

Building a Registered Purebred Angus Herd

To buy heifers or to buy embryos?

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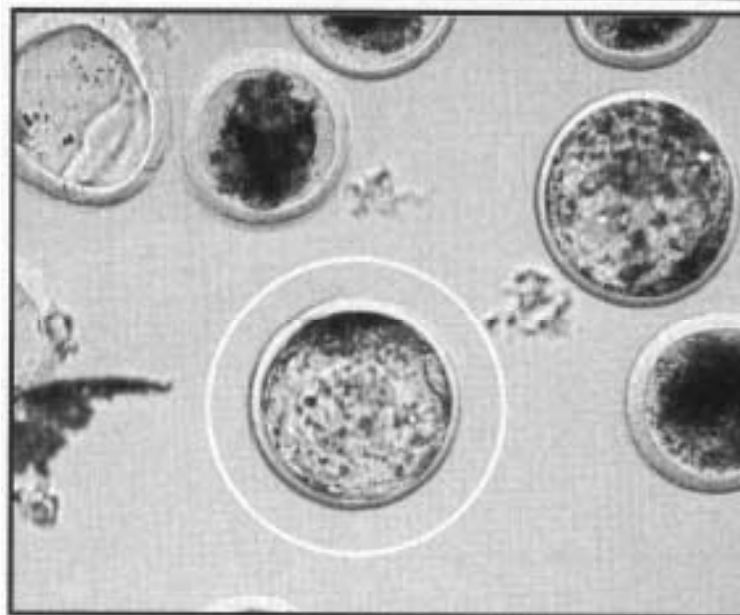
Purchasing frozen embryos rather than buying cows or heifers is one way of building a registered purebred cow herd. The question, however, is whether it is more effective to buy embryos or to buy breeding age heifers to build a herd. Data from an on-going project at Virginia Tech was used to address this question.

In 1991 and 1992 a total of 73 purebred Angus embryos derived from four sources were transferred to recipient cows at Virginia Tech. The average projected expected progeny differences (EPDs) of those embryos was +4.3 pounds for birthweight, 16.5 pounds for milk and 58 pounds for yearling weight. The value of those embryos ranged from \$200 to \$400 with an average of \$288 per embryo.

Forty-nine of the 73 embryos transferred (67 percent) yielded a calf (Table 1). If the cost of the embryos is combined with the transfer cost (\$300/pregnancy) and the cost of maintaining the recipient cows, the estimated value of the embryo transfer-derived

Embryos Transferred	Calves Born	Cost of Embryos	Transfer Costs	Cost per Calf Born
73	49	\$21,050	\$26,950	\$980

Cost to birth	\$980
Birth to 14 months	\$437
Income lost versus purchase as heifer	\$516
Value	\$1,993



Day 7. Frozen-thawed embryo (circled) ready to be transferred to a recipient.

calf the day it is born was \$980.

To raise the embryo derived heifer calves to breeding age (14 months) will cost an additional \$437 in direct costs and interest. This figure does include some profit to be made by selling the bulls that came from the embryos transferred. Hence, the projected cost of a 14-month-old purebred heifer derived from the purchased embryos is \$1,417.

It would be tempting to compare the \$1,417 to the average cost of registered breeding age heifers sold at purebred sales, but this would be an unfair comparison. If breeding age heifers had been purchased originally, instead of embryos, those heifers would have calved twice by the time the heifers derived from the purchased embryos had reached 14 months of age (Figure 1).

In fact, by the time you sell a yearling bull raised by one of the heifers that comes from an embryo, you could have sold three offspring raised by a heifer bought instead of an embryo. This lost production, valued at \$516

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Embryo

14-month-old Heifer



Transfer embryo



Breed Heifer

Year 1



Embryo calf born

Year 2



First calf born and rebreed



First calf sold



Embryo-derived heifer bred

Year 3



Second calf born and rebreed



Second calf sold

Year 4



Embryo-derived heifer calves

First calf sold



Third calf born



Third calf sold

Figure 1. Production by females purchased as an embryo or 14-month-old heifer.

Raising registered heifers from embryos requires patience. When you purchase one, there is nothing to show for it.

profit, has to be added to the theoretical price of raising a heifer from an embryo.

The calculated value of an embryo-derived heifer (Table 2) is equal to: the cost of the embryo, the transfer cost, maintenance cost for the recipient, the cost of rearing the calf to 14 months, and the lost production compared to buying a breeding age heifer. In the Virginia Tech project the value of an embryo-derived Angus heifer is estimated to be \$1,933.

To determine if purchasing embryos is more cost effective than buying breeding age heifers, the average sale price of yearling heifers in production sales from the same breeders that were the source of the embryos can be considered. In the year that the embryos were purchased, the same breeders sold 62 breeding age heifers with average EPDs of 3.8 pounds for birthweight, 14 pounds for milk and 48 pounds for yearling weight, for an average price of \$3,077.

By this comparison the heifers derived from embryos were an \$1,144 better value than buying breeding age heifers from the same sources, and the projected EPDs of the embryos were better than those of the yearling heifers that were sold.

Although the calculations used in this article favor buying embryos over buying breeding age heifers, there are several other factors that must be considered. First, no labor or management costs were included in these calculations. It is clearly more time consuming to devise and carry out an embryo transfer program than to purchase breeding age heifers and get them bred.

A second consideration should be the success rate of the embryo transfer program. In the Virginia Tech project 68 percent of the embryos transferred produced calves. This rate is higher than the industry-wide average. If only 50 percent of the embryos in the project had produced calves, the value of an embryo-derived heifer would have increased to \$2,254.

Buying embryos is also the ultimate form of buying something "sight unseen." The buyer of an embryo has nothing to go on other than the pedigree and the EPDs projected from the EPD of the sire and dam. By comparison, if yearling heifers are purchased, their performances to birth, weaning and yearling influence their EPDs.

Performance figures are also available for the buyer to consider before sale. The opposite side of this argument is that sellers often refuse to sell the cattle that have the most attractive EPDs and perform the best.

The psychology of the seller appears to include a willingness to part with unseen frozen embryos; however, the minute that embryo is turned into a living, breathing calf that performs well, many breeders become less willing to make a sale.

Finally, raising registered heifers from embryos requires PATIENCE. When you purchase an embryo there is nothing to show for it. As depicted in Figure 1, it takes at least one year to get a calf and three years before a heifer derived from an embryo produces a calf. Many new breeders aren't comfortable with waiting one to four years before they can "brag" about the performance of the cattle they purchased as embryos. Even for established breeders that add to existing herds, waiting two years after purchasing embryos before a heifer derived from an embryo shows up in the breeding herd can be frustrating.

There may be potential advantages to buying embryos to build a registered purebred herd. Each potential buyer, however, will have to "push the pencil" to determine their own cost-to-benefit ratio for purchasing embryos. In general, it appears that there is added value in purchasing embryos for a seedstock producer who can manage a successful embryo transfer program and who has the patience to wait for tangible results.

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