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Selection of Merino Ewes on Reproductive Performance

**Survey of current practice of producers
March 2009**

The Sheep CRC has identified producers who pregnancy scan as a key audience for their messages on reproduction and the value of pregnancy scanning shows a small but significant increase in whole farm profitability through the identification and culling of dry ewes from the flock. There are benefits from selecting high performing ewes and keeping them longer in the flock, as compared to the common practice of culling non performers and replacing these with un-proven maiden ewes. This practice termed 'Ewe Lifetime Selection' offers greater value to the producer than culling or the contribution of superior genetics to improving net reproductive rate and whole farm profitability.

In order to better understand producers' current practices of ewe selection on reproductive performance and to identify the scope and likely impact of recommendations using pregnancy scanning and 'Ewe Lifetime Selection' a series of questions was developed and included in the annual Wool Desk survey of producers for the Department of Agriculture and Food WA.

This survey set out to build a picture reproductive assessment of ewes and to determine what producers then did with the information. Linked to this survey was also a question about the age structure of the flock in order to ascertain the opportunities for producers to extend the age of their oldest ewes to undertake 'ewe lifetime selection' which was also asked in a similar survey in 2005.

Methodology

The survey was conducted by the Wool Desk of Department of Agriculture and Food WA as part of their larger survey on sheep producers. The number of producers to be surveyed in each statistical division was determined by the relative proportions of wool producers in each area according to the Australian Wool Innovation Limited shareholder database. The surveyed statistical divisions have 85 per cent of the Australian sheep population. Numbers of producers surveyed was 1411, however, not all of these producers had Merino ewes and in some cases, responses were incomplete and could not be used; hence, the number of producers reported in this survey was 1280. These producers have 2.45 million Merino ewes.

Interviewers only surveyed producers with 500 or more sheep on their property. This minimum number was chosen to ensure the flock demographics were representative of commercial sheep producers. A set of standard questions was used to determine how common the practices of pregnancy scanning and assessment of ewes post-parturition and how this information was then used to make decisions on the reproductive performance of the flock. Supplementary questions were asked to

determine age of the oldest mob of ewes in the flock (a copy of the questions and qualitative data appear in Appendix 1).

Table 1: The number of producers and the number of Merino ewes they managed, involved in the survey.

	Total # of producers	Total # of Merino ewes older than 12 months
NSW	477	140 485
QLD	46	27 436
SA	211	106 149
TAS	20	12 012
VIC	249	77 068
WA	277	150 872
AUST	1280	514,022

Producers were asked about the pregnancy scanning practice they implemented, including maiden ewes and adult ewes. And those that did, were asked what they did with the information. The options provided for adult ewes were:

- I pregnancy scan adult Merino ewes and cull once dry ewes
- I pregnancy scan adult Merino ewes. First time dry ewes are retained and given a second chance. Twice dry ewes are culled from the breeding flock
- I pregnancy scan adult Merino ewes and record the data. Dry ewes are retained for breeding next year.
- Other (specify)

and for maiden ewes were;

- I pregnancy scan maiden Merino ewes and cull dry ewes from the Merino breeding flock
- I pregnancy scan maiden Merino ewes. Dry ewes are retained and given a second chance in the following year
- I pregnancy scan maiden Merino ewes and record the data. Dry ewes are retained for breeding next year.
- Other (specify)

Producers were asked about their assessment of reproductive performance at either marking or weaning for their Merino ewe flock including maiden ewes and adult ewes. And of those that did, were asked what they did with the information.

The options provided for adult ewes were:

- I assess lambing performance, and ewes that are dry or failed to rear a lamb are culled from the breeding flock
- I assess lambing performance. Ewes that are dry or failed to rear a lamb for the first time are tagged. Second time dry ewes are culled from the breeding flock
- I assess lambing performance and record how many are dry or failed to rear a lamb. Dry ewes are retained for breeding next year.

And for maiden ewes:

- I assess lambing performance and cull from the breeding flock those ewes that are dry, or failed to rear a lamb
- I assess lambing performance and maiden Merino ewes that are dry or failed to rear a lamb are identified and given a second chance next year
- I assess lambing performance and record how many maiden Merino ewes are dry or failed to rear a lamb. Dry ewes are retained for breeding next year.

