



# Final report

## PDS: Genetics of reproduction and lamb survival

Project code: L.PDS.2016

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## **Abstract**

The project aimed to demonstrate the opportunity to improve reproduction and lamb survival by using the appropriate genetics. It proved difficult to set up demonstration sites on this subject despite there being strong producer support for the project area. Potential participants that were interested in the area were keen to move to the superior genetics that can be identified using ASBVs and not to continue to run the control group. The lag time between the start of a trial and the results caused issues on many farms. Over the period of the project, the ASBVs become considerably more sophisticated, and the project proved to be a very good conduit to educate producers on these new ASBVs. The project resulted in a lift in the confidence of producers to source rams with improved reproductive outcomes. Across the online events, social media and interactions on the hub and other social media platforms, we experienced very strong producer interaction and observed a significant shift towards more informed decision-making around selecting rams that would deliver better reproductive outcomes. The new ASBVs released by Sheep Genetics have been demonstrated to be highly reliable and powerful at improving the reproductive potential of sheep.

## **Executive summary**

### **Background**

There has been a lot of extension effort in helping producers to understand the role of nutrition and management in improving reproductive output, but comparatively little focus on the potential role of genetics in improving lambing percentages. For many producers, the role of genetics in reproduction is very difficult to see because they tend to have one source of genetics under their management. Any change over time is difficult to attribute to genetics because of the significant variation in seasonal and management differences. This project sought to demonstrate to producers the improvements in reproduction and lamb survival that could be achieved by using rams that were genetically superior for these traits.

The target of this project was commercial sheep producers who see improving the reproductive performance and lamb survival as an important objective for their business. The project ended up attracting quite progressive producers, and two of the commercial producers who were involved in the project started breeding rams over the course of the project.

The project was focused on promoting the role of genetics in reproduction to the Australian sheep industry with the overall aim of increasing the number of ram breeders that were generating and supplying reproduction ASBVs for their ram buyers.

### **Objectives**

- The original objective was to have 5 host farms where two different sire teams were compared. With difficulties in finding host farms and keeping track of trial mobs this was only achieved on one farm
- The objective to develop the knowledge, attitude and skills of associated producers to enable them to more confidently select rams based on reproductive ASBVs was achieved
- The project has the objective of extending the project outcomes across the Australian industry via social media, webinars and podcasts. This was achieved with 1600 Australian downloads of one of the podcasts alone
- The objective was to have 100% of both core and observer producers involved in the project using ASBVs to select rams which was achieved
- Host field days were an objective of the project but due to the lack of suitable sites were not carried out
- To present the findings to the wider community, the objectives of the project have been regularly communicated across many sheep industry forums where Mark Ferguson has talked and presented to over 1000 producers.

### **Methodology**

The project aimed to mate at least 250 ewes to each of two different sire sources. The intent was for one of these sire groups to be selected based on ASBVs for reproduction and for a second group to be selected based on the status quo at the property. The progeny from these matings were then going to be run through to mating and the reproductive output of the two groups followed for two joinings.

The extension of the project concepts and focus was a major component of the project with significant effort made to spread the message to the wider sheep producing community through online forums largely.

### **Results/key findings**

- The project has demonstrated that there is very strong interest among producers in genetics of reproduction, particularly as it relates to lamb survival
- There were four core sites, one of these continuing to a full result. There were 7 observer farms that were surveyed pre and post, with many more following the project through webinars etc.
- There was 100% use of the reproductive ASBVs among 'core' and 'observer' producers in the project.
- In one case, the project demonstrated very significant differences in reproduction from changing the ram source and in a second case, a small favourable difference resulted. These two were the only sites that went through to some results, with only one of these continuing through to the case study.
- The project coincided with the release of new ASBVs for reproduction, which have been demonstrated to be a lot more value to producers than the old NLW ASBV. This confused some of the pre- and post-monitoring because trait naming changed.
- The wider neXtgen Agri network and followers on social media and the Head Shepherd podcast have been well engaged in the topic area and the project was highly successful at getting the message of the benefits of using ASBVs in sire selection to improve reproduction out to a wide range of producers across many areas of Australia.

### **Benefits to industry**

- The most significant benefit this project has provided to industry is awareness to the wider industry of the potential of genetics to improve reproductive outcomes
- The strong engagement across the industry has contributed to the acceptance of the new ASBVs for reproduction, with many breeders who engaged with the project either already providing ASBVs for reproduction or working on doing so
- The opportunity for the industry to make rapid gains in reproductive outcomes is significant

### **Future research and recommendations**

The improvements in the reproduction ASBVs have been impactful and well received. The opportunity to add a Lamb Survival trait (as a trait of the lamb, not of the ewe) should be fully explored. This project has demonstrated the difficulty in conducting long-term trials on farms where there are many conflicting demands for effort and focus. It has also demonstrated that the people you are likely to get interested in this kind of work are already well down the track of implementing the opportunities being tested in the trial.

## PDS key data summary table

| <b>Project Aim:</b><br>The aim of this producer demonstration site project has been: <ul style="list-style-type: none"> <li>to demonstrate the role that genetics can play in improving ewe reproduction and lamb survival; and</li> <li>to develop the knowledge, awareness, skills and attitudes of producers involved to enable them to more confidently select rams that will improve the reproductive performance and lamb survival of their flock.</li> </ul> |                                         |         |                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|---------|----------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Comments                                |         | Unit           |
| <b>Production efficiency benefit (impact)</b><br>Reproductive efficiency – marking %, weaning %                                                                                                                                                                                                                                                                                                                                                                     | <i>Increase reproduction efficiency</i> | 5       | % lambs weaned |
| <b>Increase in income</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                         | \$20.00 | /ha            |
| <b>Additional costs (to achieve benefits)</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |                                         | \$0.00  | /ha            |
| <b>Net \$ benefit (impact)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                         | \$20.00 | /ha            |
| <b>Number of core participants engaged in project</b>                                                                                                                                                                                                                                                                                                                                                                                                               |                                         | 3       |                |
| <b>Number of observer participants engaged in project</b>                                                                                                                                                                                                                                                                                                                                                                                                           |                                         | 7       |                |
| <b>Core group no. ha</b>                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                         | 5975    |                |
| <b>Observer group no. ha</b>                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                         | 26750   |                |
| <b>Core group no. sheep</b>                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                         | 10100   | hd sheep       |
| <b>Observer group no. sheep</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                         | 31700   | hd sheep       |
| <b>% change in knowledge, skill &amp; confidence – core</b>                                                                                                                                                                                                                                                                                                                                                                                                         | <i>Confidence to select rams</i>        | 38%     |                |
| <b>% change in knowledge, skill &amp; confidence – observer</b>                                                                                                                                                                                                                                                                                                                                                                                                     | <i>Confidence to select rams</i>        | 15%     |                |
| <b>% practice change adoption – core</b>                                                                                                                                                                                                                                                                                                                                                                                                                            | <i>Select rams using ASBVs</i>          | 100%    |                |
| <b>% practice change adoption – observers</b>                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>Select rams using ASBVs</i>          | 100%    |                |
| <b>% of total ha managed that the benefit applies to</b>                                                                                                                                                                                                                                                                                                                                                                                                            | 32725 hectares                          | 0%      |                |
| <b>Key impact data</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                         |         |                |
| <b>Gross Margin / Ha</b>                                                                                                                                                                                                                                                                                                                                                                                                                                            | \$20.00/ha                              |         |                |

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**Figure 1. Ewes grazing at Redbank – Photo courtesy of Dale Harris**



## **1. Background**

### **1.1 Project aim**

The aim of this producer demonstration site project has been:

- to demonstrate the role that genetics can play in improving ewe reproduction and lamb survival; and
- to develop the knowledge, awareness, skills and attitudes of producers involved to enable them to more confidently select rams that will improve the reproductive performance and lamb survival of their flock.

#### **1.1.1 Rationale for initiating the project**

Considerable gains have been made in ewe reproductive performance and lamb survival over the last two decades. Predominantly, these improvements have come from improvements in nutrition and management strategies because of targeted research and extension. While some producers are reaping the benefits of these improvements, others have made the changes but have experienced a much lower response.

Consistently these producers have a genotype that has been selected for traits other than reproduction and survival. Sire evaluations that retain female progeny and study their reproduction have repeatedly demonstrated a significant difference in reproductive performance between sires.

