

Donor Cow Set Up



Mitchell Parks, DVM
Large Animal Services of TN

Donor cow setup is an integral part of embryo transfer. In order for embryo transfer to be successful there are certain factors that must be accomplished during donor cow setup:

- 1) It must be user-friendly.
- 2) It must be carried out in a precise and orderly manner.
- 3) It must be possible to set up multiple donor cows on the same schedule.
- 4) It must be possible to synchronize recipients.
- 5) It must be possible for the herd owner to synchronize donor cows so that only one day a month is taken up with embryo transfer.
- 6) The overall schedule must allow the ET practitioner to better utilize travel time.

In the early days of embryo transfer the only way to set up donor cows was by natural heat or the use of PGF_{2α} to try to synchronize a group of donor cows together. This was very difficult. Then progestin delivery devices were developed, and we realized this made it possible to synchronize multiple donors. We now use several different protocols to control follicular wave emergence. In order to understand the donor cow setup protocols we must have a basic understanding of follicular wave emergence. It seems most cows have either a 2 or 3 wave cycle.

Follicle stimulating hormone (FSH) is responsible for eliciting follicular wave emergence. The cows with 2-wave cycles have 2 FSH surges and those with 3 waves have 3 FSH surges. As the follicles emerge and grow, estradiol and inhibin are released and this suppresses FSH. At the initiation of the follicular wave there are several follicles forming. It appears as the follicles grow in the presence of FSH some acquire receptors for LH and this gives those follicles an advantage to become a dominant follicle, ovulate, get fertilized and eventually become a calf. The other follicles in this wave undergo atresia and are lost forever. However, these follicles that would normally undergo atresia can be brought to dominance with the use of exogenous FSH.

In my practice I use 3 basic ways to set up donor cows. The first way is to set up donor cows off a natural heat. That protocol is:

Day 0	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 22
Natural Heat	FSH - BID	FSH - BID	FSH - BID	FSH - BID PGF _{2α} - BID	(None)	Breed	Breed	Flush

The second way is to set up donor cows with the use of an intra-vaginal progestin device and GNRH injection. The following is the schedule for this protocol:

Day 0	Day 2	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 16
Insert CIDR	GNRH	FSH - BID	FSH - BID	FSH - BID	FSH – BID PGF _{2α} – BID Pull CIDR	(None)	Breed	Breed	Flush

The third way I set up donor cows is to just use a progestin device and start FSH. The following is the schedule for this protocol:

Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 13
Insert CIDR	FSH - BID	FSH – BID	FSH – BID	FSH – BID PGF _{2α} – BID Pull CIDR	(None)	Breed	Breed	Flush

This (third) protocol is used when we don't have 4 days before shots begin. For instance, UPS does not deliver the setup package till after the date for CIDR insertion has passed.

In conclusion, donor cow set-up strategies are as much an important part of successful embryo transfer techniques as anything in the whole process. Protocols must be changed or adjusted based on different responses from time to time. It is important not to get into a cookbook mindset when selecting protocols, and to instead choose a custom approach based on past experiences with similar animals or results from previous flushes with that particular donor.