



ADVANCED

FARM SYSTEMS

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Welcome

(Training Documentation for Workshops)

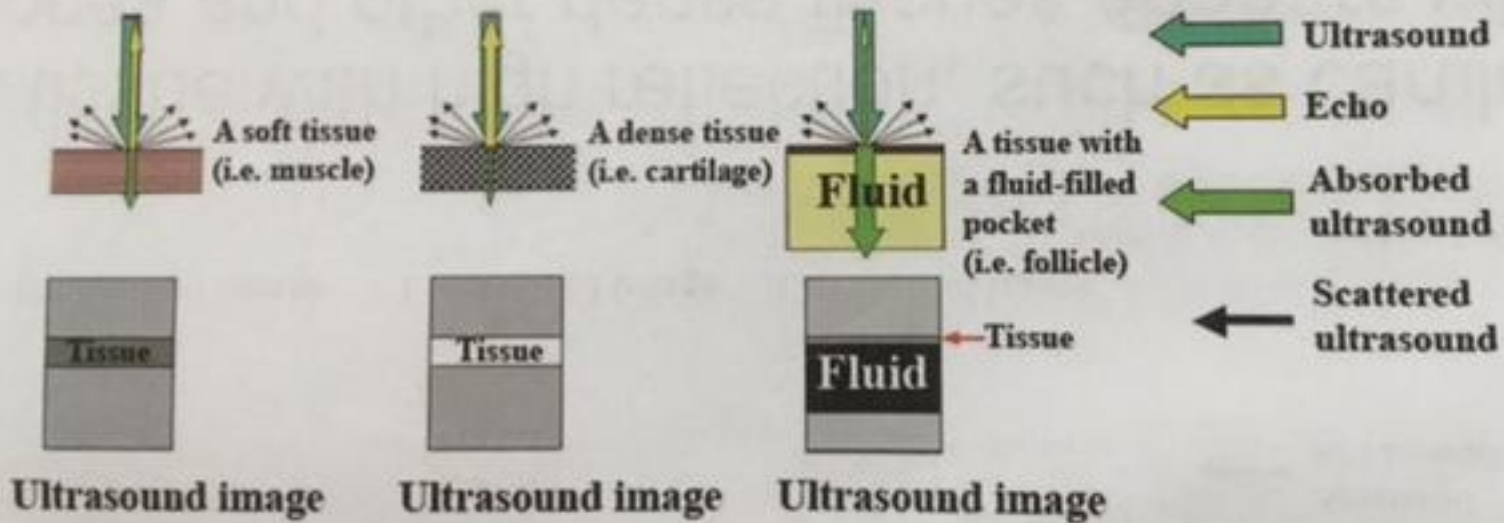
- **In this session my aim is to give you a good basic understanding of how ultrasonography works and the reasons why using ultrasound to determine pregnancy in Sheep and Cattle is so beneficial to your breeding programs and your bank balance.**

Basis Of Ultrasonography

- **Ultrasound waves are sent out from the transducer/probe toward the tissue of interest.**
- **The Ultrasound passes through the different tissues and generates echoes of various degrees.**
- **The echo is then captured by the transducer and transferred to the machine where it is converted to an image . Fluid is black, bone is white and other tissues are shown in various shades of grey.**

Shades

Basis of Ultrasonography



Transducers

- Also called an abdominal probe for Sheep and a Rectal Wand for Cattle.
- Probes come in different shapes and sizes for use in different scanning situations.
- The most common mechanical sector probes are oscillating probes. Mechanical probes produce excellent images , but are more subject to wear than electrical probes.
- Electrical probes are generally more expensive than the mechanical probes and more difficult to repair.
- Draminski Animal Profi 2 and Sono Farm Mini are one of the only scanners on todays market where both probes can be used on the one scanner.

