

FREQUENTLY ASKED QUESTIONS...

Semex's Director - Production and Quality Control, Tom Kroetsch

What is gender selected semen?

It is semen that has been modified to give you the sex of calf you wanted.

What makes Semex's **semexxx** different from other sexed semen products on the market?

semexxx has been produced and tested to insure it not only meets but exceeds the recommendations of XY Inc.

What procedures, tests and field trials were performed prior to collecting and releasing semen for commercial applications?

There were three basic levels of testing conducted prior to releasing sexed semen on a commercial level.

Level one involved assuring proper technology function, which means applying proper use of the machine, quality control, training of staff, proper facilities, manipulation of the product and so on.

Level two involved testing the product in a lab environment pre-sexing, post sexing/prefreezing and post freezing to guarantee the product meets the required standards concerning sexed semen.

Level three validated the information found in lab by a field trial. All these steps were performed with great success and results were above expected norms.

What is the heifer rate from sexed semen?

We can expect a heifer rate of around 90% meaning on 100 calvings on average we would expect 90 heifer calves.

The field trial actually provided better results than what is expected.

What kind of fertility level can we expect with sexed semen?

Sexed semen fertility levels are expected to range from 70 to 80 % of levels with conventional semen. In the field trials with virgin heifers, we obtained a conception rate of 55 % on the control group compared to 45 % with the sexed semen.

Does the sexing process change the semen?

The sexing process removes the dead, damaged sperm so there is a better chance of producing a good frozen product.

Is Semex's **semexxx** packaged differently?

All female sexed semen has a 777 stud code compared to the 200 code for the conventional product, in order to avoid any confusion. It is packaged in regular 0.25 ml straws.

Should I use **semexxx** on my cows or flush animals?

No, sexed semen is intended for use on virgin heifers only! It is strongly recommended to not use sexed semen for embryo transfer. It has been proven that results decrease significantly.

Can timed breeding reproductive management take advantage of sexed semen?

Once again, the best results come from the best conditions possible. Natural heats with top management practises will have the best results and factors such as nutrition, environment, body condition,

natural heat cycles are important to obtain the best results. Timed breeding programs with sexed semen have demonstrated lower conception rates.

How many bulls and what quantities are available?

Due to limited production capacity by the machines, approximately 5-7 doses per hour, very few doses are available. Not all bulls are able to have their semen sexed. This is either due to the semen not qualifying for the sexing technology or the fact that there may be a shortage of semen for a particular bull. At this point there are a number of bulls from different breeds available with sexed semen. Contact your local representative to inquire on available semen quantities and which bulls are available.

Do I have to handle **semexxx** differently?

semexxx straws should always be submerged in liquid nitrogen, handled with cold tweezers, thawed carefully and protected against direct light and temperature change.

Keys To Success

SEMEN HANDLING & CARE

- Qualified experienced technicians are recommended when using sexed semen to ensure best results.
- Conditions for handling sexed semen are the same as conventional semen and are affected by exposure to the environment, thawing period, time to breeding, temperature, etc.

ANIMALS TO BREED

- Use of this product is recommended on virgin heifers with a natural heat cycle and in perfect health, with proper weight gain. All other female candidates have reduced conception rates when compared to virgin heifers.

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Why Sexed Semen At Semex?

Semex scientists have worked hard since our beginnings with the Waterloo Cattle Breeders, (a precursor to our partner Gencor) to deliver the very best and newest technologies to our owners, the dairy cattle breeders.

In 1984 Roy G. Snyder (the father of Canadian A.I. and founding member of Waterloo Cattle Breeders), wrote, "Fifty Years of Artificial Insemination In Canada: 1934-1984". In this book Roy noted that the following technologies were on the horizon in the artificial insemination business:

- The Pill
- Research to Improve Inbreeding
- Larger Use of Proven Sires
- Embryo Transplants
- Storing Embryos
- Embryo Sexing
- Precise Heat Synchronization
- Semen Sexing
- Semen Preservation at Body Temperature to Enable Storage in the Female Reproduction Tract Until Time of Fertilization

Since that time much has changed in A.I., and many of Snyder's dreams have come to fruition at the Semex Alliance. The latest of these advancements is the realization of commercially available sexed semen from the Semex Alliance under the stud code 777, and branded as **semexxx**.

