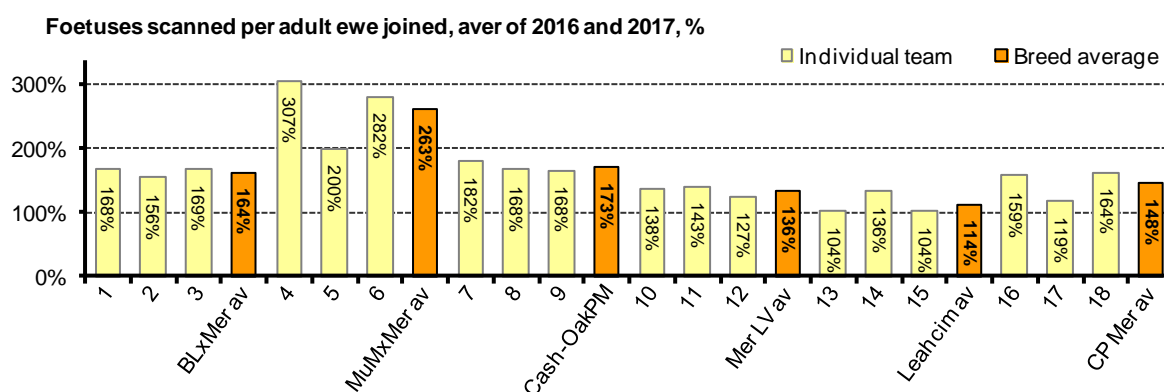
### Pregnancy scanning 20April2016

Team	Border Leicester x Merino	Multimeat x Merino	Composites Cashmore-Oaklea	Merino, Loddon Valley	Leahcim Merino	Centre Plus Merino
Ewe age mid joining, for 2016 joining. Age in months	21.5	20.7	19.1	21.3	21.2	18.3
Ewe weight at joining, 28Jan2016 fleece free, kg	62.7	59.7	67.6	51.5	54.9	54.7
Ewe condition score at joining, 28Jan2016	3.2	3.1	3.4	2.8	3.0	3.1
Ewes scanned as dry	3%	3%	11%	5%	5%	5%
Ewes scanned as carrying singles	32%	13%	8%	58%	66%	49%
Ewes scanned as carrying twins	63%	25%	69%	38%	27%	41%
Ewes scanned as carrying triplets	3%	35%	11%		2%	5%
Ewes scanned as carrying quads		25%				
Pregnancy scanning. Number of foetus per ewe	166%	268%	181%	133%	127%	146%

### Pregnancy scanning 31Mar2017

Team	Border Leicester x Merino	Multimeat x Merino	Composites Cashmore-Oaklea	Merino, Loddon Valley	Leahcim Merino	Centre Plus Merino
Ewe age mid joining, for 2017 joining. Age in months	2 yrs 9 mths	2 yrs 8 mths	2 yrs 7 mths	2 yrs 9 mths	2 yrs 9 mths	2 yrs 6 mths
Ewe weight at joining, 23Jan2017 fleece free, kg	72.6	69.1	80.6	57.0	61.6	62.1
Ewe condition score at joining, 23Jan2017	3.7	3.6	3.8	3.1	3.1	3.3
Ewes scanned as dry	3%	3%	0%	3%	13%	3%
Ewes scanned as carrying singles	35%	8%	43%	55%	73%	45%
Ewes scanned as carrying twins	59%	33%	49%	43%	15%	53%
Ewes scanned as carrying triplets	3%	38%	9%	0%	0%	0%
Ewes scanned as carrying quads	0%	20%	0%	0%	0%	0%
Pregnancy scanning. Number of foetus per ewe	162%	261%	165%	140%	102%	150%