- Other (specify)

Producers were asked what was the age of the oldest ewes in their flock in wool Desk surveys in both 2009 and in 2005 (see wool Desk Report Septemebr 2005, www.agric.wa.gov.au).

Results:

Pregnancy Scanning

Of the producers surveyed, approximately 32% scanned their ewe flocks. This is in line with other reports on the prevalence of scanning in Australian sheep flocks. Of interest was that producers who scan, usually choose to scan both maidens and adult flocks.

Table 2: The proportion of producers surveyed who pregnancy scan ewes in their flock

# of producers	Don't scan either age group	scan only adult ewes	Scan only maiden ewes	Scan all age groups
1280	68.2%	3.0%	3.3%	31.8%

Approximately 73% of producers nationally did not scan maiden ewes or did not have maiden ewes and 73% did not scan adult ewes. Approximately 3% of producers reported scanning in poor seasons only, when time permitted, scanning intermittently or were planning to scan this season but hadn't in the past. Tasmania had the lowest proportion of flocks pregnancy scanned. Queensland scanned a higher proportion of adult flocks as compared to maiden ewes whereas most other states scanned a similar proportion of flocks.

Table 3: The proportion of producers surveyed by state who don't pregnancy scan ewes in their flock

	don't scan adults	don't scan maidens	don't have maidens
NSW	64%	62%	3%
QLD	85%	78%	4%
SA	83%	80%	2%
TAS	85%	85%	Insufficient data
VIC	75%	76%	1%
WA	76%	73%	3%
AUST	73%	71%	2%

New South Wales had the highest proportion of producers who scanned both maiden and adult flocks pregnancy scanned at approximately 35% and Tasmania had the lowest proportion of flocks scanned at 15%.

Of those producers who pregnancy scanned their **maiden** flocks, the largest number recorded the pregnancy status but retained any dry ewes, giving them a second chance to fall pregnant the following joining. Lower numbers culled the maiden ewes who failed to be pregnant at that joining. Western Australia, New South Wales, South Australia and Victoria had a similar proportion of producers who retained dries for a second chance or culled on once dry status (2:1). Queensland producers culled on once dry status in similar proportion to those retained for a second chance next joining.

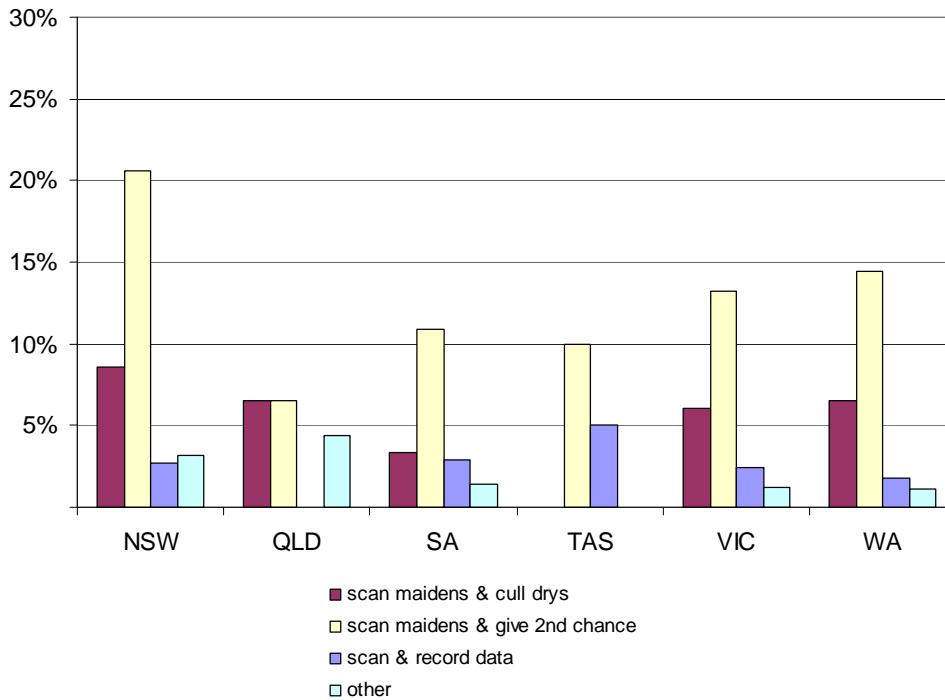


Figure 1: The proportion of producers surveyed who pregnancy scan their maiden Merino ewes

Of those producers who pregnancy scanned their **adult** flocks, the largest number identified dry ewes and culled them at that scanning in all states except Tasmania where culling on ‘once dry’ status wasn’t practiced. Lower numbers recorded the pregnancy status but retained any dry ewes, giving them a second chance to fall pregnant the following joining.

