

Terminal sires for profitable venison production

Venison finishing is most profitable when males and females ...

- Are processed when the venison price is high
- Are near the top of the premium price weight range at slaughter
- Grow rapidly to target weights and have left the farm before the next generation of fawns is born.

The use of terminal sires is a proven way to achieve these objectives. As the name suggests, terminal sires are not dual purpose animals. All their progeny should be slaughtered.

Terminal meat production systems are based on mating a female from a breed or strain that is smaller than the breed or strain of the sire. Smaller females cost less to feed and maintain than larger animals. Terminal systems are more efficient in the conversion of feed to venison and in the greenhouse gases emitted for each kilo of venison produced.

In deer, the size difference between males and females used for terminal production is more marked than other species, so care needs to be taken when selecting females to avoid dystocia (birthing complications) and undue stress (see below).

Key points

- The use of terminal sires is a proven way to maximise profits from venison production.
- On many NZ farms using terminal sires, male and female progeny reach carcass weights of 60 kg or more at 10-11 months of age.
- The use of terminal sires is not a silver bullet. It's a whole farm system that relies on good selection and management of hinds as well as stags/bulls.
- Red hinds mated to terminal sires need up to 30% more high quality feed in the run-up to and during lactation than hinds mated to maternal sires. Providing this extra feed is critical to the success of the system.
- Select terminal sires on the basis of their breeding values (BVs) and other traits that suit your farming system.
- Select robust well-conditioned MA hinds in good condition, 115 kg-plus, for mating. Their BVs are important – they contribute half their fawn's DNA.
- Look after your terminal sires. Shield them from social pressure. Ensure they are in prime condition when they are joined with the hinds. Always feed them well and particularly in May, so they recover from the rigours of the roar.



Photo: Trevor Waiton

A picture of breeding, feeding and health: Elk/Wapiti crossbred weaners at Lynnford Farm in mid-June. Average weight on 1 May, 92 kg

What to look for in a terminal sire

Terminal sires with varying amounts of North American elk, European red and English red ancestry are available:

- Elk-wapiti (typically 75-90% elk ancestry)
- European reds
- Composite terminals (commercial bloodlines with both elk and red ancestry)
- NZ wapiti – bloodlines based on live captures from Fiordland.

Many breeders get their deer DNA tested for parentage by GenomNZ. They can provide you with the percentage ancestry of the sires you are buying.

Select terminal sires that are right for your farm. It is important to do this on the basis of breeding values (BVs) rather than on the basis of an individual stag or bull's raw data for eye muscle area or growth rate as a weaner. This is because a stag/bull does not necessarily pass his own performance on to his sons and daughters. The genetic



Kracka, an elk-wapiti sire owned by breeder Grant Hasse

traits he will pass on to his progeny can only be assessed by using BVs.

Go to Deer Select to see what BVs are being recorded, as well as the Terminal Sire Index, which is expressed in dollars per hind mated. This is made up of rewards for growth to 12 months and for increased carcass weight and muscling.

There is no BV for temperament, so – when you have selected stags/bulls on the basis of their BVs – get up close and check out their behaviour. Are they displaying traits you can work with?

At the time of writing this *Deer Fact*, AgResearch Invermay and Deer Select were finalising the research needed to enable farmers to directly compare the BVs of deer from both elk and red-dominant bloodlines. The latest sire BV summaries are here >> <https://bit.ly/SireBVs>

Growth rate

High growth rates enable deer farmers to achieve 55-70 kg target carcass weights for males and females by their first spring, when venison marketers typically pay a premium for chilled venison supply to Europe.

There is also a growing demand for animals with higher carcass weights (up to 100 kg) during summer or autumn

for companies supplying markets where larger 'elk' cuts are preferred.

The best measure of whether a potential terminal sire will produce progeny that achieve these goals is the Deer Select BV, Weight at 12 months (W12eBV).

Parasite resistance – CARLA

The CARLA saliva test is used to measure the extent to which deer produce antibodies to resist internal parasite infections. A sire with a high CARLAeBV will pass this trait on to his progeny.

For more about the CARLA test and breeding parasite resistant deer, read 'The CARLA breeding value' *Deer Fact*.

Meat yield

Good terminal sires produce progeny with good growth rates, high yields of tender venison and ultimately higher returns to the producer.

Look for the eye muscle area breeding value EMaCeBV. This identifies carcasses with a greater proportion of higher value cuts. This BV also has a high correlation with total primal meat yield, dressing out percentage and venison tenderness.

What breed?

Elk-wapiti have less marked sexual dimorphism (size difference between males and females) than reds until 12 months of age. This means female weaners with elk genetics are quicker than straight red females to follow their male herd mates onto the truck when they reach target weights.

The very highest growth rate BV sires come from elk bloodlines, but in the medium growth rate range, farmers have the choice of both elk and red-dominant bloodlines.

Within both red and elk-wapiti bloodlines there is also a range of other BVs that are relevant in a terminal sire system, such as eye-muscle area and parasite resistance.

