RUM_013 Oestrus synchronisation in small ruminants

I. OBJECTIVE

To achieve synchronised oestrus and ovulation in a majority (large proportion) of females in a flock (ewes / does).

II. DEFINITIONS

Competent - "the consistent application of knowledge and skill to the standard of performance required regarding the care and use of animals. It embodies the ability to transfer and apply knowledge and skill to new situations and environments." (as per, Australian code for the care and use of animals for scientific purposes, 2013)

III. COMMENTS / RECOMMENDATIONS

- As routine, any health concerns should be managed as per veterinary advice.
- Relative to animal ethics applications, when using this SOP, the following should be described in the individual ethics application: duration and frequency of animal use, and any variation to this SOP.
- **Drugs, chemicals or biological agents**
    - CIDR's- progesterone containing devices (Controlled Internal Drug Release)
    - Prostaglandin F2α-analogues or synthetic.
- **Animal Wellbeing:** The procedure/s is/are well tolerated in NON-PREGNANT animals.
- **Pain Relief:** Not needed. The procedure should not cause pain. Hygiene and cleanliness are fundamental.
- **Animal Care:** Females are typically mustered and held in collecting yards/pens as necessary. They should not have excessive restrictions from food, and water should be freely available. Adverse reactions are rare.
- **Reuse and repeated use:** Typically, the devices/drugs are only placed once at predetermined times, with the exception of the two-dose prostaglandin protocol. Animals that are not pregnant or do not come into oestrus can be resynchronised.
- **Qualification, experience or training necessary to perform procedure:** Operators should be familiar with the correct techniques and the anatomy and physiology of the female before attempting this procedure (i.e. competency).

IV. EQUIPMENT

- CIDR applicator
- Obstetrical lubricant.
- Antiseptics and paper towel as necessary.

V. PROCEDURE

1. Synchronisation of oestrus

There are two approaches to controlling the time of oestrus in females.

(i) Progesterone or compounds with progesterone-like activity (progestagens) are administered for 12-14 days. Due to feedback on the hypothalamus and pituitary, the females do not come into oestrus during treatment. By the end of the treatment period, the female's corpus luteum will have regressed, regardless of the stage of the cycle at which treatment commenced, and cessation of the treatment should result in all females coming into oestrus in the next 2-3 days.

The more common way to deliver progestogen for oestrus synchronisation is to insert a controlled internal drug-releaser (CIDR) (or similar device) impregnated with an appropriate dose of progestagen into the vagina of the

female. This is applied via a specifically designed applicator. Introduction of the CIDR into the female vagina - Dip the device applicator into a non-irritating antiseptic solution. Place the device into the applicator so that the short legs of the device are folded together with only the tips protruding from the applicator. Dip the tip of the loaded applicator into a suitable veterinary obstetrical lubricant. Wipe the vulval lips with a disposable tissue and insert the loaded applicator, sloping slightly upwards, through the vulva and then forwards, without forcing, into the forward portion of the vagina. Release the device by depressing the applicator plunger leaving the cord protruding from the vulva. Repeat disinfection of the applicator before each insertion. The progestagen devices are removed after the designated time (typically 12-14 days after application in ewes, and 18-21 days in does) by placing tension on the plastic string of the device that protrudes from the vulva. Females commence coming into oestrus 24-36 hours after removal of the CIDR with a peak at 48 hours, and nearly all females should enter oestrus by 60 hours.

(ii) The second and less commonly used approach to controlling oestrus is to administer a single dose of prostaglandin. This induces luteolysis, and the female returns to oestrus. However, prostaglandins are only effective when given more than 4-5 days after oestrus, so in order to get all females into oestrus at the same time a second prostaglandin treatment must be given, preferably about 11-12 days after the first. Prostaglandins are only effective in females that are cycling regularly and may cause abortions if given during the first 60 days of pregnancy in ewes. It can induce abortion in does anytime during pregnancy as the corpus luteum maintains pregnancy for the entire duration of gestation.

2. Identification of females in oestrus
Accurate and early detection of oestrus is essential. Oestrus can be detected by vasectomised males (teasers) wearing harnesses with marking crayons.

General reference - Reference Miller, SJ (1995) 'Artificial breeding techniques - Sheep' in Compendium of Approved Procedures, CSIRO Division of Animal Health, Armidale pp. 58:71-58:83.

Version #	Reviewing AEC (note: all other relevant AECs ratify the approval)	AEC Review Date	Approval To Date
1	PCA	20/07/2022	20/07/2025

Conditions:
- Investigators named in an animal ethics application, relative to this SOP, must be competent to implement the SOP
- Any variation to this SOP must be described in the relevant animal ethics application
- If this SOP has not been reviewed and approved by a UQ AEC within the last three years it is no longer valid and cannot be used in animal ethics applications until reapproved (see “AEC Reviewed/Approved” date in this document’s header).