Despite these obvious differences and producer sentiment suggesting they want to improve reproductive performance and lamb survival, the industry uptake of genetic tools to improve

reproduction (NLW ASBVs and more recently additional reproduction ASBVs) has been poor (estimated at less than 10% of ram buyers utilising this information when purchasing rams). With the advent of new reproduction ASBVs to help inform producers when buying rams, there is a renewed opportunity to demonstrate the role that genetics can play in augmenting nutritional and management strategies to improve ewe reproductive performance.

There is a range of over 60% in the weaning rate breeding value in the Merino analysis and 50% in the maternal analysis of Sheep Genetics. Largely commercial producers are not using this information when selecting rams and many ram breeders are currently not supplying the information. Genetics is obviously a slower route to an improvement in reproductive performance, but it is permanent and cumulative. The large range in genetic potential was identified as an excellent opportunity to demonstrate the difference to Australian sheep farmers.

Prior to the project, a significant interest in genetics and specifically reproduction within (and outside) the neXtgen Agri producer network was noted, presumably due to record high sheep meat prices and or the need to rebuild ewe numbers from within the business following the 2018 and 2019 droughts on the east coast. Hence there was a strong case for demonstrating the role that genetics can play in improving reproduction. The project aimed to significantly improve the awareness and the uptake and use of the new reproductive ASBVs.

The project compared the 'home' ram team and a purchased 'demo' ram team for the lamb survival and subsequent reproductive performance in the F1 generation. neXtgen Agri anticipated that a 5% improvement (5 more lambs weaned per 100 ewes mated) in lamb survival would be evident in the first cross and that this would increase to 10% when the F1 ewes had the opportunity to lamb.

Logically, the impacts on subsequent adoption were expected to be greatest for 'core' producers hosting demonstrating sites, moderate for 'observer' producers and less for the wider interest group.

### **1.1.2 Demonstration sites**

- The project established three demonstration sites in year one, which continued in years two and three, with an additional two sites established in year three.
- One of the core sites has demonstrated a significant difference in lamb survival and growth rate as a result of changing their ram source.
- However, it has been difficult to establish and maintain sites that are willing to follow the protocols as originally contracted.
- A number of the demonstration site hosts have indicated they are not willing to hold onto and continue using old sires after purchasing new ones with better breeding figures. Due to this, the ability of the project to meet the objectives as per the original agreement has not been achieved.

### **1.1.3 Reduced project scope, deliverables and period**

The scope, deliverables and period for completion of the project have been reduced due to the difficulty in establishing and maintaining demonstration sites that are willing to follow the project protocols.

## 2. Objectives

The objectives agreed to by MLA and neXtgen Agri at the start of the project (along with their status at the completion of the project) are outlined in Table 1.

**Table 1. Original project objectives and their status at the completion of the project.**

| Original objectives                                                                                                                                                                                                                                                                                                                                                                                           | Status                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Across 5 host farms, across two drops, demonstrate the impact of selecting a team of sires for improved reproduction traits using ASBVs of 5% in F1 lamb survival and 5% more lambs weaned in subsequent reproductive performance. This will include demonstrating the role of wetting and drying, pregnancy scanning for multiples and the use of EID to capture and utilise information for ewe culling. | <p><b>Reproductive performance and lamb survival results</b></p> <p>At Redbank Grazing, the following results were observed:</p> <ol style="list-style-type: none"> <li>1. There were small increases in conception and reproductive rates when the old ewes were joined as maidens to the new rams compared with the old rams. These differences were greater when the old ewes were joined again the following year.</li> <li>2. Compared to the old ewes, there was a greater increase in conception and reproductive rates of the F1 ewes joined when joined to the new versus old rams for the first time. However, at their second joining, there was less difference in conception and reproductive rates between ewes joined to the new versus old rams.</li> <li>3. The rates for lamb survival, marking and weaning were higher for lambs from the old ewes joined to the new ram team versus the old ram team.</li> <li>4. There was minimal difference in weaning weight of lambs born to the old ewes when joined to the old or new rams.</li> </ol> <p>Due to several reasons (outlined later in the report) the results from the other host sites were not conclusive.</p> <p><b>Implementing skills</b></p> <p>At Redbank Grazing, the following skills were implemented during the trial:</p> |

| Original objectives | Status                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ul style="list-style-type: none"> <li>• condition scoring ewes (normally)</li> <li>• weighing ewes or lambs (normally)</li> <li>• weighing ewe lambs or maiden ewes (normally)</li> <li>• pregnancy scanning for multiples (normally)</li> <li>• managing ewes in single and twin-scanned groups (normally)</li> <li>• calculating lamb mortality percentage (normally)</li> </ul> <p>At Mirridong, the following skills were implemented during the trial:</p> <ul style="list-style-type: none"> <li>• condition scoring ewes (sometimes)</li> <li>• weighing ewes or lambs (rarely)</li> <li>• weighing ewe lambs or maiden ewes (normally)</li> <li>• pregnancy scanning for multiples (normally)</li> <li>• managing ewes in single and twin-scanned groups (normally)</li> <li>• calculating lamb mortality percentage (normally)</li> </ul> <p>At LLI&amp;L Gibbs, the following skills were implemented during the trial:</p> <ul style="list-style-type: none"> <li>• condition scoring ewes (normally)</li> <li>• weighing ewes or lambs (normally)</li> <li>• weighing ewe lambs or maiden ewes (normally)</li> <li>• pregnancy scanning for multiples (normally)</li> <li>• managing ewes in single and twin-scanned groups (normally)</li> </ul> |

| Original objectives                                                                                                                                                                     | Status                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----|------|--|------------|------------|----------------------|-----|------|---------------------|-----|-----|--------------------------------|-----|-----|--------------------|-----|-----|---------------------------------------|------|------|-----------------------------------------------------------------|-----|-----|-------------------------|------|-----|-----------------------------------------------|------|------|------------------------------------------|-----|------|-----------------------------------|-----|-----|-----------------------------------------------------|-----|-----|-----------------------------------------------------------------|-----|-----|-------------------------------------------------------------------------------------|-----|-----|----------------------------------|-----|-----|
|                                                                                                                                                                                         | <ul style="list-style-type: none"><li>calculating lamb mortality percentage (normally)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| 5. Develop the knowledge, attitudes and skills of ‘core’ producers as well as ‘observers’ to enable them to more confidently select rams based on their genes for reproduction (ASBVs). | <p>The self-graded confidence in selecting rams to improve the reproductive performance of ewe flocks lifted from an average of 7.85 to an average of 9 in the ‘observers’ and from 7 To 9.66 in the core producers.</p> <p>in terms of skills and knowledge deployed. There were subtle shifts between pre and post but no major changes for ‘observers’</p> <p>The following results relate to changes in the observer sites.</p> <table><tr><th></th><th>Pre</th><th>Post</th></tr><tr><th></th><th>% Normally</th><th>% Normally</th></tr><tr><td>Condition score ewes</td><td>86%</td><td>100%</td></tr><tr><td>Weigh Ewes or Lambs</td><td>43%</td><td>71%</td></tr><tr><td>Weigh ewe lambs or maiden ewes</td><td>71%</td><td>71%</td></tr><tr><td>Buy twin born rams</td><td>14%</td><td>29%</td></tr><tr><td>Use ASBVs to guide your ram selection</td><td>100%</td><td>100%</td></tr><tr><td>Use the Number of lambs weaned ASBV to guide your ram selection</td><td>71%</td><td>71%</td></tr><tr><td>Preg scan for multiples</td><td>100%</td><td>86%</td></tr><tr><td>Manage ewes in single and twin scanned groups</td><td>100%</td><td>100%</td></tr><tr><td>Calculate your lamb mortality percentage</td><td>86%</td><td>100%</td></tr><tr><td>Benchmark your genetics in anyway</td><td>43%</td><td>57%</td></tr><tr><td>Discuss your ram requirements with your ram breeder</td><td>86%</td><td>57%</td></tr><tr><td>Change ram sources to get the rams that better suit my business</td><td>57%</td><td>57%</td></tr><tr><td>Purchase rams from more than one vendor to get the rams that suit your requirements</td><td>14%</td><td>57%</td></tr><tr><td>Seek external advice on genetics</td><td>86%</td><td>71%</td></tr></table> <p>Within the core producer group there was a slight increase in the belief of how their lambing percentage compared with industry average. There was also an increase in the use of ASBVs and specifically reproduction ASBVs. There was also an increase in genetic benchmarking and a change in ram sourcing to find rams that are best suited to the</p> |            | Pre | Post |  | % Normally | % Normally | Condition score ewes | 86% | 100% | Weigh Ewes or Lambs | 43% | 71% | Weigh ewe lambs or maiden ewes | 71% | 71% | Buy twin born rams | 14% | 29% | Use ASBVs to guide your ram selection | 100% | 100% | Use the Number of lambs weaned ASBV to guide your ram selection | 71% | 71% | Preg scan for multiples | 100% | 86% | Manage ewes in single and twin scanned groups | 100% | 100% | Calculate your lamb mortality percentage | 86% | 100% | Benchmark your genetics in anyway | 43% | 57% | Discuss your ram requirements with your ram breeder | 86% | 57% | Change ram sources to get the rams that better suit my business | 57% | 57% | Purchase rams from more than one vendor to get the rams that suit your requirements | 14% | 57% | Seek external advice on genetics | 86% | 71% |
|                                                                                                                                                                                         | Pre                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Post       |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
|                                                                                                                                                                                         | % Normally                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | % Normally |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Condition score ewes                                                                                                                                                                    | 86%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 100%       |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Weigh Ewes or Lambs                                                                                                                                                                     | 43%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 71%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Weigh ewe lambs or maiden ewes                                                                                                                                                          | 71%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 71%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Buy twin born rams                                                                                                                                                                      | 14%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 29%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Use ASBVs to guide your ram selection                                                                                                                                                   | 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 100%       |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Use the Number of lambs weaned ASBV to guide your ram selection                                                                                                                         | 71%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 71%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Preg scan for multiples                                                                                                                                                                 | 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 86%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Manage ewes in single and twin scanned groups                                                                                                                                           | 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 100%       |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Calculate your lamb mortality percentage                                                                                                                                                | 86%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 100%       |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Benchmark your genetics in anyway                                                                                                                                                       | 43%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 57%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Discuss your ram requirements with your ram breeder                                                                                                                                     | 86%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 57%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Change ram sources to get the rams that better suit my business                                                                                                                         | 57%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 57%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Purchase rams from more than one vendor to get the rams that suit your requirements                                                                                                     | 14%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 57%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |
| Seek external advice on genetics                                                                                                                                                        | 86%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 71%        |     |      |  |            |            |                      |     |      |                     |     |     |                                |     |     |                    |     |     |                                       |      |      |                                                                 |     |     |                         |      |     |                                               |      |      |                                          |     |      |                                   |     |     |                                                     |     |     |                                                                 |     |     |                                                                                     |     |     |                                  |     |     |

