The first time I heard that you could look under an animal’s hide and determine fat thickness and muscularity, I was a senior in Mr. Frank Litterst’s Beef Production class at Texas A&M, in 1975 or 76. We had a guest speaker (I forget who) in class one day and he described an ultrasound device that was called “ANSCAN” for “Animal Scan”. I remember he went into great detail. I must have been paying attention because I repeated it to my Technical Writing class a few days later! I had forgotten that I was assigned to do an oral presentation on a process. I not only was successful in describing it but drew a schematic of the device on the chalk board (left handed) and explained how it worked. I made an “A”. I was hooked.

The technology was actually adopted to use in the livestock industry by Dr. James R. Stouffer, Professor Emeritus at Cornell University. Dr. Stouffer first used it in 1959 (although it was written about prior to then) to assess the fatness and muscularity of steers and hogs.

“This technology was used to evaluate the fat and muscling of all the steers in the Quality Beef Contest at the International Livestock Exposition (Chicago, IL) in 1960, 1961, and 1962. These predicted carcass measurements were provided to the judges for assistance in the ranking of the live animals. Before this time, cattle judges used only visual appraisal. There was
a great need for objective evaluation because it was acknowledged that it was difficult to estimate visually what was under the hide of an animal”. (Stouffer, 2004)

The next time I came across the technology was in 1988 when Dr. Ronnie Green (who was on the Animal Science faculty at Texas Tech University at the time) came to the Texas and Southwestern Cattle Raisers Association meeting in Corpus Christi with one of his graduate students, Tommy Perkins (now Dr. Tommy Perkins, Executive Vice President of International Brangus Breeders Association). Dr. Green didn’t demonstrate his ultrasound (as it was then called) device but did show results on how it might be used in breeding and fed cattle to predict not only muscling and fatness but also marbling! I had met Tommy when he was a County Extension Agent in Ector County when I was the Extension Livestock Specialist based in Ft. Stockton. I was glad that when he graduated, Dr. Perkins went to teach at Southwest Texas State (now Texas State University) in San Marcos and became a real ultrasound guru. Dr. Perkins has done most of my early ultrasound work here in Texas but Donnie Robertson, Casey Worrell, Lorna Pelton and many others have scanned for me.

By the 1990s there was a tremendous amount of interest in ultrasound and the technology for...
accurately measuring marbling score, or intramuscular fat or IMF, was developed. About then, many purebred breeders and their associations became interested in the technology since it allowed selection decisions to be made more accurately on live animals rather than carcasses and at less cost than feeding and collecting carcass data. There were a lot of folks scanning cattle and not everyone was using the same equipment or technique. It was decided that data for breed associations, that would later be used to calculate EPD for ultrasound carcass traits, should only be collected by ultrasound technicians who had passed a proficiency test. The test consists of measuring each of the traits of interest: fat thickness, ribeye area, IMF and rump fat.

Folks who wanted to learn how to ultrasound would go to a school, learn how to scan beef cattle (breeding stock and fed animals) and then follow fed animals as carcasses into the cooler to fine tune their skills. There were several types of machines being used, some more successfully than others, especially for IMF. Software was continually improved to give a better image, a better prediction and even faster (chute side) results more accurately. Standardization of technique, reading of ultrasound or scan by a third party, and Central Ultrasound Processing Laboratory or "CUP Lab", provided quality control for both breeders and breed associations. The CUP Lab was originally at Iowa State University and was later moved to the private sector under the name of Walter & Associates in January 2001 where it operates as The CUP LabTM, LLC.

Today, the Ultrasound Guidelines Council (UGC) must certify all ultrasound technicians, CUP labs and image processing systems (including both hardware and software). There are currently three approved centralized ultrasound labs including The CUP LabTM, LLC., International Livestock Image Insights (ILIA) and Ultrasinsights. There are 159 certified ultrasound technicians in 31 states, five Canadian provinces and in the countries of Colombia, Paraguay, Brazil, Uruguay, Argentina and Russia. The UGC currently works with 17 breed associations. If you are interested in utilizing ultrasound in your Brahman herd (and many of you already are) you can go to the UGC website (www.ultrasoundbeef.com) and find a certified technician near you. They can tell you what you will need and what it will cost. If ultrasound is
used in a breed there is a standard age range during which it should be collected. In Brahman, that ranges from 320 to 410 days, regardless if it is a yearling bull, developing heifer or a feedyard steer or heifer.

The Beef Cattle Extension group in the Department of Animal Science at Texas A&M purchased their first ultrasound in 1988 although Dr. Frank Orts, a former Extension Meats Specialist, used one in his research in the 1970s according to Dr. Steve Hammack, who also operated it. It was quite large and not very portable. Dr. Lorna Felton, who was a graduate student under Dr. Bill Turner, was our first “commercial” technician and she found her calling as an ultrasound technician upon her graduation. During that time we used ultrasound to scan feeder cattle at reimpiant (after 70-90 days on feed) in the TAMU Ranch to Rail Program. The images were used chute side to predict whether or not cattle would develop sufficient IMF to have high quality grades and to keep from over feeding cattle. Steers were always fed to their logical slaughter potential but the ultrasound was very reliable as a predictor of muscling and IMF as we compared the chute side results to the carcass data we collected in the cooler!