Probes

- **With all Probes whether they are Linear Probes or Mechanical Sector Probes , for them to be successful it is critical that a good contact with the skin or surface being scanned is achieved.**
- **The abdominal probe used with all small animals projects the image forward towards the reproductive tract at a 90 degree angle, whilst the Rectal Probe used in Cattle projects an image 180 degrees under the probe in a sheet as thin as a piece of paper. Both probes perform at 9 frames per second hence with small movements of the probe the image can change dramatically. It is always best to fan through the scanned area with a probe to ensure that nothing is missed.**
- **With Rectal Probes used on Cattle and Horses contact is provided by the manure and mucus in the rectal tract.**

MODES

- **A Mode Ultra sound is used to judge depth only . This A Mode of Ultra Sound is used to measure Back Fat thickness as well as used as a depth gauge measurement on some earth conditioning equipment**
- **B Mode is what is used in Ultra Sound Scanning Animals . B Mode Scans are capable of taking a cross section through the body of an animal or human in 2D Images.**

Probe Contact & Direction

- **Most important. Without good contact Ultra Sound images will be of negligible use. Contact is gained with an Abdominal Probe on sheep by the application of Ultra Sound Gel . Or by the supply of water to the probe head. In a commercial application using our scanning crate with the push of a button on the handle of the crate, water is fed along a small line to the probe head. We mix the water with Hibitane which helps the operators hands by inhibiting infections and also is good practice to ensure any infections are not passed from one animal to the next.**

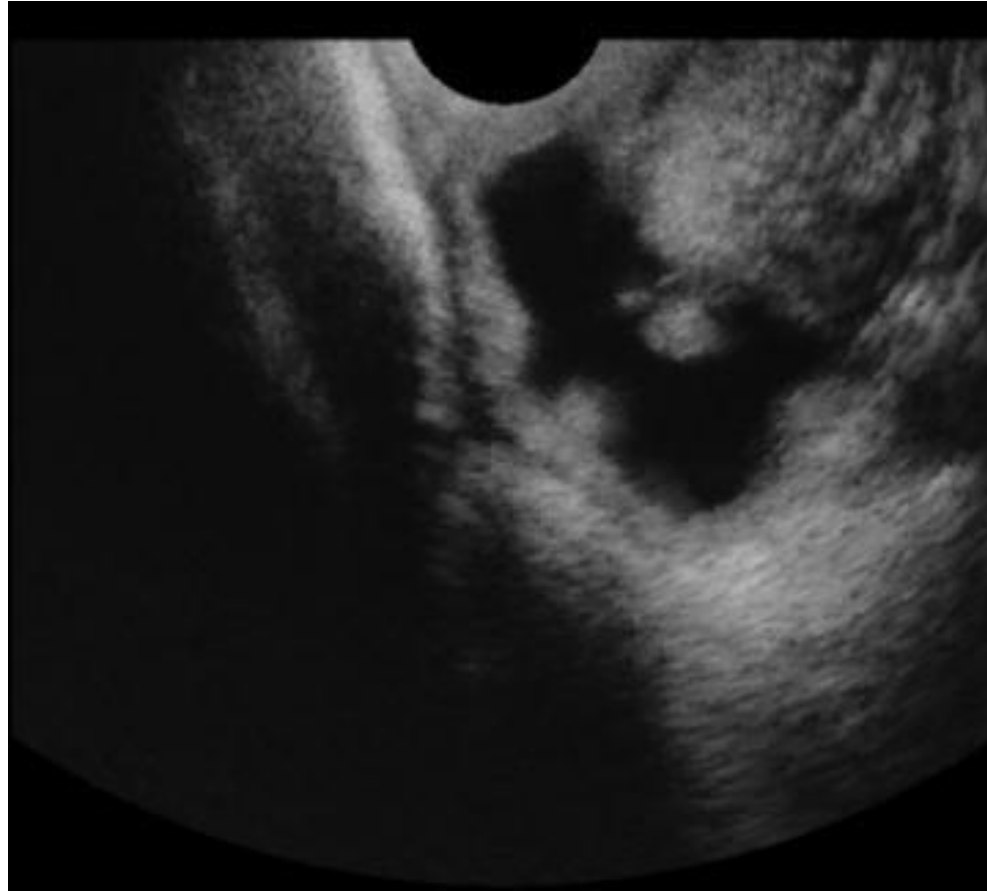
What To Look For

- **Ultrasonographic detection of pregnancy is based on visualization of fluid and an embryo within the uterus or uterine fluid.**
- **It is best to find an embryo or foetal structure within the fluid to call an animal pregnant, as in some cases only the presence of fluid can represent uterine infections or a cycling animal, or an animal which has aborted the foetus.**
- **Foetus structure and umbilical cord. Another notable feature of pregnancy is the presence of CL's or Corpus Luteum.**