| Original objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Status                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | enterprise.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p>6. Extend outcomes, learnings and experiences relating genetics of reproduction to the wider neXtgen Agri producer network using the neXtgen Agri members site, the neXtgen Agri Facebook group and Zoom (Group Video conferencing) calls throughout the project resulting in:</p> <ul style="list-style-type: none"> <li>• 100% of core producers and 50% of observer producers adopting or intending to adopt selection of rams using ASBVs; and</li> <li>• 100% of core producers and 80% of observer producers with increased knowledge, skills and confidence in relation to selection of rams using ASBVs.</li> </ul> | <p>There was 100% use of the reproductive ASBVs among 'core' and 'observer' producers in the project. Confidence and knowledge around the reproduction ASBVs had increased. During the project Sheep Genetics developed improved reproduction ASBVs and the project readily discussed this transition.</p> <p>Information around the genetics of reproduction was widely distributed across all neXtgen Agri social media platforms and the Head Shepherd podcast. Two online training series were conducted for the wider industry and were well attended. Mark Ferguson has talked to almost 2000 workshop attendees at various events and has regularly discussed genetics of reproduction at these events.</p> |
| <p>7. Host a field day at each host farm on at least two occasions during the project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Not achieved</p> <p>No field days were held during the project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p>8. Present findings to the wider community both from the public neXtgen website and at sheep industry forums and extend results through other grower group networks and consultants.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>There has been considerable engagement with the project from producers. Information about the project, as well as educational content about implementing the new reproduction ASBVs, was presented to producers through a wide range of channels:</p> <ul style="list-style-type: none"> <li>• neXtgen Agri Hub</li> <li>• neXtgen Agri social media channels</li> <li>• neXtgen Agri web page (including blog, vlog and article)</li> <li>• webinar</li> <li>• online course</li> <li>• podcast episode</li> </ul>                                                                                                                                                                                             |

| Original objectives | Status                                                                                                                                                |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ul style="list-style-type: none"> <li>• presentation at in-person events across Australia</li> <li>• case study video and results summary</li> </ul> |

## 2.1 Amended project objectives

Due to the difficulty in establishing and maintaining demonstration sites that were willing to follow the project protocols (and the associated challenges of meeting the original objectives set out in Table 1), MLA and neXtgen Agri agreed to amend the objectives for the remainder of the project on 3<sup>rd</sup> May 2024. These amended objectives (along with their status at the completion of the project) are outlined in Table 2.

**Table 2. Amended project objectives and their status at the completion of the project.**

| Amended objectives                                                                                                                                                          | Status                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Develop a post-project survey template for core and observer producers.                                                                                                  | <p>Achieved</p> <p>A post-project survey template was developed for the two groups of producers:</p> <p>(1) core producers; and</p> <p>(2) observer producers.</p>                                                                                    |
| 2. Complete post-project surveys to assess knowledge, skills, confidence, and adoption of all core producers (observers as well, if possible).                              | <p>Achieved</p> <p>Post-project surveys were completed.</p>                                                                                                                                                                                           |
| 3. Complete a case study from at least one host producer and a project summary/factsheet.                                                                                   | <p>A case study from at least one host producer (Dale Harris) has been completed and can be found <a href="#">here</a>. A project factsheet has been developed and added to the project site on The Hub and can be accessed <a href="#">here</a>.</p> |
| 4. Delivery of a final report and supporting documentation with project outcomes for the adjusted project term, addressing the original project objectives and methodology. | <p>Achieved</p>                                                                                                                                                                                                                                       |

### **3. Demonstration Site Design**

#### **3.1 Methodology**

The original project methodology was as follows:

1. Select at least five participant producers with at least 500 ewes of a similar type; these producers will be those that have made a recent decision to change genetics to improve reproduction rates.
2. At a meeting of the core producers for that site, the current ram team will be reviewed and a breeding objective for the new ram team will be established. The group will then decide (with the right of veto from the host) on the ram buying plan and this will be completed by the host.
3. A minimum of 4 rams from the 'home' team and the 'demo' team will need to be used and each ram team will be mated to a minimum of 250 ewes. The ewes will be randomly allocated to sire group and the groups will be stratified for any differences in age or type. A group of 50 ewes from each group will be weighed and condition scored at joining.
4. If not already tagged, the ewes will be tagged with electronic IDs to allow easy identification and drafting. After joining all ewes will be combined into a single mob.
5. At scanning the result will be recorded against the EID tag and single and twin-bearing ewes will be separated and managed according to their requirements. The ewes from the two different sire groups will be managed together through late pregnancy. 10 days prior to lambing ewes will be separated into four groups – single x home, twin x home, single x demo and twin x demo so that single and twin survival can be determined. Lambs will have an EID tag applied at marking and ewes will be wet and dried at the same time. The two single mobs and two twin mobs will be combined at marking.
6. All lambs will be counted and weighed at weaning. The f1 ewes will be managed together right through until their joining at 19 months. Their reproductive performance will be assessed in the same way as completed in point 5. Two drops of ewes will be generated in the same way, and up to two lambings of the F1 ewes will be followed.
7. Observer members will be asked to be present at pregnancy scanning and lamb marking allowing them to have first-hand knowledge of the results as well as the process where this can be achieved geographically.

It proved difficult to get the numbers of ewes required and to achieve the exact design. The design was modified to allow some sites to be set up. The original methodology should still be followed by producers looking to compare the reproductive performance of different sire groups in the future.

#### **3.2 Economic analysis**

The project has been ceased early due to lack of demonstration sites, the economic analysis was not completed due to the limited results available for analysis.

#### **3.3 Extension and communication**

The project included a comprehensive plan for communicating with the core, observer and other producers involved in the project. The project planned to utilise online as well as face-to-face activities to foster skill development and adoption across the site hosts and core producers. The following communication activities were identified in the communications plan for the project:

- Project web page
- Facebook group
- Project blog
- Webinar
- Online course
- Field days
- Case studies and accompanying videos
- Summary document and webinar (final results)

Details about how these activities were implemented throughout the course of the project are provided below in section 4.2.

### **3.4 Monitoring and evaluation**

#### **3.4.1 Online survey**

Online surveys were not conducted for the project.

#### **3.4.2 Pre-project and post-project surveys of core and observer producers**

Both pre-and post-project surveys were developed for the core and observer groups of producers.

