

# Working with the seasons to maximise deer profit

## The biology of deer growth

Deer have a seasonal growth cycle triggered by changes in day-length. They have lower feed intake and low liveweight (LW) gain in winter (shorter day-length) and high intake and potentially high LW gain in spring and summer (increased day-length).

Slow winter growth is a function of both lower appetite and greater need for heat regulation. It means deer use less energy foraging; an advantage that evolved in the long, cold winters of the northern hemisphere.

Deer reduce their energy intake and their digestive organs shrink during winter (see ref below\*). To help compensate for reduced feed availability, they use their fat reserves for fuel and – along with other metabolic changes – more efficiently absorb proteins from the forage they eat.

## Velvet

The antler growth cycle starts in spring and is regulated by day-length and nutrition. The entire growth phase is 120 days, with harvesting ideally at around 60-70 days.

Farmers aiming for top velvet production need stags with the genetic potential for high velvet weights. These animals must be well-grown as weaners. A target for 9-month old red weaner stags is 78 kg LW going into spring (1 August).

Rising yearling stags (NZ reds) should have growth rates of 300 grams/head/day over their first spring/summer, if fed 4 kg of quality pasture dry matter/h/d (10 cm high at least). They should weigh at least 100 kg LW as yearlings.

Spring pasture is typically a cost-effective feed for velvet production for mixed age stags. Nutrition in the four weeks starting early September, before the first button casting, is crucial for maximum velvet yields. Priority feeding at this time will give the best return on feed for mixed age stags. Underfeeding at this time delays casting and reduces velvet yields by up to 20%.

## Key points

- In spring, deer appetites increase in response to the lengthening of daylight hours. In late autumn, the reverse happens and appetites decline.
- The best time to capture the seasonal growth potential of deer is from spring to autumn.
- Winter is not usually a cost-effective time to be trying to add weight to hinds, finishing stock or young deer.
- The spring flush of high-protein pasture normally provides deer with enough nutrition for them to grow rapidly. It's also critical for velvet production.
- To maximise feed intake and liveweight gain from mid-summer to autumn in young deer and hinds with fawns, especially in summer-dry areas, provide them with forage crops or legume/herb pastures.

## The value of supplements?

Feeding stags high value/high cost supplements will not necessarily increase velvet yields in spring if stags have an adequate supply of quality pasture, which has its highest nutritive value in spring.

The feeding of high protein and energy rations to stags at this time has become popular with farmers, but there is little scientific evidence to support this practice.

Over winter, stags do not have a high capacity for growth but maintenance requirements are still high because of weight loss over the autumn rut. It is cost-effective to feed stags well in the month following the rut. Failure to do so may result in a 10% reduction in velvet yield the following spring.

See *Deer Fact: Feeding for optimal velvet production*.



Photo: Phil Stewart

*Fodder beet is a high energy feed that can be a cost-effective source of winter nutrition. Luxury feeding of supplements is not normally profitable with most classes of deer during winter, because of reduced appetites*

**Weaners**

Weaners are not as sensitive to day-length as older deer, so have the potential to grow well in early autumn.

There are huge differences in weaner growth rates between farms in autumn (from 0-230 g/head/day). The main factors driving this are feed quality (MJ ME/kg DM and crude protein) and quantity (kg DM).

Feed weaners red clover, white clover, plantain, high quality grass or chicory in autumn to provide the minimum 11.5 megajoules of metabolisable energy (MJME) per kg DM they need. Although these forages may be expensive to establish, the extra weight gain has been shown to make the investment worthwhile.

As days shorten in late autumn, weaner growth potential decreases. If weaners have not been grown to their potential in the first half of autumn, they won't be able to catch up in the second half.

**Winter**

In June and July the potential for weaner growth is at its lowest. Depending on the pasture allowance, the residual, the weight of weaners going into winter and genetics, growth rates will range from 40-120 g/d in reds and up to 150 g/d in elk crossbreds. Larger weaners are more efficient at utilising winter feed due to their lower heat loss.

At feed allowances of 4-5 kg DM/hd/d you can expect LW gains of from 80-100 g/d. This allowance can be met with pasture and additional supplements such as hay, silage or baleage (ME 10.5) if required. (Increase allowances where utilisation is very low, such as in wet and muddy conditions).

Research has shown there is a low LW gain response to high levels of winter feeding, such as with costly supplements or crops. To achieve high winter growth rates the allowance has to be very high and of high quality (at least 8 kg DM/hd/d or a post-grazing height of 10-12 cm). In practice this is difficult to achieve and may compromise other stock.

Crops such as kale, swedes or fodder beet can provide high volumes of maintenance feed from a small area and are suitable for weaners.

Farmers who have successfully wintered young stock on fodder beet report a clear 60-day window of profitable daily gain in winter followed by a slump in feed intakes. The reasons for this are unclear. For more, search 'fodder beet' on [www.deernz.org](http://www.deernz.org)

**Spring**

Once quality pasture arrives in spring, growth rates are relatively consistent at 260-320 g/hd/d regardless of winter

liveweight. This means spring slaughter weights and dates can be predicted based on liveweights at the end of autumn and end of winter.

See *Deer Fact*: Growing weaners faster with better autumn feeding.

**Hinds**

Hinds should have an average body condition score (BCS) of 3.5 (range 2.5-4.5 for individual animals) during winter. The best time to get them in condition is before or during the rut, as they will gain little weight or condition in winter regardless of feeding levels.

In spring – the last third of pregnancy – hind appetites increase rapidly. Increase the quantity and quality of rations in the first week of August and each month thereafter.

Hinds with a BCS of 3.5 or more at fawning are better able to maintain lactation performance during dry summers. See *Deer Fact*: Best practice management of pregnant hinds.

**Preferential feeding of deer**

Critical feeding periods for common deer farming systems												
Selected stock class	Autumn			Winter			Spring			Summer		
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Finishing weaners												
R2 breeding hinds												
MA hinds												
MA stags												
*Actual priority will be determined by the individual farm system												

When pasture growth is slow during adverse events like droughts or floods, there will be insufficient feed for all classes of stock. Options are to supplementary feed, sell stock or reduce feed levels to some stock to free up feed for others. Understanding seasonality helps with these decisions.

For example, in January velvetting stags would be a lower priority class than hinds and fawns which have high potential to return profitable growth for each kg of feed. Post-rut (late April through May) stags would be a high priority for at least a month.

**More >>**

<http://deernz.org/deerhub/feeding>

*Deer Fact*: Growing weaners faster with better autumn feeding

*Deer Fact*: Feeding for optimal velvet production

*Deer Fact*: Feeding hinds for maximum fawn growth

\**American Journal of Physiology*, 2015: Contrary seasonal changes of rates of nutrient uptake, organ mass, and voluntary food intake in red deer



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)



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.