Oestrogenic Clover - A Case Study

The first indication that there was a problem on the Robert Hams' Kangaroo Island farm was that lambing percentages dropped to around 25%. The ewes were in good condition and while the pastures looked fine, the problem was soon identified as being oestrogenic clovers. That was 38 years ago.

At the time, PIRSA researchers David Little and David Woodard were working on a research project on renovating oestrogenic pastures on Kangaroo Island. They identified the problem and mapped the oestrogenic clovers on the Hams' farm.

"The percentages were pretty ugly," David Woodard said. "The paddocks ranged from 4% to 59% oestrogenic clovers. We work on anything above about 20% as posing a risk. Back then on the Hams' place, we found that nine out of 13 paddocks were high or very high and only two were totally safe."

David returned to the Hams' farm in October this year to conduct a field walk organised by Agriculture Kangaroo Island (AgKI), MacKillop Farm Management Group (MFMG) and Meat & Livestock Australia (MLA), who have partnered together on a new project called Good Clover, Bad Clover. The project will work closely with local producers to determine what constitutes good and bad clover and how to implement effective management of clovers.

Oestrogenic clovers – the bad clovers – are Dinninup, Dwalganup, Yarloop and Geraldton. These older varieties contain high levels of the isoflavone formononetin, which leads to fertility problems in ewes. The effect is cumulative so lambing percentages will continue to drop from one year to the next.

"Wethers may also experience problems on oestrogenic clovers over time, due to enlarged bulbo-urethral glands which may lead to death." David said. "Wethers raised for prime lamb can be run on the oestrogenic clovers because they aren't on the pasture for long enough to have any problems."

"Ewes may fail to conceive or abort before full term. Conception rates will vary and a wide spread of lambing time may occur within the flock. Rams are the only sheep not affected by the bad clovers. Pastures can be renovated and Rob Hams is doing a good job renovating his," David continued.

"The process of renovating the affected pastures takes several years. We began renovating them by cropping the paddocks two years in a row," Rob said. "We sprayed out the clover at seeding and then sprayed again over the top of the crop; then in the third year, we knocked the paddock again before reseeding it with two sub-clovers and balansa. It seems to be going alright but we had to reduce stock to be able to do it."

"The new cultivars that we have sown are producing better quality and quantity of feed, but we have only had stock running on it for a year because we had to let the seed bank establish," he continued. "In the early days, we just managed the oestrogenic pastures we had by running cattle or wethers on them, rather than trying to renovate them. We've also run our older ewes on them and accepted lower lambing percentages in that mob. The oestrogenic clovers can also be grazed safely by ewes when the grass is completely dry."

"Renovating the pastures requires investment," Rob said. "There's the cost of destocking and then the cost of renovating the paddocks – buying in seed and so on. You can't do it unless you can do it economically. Now that there's money in sheep, it's easier."

The Hams' lambing percentages are now back up to around 80%.

Lessons Learned

- Understand the issue – assess each paddock for prevalence of oestrogenic clovers
- Graze strategically:
  - Avoid grazing ewes on oestrogenic clovers before or during mating to avoid temporary infertility
  - Avoid long term exposure of ewes to high oestrogenic clover paddocks as this can cause permanent infertility
  - Reserve high oestrogenic clovers to finish terminal lambs which are not affected
  - Graze weaners and young ewes on the least oestrogenic clover pastures available
  - When oestrogenic clovers are completely dried off, they may be grazed by ewes
  - Avoid cutting hay or silage from oestrogenic clover paddocks as the hay or silage can still be affected.
- Manage pastures:
  - Dilute clover based pastures with newer non-oestrogenic clovers or other pasture species
  - Develop a long term strategic spraying and grazing program to prevent oestrogenic clover seed set and reduce the seed bank
  - Buy certified clover seed to ensure it does not contain the older oestrogenic varieties
  - Be aware that purchased hay or silage may contain high oestrogenic clovers.

On-farm snapshot

Operators: ***Robert Hams; Ron & Yvonne Hams***

Location: ***Vivonne Bay, Kangaroo Island, South Australia***

Area: ***900ha Cleared***

Enterprise: ***Merino, self-replacing flock (older ewes mated to terminal sires); Angus cattle***

Livestock: ***4000 Merino Sheep***

Pastures: ***Sub-clovers***

Soils: ***Ironstone rubble over clay***

Rainfall: ***550mm***

Ron Hams in newly renovated pasture