

Good Clover Bad Clover

Background

Four oestrogenic sub clover varieties (Yarloop, Dinninup, Geraldton and Dwalganup) can be responsible for reduced ewe fertility, difficult births, prolapse of the uterus, urethral blockages in wethers and udder development in maiden ewes and wethers.

The 'Good Clover, Bad Clover' project commenced in April 2017 with the aim of increasing producer awareness of the potential issues and management strategies to deal with oestrogenic clover. The project involves coaching producers from 10 focus farms (on Kangaroo Island and the South East of SA), in the identification of the clovers and the development of management plans for their properties.

What was done

Pasture assessment across the medium to high rainfall zones of South Australia and Western Victoria, have found oestrogenic clovers in many pastures. The four main cultivars are widespread with Dinninup and Yarloop in the slightly higher rainfall areas (>500mm), while Dwalganup and in particular Geraldton were found to be more prolific in the drier areas. Dinninup is very widely distributed and in some areas at relatively high densities.

Two focus farms were selected on Kangaroo Island (Hd MacGillivray), for mapping of pasture composition and clover cultivars (good clovers and bad clovers) across a number of paddocks. This mapping has provided local information on the severity and extent of the bad clovers in pastures. Refer to **Table 1** for pasture composition on Farm 1 and **Table 2** for pasture composition on Farm 2.

Pasture composition will vary depending on both management (i.e. pasture renovation, grazing pressures, fertilizer and liming history and pest and weed control) and seasonal conditions (i.e. timing and the amount of rain at the break of season) as well as soil type.

The use of orange and red shading to indicate paddocks with high levels of bad clovers, highlights

the number of paddocks that are affected and the level across the farms.

These measurements can be used by landholders to develop management plans for their pastures and ewe flocks. As ewes graze oestrogenic clovers, the oestrogens accumulate over time. The management option is then to reduce the intake of oestrogens over time by putting ewe weaners on the safest pasture.

Results

The Oestrogenic Clover % indicates the proportion of clover in the pasture that is oestrogenic.

The Pasture Oestrogenic Score indicates how safe the pasture is for grazing ewes.

In **Table 1**, Paddock MacGillivray 2–18, the Oestrogenic clover score is 58% and thus marked red, however the paddock only has 29% clover and is grass dominant (at 59%). This 'dilution factor' will reduce the overall intake of oestrogens by the stock, so the overall Pasture Oestrogenic Score is LOW. Manipulating the pasture through grazing management, can keep the pasture grassy and this reduces the intake of oestrogens. Young to mid aged group ewes could safely be grazed in MacGillivray 2–18. Paddocks MacGillivray 4–18 and 8–18, have a low oestrogen clover of 16% and LOW Pasture Oestrogen score and could be kept for ewe weaners. Paddock MacGillivray 7–18 with a POTENT Pasture Oestrogen score could be targeted for renovation, sale stock or the oldest age group of ewes or wethers.

On Farm 2 there are a higher number of paddocks with high oestrogenic clover % and POTENT Pasture Oestrogenic Scores. These could be renovated over time and in the short term, only grazed with older aged group ewes or sale stock. Paddock 29–2017 has recently been renovated and has a low Oestrogen Clover % so could be used for ewe weaners.

Many of the pastures had high levels of Dinninup clover, with the range of Dinninup clover within the total clover portion of the pasture ranging from 7% to 92% with a large proportion of the paddocks above 50%.

Good Clover Bad Clover (cont.)