#### **3.4.3 MER plan**

An MER plan was developed for the project. The plan included:

- A target for the number of producer demonstration sites: a total of 10 sites.
- At least 100 producers observing the demonstration sites (and engaging with the project).
- At least 5,000 sheep directly involved in the demonstration sites.
- A target for the number of sheep on core producer sites: 25,000 sheep.
- A target for the number of sheep managed by observer producers: 150,000.
- Details about the project methodology and how the demonstration sites were expected to implement the project protocol.
- Expectations of how (and how often) information about the project would be communicated to producers.
- Guidelines regarding project surveys of the producers involved (as demonstration site hosts, observers and general producers), including the type of information to be gathered from producers.

## 4. Results

### 4.1 Demonstration site results

Performance metrics and results for the project are summarised in Table 3.

**Table 3. Performance metrics**

|               |                                                                                                                                                                                                                                                                                                                                                                                                            |                 |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|               | Performance metrics                                                                                                                                                                                                                                                                                                                                                                                        |                 |
| Engagement    | The self-graded confidence in selecting rams to improve the reproductive performance of ewe flocks lifted from an average of 7.85 to an average of 9 in the ‘observers’ and from 7 to 9.66 in core producers.<br>In terms of skills and knowledge deployed, there were subtle shifts between pre and post but no major changes for ‘observers’                                                             |                 |
|               | Number producers directly and indirectly engaged<br>There were 10 producers directly engaged in the project and a larger number indirectly involved. These are detailed later in this report                                                                                                                                                                                                               |                 |
|               | Practice change – intended and actual<br>Within the core producer group there was a slight increase in the belief of how their lambing percentage compared with industry average. There was also an increase in the use of ASBVs and specifically reproduction ASBVs. There was also an increase in genetic benchmarking and a change in ram sourcing to find rams that are best suited to the enterprise. |                 |
|               |                                                                                                                                                                                                                                                                                                                                                                                                            |                 |
| Productivity  | Production efficiency<br>Insufficient data to complete                                                                                                                                                                                                                                                                                                                                                     |                 |
|               |                                                                                                                                                                                                                                                                                                                                                                                                            |                 |
| Profitability | Enterprise Indicators                                                                                                                                                                                                                                                                                                                                                                                      | Gross Margin/Ha |

#### 4.1.1 Case study: Dale Harris, Redbank Grazing, Beermullah, WA

The case study video can be viewed here: [Dale Harris Case Study](#)

A host site was established at Redbank Grazing in 2021/22.

Redbank Grazing compared the reproductive performance of ewes joined to their 'old' or traditional crossbred maternal rams versus a new team of rams with superior Australian Sheep Breeding Values (ASBVs) for reproduction and lamb survival.

##### Methodology

1. The 'old', or traditional, ewes were joined for the first time as maidens (15 months old), with the survival of their progeny recorded to weaning.
2. The 'old' ewes were then joined again the following year.
3. The F1 progeny were also joined twice to the standard ram team.
4. Survival of the lambs born to the 'old' ewes at their second joining and those born to the F1 ewes were not recorded as there were inadequate paddocks available to keep these ewes separate during lambing. Hence, only scanning results were recorded for these ewes.

**Figure 2: Mark Ferguson assessing ewes at Redbank – photo courtesy of Dale Harris**



##### Results

In the 'old' ewes, the following results were observed at Redbank Grazing:

- Overall, the conception rates of the 'old' ewes were quite low when joined as maidens (only 50% of the ewes conceived). This resulted in limited F1 ewe progeny that could be followed through the project, with 31 F1 ewes sired by the old rams and 22 F1 ewes sired by the new rams.
- Because of the low conception rates in the 'old' ewes, it was not possible to investigate the reproductive performance of single versus twin progeny, as had originally been planned.
- At their first joining as maiden ewes, conception rate was 2% higher and reproductive rate was 7% higher for the old ewes joined to the new compared with the old ram team (Table 4).
- A greater impact on scanning results was observed when the ewes were joined for a second time, with the conception rate being 8% higher and reproductive rate being 9% higher for the ewes joined to the new rams compared with the old rams (Table 4).

- The survival of single and twin lambs born to the old ewes when joined as maidens were approximately 3% higher when sired by the new rams compared with the old rams (Table 4).
- The marking rate was about 6% higher for lambs sired by the new rams compared with the old rams (Table 4).
- The weaning rate was 5% higher for ewes joined to the new ram team compared with the old ram team (Table 4).
- The weaning weights were similar for progeny of the ewes joined to the old versus the new rams, with weights of 36.5 kg vs 34.8 kg for single-born lambs and 32.5 kg vs 31.8 kg for twin-born lambs.

**Table 4. Scanning, lambing and weaning results of crossbred maternal ewes joined to ‘old’ rams (ie traditional rams) or ‘new’ rams (ie rams with superior Australian Sheep Breeding Values for reproduction and lamb survival) as part of the Producer Demonstration Site project at Redbank Grazing**

| Ewes                                      | Rams | Average joining weight of ewes (kg) | Conception rate (%) | Reproductive rate (%) | Lamb survival to marking (%) <sup>1</sup> |       | Marking rate (%) <sup>2</sup> | Weaning rate (%) <sup>3</sup> |
|-------------------------------------------|------|-------------------------------------|---------------------|-----------------------|-------------------------------------------|-------|-------------------------------|-------------------------------|
|                                           |      |                                     |                     |                       | Singles                                   | Twins |                               |                               |
| Old ewes first joining (maidens)          | Old  | 59.3                                | 66%                 | 103%                  | 71.8%                                     | 52.4% | 60.0%                         | 58%                           |
|                                           | New  | 59.2                                | 68%                 | 110%                  | 75.0%                                     | 55.2% | 66.4%                         | 63%                           |
| Old ewes second joining                   | Old  | 69.9                                | 90%                 | 155%                  |                                           |       |                               |                               |
|                                           | New  | 69.8                                | 98%                 | 164%                  |                                           |       |                               |                               |
| F1 ewes first joining (approx. 10 month)  | Old  | 44.8                                | 47%                 | 74%                   |                                           |       |                               |                               |
|                                           | New  | 45.7                                | 62%                 | 85%                   |                                           |       |                               |                               |
| F1 ewes second joining (approx. 19 month) | Old  | 55.3                                | 78%                 | 106%                  |                                           |       |                               |                               |
|                                           | New  | 53.9                                | 83%                 | 108%                  |                                           |       |                               |                               |

<sup>1</sup> Number of lambs marked/number of foetuses scanned x 100

<sup>2</sup> Number of lambs marked/number of ewes joined x 100

<sup>3</sup> Number of lambs weaned/number of lambs joined x 100

In the F1 progeny, the following results were observed at Redbank Grazing:

- The ASBVS of the F1 ewes for conception rate, litter size and weaning rate were higher for those sired by the new rams compared with the old rams (Table 5).

- The conception and reproductive rates were 15% and 11% higher, respectively, for the F1 ewe progeny joined to the new rams compared with the old rams at their first joining (Table 4).
- There was a smaller increase in conception and reproductive rates for these ewes when joined for a second time, with the conception rate being 5% higher and the reproductive rate being 2% higher when joined to the new versus the old rams (Table 4).

**Table 5. Average Australian Sheep Breeding Values for conception rate (CON), litter size (LS), ewe rearing ability (ERA) and weaning rate (WR) of the F1 ewes sired by the new or old rams from the Producer Demonstration Site project at Redbank Grazing**

| Sires    | CON  | LS   | ERA  | WR   |
|----------|------|------|------|------|
| New rams | 0.04 | 0.07 | 0.03 | 0.16 |
| Old rams | 0.03 | 0.05 | 0.03 | 0.13 |

## Summary

1. There were small increases in conception and reproductive rates when the old ewes were joined to the new rams compared with the old rams.
2. Compared to the old ewes, there was a greater increase in conception and reproductive rates of the F1 ewes joined when joined to the new versus old rams for the first time. However, at their second joining, there was little difference in conception and reproductive rates between ewes joined to the new versus old rams.
3. The rates for lamb survival, marking and weaning were higher for lambs from the old ewes joined to the new ram team versus the old ram team.
4. There was minimal difference in weaning weight of lambs born to the old ewes when joined to the old or new rams.

### 4.1.2 Other host sites

In addition to the host site at Redbank Grazing, the project initiated four other host sites. At each host site a breeding objective was established and 'new' genetics were procured in line with that business's particular breeding objective. The 'old' genetics were also retained to provide a comparison. As explained elsewhere in this report, there were significant challenges to maintaining these host sites and the PDS trials were abandoned during 2023.

