

From ABS to the Farm...



Safely Providing a Healthy Product

The Facts About ABS SEXATION™ Semen

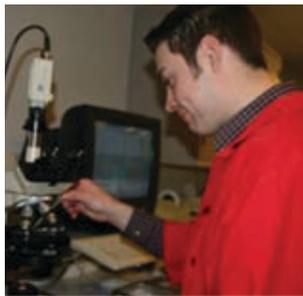
At ABS, we pride ourselves in producing and providing the highest quality and most consistent product in the industry. The key to achieving this goal is multi-faceted and pertains to following strict protocols from start to finish. This article is the third in a series that will discuss the ABS production process and describe how ABS brings top of the line products to producers. The topic of the first article focused on ABS sires and the barn staff that work with them everyday. The second article highlighted the next step in the production process—the work done in the laboratory to ensure that the highest quality semen is provided to producers. This article will detail the sperm sorting process and how ABS Sexation can help producers Grow from Within®.

The ABS Sexation brand was launched in January 2007 and is based on a strong tradition of quality and excellence. The inspiration for the product line name, 29H2960 Ocean-View SEXATION, was an ABS customer-satisfaction Holstein sire from the early 1980s.

The ABS Sexation Sorting Laboratory is in operation seven days a week, 24 hours a day. Below is an explanation of the only proven sex sorting process and what occurs in this laboratory on a day-to-day basis.

The Sex Sorting Process

Sperm go through a flow cytometer for sorting to separate X (female) from Y (male) bearing cells based on the gender preference of a dairy or beef producer. The sperm sorting procedures using the flow cytometer were first studied in U.S. government research labs in the 1980s. In 1990s, the first calf using this procedure was born and since then, researchers have been working to increase the efficiencies of the sperm sorting technique. ABS is currently utilizing the flow cytometry technology to sort sperm at the DeForest, Wisc. facilities. This opportunity allows producers to sex select progeny and also allows producers to choose from a globally



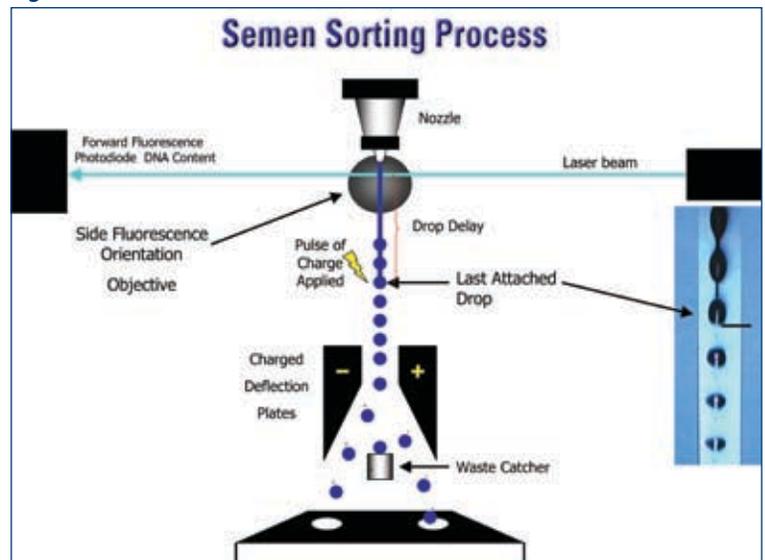
recognized ABS product offering.

Differentiating Male from Female

The flow cytometer detects the 3.8 difference in DNA content between male and female bovine sperm. (See Figure 1 below). The first step in this procedure is to dilute sperm to a very low concentration and stain them with a dye that fluoresces when excited by ultra violet light. Sperm pass through the flow cytometer at 50 mph

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Figure 1



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under 40 psi of pressure. Because of the larger X chromosome, female sperm emit slightly more fluorescence than Y chromosome bearing male sperm. Detectors measure the amount of fluorescence and assign positive or negative charges to each droplet containing a single sperm. Charged deflector plates then split the single stream into three streams: positively charged particles containing one sex go one way, negatively charged particles containing the opposite sex go the other, and uncharged droplets containing multiple sperm, sperm with unidentified sex, or membrane damaged sperm are discarded. In a female sort, unidentified/multiple sperm and male sperm are discarded.

ABS Sexation Packaging

Like all other ABS semen, ABS Sexation straws are frozen through ABS advanced technology, and evaluated for quality control standards. However, ABS Sexation semen has a 529 stud code versus the traditional 29 so that it is not confused with the conventional (standard) semen product. It is packaged in a red 1/4 ml straw for female and a blue 1/4 ml straw for male and the respective pink or blue colored racks. It is clearly identifiable by the color and 529 stud code to ensure proper identification and handling.



ABS Sexation Fertility and Handling Recommendations

There are fundamental differences between sorted sperm and conventional semen. The sorting process discards unknown sperm cells and those of the undesired sex and is limited by throughput efficiencies. Due to this process, there are fewer sperm cells packaged in each straw compared to conventional semen. The sorting process may also compromise the ability of the sperm cells to impregnate animals. Thus, it is essential to follow recommended protocols to maximize results. ABS has several basic use recommendations to achieve the highest possible results:

- Use only on well grown, well managed virgin heifers
- Use on virgin heifers 12 hours after observed/expressed heats
- Carefully follow the published guidelines for semen thawing and handling (see sidebar at right)
- Handle the 1/4 ml ABS Sexation straws with the same care as traditional 1/2 and 1/4 ml straws
- While thawing and handling standards are identical, the margin for error is greatly reduced
- Whenever possible, highly experienced and trained ABS Professionals should be utilized
- Even with proper care and handling, conception rates will average 75 to 90 percent of conventional semen ■

Distribution

This article detailed the ABS Sexation process and its role in providing a healthy, high quality product to producers. The next article in this ABS Series will describe the process which takes place in the Walton Distribution Center to store and ship units of semen to dairy and beef producers around the globe. ■



Semen Handling Recommendations

- 1. Semen Transfer:** Make all semen transfers between nitrogen tanks or retrieval of semen from a nitrogen tank within 10 seconds or within 5 seconds if extreme heat or high winds are present. This time range will keep sperm within a safe temperature range. 1/4 ml straws are smaller in diameter, so it is even more imperative that the transfer directions are followed to prevent overexposure.
- 2. Thaw Procedure:** Thaw semen in 95 to 98°F (35 to 37°C) water for 30 seconds but less than 15 minutes. Fertility comparisons show an advantage for semen thawed in warm water.
- 3. Move the Air Bubble:** An air bubble is created in each straw during the filling process for optimal freezing. Shake the straw to move the air bubble towards the crimped end of the straw before cutting. In the ABS Sexation straw the air bubble is positioned in the middle of the straw and will need to be shaken a bit more. **This will not damage sperm**, and if the air bubble is not moved, 1 to 5 percent of the sperm will be lost.
- 4. Protect the Semen:** Protect semen from environmental changes while loading into insemination equipment and transferring to the heifer. Failure to protect sperm can either cause cold shock or heat stress, both of which will result in lowered fertility.
- 5. Number of Units:** Thaw only the number of units of semen that can be inseminated within 15 minutes. The advantage of warm water thawing only exists for up to 15 minutes. However, the actual number of units of semen to thaw should be based on inseminator efficiency and facility impacts (pen size, lock ups, pass-throughs, etc.)