We also scan all the bulls and heifers in our bull gain tests and heifer development programs, and have for 25 years or so. The results of these scans give owners a rare “look under the hide” to see if their cattle have adequate muscling, fat cover and IMF for replacements. Consignors and breeders alike use the data to either improve muscling or IMF if needed. Over the years I have been pleased to have met a number of highly skilled and motivated young men and women who are very proficient in taking ultrasound measurements. Ultrasound is used in the ABBA Bull Test as well. Currently there is no accurate way to predict tenderness in a live animal using ultrasound but there are folks working on ways to be able to scan animals to predict if they are going to be tough or tender.

So how should ultrasound data be collected and used? Like any other trait you collect data on, you should also report it to your breed association to be used in breed wide genetic evaluation (EPD). In most cases this is done automatically as part of the ultrasound data collection, submission and interpretation process. As you begin collecting data, set a target that you want to realistically achieve with your selection program. Determine which of the ultrasound traits you want to improve and more importantly, how much improvement you want to make. Since ultrasound mainly measures carcass traits (some would say the rump fat is an indicator of adaptability and I would not argue that), you need to be selecting for those traits that make you, and your customers, money. If muscling or marbling is one of those traits, then ultrasound may be for you. However, selection for any trait should have a goal or an endpoint; further selection once that goal is reached should be to maintain that level of performance. Keep that in mind.

Brasil, Uruguay, Argentina y Rusia. La UGC trabaja actualmente con 17 asociaciones de raza. Si usted está interesado en utilizar ultrasonido en su hato de Brahman (y muchos de ustedes ya son) puede ir a la web UGC (www.ultrasoundbeef.com) y encontrar a un técnico certificado cerca de usted. Pueden decirle lo que se necesita y lo que costará. Si el ultrasonido se utiliza en una raza hay un rango de edad estándar durante el cual debe ser recogida. En Brahman, va de 320 a 410 días, independientemente si es un toro de un año, desarrollo de becerras o de corral de engorde buey o vaquilla.

The Beef Cattle Extension group in el Departamento de Ciencia Animal de la Texas A & M compró su primera ecografía en 1988 aunque el Dr. Frank Orts, un ex especialista en carne, utilizan en su investigación en la década de 1970 según el Dr. Steve Hammack, también que funcionó. Era bastante grande y no muy portátil. El Dr. Lorna Felton, quien era estudiante de postgrado con el Dr. Bill Turner, fue nuestro primer técnico «comercial» y encontró su vocación como un técnico de ultrasonido sobre su graduación. Durante ese tiempo se utilizó ultrasonido para bovinos alimentador en el reimplante (después de 70-90 días en la alimentación) en el TAMU Ranch to Rail Program. Se utilizaron las imágenes de canal lateral para predecir o no ganado desarrollarían suficiente FMI a tener grados de alta calidad y mantener más alimentación de ganado. Los novillos fueron alimentados siempre a su lógica matanza potencial pero el ultrasonido fue muy confiable como predictor de la musculatura y el FMI, se compararon los resultados del lado de conducto a los datos de canal que recolectamos en el refrigerador!

También la exploración de todos los toros y vaquillas en nuestro Toro ganan pruebas y programas de desarrollo de la vaquilla y durante 25 años o menos. Los resultados de estas exploraciones dan a dueños raro “look bajo la piel“ para ver si su ganado tiene musculatura adecuada, cobertura de grasa y el FMI para los reemplazos. Comitentes y criadores tanto utilizan los datos para ya sea mejorar la musculatura o FMI si es necesario.

Durante los años he sido contento con un número de jóvenes que he conocido altamente calificados y motivados y las mujeres que son muy competentes en la adopción de las medidas de ultrasonido. El ultrasonido se utiliza en la prueba del Toro de ABBA también. Actualmente no hay ninguna manera exacta para predecir la sensibilidad en un animal vivo usando ultrasonido pero hay gente trabajando para poder escanear los animales para predecir si va a ser dura o blanda.

¿Entonces los datos de ultrasonido deben recogidos y utilizados? Como cualquier otro rasgo que recoje los datos, también debe informarlo a su asociación de raza para ser utilizado en la evaluación amplia genética de la raza (EPD). En la mayoría de los casos esto se hace automáticamente como parte del proceso de recopilación, presentación e interpretación de datos de ultrasonido. Como empezar a recolectar datos, establecer un objetivo que quiere lograr de forma realista con su programa de selección. Determinar cuáles de los rasgos de ultrasonido quiere mejorar y lo más importante, cuánto mejora usted quiere hacer. Ya que el ultrasonido mide principalmente características de la canal (algunos dirían la grasa de la piel) es un indicador de capacidad de adaptación y no podría afirmar qué, necesita a la selección de aquellas características que hacen y sus clientes, dinero. Si la musculatura o marmoleo es uno de esos rasgos, ultrasonido puede ser para usted. Sin embargo, selección de cualquier rasgo debe tener una meta o un punto final; la selección más una vez alcanzado ese objetivo debería ser mantener ese nivel de rendimiento. Tenga eso en cuenta.