



Carcass Ultrasound 101

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Ultrasound as a Feedlot Marketing Tool

Using ultrasound to measure carcass quality and establish EPDs in the purebred beef industry has long been accepted practice. Every cattleman knows that quality beef starts with quality genetics. And centralized processing labs like the CUP Lab® have made ultrasound data accurate and reliable.

But using ultrasound technology in the feedlot side of the business is just beginning to catch on. The reason is simple: *Show me the money.*

Certainly, in theory, using ultrasound to identify outliers and group cattle for targeted marketing makes sense. But in a world where every movement a calf makes can cost dollars and cents, and input costs can pile up faster than manure, producers need to see a financial advantage to investing in expensive equipment or hiring technicians, and increasing calf handling.

There are currently a variety of ultrasound software products on the market that measure live carcass traits and calculate an animal's chances of scoring well on the grid. Ultrasound measurements can be very accurate predictors of carcass yield, and reasonable predictors of carcass quality, as A.R. Williams determined in a 2002 study. In fact, many studies have been conducted that show a strong correlation between ultrasound measurements taken at re-implant time (approximately 70-80 days before slaughter) and actual carcass data. In a 2000 study, J.R. Brethour concluded that ultrasound estimates of marbling and backfat during the feeding period could be used to predict carcass merit. His data show the increase in backfat thickness over time is positively correlated to initial backfat thickness. Williams concurred that subcutaneous fat on a live carcass is directly related to carcass yield grade.

Backfat thickness is one of the most accurate ultrasound measurements. One study by T.L. Perkins et al. showed a correlation between the ultrasound and actual backfat measurements of 0.76-0.93. Likewise, Williams also determined rump fat can be a fairly accurate indication of an animal's total carcass fat and thus its yield grade.

Measuring the ribeye area, or longissimus dorsi muscle area, may also be a clue as to the animal's potential yield grade. Correlations between ultrasound estimates and actual measurements range from 0.43 (M.T. Smith et al.) to 0.95 (Perkins). Correlations between ultrasound intramuscular fat and actual carcass marbling scores range from 0.69 (Perkins) to 0.85 (Brethour), making it another potentially important data source.

OK, so studies have proven the correlation, but what about the economics? Can using this data to sort cattle into marketing pens be useful and economically beneficial?

In a 2000 study, S.R. Koontz et al. made the case for precision marketing individual animals. According to his published work, "There is an optimal slaughter date (days on feed) for each animal that maximizes profit, and there is an average loss in return of approximately \$1 for each day that actual slaughter differs from the optimum." The study evaluated the advantage of sorting cattle to different fed-cattle markets using ultrasound technology and growth curves and concluded that the returns on sorting are between \$11 and \$25 per head.

An experienced ultrasound technician can scan 80-100 head per hour at a cost of about \$4-\$8 per head. Depending on the Choice-Select spread, that may very well seem like a good investment. Then, again, depending on the Choice-Select spread, it may not.

But it's not just about working the spread.

One of the best uses of ultrasound in the feedlot is identifying animals that will not produce no matter how they are handled. Just as ultrasound can help to eliminate inferior animals through breeding, feedlot software models can help to identify animals that are likely to produce Yield Grade 4+ carcasses before money is wasted on feeding them out. As Maro Ibarburu and John Lawrence said in the published account of their 2005 study, "Most feedlots use ultrasound to predict how long to feed an individual steer or heifer. Perhaps "no longer" should be a choice."

The study measured the benefit of individual animal predictions based on varying levels of information, with results ranging from \$15-\$35 per head additional gross profits. Specifically, results showed there is profitability in using individual animal data, including ultrasound, to accurately eliminate those that are likely to drain feed resources with little chance of producing dollars on the market.

But, once purchased and on the lot, an animal cannot be eliminated without cost.

In their study, Ibarburu and Lawrence included an assessment of cost to eliminate vs. cost to keep. They included factors such as trucking, sale barn commission, cattle owner overhead fee, feed, health treatments, insurance, less than



optimum pen utilization, as well as the cost of carcass data collection, and calculated a “re-selling advantage,” or RSA, of nearly \$5 per head based on the assumption that the feedlot re-sells the animal in an auction market.

As the health-conscious consumer continues to demand leaner beef and as overhead and feed costs rise, cattle that are too fat will continue to lose favor, making early assessment of an animal’s carcass even more crucial for the feedlot that wants to see a return on every dollar invested.

There are issues that limit ultrasound’s effectiveness as a market grade/feedlot profitability prediction and sorting tool. As yet, there is no reliable ultrasound measurement for tenderness, the Holy Grail of beef production. And measurements on young calves can lead to questionable predictions, as the animal has yet to realize its genetic potential.

But ultrasound is still the best tool around to guide a breeding program that will produce quality animals likely to do well in any feedlot setting and meet consumer expectations. No matter how they are sorted, cattle will only grade as well as their genetic potential allows. Using ultrasound to identify superior genetics guarantees an edge on profit.

As the evidence shows, chute-side ultrasound measurements in the feedlot can enhance that innate value, by grouping calves into marketing pens and eliminating the animals that will ultimately cost more than they garner.

The bottom line is the bottom line. Feed costs continue to rise. Ultrasound continues to evolve into an increasingly user-friendly and less costly technology. Do the math. Count the dollars. Ultrasound scanning in a breeding program and in the feedlot makes sense (and cents).