



Sheep CRC Practical Wisdom Notes

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Pedigree Matchmaker – determining dam pedigree

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Introduction

Recording full pedigree (sire and dam) will improve the rate of genetic gain in a ram breeding flock. Commercial producers are also interested in knowing dam pedigree as a way of monitoring individual reproductive performance in ewe flocks. Pedigree MatchMaker can be used in conjunction with sire joining records to determine pedigree and is less costly than DNA parentage tests or visually mothering-up lambs. In Sheep CRC trials, between 85–95% of lambs were matched to their dam with up to 96% accuracy using the Pedigree MatchMaker.

How the Pedigree MatchMaker works

The Pedigree MatchMaker (PMM) system uses RFID technology (electronic ear tags) to develop associations between ewes and lambs as they walk past a purpose built panel reader with an inbuilt data logger. The panel reader is mounted on a narrow wooden race (necessary to avoid interference) that only a single sheep can walk through at a time and each tag entry is stamped with the time and date (Figure 1). After 6–8 weeks, the files are downloaded via Bluetooth onto a computer for analysis. If a lamb consistently follows a particular ewe, the software can determine that they belong to one another.



Figure 1. Wooden race mounted with the Pedigree MatchMaker panel reader

Setting up the Pedigree MatchMaker

Equipment required:

- Electronic ear tags for all ewes and lambs (lambs can be tagged at marking)
 - Estimated cost between \$1.40 and \$2.00
- Panel reader with data logger (e.g. Sapien PedigreeScan)
 - Approximate purchase price \$3,500 or hire for \$110/week
- 12 volt batteries or solar panels
 - Approximate cost \$80 each (18AH)
- Attractant – water, lick block, hay, grain feeder
- Electric fencing or portable fence panels
- Wooden race (E.g plywood or pallets held upright with star pickets)

Method:

There are two options for setting up the Pedigree MatchMaker in the paddock.

1. Build a small yard around a water trough (or other attractant) with portable fencing panels or electric fencing, with the wooden race as the only entry/exit point (Figure 2).
2. Place the wooden race between two paddocks, allowing the sheep to move freely between them.

The first option is preferred, as each ewe/lamb pair are more likely to pass through the reader regularly, which will increase the number of lambs matched and improve the accuracy. However, if this is not practical for your farm or you have large dams that cannot be fenced off, use the second option and include attractants other than water to increase sheep flow between paddocks. Hay or supplement blocks are safe options, and lick feeders can also be used if sheep have been introduced to grain. Regardless of setup, it may be necessary to use these alternative attractants to encourage sheep flow during wet conditions when pasture availability is high.

It is well worth spending the time to set up the system properly, making it as portable as possible, as it will save time later on when the equipment needs to be moved to a new paddock. The yard must be large enough for sheep to access the attractant and move around freely without blocking the entry/exit. Sheep may camp in yards that are too large, and this should be avoided. Metal must be kept at least 600mm away from the panel reader in all directions, as it will interfere with the antenna signal and tags will not be read properly. A maximum mob size has not been identified but data collection from ewe mobs of 500 have occurred without problems.



Figure 2. Pedigree MatchMaker set up around a trough

Training the ewes and lambs

It takes time to familiarise the ewes and lambs with the PMM system, but it is time well spent, as the quality of data will be far better and the results more accurate. Maximising sheep flow is particularly important where the PMM is set up between two paddocks (to prevent sheep remaining in the one paddock), and training the ewes properly is the best way to achieve this.

The time taken to train the ewes to walk through the race will depend on their exposure to similar situations (e.g being weighed regularly). If the ewes are familiar with the equipment then the lambs will learn quickly by following their dam. Sheep must be allowed to explore and become comfortable with the PMM on their own. Do not be tempted to force sheep through the PMM with dogs etc, as the sheep will learn to associate the PMM with the negative event, reducing the frequency with which they walk through the PMM.

Begin training 5–6 weeks before you want to start recording. If lambs are tagged at marking, then training should begin just prior to lambing so that recording can begin immediately after marking. A similar method can be used where the PMM is set up between two paddocks.

1. Set up the fence and wooden race around the trough, leaving enough room for sheep to move around the trough.
2. Leave a gap of 2–3m between the wooden race and the adjoining fence, to allow sheep to walk freely to water (Figure 3).
3. Allow at least a week for the sheep to adjust to the new fence, then gradually reduce the gap every few days, to encourage ewes to walk next to, and eventually through the wooden race.
4. After 4-5 weeks, close the gap entirely and turn on the panel reader to start recording. It's advisable to download the data in a few days to check all the ewes are accessing water and data is being collected correctly.
5. Continue recording for 6-8 weeks (see comments next page).

If ewes are split into smaller mobs for lambing and it is not possible to train each group individually, train the ewes for 4–5 weeks before lambing while they are still in a large mob. When the ewes and lambs are boxed back together after lamb marking, the training period can be reduced to 1-2 weeks, as the ewes will already be familiar with the system and the lambs will learn quickly from their dams.



Figure 3. Training ewes and lambs

Data recording and analysis

Once downloaded to a computer, the data file can be sent to a service provider or analysed at home using Stockbook (www.practicalsystems.com.au) or KoolCollect (www.sapien.com.au) farm management software. Download the data file weekly and run the analysis after 4 weeks of recording, to monitor the number of lambs being matched and determine when recording can finish. It will usually take 6–8 weeks to achieve the highest accuracy and match the most lambs to their dam.

In the PMM report, each lamb that has been matched to a ewe will also be assigned a Reliability score, which indicates the strength of the association. Scores 1 and 2 are considered reliable, but be wary of scores 3 and 4, as these lambs have consistently walked through the PMM with more than one ewe. If a large portion of lambs have been assigned score 3 or 4, an extra week or two of recording may be enough to increase the reliability to a score 1 or 2 for individual lambs.

Making the most of the Pedigree MatchMaker

If the sheep are trained properly to use the PMM, and batteries are checked regularly so that recording is not interrupted, the PMM system can match up to 95% of lambs to their dam with a high level of accuracy. The total cost will depend on the setup, but will be minimised where EIDs are already used, and there are several options available for hiring or purchasing (new or refurbished) panel readers to suit a particular budget.