In 2004, the Semex Alliance's research and development arm, L'Alliance Boviteq, purchased their first semen sexing machine, utilizing the reliable sperm sexing technology from the XY inc., a global biotechnology company located in Boulder, Colorado, USA.

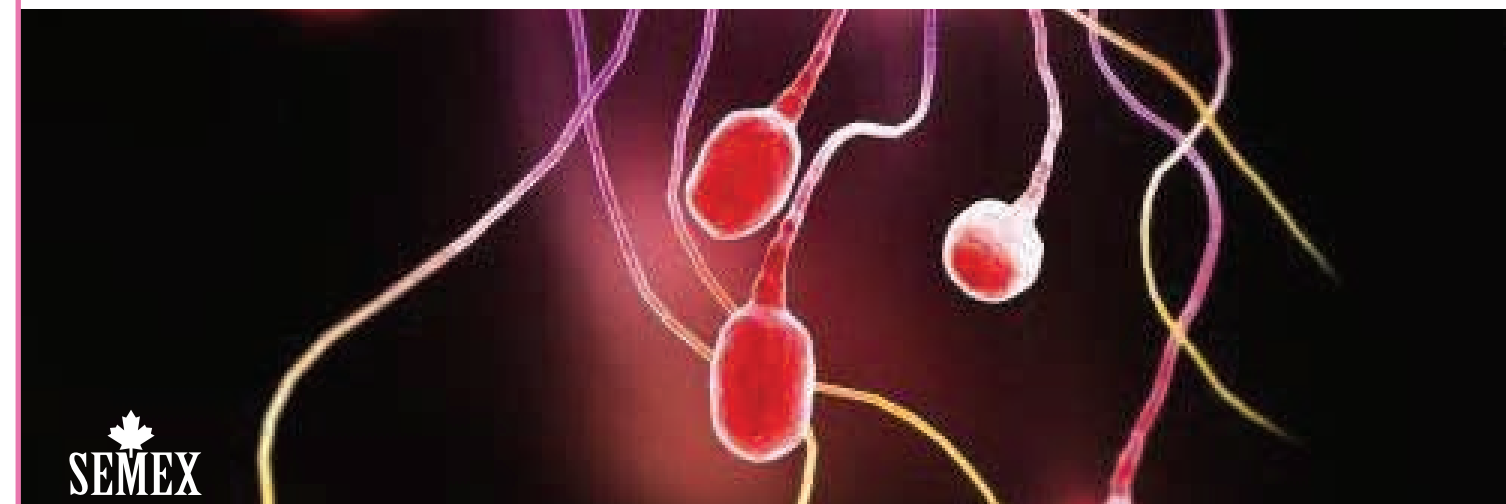
Since then Boviteq's team of scientists have worked hard to ensure that Semex's sexed semen product, **semexxx**, is among the very best on the market.

Sexed Semen & Dairying

For the hard working dairyman, sexed semen offers him a new solution for planning his herd replacements.

Now, dairymen have the option of selecting heifer calves from Semex's Balanced Breeding philosophy and **semexxx** to achieve their breeding and herd performance goals.

"The days of hoping for a heifer calf and the disappointment of the bull calf are over," says Pierre Laliberté, Semex Alliance Vice President Genetics. "Now, using **semexxx** the breeder is in control of his heifer calves and has a tighter reign on his herd's genetic future."





TEST... TEST... TEST... TEST... TEST... TES

Scientists at L'Alliance Boviteq have worked hard to ensure that our sexed semen product is second to none. Since early 2004 they have diligently conducted trials and tests to ensure that Semex's **semexXX** product would be among the very best on the market.

Dr. Patrick Blondin, Director of Research & Development at L'Alliance Boviteq, states, "We find it extremely important to offer producers the highest-quality semen in all circumstances. That is why we have not only tested the required equipment and well-trained our staff to produce sexed semen, but we have also made on-farm testing. Our results were so conclusive that we can safely and confidently offer **semexXX** to dairy producers."

Now, more than ever, the busy dairyman expects high quality, reliable products. In developing the **semexXX** product, Semex and Boviteq used every resource available to ensure that **semexXX** is not only reliable, but also utilizes highly proven, reliable genetics from our Balanced Breeding philosophy.

