



AEC SOP 4.10 Oestrus synchronisation in female bovids

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Purpose

- (1) The objective of this standard operating procedure is to provide guidance to the Charles Sturt University staff on:
 - a. A means of synchronising oestrus in cows and heifers.

Scope

- (2) This procedure applies to any person who is involved in AEC approved projects involving female bovids requiring synchronisation of oestrus.
- (3) All researchers and teaching staff using animals for scientific purposes must be competent in the handling of animals, and the processes required to synchronise oestrus in female bovids. For definition of competency refer to Charles Sturt University's Policy on 'Animal Care Competency Training and Assessment'
- (4) There are many protocols for synchronising oestrus in cattle. The most appropriate protocol will depend on the requirements and limitations of the desired outcome, and clinician preferences. Reference to appropriate publications is suggested where necessary. The main protocols involve at least one of: lysing the CL; administration of progesterone or progestogens; administration of GnRH or other means of 'resetting' the follicular wave.

Details of procedure

Lysing the CL

- (5) Intramuscular injection of a natural or synthetic analogue of prostaglandin F_{2α} (PGF_{2α}) at the appropriate dose. This can be repeated at determined intervals to enhance the likelihood of synchronisation. A single injection will result in synchrony in varying proportions (half to three-quarters) of the animals in the herd i.e. only those having CL at a responsive stage at the time of injection.

Administration of Progestogens

- (6) Intramuscular injection of progesterone, usually in oil, for a given period of time, or more commonly insertion of an intravaginal implant (IVI) containing progesterone such as a PRID®, CIDR®, Cuemate® or similar device. They are impregnated with progesterone and/or progestagens which is absorbed through the vaginal mucosa while the device remains in place, usually 5-12, but up to 21 days. The device is fitted using an applicator, according to instructions supplied. The end of the device should be lubricated and inserted carefully into the vagina, which has been previously cleaned by wiping the outside with disposable paper towel or similar. Cows are best restrained in a crush, but a narrow race to restrict movement is acceptable if temperament allows. Devices are removed by carefully



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pulling on the draw string. If the string is missing or inaccessible, the device can be expelled by using a gloved hand per rectum or per vaginum.

- (7) GnRH agonist administration to induce ovulation of dominant follicles and enhance the likelihood 'resetting' the follicular waves thereby enhancing oestrus synchronisation.
- (8) A combination of GnRH, PGF2 α and progestogens (e.g., ovsynch, or CIDR-synch) can be used in synchronisation protocols and might include oestradiol benzoate where appropriate.

Drugs, chemicals, or biological agents

- (9) Reproductive hormones: GnRH analogues, PGF2 α analogues, progestogens, and oestrogens.

Impact of procedure on wellbeing of animals

- (10) The health of animals is not adversely affected by the administration of synchronisation pharmaceuticals.
- (11) The procedures synchronise the naturally occurring event of oestrus. However, the concentrated incidence of mounting activity warrants extra care during yard operations. No adverse effects are usually associated with the devices or injections, provided adequate hygiene is observed.
- (12) Transient vaginitis is likely to occur and resolves within 48 hours.

Animal care

- (13) Transport, handling, and caging will be conducted in accordance with the Australian Animal Welfare Standards and Guidelines for Cattle 2014.

Pain relief

- (14) None required.

Reuse and repeated use

- (15) Animals may be resynchronised if not pregnant or did not show signs of oestrus.

Qualifications, experience or training necessary to perform this procedure

- (16) Competence in handling cattle followed by adequate demonstration and instruction with the necessary observation of veterinary restrictions on S4 drugs, when applicable.
- (17) Demonstrator: experience with procedures. Adequate knowledge of the physiology and anatomy involved. Demonstrators may require a thorough and extensive knowledge of reproductive physiology and endocrinology, depending on the students being taught.
- (18) Students: students may be learning the techniques as part of certificate or degree courses, as technical assistants or may be livestock producers or service agents to the industry. Prior experience with handling livestock and a background knowledge in reproduction is desirable.



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- (19) The knowledge of potential adverse effects of administration to humans is imperative. PGF2 α may induce abortion in pregnant humans, and might induce bronchospasm, especially in asthmatics.

Record requirements

- (20) Appropriate monitoring and recording of the use of animals must occur.

Associated documentation (including pictures if available)

- (21) None required.

Glossary

- (22) GnRH= gonadotrophin releasing hormone; PGF2 α = prostaglandin F2 α ; CIDR: Controlled internal drug release; PRID: progesterone releasing intra-vaginal device

References and relevant links

- (23) Australian Animal Welfare Standards and Guidelines for Cattle 2014, Animal Health Australia, version 1. www.animalwelfarestandards.net.au
- (24) <https://www.dpi.nsw.gov.au/animals-and-livestock/animal-welfare>
- (25) Wright, P. J., and Malmo, J., (1992), Veterinary Clinics of North America: Food Animal Practice. 8: 57-89.