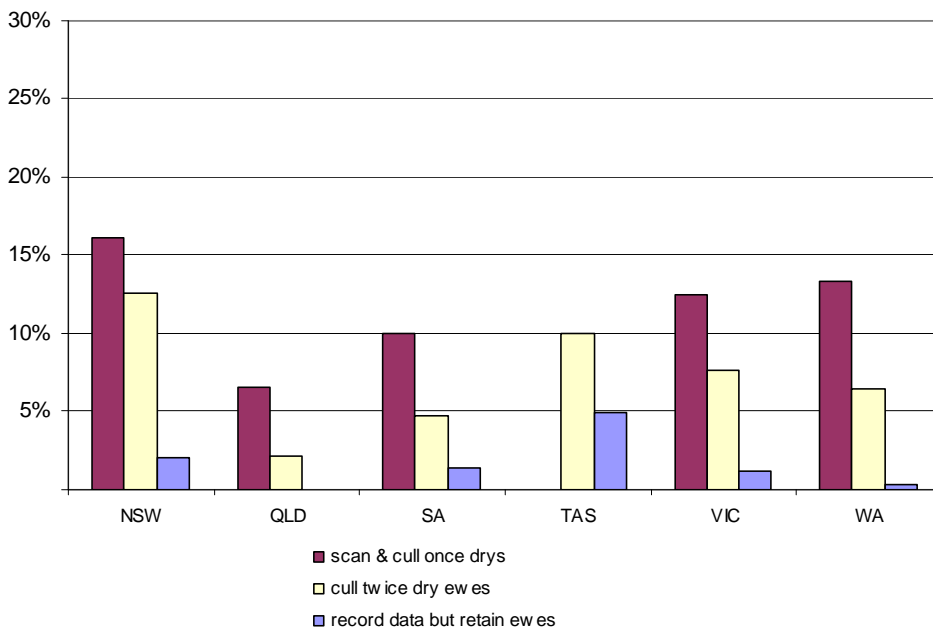


Figure 2: the proportion of producers surveyed who pregnancy scan their adult Merino ewes

Assessment after lambing

Of the producers surveyed approximately 56% assessed both maiden and adult ewe flocks at marking or weaning for reproductive performance. It had been assumed that this is a prevalent practice in Australian sheep flocks but little data was available to support this view. As with pregnancy scanning, producers who assessed their ewes usually chose to assess both maidens and adult flocks with only approximately 7% of producers choosing to assess only one of the age groups.

Table 4: The proportion of producers surveyed who assess ewes after lambing in their Merino flock for reproductive performance

# of producers	Don't assess either age group	Assess only adult ewes	Assess only maiden ewes	Assess all age groups
1280	22.9%	7.3%	7.5%	55.8%

Approximately 68% of producers nationally assessed their maiden ewes and 69% assessed their adult ewes. Tasmania recorded the highest proportion of producers who assessed their ewes after lambing, both maidens and adults. Queensland recorded the lowest proportion of producers who assessed their adult flocks after lambing, with a high proportion assessing maiden flocks also. The other states assessed a similar proportion of age groups.

Table 5: The proportion of producers surveyed by state who don't assess their Merino ewes after lambing for reproductive performance

	don't assess adult ewes	don't assess maiden ewes	don't have maiden ewes
NSW	28%	29%	2%
QLD	41%	35%	2%
SA	35%	36%	3%
TAS	15%	25%	Insufficient data
VIC	34%	30%	2%
WA	31%	29%	3%
AUST	31%	30%	2%

Of those producers who assessed their **maiden** flocks, the largest number recorded the pregnancy status but retained any dry ewes, giving them a second chance to fall pregnant the following joining. Lower numbers culled the maiden ewes who failed to be pregnant or who had lambed and lost at that joining, with similar proportions recording the data but giving these ewes other opportunities in subsequent joinings. Tasmania did not practice culling on once dry or lambed and lost status, whereas most of the other states 10% of producers culled on 1st time dry or lambed and lost.

