

Detecting Pregnancy and Litter Size in Ewes Using Ultrasound

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The rising utilization of ultrasound technology provides a valuable tool for sheep producers looking to improve flock management through pregnancy detection and fetal monitoring. This guide provides insights on optimal timing for pregnancy scanning, what to look for at different gestational stages, and practical ultrasound techniques for the best results.

Why Ultrasound for Pregnancy?

Ultrasounding serves as an invaluable tool for precise flock management. Given that feed constitutes the largest expense in an operation, understanding pregnancy status and fetal count enables better resource allocation, particularly since nutritional requirements for ewes vary based on litter size. This information also allows producers to evaluate labor needs for a successful lambing season, as ewes with a higher expected lambing rate typically require more labor input. It is generally preferred to scan ewes via ultrasonography between days 45 and 65 of gestation, as this timeframe allows for enhanced accuracy in determining fetal count. Additionally, by 45 days, ewes are beyond the point of gestation where early embryonic death is most likely to occur, reducing the chance of ewes initially scanned as pregnant being reported as open later in gestation.

Best Timing for Ultrasound Imaging

To obtain clear and useful ultrasound images, it is essential to scan ewes at the appropriate stages of gestation.

- **25-35 days into gestation:** Early detection allows for pregnancy confirmation, though identifying the exact number of fetuses may be challenging. This is the most effective timeframe for allowing producers to promptly reintroduce ewes to a ram for another breeding opportunity.
- **45-65 days into gestation:** The optimal window for fetal counting, when embryos are well-developed but not yet too crowded, making litter size determination more accurate.
- **90+ days into gestation:** In late gestation, ultrasound remains valuable for assessing fetal viability, though distinguishing individual fetuses becomes more difficult due to spatial constraints.

Ultrasound Images Across Gestation

The photos below show the development of key fetal structures that can be identified in ultrasound images at different stages throughout gestation. In each ultrasound image grey coloration indicates soft tissue (i.e., muscles or organs), white indicates dense structures (i.e., bone or connective tissue) and black indicates fluid.



Figure 1. The above image displays a non-pregnant (open) ewe. Notice the grey uterine tissue and no appearance of an amniotic fluid sac.

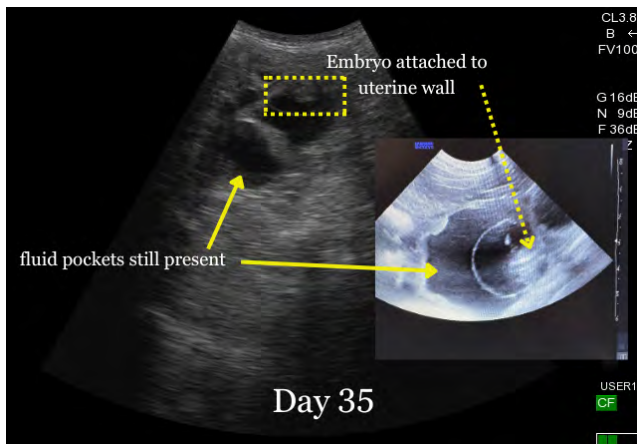


Figure 2. Between days 25 and 35 days of gestation, small fluid-filled sacs indicate early pregnancy. At 35 days, the embryo attached to the uterine wall is visible.

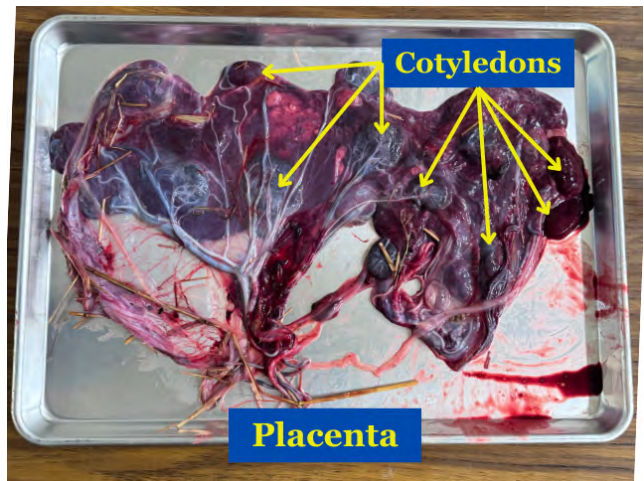


Figure 3. Cotyledons on a placenta after parturition.