It is important to note that because they are later maturing than reds, young elk-wapiti bulls are generally not ready for siring duties until they are 3-year olds.

Welcoming a terminal sire to your farm

Transport

Sires are normally bought in December or January. Transport them, using an experienced deer transporter, as soon as possible after purchase. This will give the sires time to settle into their new farm before the roar.

Arrival on the farm

Deer are social animals with strong hierarchies or pecking orders. For this reason, some breeders say it's best to buy two sires at a time, so they arrive at their new farm with the confidence that comes from having a buddy with them.

Your new sires will not perform during the roar if they are put under peer pressure from your existing sires or mature velvetters when they arrive on your farm. Ideally run them with a small group of spikers until you are ready to join them with their hind mating mob.

Mating management

Hind selection

Select robust, large-framed mixed age hinds, no lighter than 115 kg and ideally 120 kg-plus, for mating to terminal sires.

For high early conception rates, target an average body condition score (BCS) of 3.5 or more when joining with the stag/bull. Sires should be in prime condition (a BCS of 4).

First and second fawners, as well as hinds more than 10-yr old, are generally unsuitable for mating to terminal sires.

CASE STUDY

Dallas Newlands

Owner, Maraeweka Deer Farm, Maheno, North Otago

250 maternal red hinds, mated to Melior red stags

400 terminal red hinds, mated to Peel Forest B11 crossbred terminals and Melior terminal reds

"We've been in full development mode since we bought this farm 10 years ago. It's summer dry, so it's a priority to get 100 % of our finishers away before Christmas.

In 10 years we've gone from 45 kg carcass in spring to 60 kg. It's part genetics, part pasture development and part improved animal health.



Dallas Newlands with his red terminal weaners in mid-June

"Ten years ago our top hinds would have weighed 110 kg ... too small for a terminal system. So we set a target of 125 kg mature weight for our maternal line and bought red stags from Melior selected on BVs for 12 month liveweight and early calving. Any heavier and their growth would be stressed if we had a drought.

"In our terminal mob, we put 125 kg hinds to B11 terminals from Peel Forest and red terminals from Melior. Last season we got 100 per cent of males and females away by Christmas at an average of 58.2 kg."

Mating not fighting!

To reduce competition between stags and the risk of low conception rates

- Do not run mating mobs in adjacent paddocks
- Do not mix elk-wapiti and red terminal sires when mob mating
- Do not use two sires when mob mating – use three or more to break up the hierarchy. Alternatively, single-sire mate for two cycles, then box up the mobs for the third cycle
- Because roaring red stags tend to dominate elk-wapiti bulls, graze mating mobs with elk-wapiti sires well away from red stags.

They are at the greatest risk of dystocia and reproduction failure. They will also struggle to meet the lactational demands of their high growth progeny.

Hinds contribute 50% of the genetic make-up of their progeny, so select hinds for a terminal system that have sound constitutions and good BVs for CARLA and eye muscle area.

How many hinds should go to the terminal sire?

On farms that breed their own replacements, some of the hinds will not be needed for breeding replacements. Every farm is different.

To find out how many hinds you can safely put to the terminal sire, use the Mate Allocation Calculator, developed by Deer Select manager Sharon McIntyre under the P2P programme.

Go to <https://apps.deernz.org.nz/Mateallocation/>

Mating and gestation

Most farmers join their sires with their hinds in early March and remove them by 1 May or earlier to avoid prolonging fawning into the summer.

The average gestation length will vary depending on the genetic make-up of the sire:

- Red x red matings have an average 233 day gestation (eight months less eight days is an easy way to remember this).
- Elk-wapiti x red matings have a longer, 239 day (8-month) gestation. This means a 10 March mating can be expected to produce a fawn on or about 10 November.

Elk/red fawns are heavier at birth than red/red fawns, which compensates for the longer gestation.

For more information, see the 'Best practice mating management' *Deer Fact*.

Sire feeding and health

During the roar, stags/bulls lose their appetites and lose condition – some losing more condition than others.

In late April/early May, after mating, stag/bull appetites improve again, before falling away again with the onset of true winter in early June. Use this window to help your sires regain condition and (with care) become reacquainted with other stags/bulls. Feed them supplements that are high in energy and protein like deer nuts or grain, as well as high quality pasture, silage and/or lucerne.

During June and July it is virtually impossible to put condition back on adult stags/bulls, but they still need plenty of fuel. Feed quality baleage ad-lib, supplemented with 1.2 kg of grain a day – more if the weather is particularly wet and cold.

Once spring growth gets underway, cease supplementation. Lush spring pasture meets all the nutrition needs of the stag/bull.

Sire health

Adult deer are largely immune to internal parasites. This immunity breaks down in stags/bulls because of the demands of the roar.

Pre-rut drench sires with *Cervidae oral* (February/March) and post-rut (late April/early May). These drenches are essential for elk-wapiti sires.

Check your sires regularly during the roar. Replace them if their BCS drops below 2.5, or if they become footsore, lame, show other signs of ill-health, or fail to exhibit normal mating behaviour.

