Northwest Veterinary Associates Newsletter

October, 2008 by Dr. Kokaram

Over the past couple of years there has been increasing interest in the use of ultrasound technology on farms. According to one survey conducted in 2004 by Dr. Loren Warnick of Cornell University, approximately 23% of American bovine veterinarians use ultrasound in their practices. Since 2004, not only have significantly larger percentages of veterinarians and their practices begun to offer ultrasounds as part of their services, but in many locations several of the farmers themselves have begun to demand that their veterinarian begin offering such services on their farms. In light of this, I figured it might be worthwhile for this month's newsletter to look at some of the attributes of this "new" technology.

As some of you may already know, the ultrasound machine uses sound waves to create an image. Sound waves are produced by crystals in the probe, reflected off of the tissues in its path and is then received by the crystals once more. The machine uses the time the sound waves take to return and the intensity of the waves in order to create our image. Different tissues reflect sound waves differently, thus, allowing us to be able to create an image of the underlying tissues, i.e. uterus, ovaries, fetus. Admittedly, it is only a cross-section of the underlying tissues, but useful nonetheless. So, why the excitement over this "new" technology?

One of the greatest advantages of ultrasound to both you and your veterinarian is in the greater accuracy of open vs. pregnant diagnoses. Since we are able to get a cross sectional view of the uterus, we are able to completely evaluate the entire uterus for the presence of a fetus; and at a much earlier date (as early as at 25+ days bred). When compared to palpation diagnoses, ultrasound has been shown to be almost twice as sensitive at diagnosing a functional CL (an ovarian structure essential to maintain a pregnancy). This ability to now make much earlier and much more accurate diagnoses of pregnancy vs. open, allows us in turn to make earlier decisions as far as re-enrollment of these cows into a synch protocol.

We can also evaluate the fetus for cardinal signs of distress (the cow will probably lose these calves) and death (the pregnancy has been lost; calf just hasn't been expelled yet). Such signs would include lack of a heart beat or just a slow one, lack of fetal movement (in calves over 60 days), cloudy fetal fluids, separation of the fetal membranes, or obvious developmental anomalies. Obviously, none of these would be apparent on regular palpation. Diagnoses of twin pregnancies, another cause for early embryonic death and early pre-term calvings, would also be significantly easier using ultrasound.

As I mentioned before, ultrasound definitely does allow us to have a better evaluation of the structures on the ovaries. One of the hardest diagnoses to make on palpation is indeed that of cystic ovarian structures. In a presentation given by J. Lievaart or Utrecht, in 2006, of the 55 cows that were diagnosed cystic by rectal palpation, 50% were not actually cystic when evaluated by ultrasound technique. In another study done by Jeff Stevenson and reported in Hoards' Dairyman in 2006, of the 51 cows diagnosed as having cystic structures following rectal palpation, 12 were cysts that ovulated following GnRH, 14 were luteal cysts (responds to prostaglandin like a normal CL would), and 6 were truly cystic and non-cycling. While these two studies did not look at a high number of cows, the percentage of error in rectal palpation is probably enough to throw off the synch program for those cows.

An additional use for ultrasound would also be in the realm of fetal sexing. One very important area where this could be utilized is in heifer pregnancies. Not only can the sex of the calf be determined with a high degree of certainty, but the size of the calf can also be assessed (nobody wants to deal with a fetal monster come term). This would therefore, provide you and your veterinarian with enough information to be able to determine calving ease/difficulty and be able to make much more informed decisions as to whether to induce the heifer earlier than her actual due date, or even whether to terminate the pregnancy altogether

(generally done by those with heifer or bull contracts). Others have also used sexing for culling decisions; it's much easier to cull the 12th lactation cow with chronic mastitis if you know she is pregnant with a bull calf.

Other areas where ultrasound has proven useful has been in the diagnosis of metritis (uterus infection) vs. mucometra (uterus full of mucus; not a pregnancy), fetal anomalies, ET evaluations (determining response, recipient viability, number of possible embryos from a single flush). As far as non-reproductive uses for ultrasound; if we can put a probe on it, we can scan it.

However, while ultrasound does have its advantages, this isn't to discount the value of rectal palpation. There is indeed some increased time required for ultrasound evaluations, and therefore cost. Additionally, there is also a requirement for safe restraint of animals which may preclude its use on certain farms. However, with all of the additional information that is available to you and to your veterinarian via ultrasound, it is quite easy to see why some may wish to use this as their primary means of pregnancy diagnosis and reproductive assessment on the farm.