#### Scott Brown, Trunkey Creek, NSW

This host site was added in late 2022.

This producer had been a project observer earlier in the project and had collected data relevant to the project's aims. However, the methodology implemented at this site was a modified version of the original project methodology.

The site compared the performance of progeny from 'new' rams (that were purchased because of their reproductive breeding values) with historical results from 'old' rams and ewes. This was because the producer did not want to continue to breed from 'old' rams, having purchased 'new' rams with superior ASBVs for reproduction.

The site was also interested in monitoring the performance of 'new' ewes mated to the 'new' rams.

Unfortunately, due to a combination of factors (including a severe cold snap and extreme rainfall events during joining and lambing, as well as joining low condition F1 ewe lambs) there were low numbers of F1 progeny available for the trial. These environmental factors also made it difficult to compare data between years.

While some scanning, marking and weaning data was collected for the project (Table 6), the PDS trial was discontinued in the 2023 breeding season. Because there wasn't F1 progeny assessed for both old and new rams there is little we can draw from this data.

**Table 6. Scanning, marking and weaning results of 'old' and 'new' ewes joined to 'old' and 'new' rams, where 'new' indicates animals with superior Australian Sheep Breeding Values for reproduction and lamb survival) as part of the Producer Demonstration Site project at Grovedale.**

| Mob Description                           | Average Ewe Joining Weight (Kg's) | Scanning Results  |                                          |                                              | Marking                      |                                               |                                     |                                   |                                   | Weaning                      |                                       |                                               |                                 |
|-------------------------------------------|-----------------------------------|-------------------|------------------------------------------|----------------------------------------------|------------------------------|-----------------------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|------------------------------|---------------------------------------|-----------------------------------------------|---------------------------------|
|                                           |                                   | Total Ewes Joined | Average fertility rate (%) ewes pregnant | Repro Rate (Fetuses Scanned / Ewes Joined %) | Total Number of Lambs Marked | Lamb Marking % (lambs marked per ewes joined) | Marking Survival Rate (%) (Singles) | Marking Survival Rate (%) (Twins) | Marking Survival Rate (%) (Total) | Total Number of Lambs Weaned | Average Weight of Lambs Weaned (Kg's) | Lamb Weaning % (lambs weaned per ewes joined) | Weaning Survival Rate % (Total) |
| Old ewes x old rams                       | 61.5                              | 2405              | 93%                                      | 130%                                         | 2234                         | 93%                                           | 85.8%                               | 60.6%                             | 71.3%                             | 2125                         | 26.4                                  | 88%                                           | 67.8%                           |
| Old ewes x new rams (2021)                | 55.7                              | 1026              | 88%                                      | 130%                                         | 857                          | 84%                                           |                                     |                                   | 64.2%                             | 838                          | 17.9                                  | 82%                                           | 62.8%                           |
| New ewes x new rams (2022)                | 50.3                              | 87                | 92%                                      | 113%                                         | 77                           | 89%                                           | 85.5%                               | 66.7%                             | 78.6%                             | 77                           |                                       | 89%                                           | 78.6%                           |
| Old ewes x new rams (2022)                | 53.7                              | 720               | 88%                                      | 126%                                         | 667                          | 93%                                           | 83.6%                               | 66.8%                             | 73.5%                             |                              |                                       |                                               |                                 |
| New ewes x new rams (2023)                |                                   |                   |                                          |                                              |                              |                                               |                                     |                                   |                                   |                              |                                       |                                               |                                 |
| F1 ewe lambs group 1 x common rams (2022) | 40.1                              | 154               | 42%                                      | 46%                                          | 65                           | 42%                                           | 90%                                 | 100%                              | 92%                               |                              |                                       |                                               |                                 |

### Gibbs Family, Caniambo, VIC

A host site was established at the property of the Gibbs Family in 2020/21.

At this site the breeding objective was focused on:

- improving lamb survival
- lamb weaning percentage
- lamb growth
- increasing ewe condition score
- maintaining fleece value

In addition to comparing ram sources over their original base ewes, they also purchased some ewes of the new bloodline to include in their comparison.

Some scanning, marking and weaning data was collected for the project (Table 7). These results included a much higher weaning percentage for the new rams over the old ewes, and an even better weaning percentage for the new rams over the new ewes, along with higher 7-month weights. However, the PDS trial was discontinued in the 2023 breeding season, so there was not an opportunity to replicate these results.

**Table 7. Scanning and weaning results, and 7-month weights, for ‘old’ ewes joined to ‘old’ and ‘new’ rams and for ‘new’ ewes joined to ‘new’ rams, where ‘new’ indicates animals with superior Australian Sheep Breeding Values for reproduction and lamb survival) as part of the Producer Demonstration Site project at the property of L, L,I & L Gibbs.**

|                     | Scanning | Weaning % | Weight at 7 months |
|---------------------|----------|-----------|--------------------|
| Old ewes x old rams | 152%     | 92%       | 31kg               |
| Old ewes x new rams | 154%     | 101%      | 36.4kg             |
| New ewes x new rams | 155%     | 133%      | 38kg               |

### **Charlie Vallance, Lake Bolac, VIC**

A host site was established at this property (Aberfoyle) in 2020/21.

At Aberfoyle, the breeding objective was to:

- increase lamb survival
- increase ewe resilience
- maintain fleece value

The progeny from each group showed similar survival and growth attributes. However, at their first shearing, the progeny (as hoggets) demonstrated a difference in wool value, with the new bloodline being 1.5 microns stronger and cutting 200 grams less wool than the old bloodline.

This site had no additional data to provide at the end of 2022 as it was impacted by flooding on the East Coast. Further, an alternative source of rams was sought as a result of the loss in wool value they experienced following the change in genetics at the start of the trial. The PDS trial was discontinued.

### **Todd Burger, Glenthompson, VIC**

A host site was established at this property in 2020/21.

At this site, the breeding objective was to:

- maintain spinners style Merino wool
- increase lamb weaning percentage
- improve ewe resilience
- increase lamb growth
- cease mulesing

As summarised below in Table 8, there was no significant difference between the treatment groups for weaning percentage (85% control, 87% new sires). Further, there was no significant difference in weaning weights (23kg control and 23.5kg new sires).

While the lambing paddocks appeared similar, the farmer reported that the ewes mated to the new sires were in poorer condition at lamb marking and weaning. It is likely that there was an environmental influence on the results.

The F1 progeny were not heavy enough to mate as ewe lambs and the PDS trial was discontinued in the 2023 breeding season.

**Table 8. Scanning, weaning and weaning weight results for ewes joined to ‘old’ and ‘new’ rams (where ‘new’ indicates animals with superior Australian Sheep Breeding Values for reproduction and lamb survival) as part of the Producer Demonstration Site project at Mirridong.**

|                      | Scanning | Weaning % | Weaning weight |
|----------------------|----------|-----------|----------------|
| Old sires (200 ewes) | 117%     | 85%       | 23kg           |
| New sires (200 ewes) | 118%     | 87%       | 23.5kg         |

### **4.1.3 Project summary/fact sheet**

A project summary fact sheet has been prepared and has been provided to MLA.

## **4.2 Economic analysis**

### **Results of the economic analysis**

There was insufficient data collected from this project to conduct a valid economic analysis.

## **4.3 Extension and communication**

### **4.3.1 Engagement through extension and communication activities**

Despite the challenges encountered during the project (from events affecting the wider community (such as restrictions on travel and events due to COVID-19, floods and other extreme weather events) to issues with implementing the project methodology, there was considerable engagement with the project from producers.

The timing of the project has been beneficial for the industry in terms of awareness-raising activities regarding the change in how reproduction breeding values are reported by Sheep Genetics. Through the extension and communication activities outlined below, the project has been able to address confusion that has arisen among producers about the new reproductive ASBVs.

The project has been able to help explain issues - such as the low correlation between the old reproductive breeding values (NLW, YNLW, NLB, YNLB) and the new reproductive breeding values (CON, LS, ERA and their yearling equivalents), which has meant that rams that seemed to be superior for the old traits are no longer superior for the new traits and vice-versa - and educate producers about the importance of focusing on the new breeding values.

### **4.3.2 neXtgen Agri Hub**

At the start of the project, the neXtgen Agri online community (known as the neXtgen Agri Hub) had 100-plus members and neXtgen Agri expected the community to grow to over 400 members by the end of the project. At the time of preparing this final report, there were approximately 800 members in the neXtgen Agri online community.

