
Maternal size

Mark Young

Beef cows and ewes can be too big. This was made clear to me at recent meetings with beef and sheep farmers. However some breeders are reluctant to compromise improvement in the growth rate of young stock in order to limit adult size of cows and ewes. *Is this a wise position to take?*

We know cows can damage pasture and soils in winter when ground is soft. On hill country, where soils can be shallower and slips a problem, many farmers do not want cows over a certain size.

With sheep, it is more to do with handling of stock. Whether working with lambs or ewes up a race, or the strain of dagging and shearing ewes and young stock. One ram breeder summed it up well by saying “How much value do you place on having a good set of knees when you are 60?”. Shearers regularly tell us sheep are getting bigger.

It is not just genetics. Compared to 25-30 years ago, grazing management is better, so stock are better fed in terms of both quantity and quality. But genetic information clearly shows young animals are getting heavier at a given age and science tells us this means they are heavier as adults. Science also tells us larger adult size means higher maintenance feed costs per animal.

Some people feel uneasy about using selection indexes where genetic merit for early liveweight in growing animals has a positive weighting while merit for adult size has a negative weighting e.g. SIL Dual Purpose indexes for growth.

At first glance this might look like we want to reduce adult size while increasing growth rate in young stock. This is not the case. The aim is to limit increases in adult size while promoting growth of young animals, thereby increasing profit. SIL predicts that selection using its Dual Purpose (DP) indexes will lead to heavier lambs at any given age together with relatively small increases in ewe size. So despite a negative weighting on ewe size, it will still increase due to the pressure on lamb growth, just not as much as if we ignored it!

This happens because there are strong positive relationships between liveweights at different ages i.e. “the genes that make you big, make you big, make you big”. In other words, many growth genes act at all stages of growth.

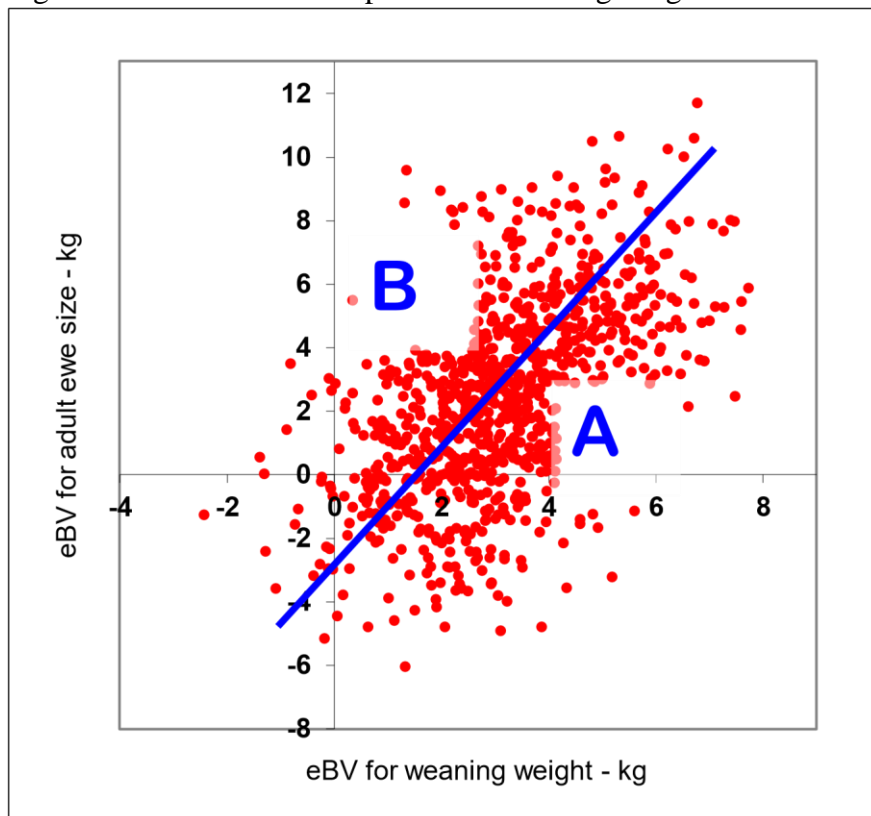
This is best seen in the figure using data from SIL-ACE which shows genetic variation in weaning weight related to that in adult size. The blue line is the general trend – animals with higher ratings for weaning weight tend to have higher ratings for adult size.

We are looking for animals that buck that trend i.e. for growth we want fast growing animals with moderate adult size. That will mean increased profit and efficiency because they have higher growth rates but lower adult size than you expect for those growth rates.

Animals below the trend line (zone “A”) have lower adult size eBV than expected for their weaning weight eBV given the trend. Those above the line in zone “B” have higher adult size eBV than expected for their weaning weight eBV given the trend. SIL indexes favour animals in zone A over those in zone B. They are more profitable or efficient, other things being equal.

To improve farm profit and efficiency, breeders must measure adult liveweight in beef cows and ewe breeds, so we can assess genetic merit accurately and weight that appropriately in indexes focused on profit. Where there are absolute limits to adult size, we may need to define maximums for breeding programmes to work up to.

Figure – Genetic relationship between weaning weight and adult size in sheep



We cannot ignore the effects of selection for growth in young animals on adult size in ewes and cows. Be careful when selecting rams or bulls to breed replacement ewes and cows from. Weigh up their merit for growth traits against that for adult size and relate this to your ideas about adult size in your ewe flock or beef cow herd.

You can give B+LNZ Genetics or SIL your thoughts on this topic by email to silhelp@sil.co.nz or by leaving a phone message on 0800-silhelp (0800 745 435).

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