

**W**hen embryo transfer began to be used by cattle breeders in the early 1970's, it was a highly specialized, expensive surgical procedure that was used by the "exotic" breeders. During the past two decades, nonsurgical recovery and transfer procedures have become routine and costs have become less expensive. Freezing techniques have improved significantly. Embryo splitting, in-vitro fertilization and embryo sexing are advertised by a few companies, illustrating the possibilities now being promoted. Today, progressive breeders in many breeds are learning to utilize embryo transfer as a means of increasing the reproduction rate of valuable females and the frequency of desired dam and sire combinations. Embryo transfer can effectively change the genetic characteristics of a herd by having a large percentage of the calf crop coming from a few selected donors.

In general, what can you expect from super-ovulation? The standard hormone for super-ovulation for the past several years has been follicle stimulating hormone (FSH/P). Super-Ov, a product with controlled levels of follicle stimulating hormone and lutenizing hormone is now available. These hormones are administered over a 3 or 4 day period, in conjunction with a prostaglandin, which causes the release of several egg cells. The cow is inseminated 1 or 2 times and then is flushed 7 days after heat. The average response is 9 to 10 embryos with 6 to 7 viable embryos per flush. The average pregnancy rate will be 50% to 60%, or 3 to 4 pregnancies per flush.

However, great variability in response is shown among cows to identical doses of the hormone. Some donors seem refractory at all times, others are refractory intermittently, and some over-respond on occasion with ovaries the size of an orange or larger. Such responses occasionally are successful with large numbers of embryos. However, the ideal response seems to be 5 to 10 ovulations per ovary. It is very common for breeders to desire several flushes on a donor. In such cases, the previous flush history can be utilized to adjust the stimulation level or the hormone used in an attempt to get the desired response from the donor.

Once the cow is flushed, she can be super-ovulated again in approximately 60 days. She must return to normal cyclic activity before being treated again.

In most commercial units, embryos are recovered from the donor cows 6 to 8 days after insemination. A Foley catheter is introduced into the uterine body, or horn, and about 750 ml of phosphate buffered saline, plus .4% bovine serum albumin, is allowed to flow through the uterus in several fractions to flush the embryos from the horns. After passing the solution through the cow, embryos are filtered from the

fluid and located under a dissecting microscope. The embryo can then be transferred to recipients or frozen for later utilization. If recipient populations are prepared, transfers are usually accomplished as expeditiously as possible either in-clinic or at the owner's ranch. Embryo freezing and thawing techniques have improved greatly in the past decade and many breeders now accumulate frozen embryo "banks" for timely utilization or for planned embryo sales. Average pregnancy rate with frozen embryos is generally 10% to 15% lower than rates experienced with fresh embryos.

How have Texas Longhorns performed in embryo transplant? How do they compare to other breeds in their response patterns? We at Reproduction Enterprises, Inc., have worked for several Texas Longhorn breeders over the past few years. A general summary of the results is as follows:

<b>Number of Flushes:</b>	<b>53</b>
<b>Avg. Total Embryos Recovered</b>	<b>10.4</b>
<b>Avg. Transferable Embryos</b>	<b>6.3</b>

Several evaluations of the Texas Longhorn breed emerged as we accumulated the above data. First, the average production of total embryos and transferable embryos is similar to across breed averages reported by many embryo transfer centers. In approximately 25% of the flushes, no transferable embryos were produced and 17% of the flushes yielded 1 to 3 transferable embryos, 50% of the flushes yielded from 4 to 15 transferable embryos, while 8.5% of the flushes yielded greater than 15 transferable embryos. These averages are quite consistent with across breed averages reported by many embryo transfer centers.

In summary, the Texas Longhorn breed has performed very similarly to many other breeds in embryo transplant. Some cows will not respond to the super ovulation programs while other cows will be exceptionally responsive. Unfortunately, these differences are not readily apparent until the

cows have been in an ET program.

It is hoped that the above information is useful in applying the basics of an embryo transplant program to your breed. Embryo transplant is a very different and increasingly useful technique that can be utilized to influence a cow's reproduction rate. It involves very complex manipulation of physiology and a seemingly endless set of factors that can influence the successful delivery of a calf crop. ■

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## Embryo Transfer In Texas Longhorns

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