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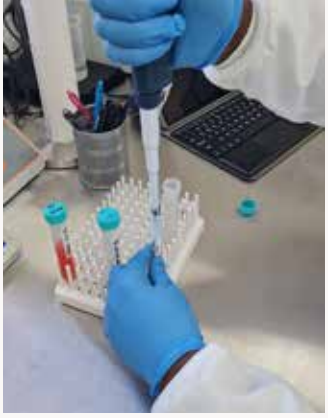
# Improve LIVESTOCK BREEDING through Semen Sexing Technology

Sexed semen technology is a groundbreaking advancement in animal breeding, particularly in livestock such as cattle, sheep, and goats. This method allows breeders to selectively determine and control the sex of offspring through artificial insemination and embryo production. This is achieved by separating X chromosome-bearing sperm (female) from Y chromosome-bearing sperm (male) using flow cytometry.

The partnership between Sexing Technologies® (ST) and Ramsem in 2021 marked a significant milestone in this field. Together, they established Africa's first semen sorting lab in Bloemfontein, producing both fresh and frozen sex-sorted semen for sheep, goats, and cattle. ST's method, boasting over 90% accuracy for the desired gender, has demonstrated conception rates comparable to conventional semen used in artificial insemination.

## The advantages of using sexed semen in breeding programs:

1. **Precision in Gender Selection:** Breeders gain the ability to choose the gender of offspring, proving particularly valuable when economic or management considerations are tied to specific genders. For instance, in dairy farming, where female calves are more valuable for milk production.
2. **Enhanced Genetic Progress:** Sexed semen enables breeders to strategically pair superior sires and dams, accelerating genetic progress in desired traits such as milk production, growth rate, or disease resistance.
3. **Reduced Generation Interval:** By strategically selecting the gender of offspring, breeders can introduce more females into the herd or flock more rapidly, reducing the generation interval and enhancing genetic improvement.
4. **Increased Efficiency and Productivity:** The technology promotes overall reproductive efficiency by facilitating the production of a higher number of genetics elite females, contributing to increased productivity in terms of meat, milk, or other economically significant traits.
5. **Improved Management and Space Utilization:** Controlled sex ratios offer efficient management of herds or flocks, optimizing space utilization and management practices.
6. **Economic Benefits:** The production of animals with desired characteristics translates into economic benefits for stud and commercial breeders, whether through increased milk production, improved meat quality, or other economically valuable traits. Thus, increasing the bottom line and profitability of various production systems.
7. **Reduced Culling Rates:** Selecting for specific traits and genders reduces the need for culling animals that do not align with breeding objectives, contributing to a more focused and efficient breeding program. Resulting in economic benefits mentioned previously.




5. **Health and Nutrition:** Ensure animals are in good health and receiving proper nutrition, as overall animal health significantly influences reproductive success.
6. **Consider Conventional Semen as Backup:** Despite advancements, have conventional (non-sexed) semen as a backup to increase chances of conception.
7. **Regular Fertility Rate Evaluation:** Assess fertility rates associated with sexed semen regularly to make informed decisions about its continued use.
8. **Consult with Experts:** Seek advice from reproductive specialists, veterinarians, and other experts to ensure the best practices for using sexed semen in specific breeding programs.

Semen straws cannot be distributed if any of the international requirements are not met. All semen produced must adhere to these standards. Each batch of straws is evaluated based on its motility (the movement of individual cells), morphology (abnormalities), concentration (the number of cells in each straw), and purity (accuracy on selected gender).

## Tips for Successful Artificial Insemination with Sexed Semen:

1. **Timing of Insemination:** Work closely with veterinarians or reproductive specialists to determine the optimal time in the animal's oestrous cycle.
2. **Insemination Technique:** Employ proper artificial insemination techniques to maximize the opportunity for successful fertilization, resulting in increased conception rates.
3. **Semen Quality Maintenance:** Follow recommended storage conditions and use semen within the specified timeframe to maintain product quality and integrity.
4. **Oestrus Cycle Monitoring**: Accurately monitor the oestrus cycles of females by observing behavioural and physical signs of heat.

In collaboration with Absolute Genetics, Ramsem offers a fully integrated reproduction service, including AI, In Vitro Fertilization and Embryo Flushing. In the context of IVF for cattle, sexed semen is used in conjunction with the IVF process. In IVF, eggs (oocytes) are collected from the female and fertilized with sperm outside the body. By using sexed semen, the farmer or breeder can increase the likelihood of obtaining embryos of the desired sex, from a specific donor cow and bull.

Using sexed semen for IVF provides more control over the genetic makeup of the offspring, allowing farmers and breeders to selectively breed for desired traits. This technology has been particularly valuable in the dairy and beef industries where the sex of the offspring can impact production and economic factors.

Sexed Semen Technology has reshaped the landscape of animal breeding, offering breeders unprecedented control and precision in shaping the genetic composition of their herds. Breeders are encouraged to stay abreast of the latest advancements and collaborate with us, as industry professionals, to optimize the use of this technology in their specific breeding programs.