Information from the project has been posted on the dedicated page on the neXtgen Agri Hub: <https://thehub.nextgenagri.com/c/reproductionandlambsurvival/>. This replaced a closed Facebook group that was set up in an early phase of the project (but abandoned due to low engagement). At the time of preparing this report, 796 producers were signed up to follow this page on the neXtgen Agri Hub.

#### **4.3.3 Social media channels**

At the beginning of the project, neXtgen Agri was building its online presence through social media channels and planned to use these channels to extend the results from the project. Over the course of the project, this online presence has grown significantly (eg neXtgen Agri's followers on Twitter has grown from 1,000-plus to 2,000-plus) and covers multiple channels (ie Twitter, Facebook, Instagram and LinkedIn).

The project and the principles have been promoted via the neXtgen Agri social media channels.

#### **4.3.4 Web page (including blog post, vlog post and article)**

In addition to the dedicated page on the neXtgen Agri Hub (see above), a web page on the neXtgen Agri website was also developed. This web page included a blog and vlog post (from the early phase of the project) and also signposted producers' further information about the project: <https://www.nextgenagri.com/reprogenes>. This page has received a total of 83 views throughout the project.

In February 2021, we published an article/blog post, 'The genetics of more lambs', via the neXtgen Agri website. The article covered how genetics can be harnessed to improve lamb survival and help producers wean more lambs. It also highlighted the PDS project and how producers could find out more. The article can be found [here](#). This page has received a total of 160 views throughout the project.

#### **4.3.5 Webinar**

A webinar held during the early phase of the project was well received, with 24 participants over several different evenings.

#### **4.3.6 Online course**

During the course of the project, an online course was offered twice to host and core farm participants, as well as a wider network of producers. The course was delivered over three sessions and recordings were made available to watch online via the neXtgen Agri Hub.

In July and August 2021, we launched the online course for the project: 'Breeding for more lambs'. The course was run over three sessions (28 July, 4 August and 11 August 2021), after being promoted on neXtgen Agri's social media channels. It was successful, with 180 producers signing up, both from within and outside the neXtgen Agri network.

Dr Mark Ferguson (neXtgen Agri) and Dr Gus Rose (Sheep Genetics) gave an overview of the new reproduction ASBVs, as well as the old NLW breeding values, and discussed the relevance of each. The course also covered how reproduction can be improved by making nutrition and management changes, as well as taking a genetic approach.

Each of the sessions was recorded and shared on the [project page](#) on The Hub (which is open to the public). These recordings were also shared directly with everyone who registered for the course, as some people were not able to attend the live sessions.

- The [first session](#) was about the reproductive breeding values, including what they are and how to use them to improve reproductive performance and lamb survival.
- The [second session](#) was about how to buy rams based on their reproductive potential.
- The [final session](#) was about strategies for ewe selection based on their reproductive performance.

The recordings are also available on the neXtgen Agri YouTube channel: [session 1](#), [session 2](#) and [session 3](#).

In July and August 2022, we gave producers a second opportunity to engage with the online course. The course was promoted throughout the neXtgen Agri network, on social media and was open to all producers. It was again conducted over three Zoom sessions, this time led by Dr Mark Ferguson (neXtgen Agri). The aim was to continue to build awareness of strategies to make genetic gains in ewe reproduction and lamb survival, helping to support producers to make genetic gain in the reproductive traits. A total of 40 people attended this second series of three live sessions and demonstrated strong engagement and support of their peers.

A ram team evaluator tool was shared as part of the online training course series to help attendees assess their own ram teams and determine any areas to make genetic improvement on reproduction traits.

A copy of the PowerPoint slides, as well as the ram team evaluator tool, are included in the Appendix 6.1.4.

#### **4.3.7 Podcast**

In August 2022, we released a podcast episode (via the Head Shepherd podcast) about the genetics of reproduction. It provided an overview of the various genetic traits of reproduction, along with their breeding values and how to use them to improve reproductive performance.

The episode was promoted on the neXtgen Agri social media channels. As at the time of preparing this report, this episode had been downloaded more than 2,300 times, over 1,600 of these by Australian listeners. The episode can be found [here](#).

#### **4.3.8 Case study**

A case study video and a summary of the results to support the video have been developed for the demonstration site at Redbank Grazing. These have been shared via the communication channels outlined above.

**Figure 3: Ewes and lambs in for tailing at Redbank – Photo courtesy of Dale Harris**



#### **4.3.9 Presentation at events**

During 2022, we presented information about the project at several events across Australia, including at our 'Farm Fit Ewe' workshops. The focus was on the project objectives and key messages about the new reproduction breeding values.

We presented the messages from the project at a range of venues across South Australia (more than 200 producers), as well as at workshops at Mumblebone (150 participants) and Kerin Poll (170 participants).

We also presented at three T90 workshops on the subject totalling nearly 800 producers. There were a range of other speaking engagements during the life of the project where the project messaging was conveyed.

#### **4.3.10 Field days**

Due to the project challenges described elsewhere in this report, we did not conduct any field days at host producer sites.

## **4.4 Monitoring and evaluation**

### **4.4.1 Pre-project and post-project surveys of core and observer producers**

#### **Pre-project surveys**

During the Project it proved difficult to get producers to fill out the pre-project surveys. Three producers completed the 'core' producer version and a further seven producers completed the 'observer' pre-project survey.

The results from the pre-project surveys of 'core' producers were as follows:

- Between the three 'core' producers, they were managing 9,000 sheep.
- There was a mixture in confidence levels in purchasing rams that are likely to produce ewes with high reproductive rates.
- There were different perspectives on the impact that genetics can play in reproduction.
- All three sites have a history of purchasing rams from one place and have struggled to get higher reproductive performance.
- There was generally a poor understanding of the current financial benchmarks for the farming business.

The results from the pre-project surveys of 'observer' producers were as follows:

- Across the seven 'observer' producers, they were managing 26,000 sheep.
- In general, the respondents were very positive about the potential that genetics can have on reproduction.
- The 'observer' group consists of producers who have self-selected to participate and are highly interested in the topic of genetic selection for reproduction.
- As with the 'core' producers, the survey results indicated a poor understanding of (or lack of interest in) benchmarking the financial KPIs of their farming business.

#### **Post-project surveys**

- The post-project surveys demonstrate only minimal shift in skills and knowledge. There are two key reasons for that, firstly the group of producers that ended up participating in the project had a higher skill level than the producers the program was really designed for. The difficulty finding host sites meant we were only able to attract those that were really interested in reproduction and ASBVs. Secondly, the project didn't meet its original target of having 5 core sites operating and demonstrating the expected gap in reproduction from choosing the right ram team.
- The confidence in selecting rams for improved reproduction lifted across both core and observer producers which was very pleasing with strong measures of confidence across the board.
- Participants generally rated the project well – 8/10 for observers and 8.5/10 for core.
- A direct comparison of management practices pre and post project is presented below in table 9 as the percentage of producers who 'Normally' carry out the practice. It demonstrates some changes but mostly they are minor shifts.
- The biggest change is that the producers are now more likely to purchase rams from more than one vendor to get the rams that suit their business

**Table 9. Pre- versus Post-project for management practices that observer producers carry out. The numbers presented are the percentage of producers that ‘Normally’ carry out the practice when given the options of: normally, sometimes, rarely, never and Not Applicable.**

|                                                                                            | <b>Pre</b>            | <b>Post</b>           |
|--------------------------------------------------------------------------------------------|-----------------------|-----------------------|
|                                                                                            | <b>%<br/>Normally</b> | <b>%<br/>Normally</b> |
| <b>Condition score ewes</b>                                                                | 86%                   | 100%                  |
| <b>Weigh Ewes or Lambs</b>                                                                 | 43%                   | 71%                   |
| <b>Weigh ewe lambs or maiden ewes</b>                                                      | 71%                   | 71%                   |
| <b>Buy twin born rams</b>                                                                  | 14%                   | 29%                   |
| <b>Use ASBVs to guide your ram selection</b>                                               | 100%                  | 100%                  |
| <b>Use the Number of lambs weaned ASBV to guide your ram selection</b>                     | 71%                   | 71%                   |
| <b>Preg scan for multiples</b>                                                             | 100%                  | 86%                   |
| <b>Manage ewes in single and twin scanned groups</b>                                       | 100%                  | 100%                  |
| <b>Calculate your lamb mortality percentage</b>                                            | 86%                   | 100%                  |
| <b>Benchmark your genetics in anyway</b>                                                   | 43%                   | 57%                   |
| <b>Discuss your ram requirements with your ram breeder</b>                                 | 86%                   | 57%                   |
| <b>Change ram sources to get the rams that better suit my business</b>                     | 57%                   | 57%                   |
| <b>Purchase rams from more than one vendor to get the rams that suit your requirements</b> | 14%                   | 57%                   |
| <b>Seek external advice on genetics</b>                                                    | 86%                   | 71%                   |

## **5. Conclusion**

### **5.1 Key findings**

- Despite some challenges in establishing and maintaining sites, which ultimately resulted in the project finishing early, the project has had many successes.
- The project has demonstrated that there is very strong interest among producers in the area of genetics of reproduction, particularly as it relates to lamb survival
- There were two sites where sufficient data was gathered to compare the reproduction outcome from different genetics. On one of these sites there was a large difference and on the other a small difference in favour of rams selected for improved reproduction. Results were not obtained at other sites for a variety of reasons.
- The project coincided with the release of new ASBVs for reproduction which have been demonstrated to be a lot more value to producers than the old NLW ASBV.
- The wider neXtgen Agri network and followers on social media and the Head Shepherd podcast have been well engaged in the topic area and the project was highly successful at getting the message out to a wide range of producers across many areas of Australia.