### Pregnancy scanning rate for individual teams within breed for each lambing with the average adult scanning rate



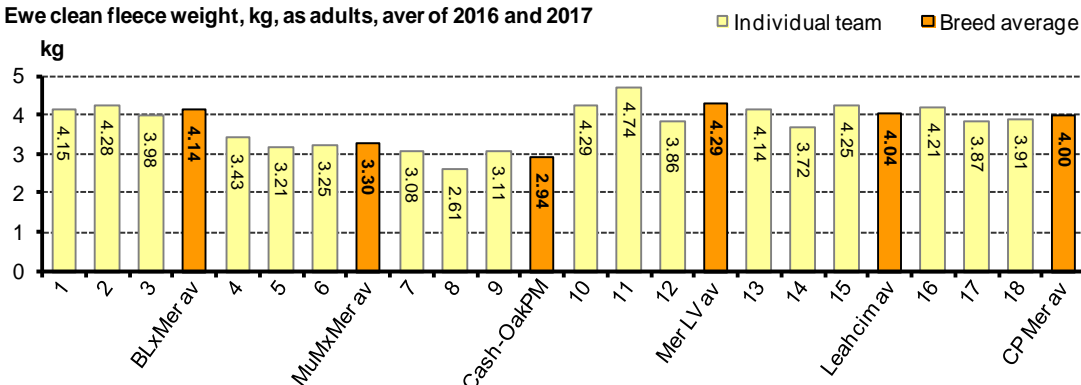
***Ewe scanning rate per ewe joined each year***

	Team	2015 lambing -ewe lambs	2016 lambing	2017 lambing	Adult ewes, 2 year average
	Date	18May2015	20Apr2016	31Mar2017	
Border Leicester	team 1	1.71	1.73	1.64	1.68
x Merino XB	2	1.29	1.43	1.69	1.56
	3	1.71	1.85	1.54	1.69
Breed average		1.57	1.67	1.62	1.64
Multimeat	4	2.43	3.00	3.14	3.07
x Merino XB	5	1.70	2.25	1.75	2.00
	6	2.50	2.71	2.93	2.82
Breed average		2.21	2.65	2.61	2.63
Cashmore-Oakley	7	1.79	1.92	1.71	1.82
Performance Mat-s	8	1.50	1.70	1.67	1.68
	9	0.57	1.77	1.58	1.68
Breed average		1.29	1.80	1.65	1.73
Merino,	10	0.60	1.31	1.46	1.38
Loddon Valley	11	0.75	1.36	1.50	1.43
	12	0.93	1.31	1.23	1.27
Breed average		0.76	1.32	1.40	1.36
Leahcim Merino	13	0.33	1.08	1.00	1.04
	14	0.93	1.64	1.07	1.36
	15	0.36	1.07	1.00	1.04
Breed average		0.54	1.26	1.02	1.14
Centre Plus Merino	16	0.55	1.64	1.54	1.59
	17	0.92	1.08	1.31	1.19
	18	0.67	1.64	1.64	1.64
Breed average		0.71	1.45	1.50	1.48

## Clean fleece weight

Clean Fleece Weight (CFW) for individual teams within breed.

Ewe clean fleece weight, kg, as adults, aver of 2016 and 2017



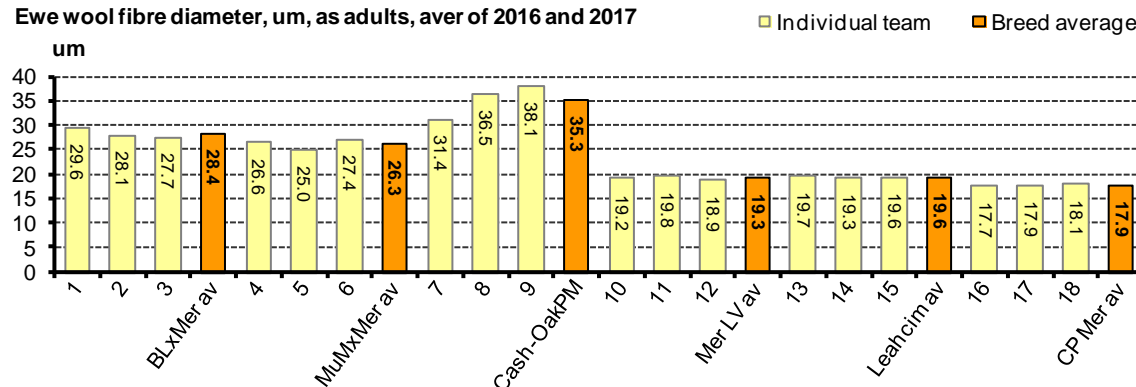
Clean Fleece Weight (CFW) , kg, for individual teams within breed