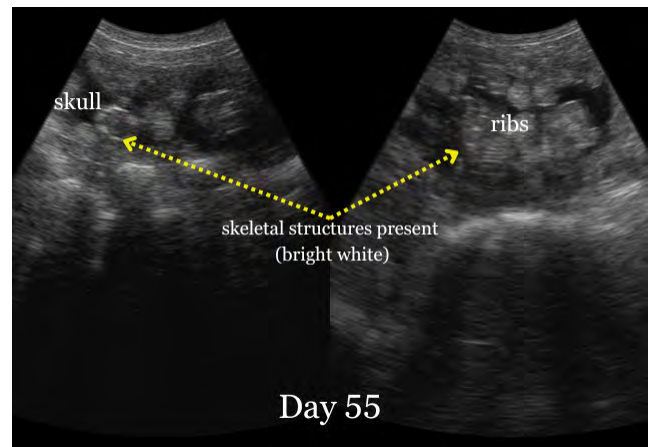
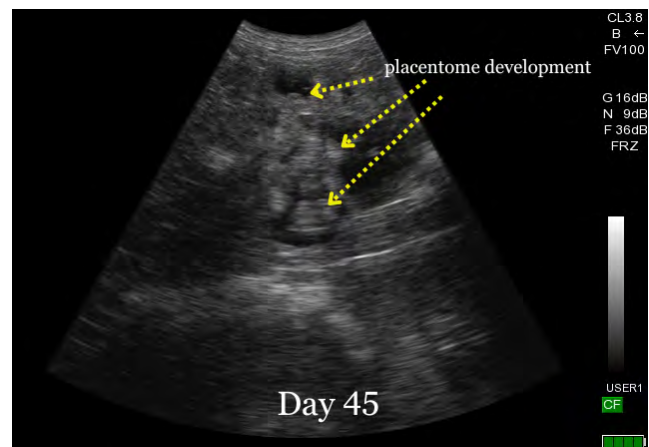


Figure 4. By days 45-55, developing fetuses become distinguishable and the skeletal structures can often be seen. Placentomes, a term for the whole group of fetal (cotyledons) and maternal (caruncles) tissues that are involved in placentation, will be present.

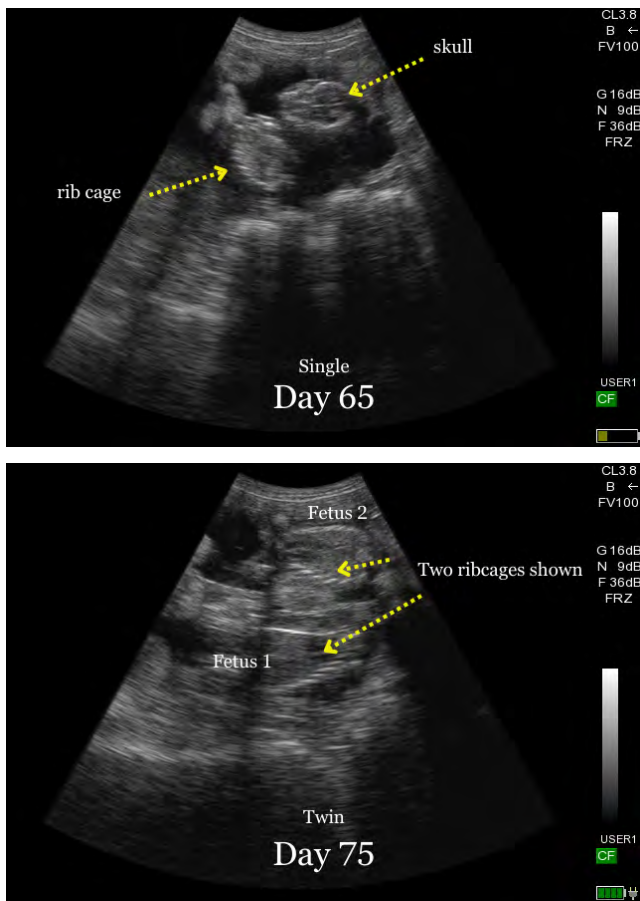


Figure 5. Around days 60-75, skeletal structures become clearer, allowing producers to count multiple fetuses more accurately.