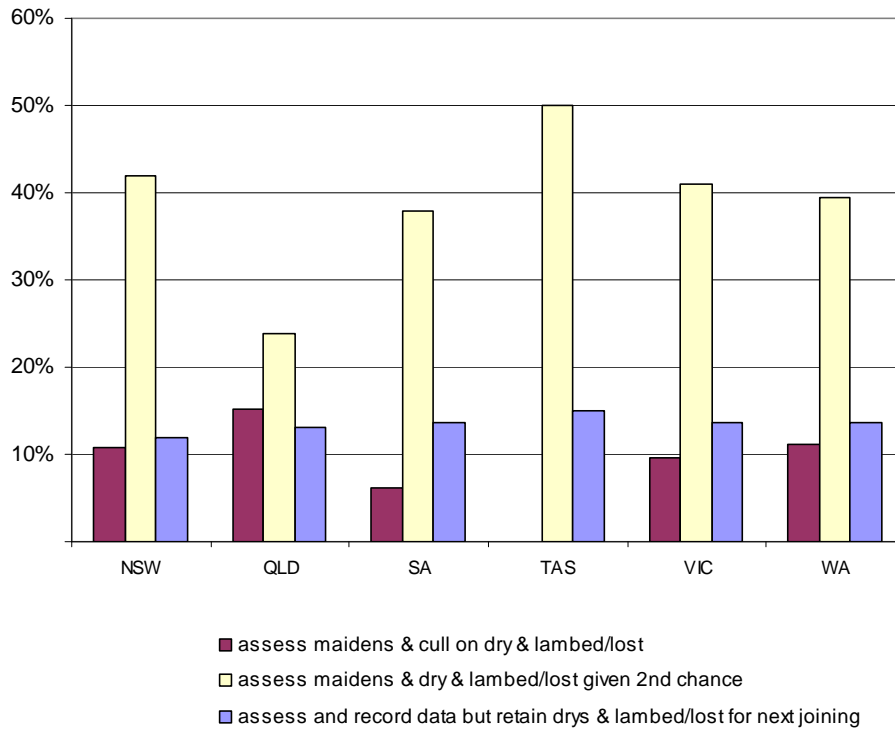


Figure 3: The proportion of producers surveyed who assess their maiden Merino ewes for reproductive performance

The proportion of producers who assessed their **adult** ewe flock after marking was highly variable between states. Western Australia and Queensland both had higher proportions of producers who assessed and then culled ewes that had failed to become pregnant or had 'lambbed and lost' than those producers who gave their adult ewes a second chance. Producers in New South Wales Victoria and to some extent, South Australia placed equal emphasis on giving ewes who failed another chance or culling immediately that the ewe failed to reproduce in that year. About 15% of producers from these states recorded the information but didn't use the information to make culling decisions solely based on reproductive performance. Tasmanian producers were less keen on culling ewes in the 1st instance who had failed to reproduce in that year.

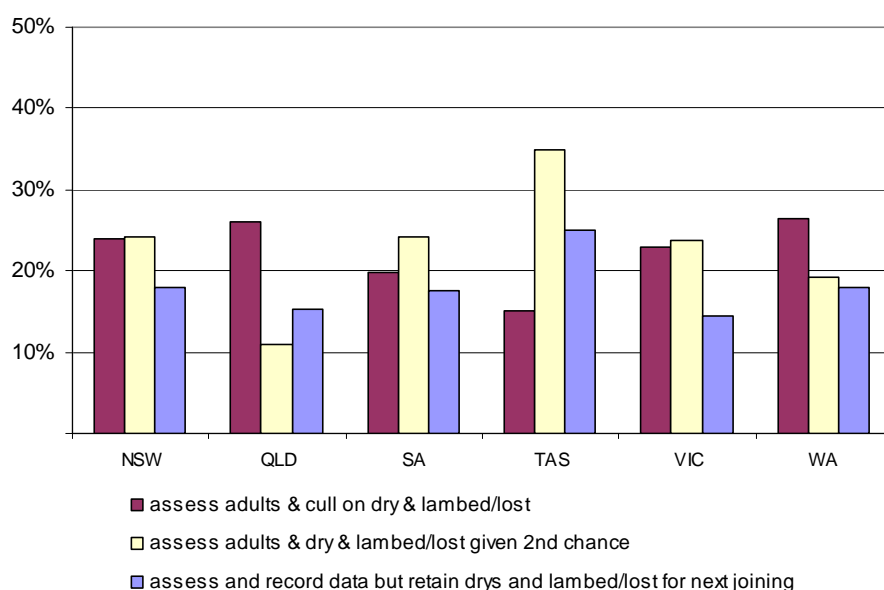


Figure 4: The proportion of producers surveyed who assess their adult Merino ewes for reproductive performance

Pregnancy Scanning and post –lambing Assessment

Nearly 20% of producers surveyed neither pregnancy scanned or assessed ewes post-parturition for reproductive performance. This represented over ½ million ewes or about 20.2% of the ewe flock represented in the survey.

