

# Stag and hind replacements that will boost your bottom line

## Where the rubber meets the road

Genetics are the motor that drives the profitability of a deer farm.

No matter how much fuel is available and how well the vehicle is tuned and maintained (health, welfare, stockmanship), the performance of a deer farm is limited by what's under the hood.

To improve that genetic engine a commercial deer farmer needs to have clear breeding objectives and know how to identify them (see *Deer Fact*, 'Setting your breeding objectives').

With this done, it's time to buy some stags with breeding values (BVs) for the traits you want and to mate them with your best hinds. This is where the rubber hits the road.



Photo: Jamie Ward

**Weaner stags in early spring:** *The only way to predict which ones have the potential to become great herd sires, is through their Deer Select breeding values (BVs)*

## The sire influence

The sire has the greatest genetic influence on the rate of progress of a herd towards its breeding objectives.

Sires used in natural mating should be turned over regularly – say, every three or four years. Good breeders are constantly improving the BVs of their offerings, so breeding from an old stag puts you in the slow lane. You might consider AI programmes for faster progress if you have identified hinds of high genetic merit in your herd.

Ideally, all sires or semen used in a herd should be bought from a stud breeder who offers BVs for the traits you want. Use the Deer Select sire summaries to find the studs with stags which have BVs for the traits you are interested in: [www.deernz.org/deerselect](http://www.deernz.org/deerselect).

## Key points

- Stags can have a huge effect on overall herd genetics because they can each contribute around 50 progeny/year in a naturally-mated system.
- Buying stags or semen with BVs for traits that will increase the whole performance of a herd can be highly profitable.
- It's important to replace and upgrade stags after 3 or 4 years to ensure your herd's genetic progress is keeping pace with improvements in your stag breeder's herd. If you are using AI, sires can be upgraded every year.
- With hinds, the focus needs to be on lifting the genetic merit of the herd as a whole. Daughters of a new stag will directly impact herd productivity for up to 13-14 years.
- A rapid generation turn-over, and objective culling and selection, are the best tools most farmers with commercial breeding herds have to improve the quality of their hind herd.

See the *Deer Fact*, 'Deer Select' for more information on the BVs that are available and how they are calculated.

See the *Deer Fact* 'Setting your breeding objectives' for more about the importance of having clear objectives and how to make best use of BVs to maximise genetic gain.

## Why spend more on stags with BVs?

Buyers of herd sires can look at the 2-year old and 3-year old stags on offer and make judgements about their temperament, size and muscling. This is important, but how the stags' progeny perform at 10-15 months of age is what counts in a venison system. BVs will provide that information.

BVs and indices also enable you to choose sires with the right genetic merit for your property. On intensive finishing country with high quality pastures, go for high growth rate BVs. On harder or drier hill country a more moderate merit stag may be better.

See the testimonial by Mike Salveson of Mt Somers elsewhere in this *Deer Fact*. Also other testimonials, in the *Deer Fact*, 'Setting your breeding objectives'.

## How much more should you pay?

As a rule of thumb, many farmers buying a breeding stag are willing to pay up to half the extra income they expect the stag to generate.

A venison example:

High-BV stag (say, W12eBV +23.8 kg) used for four years.  
Progeny 12 kg heavier at 12 months than previous herd average.

Assume all progeny processed.

174 progeny x 12 kg = 2088 kg liveweight = 1126 kg extra carcass.

1126 kg @ \$9/kg = \$10,134 extra value added by high-BV stag  
Rule of thumb value of stag to commercial farmer ~ \$5000

## Selecting stags for better velvet production

Heritability for velvet weight in stags is typically around 80%. This high heritability has enabled breeders who don't record BVs to make good progress with their velvet production.

However, decisions on which R2 hinds to retain for breeding need to be made at 12-15 months of age when the hinds' half-brothers have not yet cut their 2-year old velvet.

By using BVs, the accuracy of selection on the female side is greatly improved. Information from all male relatives is used to estimate a hind's BVs for velvet production.

## Velvet versus venison objectives

The most efficient system for producing velvet would in theory be one where big heads come from small-bodied stags, such as those of traditional English stock.

But most velvetting operations breed their own replacements. This means they sell for venison, female yearlings and young stags that aren't selected as breeding and velvet herd replacements. If these animals are of a small carcass size they will struggle to reach reasonable slaughter weights before their second winter.

