

Improving Reproduction in Cattle & Sheep

Reproductive inefficiency costs cattle and sheep producers billions of dollars each year. Working together across multiple states and disciplines, researchers at land-grant institutions have made discoveries and data-driven recommendations that have reshaped livestock industry practices, delivering measurable gains in reproductive performance.

- Breeding programs can now screen for a mutation that causes embryonic loss in Holstein cows and phase it out of bull pools, reducing embryonic loss across the nation's most popular dairy breed.
- SLICK-genotype bulls, which have greater tolerance to heat, are now commercially available to producers in warm regions worldwide.
- The Open Cow Test is used nationally, enabling producers to re-breed open cows 2 to 3 weeks sooner than conventional methods.
- Findings may help producers identify and cull heifers with genetically delayed puberty, saving \$2,500 per heifer in development costs.
- Using validated artificial insemination synchronization protocols, producers can increase pregnancy rates and yield up to 25% more calves.
- Artificial insemination laboratories are piloting deep-learning algorithms that analyze sperm images in order to improve sire selection.
- Findings have changed gestational nutrition guidelines for livestock.
- Reproductive management workshops have led to annual returns of \$1,000 to \$5,000 per ranch.
- New educational tools are helping train the next generation of scientists and producers.
- Findings informed human perinatal medicine, revealed links to endometrial cancer suppression, and improved understanding of and possible therapies for one of the leading causes of infertility in women.

Even just a 1% improvement in calf or lamb production due to this project's innovations would be worth over \$1 billion annually to U.S. producers. Thriving beef, dairy, and sheep industries help meet consumer demand and are vital to the economy, generating about \$243 billion in total production value each year and supporting 2.3 million jobs.



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