

# dairying

# Sexed semen: grow your dairy herd and increase beef output

**Craig Murphy**

Animal and Grassland Research and Innovation Centre, Teagasc, Moorepark, Fermoy, Co Cork

**G**lobal demand for milk and meat protein will necessitate greater numbers of dairy cows and more efficient beef production from the dairy herd. Sexed semen may be a useful technology to rapidly increase dairy heifer calf inventory, while also facilitating increased output of crossbred beef calves.

With conventional semen, roughly 50% of the calves born are male, but >99% of male dairy calves are a low-value byproduct of using dairy semen for AI. A large Irish field trial in 2013 indicated that sexed semen resulted in conception rates that were approximately 87% of the conception rates achieved with conventional semen.

A study in New Zealand reported that fresh sexed semen could achieve conception rates that were approximately 94% of the conception rates achieved with sexed semen. In the near future, it is likely that sexed semen will be capable of achieving conception rates that are similar to conventional semen.

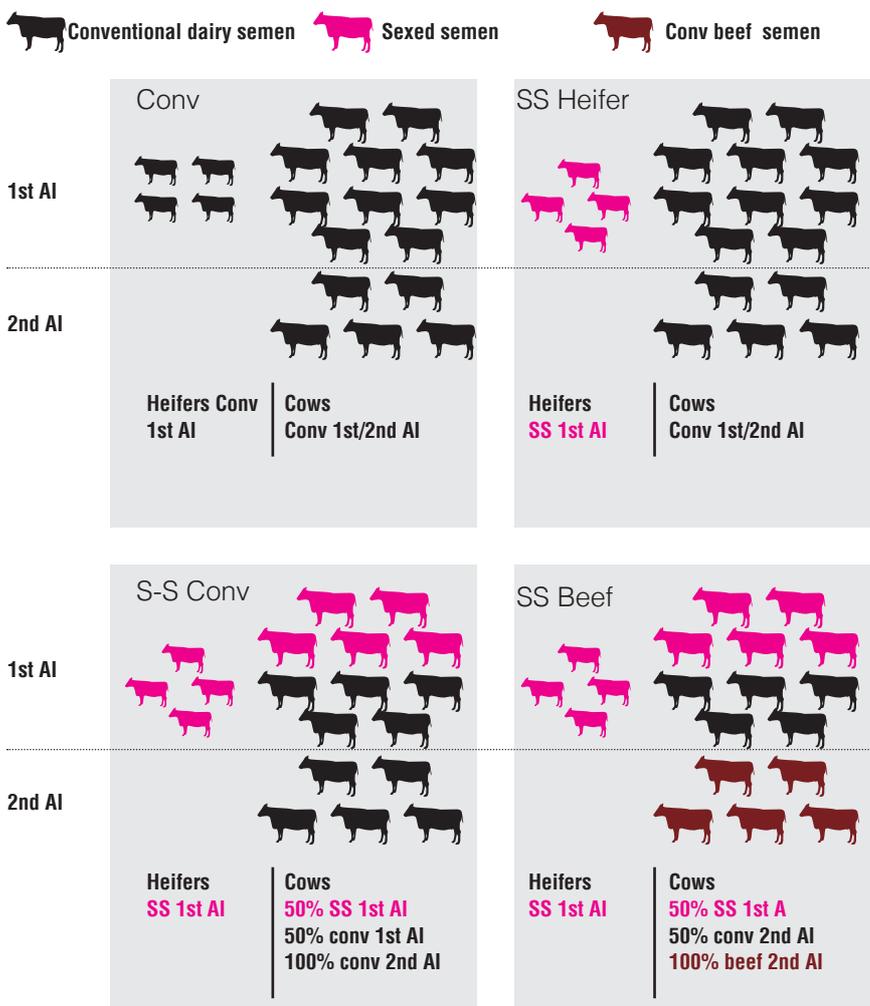
### Simulation study

A simulation model was developed to determine the effects of sexed semen use in heifers and lactating cows on replacement heifer numbers and rate of herd expansion in a seasonal dairy production system. Four AI protocols were established according to the type of semen used:

1. Conventional frozen-thawed semen (CONV).
2. Sexed semen in heifers and conventional semen used in cows (SS-HEIFER).
3. Sexed semen in heifers and a targeted group of cows (body condition score  $\geq 3$  and calved  $\geq 63$  days), with conventional semen used in the remainder of cows (SS-CONV).
4. Sexed semen in heifers and a targeted group of cows, with conventional semen in the remainder of cows for the first AI and conventional beef semen used for the second AI (SS-BEEF).

**Figure 1**

Schematic outline of the different sexed semen usage scenarios investigated at varying levels of sexed semen conception rate relative to conventional semen.



## Conclusions

The study examined a variety of strategies for sexed semen use when expanding from 100 to 300 lactating cows. Using sexed semen generally facilitated faster herd expansion and increased discounted net profit compared to CONV.

The quickest expansion strategy, SS-CONV, resulted in negative cash flows with high fertility sexed semen (100 and 94% SS-CR) during the period of most rapid expansion and at all SS-CR when milk price was low, placing the viability of the farm business at risk.

Combining sexed semen use with conventional beef semen provides alternative strategies for expanding farmers, which have the potential to generate additional income. Further work is required to validate the findings from this simulation model.