For this reason a number of stud breeders producing stags with good BVs for velvet have also been increasing the 12-month carcass weight BVs of their offerings. These stags strike a better balance between conflicting velvet and venison production objectives on a commercial farm.

## Keep things in balance

When selecting stags with strong BVs for the traits you want, take care to check they are not weak in other important traits.

For example, an earlier fawning date may not be one of your breeding objectives, but you probably won't want a later fawning date. Stags on Deer Select with good BVs for venison have fawning date BVs (CDeBV) ranging from around 10 days earlier to 10 days later than the average.

## Heavier, faster, more profitable

Mt Somers, South Canterbury, farmer, Mike Salvesen (pictured) is a big fan of using breeding values to help his selection of sires.

"BV's do work. If you have an average herd, you will see a big leap in performance," he says.

In an on-farm trial in his commercial herd he compared two stags with different BVs for 12-month weight (W12eBV), assuming a schedule



Photo: Phil Stewart

price of \$9/kg. The benefits were clear – the heavier, faster growing progeny of the higher BV stag would return an extra \$10,000 if the stag was used for four years.

Stag W12eBV	Progeny 1st June liveweight	Ave kill date
+15 kg	60 kg	1st Dec
+25 kg	75 kg	25th Oct

## The hind influence

In stud herds, breeders use DNA based parentage tests to accurately identify which fawn belongs to which hind. This information is then used for calculating BVs.

Some commercial farmers see value in using DNA parentage testing for three or four years to identify which hinds, when mated to high-BV sires, are producing their best fawns. They then use these hinds and their female progeny to set up a nucleus herd for mating to high merit sires to breed replacements.

## Putting BVs to work in stag selection

In this table, adapted from Deer Select, we show a selection of BVs and the Reproduction-Early Kill and Terminal indices.

If you want to move your fawning date forward, stags D, E, and F have good BVs. The minus means days earlier conception. These stags will leave daughters that cycle earlier and fawn earlier.

Stags D and E provide similar profitability (Indices), stag E has a higher lean yield than the other two if meat is a focus.

If you want high growth rates and overall profitability then stags B, C and G are best – they are high for W12eBV and for overall index. If mature size was a concern for you, you might choose Stag G over stag B or C as it offers similar R-EK and terminal indices to the others, but leaves smaller mature hinds.

If you want a stag with the best growth rates and indices to produce finishing deer for yourself, or weaners for sale to a finisher, you may choose Stag B. He also has good venison yield figures but does leave the heaviest daughters.

ID	WWTeB kg	W12eBV kg	MWTeBV kg	EMAcceBV CM <sup>2</sup>	LEANYeBV	CDeBV days	R – EK index \$/hind	Term index \$/Hind
Stag A	8.5	15.5	12.4	0.59	0.01	+2.02	15.79	21.08
Stag B	15.5	26.2	19.6	1.61	1.13	-2.50	28.70	39.09
Stag C	15.0	20.3	16.3	0.96	1.21	-1.09	26.37	35.81
Stag D	11.0	17.2	12.1	0.10	-0.07	-7.38	21.04	28.90
Stag E	10.1	16.3	13.7	0.73	0.87	-7.52	20.39	28.01
Stag F	9.4	13.5	11.9	-0.72	-0.58	-7.60	17.31	23.73
Stag G	12.4	21.9	13.8	2.03	1.56	-0.97	26.51	36.23
	Wean weight	12 month weight	Mature weight	Eye muscle area	Lean yield	Conception date	Replacement index	Terminal index



Photo: Richard Hilson

*To maximise the rate of genetic progress, the progeny of high merit stags and younger hinds should be given priority to enter the herd as replacements*

Most farmers with commercial herds consider the costs and hassles of doing this cannot be justified when selecting their home-bred female replacements. For them, the focus needs to be on lifting the genetic merit of the herd as a whole. A rapid generation turn-over, culling and selection are the best tools they have for doing this.

### **Rapid generation turn-over**

Half a fawn's genetic package comes from each parent. Rapid improvement in the genetic quality on the father's side comes about by each year buying in stags or semen with good BVs.

Rapid improvement in the genetic quality of the mother's side, comes about by replacing mature hinds with the daughters of higher merit stags used in the herd 2, 3 or 4 years before. The higher the replacement rate each year, the more rapid the rate of genetic progress.

