IVF PILLARS OF SUCCESS: DONOR MANAGEMENT, IVF PROCESS AND RECIPIENT MANAGEMENT.

RECIPIENT MANAGEMENT.

Vytelle™

Thanks to new research and better techniques, *in vitro* fertilization (IVF) is more affordable and available for beef and dairy producers. As more producers adopt this technology, Vytelle's goal remains to produce as many healthy offspring from the donor cow as possible in an easy, cost effective way while maintaining female health and production. Thus, it is critically important to select the best recipients to carry these offspring and set them up for a successful pregnancy and stress-free calving.

Selecting Recipients

The first step in managing recipients is selecting the right females to receive embryos. Keep in mind that there are multiple areas to manage for successful pregnancy results. Tips for success include:

- Select recipients that are 3 to 6 years of age and 60 days postpartum
- Recipients should exhibit regular estrous cycles prior to synchronization
- Give pre-breeding vaccinations 30 to 45 days prior to embryo transfer (ET)
- Avoid large changes in nutrition 30 days prior to and 45 days post ET
- Minimize transportation before and after ET to decrease stress

Manage Nutrition for Recipients

Recipient nutrition and health management should be managed the same as pregnant donors. The body condition score (BCS) of the recipient female should be assessed at calving to gauge how she will able to maintain her condition during lactation. Beef cows should calve with a BCS of 5.5 on a 9-point scale (1 = very thin to 9 = obese)[1]. Moving one point on the BCS scale is approximately 100 pounds of bodyweight. Recipient rations can be designed to increase body condition to meet the breeding season target of 5. If recipient cows are thin—less than 4.5 BCS—this could be an indication of negative energy balance which will likely have an adverse impact on embryo pregnancy rate.

Work with a nutritionist to develop pre-breeding, gestation and postpartum rations that will support maintenance and lactation requirements of recipients. Starting at least 30 days prior to ET, recipient cows should be on a positive plane of nutrition including complete mineral and trace mineral supplementation. If nutrients, vitamins or minerals are limited, you may see reproductive problems, such as increased interval to first estrus and irregular estrous cycles. By setting cows up on an increasing plane of nutrition prior to ET, response to synchronization will improve. Continue proper nutrition through uterine implantation—40 days post transfer—to aid pregnancy success.

Health

Recipient health management is a key pillar to a successful IVF program. Before ET, recipients should be 45 to 60 days post-partum to allow complete uterine involution and resumption of normal estrous cycles. Pre-breeding vaccines are regularly given to replacement heifers and cows before breeding season to manage reproductive diseases and the negative effect on pregnancy rates. As the vaccine takes effect in the cow, however, reproductive function is suppressed for a period of time. Therefore, best management practice is administration of vaccines at least 30 to 45 days before ET, ultimately yielding better results. Work with your herd veterinarian to select a vaccine that will cover the reproductive diseases in your area.

Synchronization of Recipients

Estrus synchronization is commonly used to set up recipient cows for ET. For recipients to receive an IVF embryo, cows should be in heat 7 to 8 days prior to day of ET. Cows can be set up for ET using synchronization protocols like a 7 day CO-Synch + CIDR or 5 day CO-Synch + CIDR. These protocols take 10 to 17 days to implement, therefore recipient programs need to be scheduled in advance to maximize ET on one date. Best results are seen using heat detection in conjunction with the synchronization protocol.

All recipients must be palpated or ultrasound scanned for a corpus luteum (CL) before ET. The ET technician approves or passes recipients based on CL quality. On average, 5 – 10 percent of recipients are passed during implantation. The embryo should be transferred in the uterine horn on the same side as the CL. Producers should minimize recipient handling, calf separation and excess transportation before, during and after implantation to minimize stress.

SAMPLE RECIPIENT HEAT SYNCHRONIZATION PROTOCOL

DAY OF WEEK	DAY	RECIPIENT(S)	DONOR(S)
Monday	0	A.M. – CIDR in and GnRH*	
Monday	7	P.M. – CIDR out and PG**	
Wednesday	9	A.M. and P.M. – Heat detect and record heats	OPU Collection
Thursday	10	A.M. – Give all recipients GnRH; A.M. and P.M. – Heat detect and record heats	
Thursday	17	A.M. – Embryo Transfer	
Thursday	35	1st Preg Check	
Wednesday	90	2nd Preg Check	
Thursday	280	Expected Calving Date	

* Gonadotropin Releasing Hormone
** Prostaglandin

Match Embryo to Recipient

Matching embryo genetics with suitable recipients drives a successful calving season. Expected progeny differences (EPDs) are a great tool to predict offspring traits from specific matings and potential calving performance. This is especially important if young females are used as recipients. Place calving ease embryos in younger females and utilize cows to carry larger or less proven genetics. The ideal recipients to utilize in an ET program are those 3 to 6 years of age with calving experience and higher quality colostrum than younger females. Recipient cows carry high quality genetics, so selecting the best females to raise these embryo calves will drive good results.

Pregnancy Detection

Pregnancy detection can take place from 45 to 90 days post implantation. Schedule pregnancy check before 100 days of gestation. After this point, veterinarians have more difficultly accurately predicting fetal age due to size and safe access to the fetus. Once pregnancy is confirmed, create calving lists to plan calving dates based on an average 280-day gestation length. Pay close attention to recipient due date and lactation development. Have a plan to contact a veterinarian if recipients are not showing signs of parturition, which can cause them to go over the due date.

Summary

ET is an excellent way to speed up generation interval and increase genetic uniformity in a herd quickly. With the right recipient management, IVF can become a valuable tool for your herd.

Visit vytelle.com to find Vytelle's U.S. and international locations.

1. Jaymelynn Farney, et al., Guide to Body Condition Scoring Beef Cows and Bulls, Kansas State University, December 2016.