Table 1: Pasture Composition, Percentage of Oestrogenic clovers and ranking on Farm 1

Paddock	Grass %	Broadleaf %	Clover %	Oestrogenic Clover %	Pasture Oestrogen Score
MacGillivray 1-18	Cut for hay 2018				
MacGillivray 2-18	59	12	29	58	17 - Low
MacGillivray 3-18	50	17	33	62	12 - Low
MacGillivray 4-18	51	33	8	16	1 - Low
MacGillivray 5-18	47	9	45	56	25 - Moderate
MacGillivray 6-18	59	10	31	82	25 - Moderate
MacGillivray 7-18	29	18	53	93	49 - Potent
MacGillivray 8-18	65	6	29	16	5 - Low
MacGillivray 9-18	46	4	50	63	32 - Moderate
MacGillivray 10-18	57	6	37	90	33 - Moderate
MacGillivray 11-18	35	13	52	67	35 - Moderate
MacGillivray 12-18	31	28	41	92	38 - Moderate
MacGillivray 13-18	64	13	23	94	22 - Moderate
MacGillivray 14-18: Saline	69	10	21	39	8 - Low

Good Clover Bad Clover (cont.)

Table 2: Pasture Composition, Percentage of Oestrogenic clovers and ranking on Farm 2

Paddock	Grass %	Broadleaf %	Clover %	Oestrogenic Clover %	Pasture Oestrogen Score
MacGillivray 15-18	20	29	51	78	40 - Potent
MacGillivray 16-18	21	14	65	61	40 - Potent
MacGillivray 17-18	19	48	33	42	14 - Low
MacGillivray 18-18	32	8	60	69	41 - Potent
MacGillivray 19-18	35	33	32	70	22 - Moderate
MacGillivray 20-18	38	34	28	71	20 - Low
MacGillivray 21-18	20	9	71	34	24 - Moderate
MacGillivray 22-18	4	60	36	86	31 - Moderate
MacGillivray 23-18	44	9	47	89	42 - Potent
MacGillivray 24-18	22	23	55	83	46 - Potent
MacGillivray 25-18	42	13	45	52	23 - Moderate
MacGillivray 26-18	49	8	43	67	29 - Moderate
MacGillivray 27-18	34	45	21	70	15 - Low
MacGillivray 28-18	18	17	65	42	27 - Moderate
MacGillivray 29-2017	18	18	64	18	12 - Low
MacGillivray 30-2017	58	32	10	90	9 - Low
MacGillivray 31-2016	16	21	63	53	33 - Moderate
MacGillivray 32-2016	72	8	20	53	11 - Low
MacGillivray 33-2016	43	4	53	61	32 - Moderate
MacGillivray 34-2016	6	30	64	49	31 - Moderate
MacGillivray 35-2016	17	41	42	58	24 - Moderate

Good Clover Bad Clover (cont.)

Take home messages

Pastures with greater than 20% oestrogenic clovers are considered problematic.

Paddocks that have been identified as having greater than 20% oestrogenic clover should not be grazed with ewes whilst the clover is green. These paddocks can be grazed with older age group of ewes, wethers or terminal lambs. Drilling in winter-feed to dilute the clover content and avoiding grass cleaning of highly oestrogenic pastures is also recommended.

There is no cure for the permanent infertility in ewes that have had repeated exposure to large amounts of oestrogenic clovers over a long period of time. This cumulative effect may occur over a two to three year period of exposure. These ewes should be culled.

Renovation of pastures with low oestrogenic cultivars will improve productivity. Seed reserves in the soil often mean that renovation does not completely remove the oestrogenic clovers from a pasture. Ensuring new varieties can dominate through adequate soil nutrition, weed and insect control is important. In the years prior to renovation, reducing seed set of oestrogenic cultivars should be considered. In paddocks which can be cropped, encouraging germination via shallow tillage helps maximise germination and effectiveness of herbicide applications to reduce seed banks. Cutting clover hay or silage in the year prior to renovation can help reduce seed set, which in turn helps to reduce the seed bank and reduce competition for the establishment of new cultivars.

Funding/Sponsors:

MacKillop Farm Management Group in Partnership with AgKI through:
Meat & Livestock Australia
Sheep Connect SA
Natural Resources South East

For further information, contact

David Woodard, PIRSA, Nuriootpa:

Phone 0417 803 525 Email: david.woodard@sa.gov.au

Lyn Dohle, PIRSA, Kingscote:

Phone: 0419 846 204, 8553 4999 Email: lyn.dohle@sa.gov.au