If a herd has a weaning rate of 85%, of which 50% will be male, 2.5 hinds will need to be mated for each potential female replacement for the breeding herd. If you plan to replace 20% of your breeding herd each year, 50% of your hinds will be needed to produce enough progeny to do this. The maximum possible replacement rate in a herd with an 85% weaning rate is 40% ( $100/2.5 = 40$ ).

In practice, there's a trade-off between the rate at which a farm aims to improve the genetics of their females and the need for cash income now – say, from fast growth rate venison animals from hinds that went to a terminal sire. Clearly, a higher fawning rate provides more flexibility

for hind replacement. Give priority to the progeny of high BV stags and younger hinds when selecting herd replacements.

Try using the DINZ Mate Allocation Calculator ([www.deernz.co.nz/deer-hub/tools](http://www.deernz.co.nz/deer-hub/tools)) to help you work out how many of your hinds need to be put to a maternal sire each year to breed replacement females. It tells you how many 'spare' hinds can be mated to a terminal sire.

If you plan to select your replacements from your younger hinds you will need to be able to identify their progeny. That's because younger hinds tend to fawn later and don't milk as well as older hinds, so their fawns may well be smaller than the fawns of older hinds of less genetic merit. Keeping first and second fawning hinds in separate mobs until weaning is the easy answer.

### **Mating yearlings**

Another way to speed up the generation interval is to mate replacement R2 hinds to the spiker stag progeny of high-merit sires. See the *Deer Fact*, 'Best practice mating management' for more information.

### **Culling and selection**

1. Choose the best females to mate with your best BV-selected stags. In a commercial herd it can be hard to identify better producing hinds. If you haven't been using improved stags, selecting an even line of younger hinds may be a good starting point.
2. Mate these hinds to higher merit stags, fawn them separately and preferentially keep replacements from this mob.



### Identifying the tail-enders

Culling the hinds that produce 'fluffies' or tail-end fawns can do much to lift overall herd performance. The challenge is to identify these hinds.

Sheffield, Canterbury, farmer Stu Stokes does this at weaning. He separates out the fluffies and daubs their heads with blue food grade dye mixed with something sticky. Emollient salve (used by dairy farmers) works well. After a few hours in the shed – when they're good and hungry – he lets them back into the paddock with the weaned hinds.

"They go straight to their mums for a feed, colouring their udders bright blue. The next day, the hinds are run into the yards and the blue-bagged ones are tagged for future culling. It's been very effective at tidying up the tail-end," Stokes said.

"It's interesting, but when you look at the mothers of the fluffies, they are a mix of small and large hinds. You can't tell they're poor mothers by looking at them."

3. Longer-term, if your climate and property allow, preferentially select your replacements from the offspring of R2 hinds as they should be your best genetics. But bear in mind that R2 hinds are themselves still growing. They need to be able to raise a fawn and gain 10-20 kg LW, so it is important to be able to feed them well during pregnancy and lactation.
4. If your property is more challenging, the smaller weaners from R2 hinds may struggle to achieve the desired weights for high performance replacement hinds. In this case, select your replacements from the offspring of your R3 and R4 hinds.
5. If earlier fawning is a priority and you have used stags that leave earlier conceiving hinds, you can identify these hinds by foetal aging at pregnancy scanning.
6. Another advantage of foetal ageing at pregnancy scanning is being able to draft hinds into mobs with a similar fawning date. This means you can move and rotate them onto better feed sooner than you can a mob with a spread fawning. Late fawners can also be identified for culling.
7. When selecting replacement hinds check that they are physically sound.
8. Within a herd some hinds give birth to small or late fawns. Some farmers have devised systems to identify the mothers of these fawns for culling. See panel at left.
9. Cull hinds if they are not pregnant, unless they are first fawners and there is a good reason for the lack of pregnancy – such as under-feeding in a drought.
10. Make the most of high genetic merit through good feeding of young hinds at all times.

### More >>

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*Deer Fact:* Setting your breeding objectives

DINZ *Deer Hub:* [www.deernz.org/deerselect](http://www.deernz.org/deerselect)

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**Deer Industry  
New Zealand**

**Deer Industry New Zealand**

PO Box 10702, Wellington 6143 / Level 5, Wellington Chambers  
154 Featherston Street / Wellington 6011 / New Zealand  
Telephone: +64 4 473 4500 / Email: [info@deernz.org](mailto:info@deernz.org)



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