	Team	2015 shearing -ewe lambs	2016 shearing	2017 shearing	Adult ewes, 2 year average
	Date	Oct2015	Oct2016	Oct2017	
Border Leicester	team 1	3.44	3.93	4.37	4.15
x Merino XB	2	3.49	3.99	4.57	4.28
	3	3.36	3.73	4.24	3.98
Breed average		3.43	3.88	4.39	4.14
Multimeat	4	2.83	3.32	3.54	3.43
x Merino XB	5	2.60	3.04	3.38	3.21
	6	2.88	3.15	3.35	3.25
Breed average		2.77	3.17	3.42	3.30
Cashmore-Oakley	7	2.62	3.12	3.04	3.08
Performance Mat-s	8	2.31	2.67	2.56	2.61
	9	2.60	3.20	3.03	3.11
Breed average		2.51	3.00	2.88	2.94
Merino,	10	3.28	3.83	4.74	4.29
Loddon Valley	11	3.62	4.32	5.17	4.74
	12	3.18	3.54	4.17	3.86
Breed average		3.36	3.90	4.69	4.29
Leahcim Merino	13	3.37	3.91	4.37	4.14
	14	3.34	3.44	4.00	3.72
	15	3.31	3.78	4.72	4.25
Breed average		3.34	3.71	4.37	4.04
Centre Plus Merino	16	3.56	3.87	4.55	4.21
	17	3.37	3.46	4.29	3.87
	18	3.38	3.59	4.24	3.91
Breed average		3.44	3.64	4.36	4.00

## Fibre diameter

Ewe wool Fibre Diameter, um, for individual teams within breed

Ewe wool fibre diameter, um, as adults, aver of 2016 and 2017



Ewe wool fibre diameter, micron, for individual teams within breed

	Team	2015 shearing -ewe lambs	2016 shearing	2017 shearing	Adult ewes, 2 year average
	Date	Oct2015	Oct2016	Oct2017	
Border Leicester	team 1	29.5	29.3	29.9	29.6
x Merino XB	2	26.5	27.4	28.8	28.1
	3	27.2	26.3	29.0	27.7
Breed average		27.7	27.7	29.2	28.4
Multimeat	4	26.3	25.8	27.3	26.6
x Merino XB	5	24.1	24.6	25.3	25.0
	6	27.1	26.6	28.1	27.4
Breed average		25.8	25.7	26.9	26.3
Cashmore-Oakley	7	29.6	30.7	32.1	31.4
Performance Mat-s	8	34.0	36.8	36.3	36.5
	9	35.3	38.2	37.9	38.1
Breed average		33.0	35.3	35.4	35.3
Merino,	10	17.7	18.8	19.6	19.2
Loddon Valley	11	19.1	19.3	20.2	19.8
	12	18.2	18.4	19.4	18.9
Breed average		18.3	18.8	19.7	19.3
Leahcim Merino	13	18.2	19.1	20.4	19.7
	14	19.0	18.7	20.0	19.3
	15	18.6	19.1	20.1	19.6
Breed average		18.6	19.0	20.1	19.6
Centre Plus Merino	16	17.5	17.5	18.0	17.7
	17	17.7	17.5	18.2	17.9
	18	17.5	17.6	18.5	18.1
Breed average		17.5	17.5	18.3	17.9