Table 6: The proportion of producers surveyed by state who assess after lambing for reproductive performance and/or pregnancy scan their Merino ewes

State	total ewes	% of producers who don't assess or scan ewes	% of producers who scan and assess at least 1 age group
NSW	140485	6.3	21.9
QLD	27436	1.1	1.9
SA	106149	4.2	10.2
TAS	12012	0.2	1.1
VIC	77068	3.8	10.7
WA	150872	3.8	13.8
AUST	514,022	19.5	59.5

Age of the oldest mob in the flock

In 2005 and 2009 the average age of the oldest mob in the Merino flock was 5.9 years with Queensland and New South Wales having the oldest flocks on average and Tasmania having the youngest flock on average. The average age of the oldest ewe mob in the flock at a state level showed no difference between states.

The flocks in New South Wales and Queensland have also got older from 2005 to 2009 slightly (0.3 years and 0.2 years respectively) whereas the flocks in other states got younger on average with Tasmania dropping nearly 1 year (from 6.3 to 5.5

years). These changes may reflect whether the state was experiencing drought or was in a rebuilding phase post drought.



Figure 5: The age of the oldest ewes in the flock by state in years 2005 and 2009

The range in age of the oldest ewes in the flock was considerable with some producers having ewes as old as 13 years in the flock and some having very young flocks. Tasmania was the only state with a significant difference in the age of the oldest ewes (being 7 years).

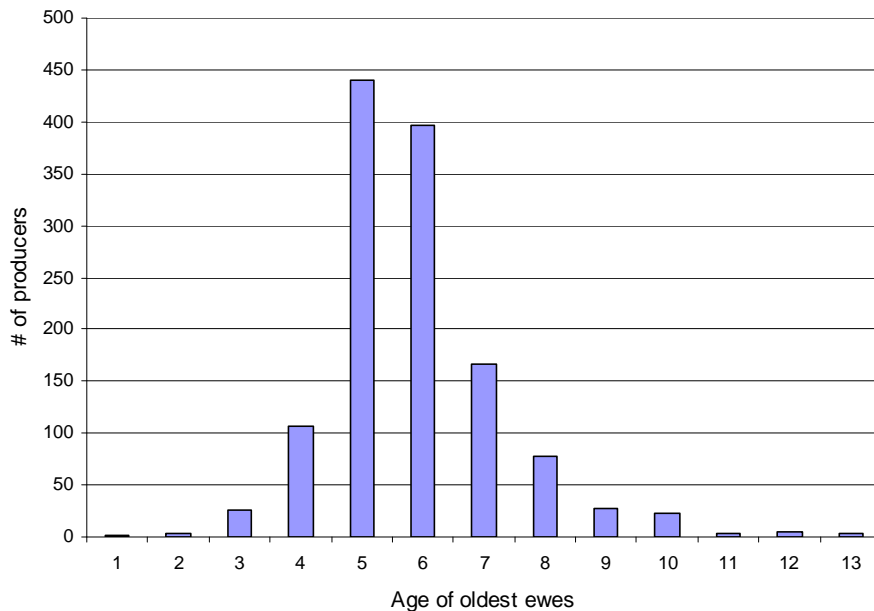


Figure 6: The distribution of ages of the oldest ewes in the flock

Conclusions:

Producers tend to monitor ewes reproductive performance in two ways – through pregnancy scanning (either for pregnant and dry or for multiple pregnancies) and by assessing udders of ewes at marking or weaning (either for dry or lambled and lost).

Although pregnancy scanning rates had been estimated at ~35% of the national flock through a number of previous surveys there has been no recent or extensive survey of the practice of assessing ewes at the end of lactation.

This survey showed that 32% of producers scanned their Merino ewe flocks and those producers who scan usually chose to scan both maidens and adult flocks.