### **5.2 Benefits to the industry**

- The most significant benefit this project has provided to the industry is the awareness it has created in the wider industry of the potential of genetics to improve reproductive outcomes

- The strong engagement across the industry has contributed to a rapid acceptance of the new ASBVs for reproduction and an increase in the number of breeders that are either already providing ASBVs for reproduction or are working on doing so
- The opportunity for the industry to make rapid gains in reproductive outcomes is significant
- One of the challenges with reproduction and with this project is the time lag between making a change and actually seeing it play out on farm.
- We have shown that you can build confidence in ram selection for reproduction by clearly explaining the opportunity and tools without the need for producers to see the results first-hand.

## 6. Appendix

### 6.1 Communication outputs

**6.1.1 neXtgen Agri Hub:** the link to the dedicated project page on the neXtgen Agri Hub can be found [here](#).

**6.1.2 Web page:** the link to the project web page on the neXtgen website can be found [here](#), which includes a blog/vlog post (from the early phase of the project).

**6.1.3 Article/blog post:** a copy of the article 'The genetics of more lambs' is available [here](#)

**6.1.4 Online course:**

- A copy of the PowerPoint slides for the online course are available [here](#).
- Links to recordings of the three webinar sessions can be found on the [project page](#) on the neXtgen Agri Hub ([session 1](#), [session 2](#) and [session 3](#)) or on the neXtgen Agri YouTube channel ([session 1](#), [session 2](#) and [session 3](#)).
- The ram team evaluator tool is available [here](#).

**6.1.5 Podcast:** the link to the podcast episode can be found [here](#).

**6.1.6 [Project summary: Genetics of reproduction and lamb survival](#)**

### 6.2 Surveys and survey results

**6.2.1 Pre-project survey results:**

- A total of 11 producers completed a pre-project survey.
- Four producers completed the 'core producer' version and a further seven producers completed the 'observer producer' version.
- Copies of the completed surveys have been provided to MLA as separate files.
- Pre-project survey template:

## MLA Producer Demonstration Sites

### Pre-project Survey - Core Participants

**PDS Name :** \_\_Genetics of reproduction and lamb survival\_\_\_\_\_

**PDS Project Code:** \_\_L.PDS.2016\_\_\_\_\_

The following questions are used to determine your level of understanding of maiden ewe management. The knowledge and skills audit is used at the start and completion of the program to allow individuals to track their skill development and adoption of new practices. It will also be used:

1. To improve the content of future project meetings; and
2. As part of the evaluation process for the project

The information will be completely confidential, and individuals will not be identified in the analysis of data.

**Participant** **Name:** \_\_\_\_\_ -

**Date:**     /     /

MLA may contact me to further assess the impact of their programs?     ☐ Yes ☐ No

MLA may send me newsletters and inform me of future events?     ☐ Yes ☐ No

I have read, understood and accept the terms of MLA's "PDS Participant  
Consent & Release" (see appendix 1)     ☐ Yes ☐ No

**Participant** **Signature:** \_\_\_\_\_ -

## **Section A – Demographic Information**

### **A1. Your contact details**

- a. Property name.....
- b. Business / trading name.....
- c. Property address.....
- d. Postal address.....
- e. Email address.....
- f. Phone .....
- g. Mobile .....

### **A2. What area do you manage? (please write the number of hectares that you managed)**

- a. Hectares .....

### **A3. What numbers of livestock do you run? (please write the number of head against each of the categories of livestock that you run)**

- a. Number of beef breeders.....
- b. Number of cattle turned off per year .....
- c. Total number of cattle .....
- d. Number of ewes .....
- e. Number of lambs turned off per year .....
- f. Total number of sheep .....
- g. Number of goats turned off per year.....
- h. Other .....

## Section B – Knowledge and Skills

*Please select an option in each of these questions by ticking one of the boxes. If you do not know, please select the 'Unsure option'*

### **B1. Australian Sheep Breeding Values (ASBVs) are useful because? (Tick one of the options below)**

- a. They can be used to compare rams across properties ..... ☐
- b. They remove environmental effects and estimate the rams genes..... ☐
- c. They use a rams pedigree and sibling performance to improve accuracy..... ☐
- d. They are independent of ram feeding and preparation .....
- e. They account for differences in being born a single or twin..... ☐
- f. All of the above..... ☐
- g. I actually don't find them useful..... ☐
- h. Other (Please describe)..... ☐
- i. Unsure..... ☐

### **B2. Australian Sheep Breeding Values on the type of rams I buy are: (Tick one of the options below)**

- a. Not useful for me..... ☐
- b. A guide but it is more important to look at the animal .....
- c. A good tool to be used in conjunction with visual inspection..... ☐
- d. Are a very important part of my ram selection decision .....
- e. Unsure..... ☐

**B3. Do you think genetics plays a role in ewe reproduction and lamb survival ? (Tick the answer that applies to you)**

- a. No not at all ..... ☐
- b. A small effect but mainly it is related to the season and weather ..... ☐
- c. A small effect but it is mainly a result of management and nutrition ..... ☐
- d. A significant effect that is worth maximising ..... ☐
- e. Unsure..... ☐

**B4. Talking to my ram breeder about the information they supply on rams is? (Tick the answer that applies to you)**

- a. Not something I have ever done ..... ☐
- b. Daunting because I feel like I don't understand genetics well enough ..... ☐
- c. OK but I feel a bit out of my depth ..... ☐
- d. Yes I do and I feel like they listen to what I ask for..... ☐
- e. Unsure..... ☐

**B5. For reproduction and lamb survival, what do you think the genetic potential of your ewe flock is? (Tick the answer that applies to you)**

- a. Well below the industry average..... ☐
- b. Below industry average..... ☐
- c. About industry average..... ☐
- d. Above industry average ..... ☐
- e. Unsure..... ☐

**B6. Where do you buy your rams from? (Tick the answer that applies to you)**

- a. I have sourced my rams from one place for a long time ..... ☐
- b. I have tried different ram sources from time to time but not often ..... ☐
- c. I have regularly changed ram sources to try and get the sheep I like ..... ☐
- d. I purchase rams based on their merit and am flexible where they come from ..... ☐
- e. Unsure..... ☐

**B7. What information does your current ram breeder supply? (Tick the answer that applies to you)**

- a. Tag numbers and some basic pedigree..... ☐
- b. Some simple measures like fleece weight, micron and body weight..... ☐
- c. ASBVs for wool traits and body weight traits..... ☐
- d. ASBVs for most traits and including the reproduction traits (eg NLW) ..... ☐

- e. Unsure.....0

**B8. Do you think there is any value selecting rams with higher breeding values for reproduction and survival? (Tick the answer that applies to you)**

- No, I think it is better to select for other traits and manage for reproduction..... ☐
- No, because I don't think breeding values will work for these traits ..... ☐
- Yes, but only if the ram has everything else I want..... ☐
- Yes, it is a high priority for me ..... ☐
- Unsure..... ☐

## Section C – Confidence and Practices

**C1. How confident are you in selecting rams to improve the reproduction and lamb survival in your flock?**

*(please rate out of 10, with 1 being poor and 10 being very good, by circling your choice below)*

[illegible]