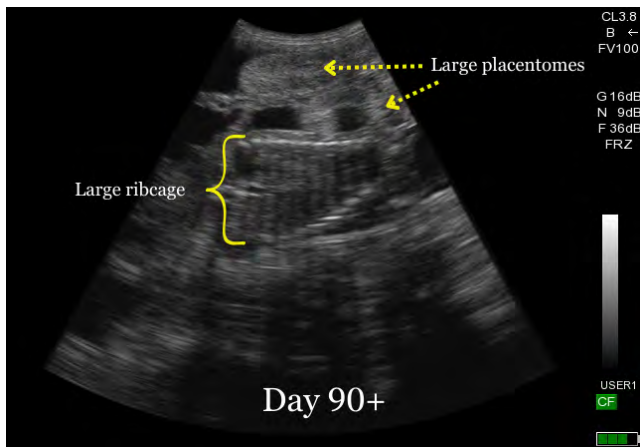
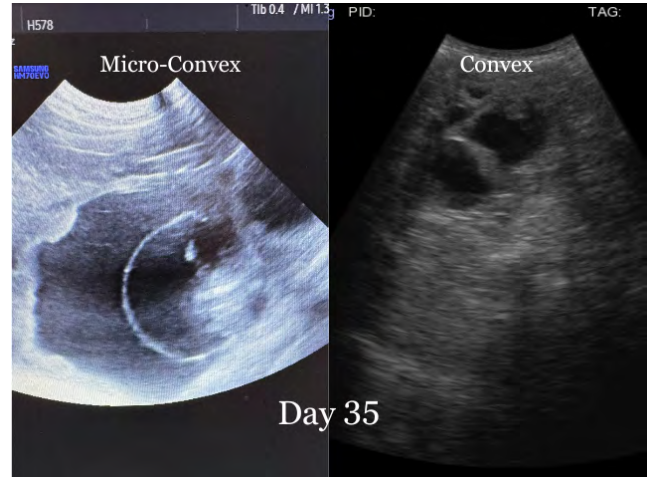


Figure 6. By day 90 and beyond, fully formed fetuses are evident, with rib cages and skulls prominently displayed. Although, determining litter size can be more challenging.

Practical Ultrasound Tips for Sheep Producers

To achieve the best imaging results, producers should utilize the right equipment and apply proper scanning techniques.

Equipment



- **Convex Probes (3.5-5.0 MHz):** These probes have a curved surface that provides a wider field of view and deeper tissue penetration, making them ideal for early pregnancy detection (days 25-35) and scanning larger-framed ewes. The lower frequency allows for wider range of imaging, though fine details may be difficult to see.
- **Micro-convex Probes (4.0-10.0 MHz):** may also be utilized but have a smaller contact area. They allow for finer details to be seen within a smaller field of view relative to convex.

Proper Scanning Techniques

Proper probe handling is also essential; holding the probe firmly and using adequate ultrasound gel or warm soapy water helps ensure good contact, while rotating at the wrist slightly from side to side can help locate fluid pockets and fetal structures.

Probe Positioning

- For early scans (<60 days), the probe should be positioned just in front of the udder, high in the ewe's flank, and aiming slightly inward.
- Scans being completed after 60 days of gestation should position the probe on the middle of the lower abdomen. This is due to fetal migration/expansion as the lamb(s) grow.

Completing scans before feedings can reduce gut fill interference, improving image clarity. For the best clarity scanning, producers should use a headgate or a helper to keep the ewe still to minimize movement that could distort images.

Conclusion

Using ultrasound effectively can enhance reproductive management, allowing producers to make informed decisions on ewe nutrition, culling, and lambing preparation. By following the practices outlined in this guide, sheep producers can maximize the benefits of ultrasound technology in their flocks.

Acknowledgement

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