

## Key messages

- › Semen fertility is different from daughter fertility.
- › Conception rates are similar for most AI bulls.
- › Bulls with higher Semen Fertility Values have slightly higher conception rates.

## Semen Fertility Values

Semen fertility is different to daughter fertility. Daughter fertility relates to the ability of the bull's daughters to get in calf. Semen fertility relates to the ability of the bull's semen to get cows in calf. Daughter fertility is a genetic trait and has an Australian Breeding Value. Don't assume that an above average semen fertility bull will have daughters with above average fertility.

While conception rates are similar for semen from most bulls, some bulls have higher or lower conception rates. Farmers and herd improvement service providers can compare bulls based on the fertility of their semen. Using hundreds of thousands of mating records collected through data processing centres around Australia, ADHIS produces Semen Fertility Values for bulls with more than 400 matings. Semen Fertility Values estimate the ability of the bull's semen to get cows in calf. The results are published on the ADHIS website.

This measure is not a breeding value. The differences between bulls' semen fertility are both genetic and environmental. Such environmental factors include the collection and processing procedures of a bulls semen, the health status/ stress level of the bull at the time of collection as well as many others. However, Semen Fertility Values can be considered when making bull selections.

### Higher Semen Fertility Values

Using bulls with higher Semen Fertility Values is expected to result in slightly higher conception rates.

### Higher Daughter Fertility ABVs

Using bulls with higher Daughter Fertility ABVs are predicted to produce more fertile daughters.

## Expression of Semen Fertility Values

Bulls with higher Semen Fertility Values have slightly higher conception rates. For example, a Semen Fertility Value of +2% means an increase in first-service conception rate of 2% compared to that which would be achieved by an average bull (Semen Fertility Value of 0). Most bulls range between  $\pm 2.5\%$  for Semen Fertility. Extremes in the Holstein breed are -8% to +5%.

## Using Semen Fertility Values

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Semen Fertility Values can be used by bull breeding companies and farmers.

### *Bull Breeding Companies*

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Bull Breeding companies may use Semen Fertility Values to handle individual bulls differently during semen collection and/or semen processing.

### *Farmers*

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A quick check of the Semen Fertility Values for this year's bull team may improve conception rates. For example, take a 400 cow herd with a 50% conception rate using bulls with average (0) semen fertility. By using a bull with a fertility value of 2%, the first service conception rate is estimated to be 52%. The expected result is 8 more cows in calf in the first round of AI assuming all else remains the same. In addition, the risk of using less fertile semen can be further managed by using a range of bulls rather than only one or two.

#### **Semen Fertility Values Change**

Over time, a bull's Semen Fertility Value will change as the bull's environment and semen processing practices change.

Semen Fertility Values are not breeding values – they are influenced by both genetics and the bull's environment. The environmental effects of a bull's semen fertility may change over time as collection and semen processing practices change.

## How is the Semen Fertility Value calculated?

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To calculate the Semen Fertility Value of a bull, ADHIS uses mating data to determine the non-return rate of a bull (cows assumed to be pregnant because they were not re-submitted for mating). In the calculations, a number of other details are taken into account, such as

- › the fertility level of the herd that the bull is used in,
- › the fertility levels achieved by the technicians that inseminated the bull's semen and
- › details about the cow that was inseminated by the bull's semen

Semen Fertility Values are not ABVs and therefore are published separately to ABVs. Semen Fertility does not affect the genetic make-up of a bull's daughters and therefore is not included in the Australian Profit Ranking.

## Conclusion

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Semen Fertility Values can be used to make small improvements in reproductive performance. To make the most of genetic improvement, farmers are advised to stay focused on the ABVs for the traits important to the herd's breeding objective. Start by short-listing bulls that meet the herd's breeding objective and then make your final selections based on other factors such as price, inbreeding and Semen Fertility Values. It is always wise to manage risk by selecting a team of bulls rather than only one or two.