Hind feeding during pregnancy and lactation

The use of terminal sires is not a silver bullet. It's a whole farm system.

Hinds and their rapidly growing progeny must be provided with the feed they need. If the sire is at the upper end of the W12eBV table, this may mean providing up to 30% more quality feed at crucial periods than is needed for red x red maternal matings.

Failure to provide sufficient feed will not only sacrifice fawn growth rates, it may also mean hinds are in poor condition when they go to the stag/bull the next season. Delayed and lower conception rates are the likely result.

Consider the potential for producing more venison from a smaller number of well-fed hinds. Where feed supply is already a limiting factor on your farm, this is likely to be a more profitable option. Greenhouse gas emissions efficiency will also improve.

Diane Lowe

Co-owner with husband Peter and son Thomas
Lynnford Farm, Hinds, Canterbury

130 red-wapiti hinds crossbred hinds mated to elk-wapiti bulls

"We don't breed any replacements. Each year we buy 20 or so replacement red-wap cross hinds from Ross Carran in Te Anau. They're probably 150 kg as mature hinds.

"We get our elk-wapiti bulls from Donald and Leigh Whyte. We select meaty animals that had top growth rates as weaners – that's a must. We eyeball them for good temperament. The velvet they produce is a handy bonus.



"Our target is to have all our weaners sold at an average carcass weight of 70 kg before a new crop of fawns is on the ground. The best we have done is 68 kg, but it depends on the season. If the peak of the schedule is in September we may end up selling them a little lighter than we would like.

"On 1 May [2022] our weaners averaged 92 kg, with the heaviest 124.5 kg liveweight. The secret to great growth rates lies in pre- and post-weaning management and feeding. If weaners are well-fed and settled they never look back."



Chris Whyte, Deer Manager, Wakaepa Farms, Whitecliffs, Canterbury, with elk-cross terminal weaners on fodder beet in mid-June

"Eight years ago we struggled to get 40% of our venison weaners away in spring at 45 kg. Last spring [2021] nearly all our weaners made the cut – the stags averaged 58 kg and the hinds 54 kg.

"Most of our progress is due to better feeding. Clovers, plantain, chicory on our irrigated flats in autumn. We also grow red clover and lucerne. In the winter we feed swedes, fodder beet, baleage, ryecorn and some grass – the important thing is to give deer choice, they're browsers not grazers."

Pregnancy

Feed hind mobs during pregnancy so they maintain an average BCS of 3.5 (range 3.0-4.5) throughout. This is crucial in a terminal sire system.

From mid-August, the start of the third trimester, the feed requirements of hinds increase markedly. Because a terminal foetus is larger and growing more rapidly, the hind needs more high quality feed than it would if it was carrying a foetus from a maternal mating.

In the run-up to fawning, graze hinds on high legume content pastures with covers of at least 1800 kg DM/ha (5+ cm).

Consider running terminal and maternal hinds in separate mobs. This also allows the terminals to be preferentially fed before set-stocking for fawning.

Lactation

Hinds feeding terminal progeny produce more milk than hinds with maternal progeny. To enable them to do this, provide them with bigger volumes of quality feed.

Feed to maintain an average hind BCS of 3.0 or better. Ensure pasture covers don't fall below 1800 kg DM/ha (5 cm) and that at least 60% of pasture is green leaf. If this is not possible, feed high-energy supplements such as grain.

Pre-rut weaning is normally advised in a terminal system, to enable hinds to regain condition for mating and early



Photo: Lynda Gray

Feed hinds well during lactation and be rewarded. A red hind with its elk-wapiti cross fawn in late summer at Paul & Sharon Waller's Lumsden farm

conception. Bear in mind, if weaning early, that elk-wapiti crossbred fawns are about a week younger than reds at the same weaning date.

Conservative target liveweights for terminal weaners at 1 March:

- 70+ kg males
- 65+ kg females

Some farms are achieving better liveweights than this, but much depends on what's possible on an individual farm, given climate, soil type and altitude.

Post-weaning management

Make the most of the high growth rate potential of weaners in autumn. Control internal parasites and continue to provide quality feed.

In mixed maternal/terminal mobs, always feed to the requirements of the terminals. If you feed them as maternals they will perform as maternals.

Note also that elk-wapiti and their crosses have a better ability than straight reds to grow over winter. But this is only the case if sufficient quality feed is available.

More >>

Deer Facts

Refer to your *Deer Fact* ring binder or go to >> https://bit.ly/NZ_DeerFacts

The CARLA breeding value

Best practice mating management

Best practice management of pregnant hinds

Feeding hinds for maximum fawn growth

Growing weaners for the spring venison market

Deer Select Sire BV summaries

Go to >> <https://bit.ly/SireBVs>



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



This *Deer Fact* was produced by Deer Industry New Zealand (DINZ) as part of the Passion2Profit (P2P) strategy. P2P is a Primary Growth Partnership joint venture between DINZ and the Ministry for Primary Industries.

Each *Deer Fact* sheet has been checked for technical accuracy, but DINZ cannot take responsibility for decisions based on their content. If in doubt, seek professional advice.