New South Wales had the highest proportion of producers who scanned both maiden and adult flocks pregnancy scanned at approximately 35% and Tasmania had the lowest proportion of flocks scanned at 15%. Most producers who scanned maiden ewes retained any dry ewes, giving them a second chance to fall pregnant the following joining. Most producers who scanned adult ewes culled the dry ewes at that scanning in all states except Tasmania where culling on 'once dry' status wasn't practiced.

This survey showed that 56% of producers assessed their ewe flocks at marking or weaning for reproductive performance and those producers who practice the technique assess both maidens and adult flocks with only approximately 7% of producers choosing to assess only one of the age groups.

Most producers who assessed their maiden flocks retained any dry ewes, giving them a second chance to fall pregnant the following joining, whereas the treatment of the adult ewe flock after lambing was highly variable between states.

Only 20% of producers surveyed neither pregnancy scanned or assessed ewes post-parturition for reproductive performance and this accounted for about 0.5 million of the 4.5 million ewes covered by the survey.

The average age of the oldest mob in the Merino flock was 5.9 years with Queensland and New South Wales having the oldest flocks on average and Tasmania having the youngest flock on average. Some states showed an aging flock where as other states had a younger flock over the period from 2005 to 2009. These changes may reflect whether the state was experiencing drought or was in a rebuilding phase post drought.

There is a great opportunity to provide clearer messages to producers who do some level of reproductive assessment on their ewe flock, either by scanning or by assessment after lambing. Reaching these producers with messages on what the impact of the practice that they currently employ and how scanning for multiple foetuses can provide a greater opportunity for selection of higher performing ewes.

There are differences between states and regions and this allows us to more targeted in our approach to scanning.

The age of the Australian flock shows that there are some opportunities to increase the age of the flock and thereby increase the reproductive performance by selecting ewes of higher value but influences such as rebuilding flock numbers after droughts will have an impact. We are also unsure of how many of these older ewes are being mated to terminal sires rather than to Merino sires once they have been culled for age.

Mandy Curnow
Kimbal Curtis
Andrew Thompson
24/3/09

Appendix 1

Q31S1 **With respect to your maiden Merino ewes, do you pregnancy scan?**

Q31S1_code	Q31S1_text
1	No, I do not pregnancy scan maiden Merino ewes
2	I pregnancy scan maiden Merino ewes and cull dry ewes from the Merino breeding flock
3	I pregnancy scan maiden Merino ewes. Dry ewes are retained and given a second chance in the following year
4	I pregnancy scan maiden Merino ewes and record the data. Dry ewes are retained for breeding next year.
5	Other (specify)
6	I do not have maiden Merino ewes

Q31S2 **With respect to your maiden Merino ewes, do you assess lambing performance at marking or weaning?**

Q31S2_code	Q31S2_text
1	No, I do not assess lambing performance
2	I assess lambing performance and cull from the breeding flock those ewes that are dry, or failed to rear a lamb
3	I assess lambing performance and maiden Merino ewes that are dry or failed to rear a lamb are identified and given a second chance next year
4	I assess lambing performance and record how many maiden Merino ewes are dry or failed to rear a lamb. Dry ewes are retained for breeding next year.
5	Other (specify)
6	I do not have maiden Merino ewes

Q31S3 **With respect to your adult Merino ewes, do you pregnancy scan?**

Q31S3_code	Q31S3_text
1	No, I do not pregnancy scan adult Merino ewes
2	I pregnancy scan adult Merino ewes and cull once dry ewes
3	I pregnancy scan adult Merino ewes. First time dry ewes are retained and given a second chance. Twice dry ewes are culled from the breeding flock
4	[not used]
5	I pregnancy scan adult Merino ewes and record the data. Dry ewes are retained for breeding next year.
6	Other (specify)

Q31S4 **With respect to your adult Merino ewes, do you assess lambing performance at marking or weaning?**

Q31S4_code	Q31S4_text
1	No, I do not assess lambing performance
2	I assess lambing performance, and ewes that are dry or failed to rear a lamb are culled from the breeding flock
3	I assess lambing performance. Ewes that are dry or failed to rear a lamb for the first time are tagged. Second time dry ewes are culled from the breeding flock
4	[not used]
5	I assess lambing performance and record how many are dry or failed to rear a lamb. Dry ewes are retained for breeding next year.
6	Other (specify)