Tests show that **semexXX** is extremely reliable, producing results above expected normals as shown in Figure 1, L'Alliance Boviteq Quality Control Testing. At Boviteq scientists have set their targets to exceed to ensure that **semexXX** exceeds conditions of the XY Inc. agreement.

Additionally, Figure 2 demonstrates that out of 200 artificial inseminations using **semexXX**, producers can expect 80% conception rate of the

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normal rates (60% being the normal conception rate in this test) resulting in an impressive 96 calves, of which 86 are female.

Fig 1: L'Alliance Boviteq Quality Control Testing

Parameter	Target Value	Boviteq Value
Total Motility	≥ 35%	40%
Progressive Motility	≥ 15%	20-25%
Purity	≥ 85%	90-94%

All Tests Conducted by L'Alliance Boviteq

Fig 2: Expected Results Following 200 Artificial Inseminations

	Non-Sexed Semen	Sexed Semen
Gestation Rate J30-37	60%	80% of normal conception rates
No. of Calves	120	96
No. of Female Calves	60	86

Conception is dependent on many factors beyond the control of the Semex Alliance and no warranty, expressed or implied, is made by Semex Alliance, its distributors, employees or agents for conception or quality of offspring in connection with the use of Semex Alliance semen.

BEST PRACTICES GUIDE

As everyone has read, sexed semen is a delicate product that must be used carefully and appropriately to achieve success. This includes proper handling and usage at all stages of production and at all points of transfer.

Semex's Director - Production and Quality Control, Tom Kroetsch recommends the following as Steps for the Successful Use of Sexed Semen:

Have Reasonable Expectations

It is critical to remember that sex-sorted semen is intended for use in virgin heifers. Field trials using sex-sorted frozen semen have demonstrated that sexed semen used on virgin heifers results in a fertility rate of up to 80% of conventional semen used in the same herd.

To maximize your chances for success focus on two key areas:

1. Selection And Care of Heifers To Be Bred

Only virgin heifers that are well-managed, well grown and in moderate or better body condition are suitable to receive thawed sexed semen.

Efforts must be made to reduce stress; suitable group size in a familiar surroundings combined with a consistent feed plan, will contribute to your success.

2. Use Proper AI Technique

Frozen sex-sorted semen is unique in many ways and although strict quality control remains a big part of the process, it must be

remembered that:

- the sperm cells may have been challenged during the sorting and freeze-thaw process
- there are fewer sperm in each straw compared to conventional semen

Therefore, proper AI procedures are more critical and if done properly can contribute even more towards your success.

Handling Sex-Sorted Semen

- Always keep the sexed semen straws submerged in liquid nitrogen
- Move the frozen sexed semen straws as little as possible
- Always use nitrogen cooled tweezers to handle the straws
- Identify the semen in your tank without raising the straw as this will lead to reduced quality.
- If finding the straw requires more than 5 seconds lower the canister back into the tank for at least 10 seconds before trying again.

Thawing Sex-Sorted Semen

- Routinely verify the thaw-thermos thermometer.
- Check that the thermos water temperature is 37°C before each straw is removed from the tank.
- Ensure a warm, draft free environment for thawing semen.
- Thaw, only one straw at a time, in 37°C water for 40 seconds.
- Remove the straws from the thaw water, wipe it dry with warm paper towel and do not allow it to cool again.
- Be sure that all equipment including guns, sheaths, and paper towels are warm before

coming in contact with thawed straws.

Inseminating With Sex-Sorted Semen

- The traditional AM-PM rule can be followed so heifers are inseminated eight to 12 hours after observed estrus.
- The use of estrus synchronization combined with observed estrus, is acceptable. Timed breeding is not recommended.
- Increased estrus detection efforts will contribute to better results.
- The thawed semen must be inseminated, by only highly experienced technicians, within 5 minutes of removal from the tank.
- Deposit of the semen in the body of the uterus or opening of the horn. Do not attempt to deposit the semen at the tip of the horn as unnecessary manipulation will decrease the pregnancy rate.
- It is recommended that sexed semen be used for the 1st and 2nd services with conventional non-sexed semen suggested for subsequent services.