**C2. Do you currently use the following practices?**

|                                                                 | Normally | Sometimes | Rarely | Never | Not Applicable |
|-----------------------------------------------------------------|----------|-----------|--------|-------|----------------|
| Condition score ewes                                            |          |           |        |       |                |
| Weigh ewes or lambs                                             |          |           |        |       |                |
| Weigh ewe lambs or maiden ewes                                  |          |           |        |       |                |
| Buy twin born rams                                              |          |           |        |       |                |
| Use ASBVs to guide your ram selection                           |          |           |        |       |                |
| Use the Number of lambs weaned ASBV to guide your ram selection |          |           |        |       |                |
| Pregnancy scan for multiples                                    |          |           |        |       |                |
| Manage ewes in single and twin scanned groups                   |          |           |        |       |                |
| Calculate your lamb mortality percentage                        |          |           |        |       |                |
| Benchmark your genetics in anyway                               |          |           |        |       |                |
| Discuss your ram requirements with your ram breeder             |          |           |        |       |                |

|                                                                                     |  |  |  |  |  |
|-------------------------------------------------------------------------------------|--|--|--|--|--|
| Change ram sources to get the rams that better suit my business                     |  |  |  |  |  |
| Purchase rams from more than one vendor to get the rams that suit your requirements |  |  |  |  |  |
| Seek external advice on genetics                                                    |  |  |  |  |  |

**C3. For the key metrics you are seeking to demonstrate in this PDS, please advise what is your current performance**

| <b>Metric</b>                                  | <b>Current performance</b> |
|------------------------------------------------|----------------------------|
| <b>Production efficiency (kg red meat/dse)</b> |                            |
| <b>Current lamb weaning %</b>                  |                            |
| <b>Current lamb mortality rate</b>             |                            |
| <b>Gross margin/dse</b>                        |                            |

### 6.2.2 Post-project survey results:

- A total of 10 producers completed a post-project survey.
- 3 producers completed the 'core producer' version and 7 producers completed the 'observer producer' version.
- Post-project survey template:

### Post-Project Survey – Core Participants

**Project Code:** L.PDS.2016      **PDS Name :**      **Project** Genetics of reproduction and lamb survival

The following questions are used to determine your level of understanding of the role that genetics can play in improving ewe reproduction and lamb survival and how to select rams that will improve the reproductive performance and lamb survival of your flock following your participation in the above producer demonstration site project. The knowledge and skills survey is used at the start and completion of the program to allow individuals to track their skill development and adoption of new practices. The information will be used as part of the evaluation process for the project and MLA's PDS program. The information will be completely confidential, and individuals will not be identified in the analysis of data.

**Participant name:** \_\_\_\_\_

**Company/business name:** \_\_\_\_\_

## Section A - Your thoughts on the PDS

*Please rate each of the questions below out of 10 (where 1 is negative and 10 is positive)*

**A1.** Overall, how **satisfied** are you with this PDS? \_\_\_\_\_/10

**A2.** How **valuable** was this PDS in assisting you manage your livestock enterprise? \_\_\_\_\_/10

*Please tick your response and provide short answer responses for the below questions*

**A3.** Would you **recommend** MLA's PDS program to others? ☐ Yes    ☐ No    ☐ Not Sure

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**A4.** Please provide any feedback to help us improve the PDS program:

## Section B – Knowledge and Skills

*(Please select an option for **each** of these questions by ticking one of the boxes. If you do not know, please select the 'Unsure' option.)*

### B1. Australian Sheep Breeding Values (ASBVs) are useful because?

*(Tick one of the options below)*

- a. They can be used to compare rams across properties ☐
- b. They remove environmental effects and estimate the ram's genes ☐
- c. They use a ram's pedigree and sibling performance to improve accuracy ☐
- d. They are independent of ram feeding and preparation ☐
- e. They account for differences in being born a single or twin ☐
- f. All of the above ☐
- g. I actually don't find them useful ☐
- h. Other (Please describe) ☐
- i. Unsure ☐

### B2. Australian Sheep Breeding Values on the type of rams I buy are:

*(Tick one of the options below)*

- a. Not useful for me ☐
- b. A guide but it is more important to look at the animal ☐
- c. A good tool to be used in conjunction with visual inspection ☐
- d. A very important part of my ram selection decision ☐
- e. Unsure ☐

### B3. Do you think genetics plays a role in ewe reproduction and lamb survival?

*(Tick one of the options below)*

- a. No not at all ☐
- b. A small effect but mainly it is related to the season and weather ☐

- c. A small effect but it is mainly a result of management and nutrition ☐
- d. A significant effect that is worth maximising ☐
- e. Unsure ☐

**B4. Talking to my ram breeder about the information they supply on rams is?**

*(Tick the answer that applies to you)*

- a. Not something I have ever done ☐
- b. Daunting because I feel like I don't understand genetics well enough ☐
- c. OK, but I feel a bit out of my depth ☐
- d. Yes, I do and I feel like they listen to what I ask for ☐
- e. Unsure ☐

**B5. For reproduction and lamb survival, what do you think the genetic potential of your ewe flock is?**

*(Tick the answer that applies to you)*

- a. Well below the industry average ☐
- b. Below industry average ☐
- c. About industry average ☐
- d. Above industry average ☐
- e. Unsure ☐

**B6. Where do you buy your rams from?**

*(Tick the answer that applies to you)*

- a. I have sourced my rams from one place for a long time ☐
- b. I have tried different ram sources from time to time but not often ☐
- c. I have regularly changed ram sources to try and get the sheep I like ☐
- d. I purchase rams based on their merit and am flexible about where they come from ☐
- e. Unsure ☐

**B7. What information does your current ram breeder supply?**

*(Tick the answer that applies to you)*

- Tag numbers and some basic pedigree ☐
- Some simple measures like fleece weight, micron and body weight ☐

ASBVs for wool traits and body weight traits ☐

ASBVs for most traits and including the reproduction traits (eg NLW) ☐

Unsure ☐

**B8. Do you think there is any value in selecting rams with higher breeding values for reproduction and survival?**

*(Tick the answer that applies to you)*

a. No, I think it is better to select for other traits and manage for reproduction ☐

b. No, because I don't think breeding values will work for these traits ☐

c. Yes, but only if the ram has everything else I want ☐

d. Yes, it is a high priority for me ☐

e. Unsure ☐

## Section C – Confidence and Practices

**C1 How confident are you in selecting rams to improve reproduction and lamb survival in your flock?**

*Please rate out of 10 by marking your choice below, 1 = Not at all confident, 5 = somewhat confident, 10 = very confident*

|                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <b>1</b>                 | <b>2</b>                 | <b>3</b>                 | <b>4</b>                 | <b>5</b>                 | <b>6</b>                 | <b>7</b>                 | <b>8</b>                 | <b>9</b>                 | <b>10</b>                |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**C2 Do you currently use the following practices?**

|                                                                       | Normally | Sometimes | Rarely | Never | Not Applicable |
|-----------------------------------------------------------------------|----------|-----------|--------|-------|----------------|
| Condition score ewes                                                  |          |           |        |       |                |
| Weigh ewes or lambs                                                   |          |           |        |       |                |
| Weigh ewe lambs or maiden ewes                                        |          |           |        |       |                |
| Buy twin born rams                                                    |          |           |        |       |                |
| Use ASBVs to guide your ram selection                                 |          |           |        |       |                |
| Use the Number of lambs weaned (NLW) ASBV to guide your ram selection |          |           |        |       |                |
| Pregnancy scan for multiples                                          |          |           |        |       |                |

|                                                                                     |  |  |  |  |  |
|-------------------------------------------------------------------------------------|--|--|--|--|--|
| Manage ewes in single and twin-scanned groups                                       |  |  |  |  |  |
| Calculate your lamb mortality percentage                                            |  |  |  |  |  |
| Benchmark your genetics in any way                                                  |  |  |  |  |  |
| Discuss your ram requirements with your ram breeder                                 |  |  |  |  |  |
| Change ram sources to get the rams that better suit my business                     |  |  |  |  |  |
| Purchase rams from more than one vendor to get the rams that suit your requirements |  |  |  |  |  |
| Seek external advice on genetics                                                    |  |  |  |  |  |

**C2.1 Have you made/do you intend to make any other changes to your business as a result of participating in this PDS?** *If yes, please advise what changes*

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*C3 is only applicable where practices change/adoption has occurred as a result of participating in the PDS.*

**C3 What impact did implementing the above practices have on the following metrics?**

*(Please do not answer if you are unsure)*

| Metric                              | Performance after participating in the PDS |
|-------------------------------------|--------------------------------------------|
| Production efficiency (kg meat/dse) |                                            |
| Current lamb weaning %              |                                            |
| Current lamb mortality rate         |                                            |
| Gross margin/dse                    |                                            |

**C4 If not applicable, please provide a reason why**

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