Key Markers Of Pregnancy

- Embryo
 - Umbilical Cord
 - Heartbeat
 - Spinal Cord
 - Forelimb Buds
 - Eye Orbit
 - HindLimb Buds
 - Split Hooves
 - Fetal Movement
 - Ribs
- 19-24 Days
 - 19-24 Days
 - 19-24 Days
 - 26-33 Days
 - 28-31 Days
 - 29-33 Days
 - 30-33 Days
 - 42-49 Days
 - 42-50 Days
 - 51-55 Days

Cattle Embryo 30 days



How Ultra Sound Can be Used in a Breeding Program

- To ensure twins are adequately mothered it then becomes an animal nutrition issue. The Ideal application of Ultra Sound in a Breeding Program is to scan all animals immediately the Ram is removed after say a six week joining program. This will pick up all the early joiners who are and will consistently be the most fertile animals on your farm
- The Rest can be rechecks scanned again after a further four to six weeks which will pick up the late joiners (less fertile) and the empties. The late joiners can be sold as scanned in lamb and sold in order to improve lamb reproduction. The empties of course can either be re joined or removed from the breeding program. Increasing lamb percentages equals more lambs and having to run less ewes. Twinning is best picked up in the early stages of pregnancy so can be done and drafted accordingly at each scanning

Cattle Embryo 33 Days



Cattle Embryo 35 Days



Key Benefits

- **The benefits of using ultrasound are that we can firstly see if the animal is pregnant ,then determine if they are carrying single or multiples. This allows the Breeder to feed these animals according to their pregnancy status. Ultra Sound Scanners are another tool in your tool box to add information to your breeding program for better Livestock Management.**
- **It also allows us to build up a better reproductive gene pool in your breeding stock. Using this technology not only increases lambing and calving rates it also helps us work out which of our animals are the most fertile. Or in laymans terms which animals are paying the bills.**

Ultimate Scanning Times



Detection Time

- **First Scan when the Ram or Bull comes out after say six weeks. Or from 30 Days after Joining. This picks up all the early Joiners and the most fertile animals on your property. Draft the rechecks (potential empties) , singles and multiples.**
- **Re scan the rechecks after another three to four weeks to pick up the late joiners and empties.**
- **Decide whether to remove the empties from your Breeding Program , or to rejoin.**
- **To really improve the productivity of your Breeding stock Cattle or Sheep consider selling the empties to avoid building up stock that needs to be fed , but are not producing income, and also consider the late joiners . The late joiners and the empties are the least fertile animals on your farm.**
- **Should you sell the late joiners and the sheep showing only singles? Certainly some schools of thought encourage this type of Livestock Management Program which can only be achieved with your own equipment.**

Lambing & Calving Rates

- **The National Average Lambing rate in Australia is only 90% and in some areas as low as 72% and it has been this low since records began in the early 70's. This is the lowest Lambing rate in the world. NZ averages nearly 130% and yet whilst their ewe numbers are declining by up to 2% per year their Lambing rates at tailing time had increased by 4.4% in 2017 . Most European Countries are running at over 200%. IT IS A CASE OF DOING MORE WITH LESS. Now that Scanning Equipment is more affordable it has become a tool suitable for breeders.**
- **In some recent studies in Queensland fertility rates with cattle using an AI program have been as low as 50%. We have case studies of Cattle Farmers lifting their fertility rate from 50% to 95% in under four years using this technology.**

Risk and Side Effects

- **Ultrasonography is generally considered a safe imaging procedure. World Health Organizations technical report series supports that ultrasound is harmless**
- **Diagnostic ultrasound studies of the foetus are generally considered to be safe during pregnancy.**
- **Despite the above we recommend caution using Ultra Sound on our wives and daughters . Lets stick to animals. We have received some interesting images over the years , but we do not want to be in the firing line should anything go wrong.**

Easy to Use & Easy to Clean

- **What to look for in a Breeders Ultra Sound Scanner.**
- **Portable.**
- **Battery operated . Draminski battery provides over 5 hours of scanning.**
- **Water & Dust Proof.**
- **Wash in mild soap with soft cloth.**
- **Affordability. There has to be economically feasible to use your own scanning equipment. To achieve this it is just a question of Livestock numbers or to consider doing some contract scanning in your area to help pay the costs of the equipment. Along with adding external income.**
- **Interchangeable Probes so that one machine can scan all animals.**

Machine Settings



- The best setting depend upon the animals to be scanned.
- Please call Advanced Farm Systems / Phil for further information.

Custom Made Crates



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