

The higher ground



GENE TALK

Mark Young

Recent articles in the rural press question an all out pursuit of productivity in genetic improvement programmes, where that requires high inputs or a high level of control to achieve.

The view was that sheep and beef cattle must be more robust to reliably deliver profit when we have less control over the farm system and that high productivity compromises this.

Our sheep and beef farms differ from those for chickens and pigs where there is more control over environment and feeding. Dairy cows are somewhere in between.

Sheep and beef farms are mostly in harder environments where it is less easy or impossible to control water supply for pasture growth, while hill topography makes it harder to harvest feed that is more variable in quality and quantity.

Grazing management on hills is less amenable to control through regular movement to new paddocks or break fencing. Added to this, it is less easy to bring animals in for routine tasks such as animal health treatment.

In this tougher, less controllable environment, some people argue they don't want highly productive animals that are less able to cope when things get tough.

Animal production is affected by feeding level. But processes like pregnancy and lactation are somewhat parasitic in that an animal will keep doing them even when feed is limiting.

Cows or ewes will use their own body reserves to keep the calf or lamb(s) growing.

So if feed is short a cow or ewe might deplete her own body reserves so much it impacts on next year's production.

Another issue is fitting the different physiological states into the calendar year and timing them to best fit feed supply.

Nature helps insofar as sheep and

cattle reproduction naturally peaks in the spring when feed supply is best.

Sheep differ though in that reproduction is strongly tied to this natural peak and so is hard to shift when management allows feed supply to be manipulated for an earlier lambing.

By contrast, cattle can reproduce at other times of the year but it is hard to "shoehorn" pregnancy and lactation into 365 days. Cows must always be pregnant, lactating or both to maintain this cycle. Sheep have the "luxury" of a dry period after weaning and before mating to aid recovery after a poor season.

Beef+Lamb New Zealand Economic Service data clearly show we have lifted productivity per ewe by more than 80% over the last 20-30 years, a massive gain. A big part is due to genetic improvement.

Parallel progress in grazing management is another part. We now produce a similar weight of lamb but from less than half the number of ewes we had 20-30 years ago.

Productivity is not the main goal of existing standard industry breeding objectives – profit is. But because product returns usually outweigh costs of production, increased productivity is the outcome of selection using these objectives.

We need productivity – we just need to consider what is *optimum productivity* for different situations. A key question to address is whether genetic potential for high productivity is a liability when feed is limiting or unreliable.

The questions we must ask are:

- Do we have all traits affecting profit in the breeding objective?
- Do we need different breeding objectives for different farm types?

We must aim for long-term, sustained profit with all-important traits included in our breeding objectives.

Two key traits to consider are longevity and body condition score in terms of how they interact with other production traits to define ewes and cows that can sustain productivity in the variable environment we farm in.

The importance of hill country to NZ sheep and beef production is well accepted.

Here profit is closely tied to ewe and cow performance so we need a strong



Higher costs

One simple effect of farming on hills is that animals have to work harder to harvest feed over greater vertical distances – it takes four times more energy to move a vertical metre than a horizontal metre – therefore animals on hills have higher maintenance costs!

focus on maternal attributes for hill country. It is plausible that under harder conditions, animals that have less extreme productivity might sustain production better in the long term.

But we must not set our sights too low and get sustained but modest productivity. Bringing more traits into the objective is critical as is considering performance optimums for some key traits.

Improving productivity is not just about genetics. We need to consider the impact improved productivity potential will have on other aspects of the farming system and alter our management to suit.

Debate about breeding objectives is valuable. A challenge is the lack of information for some key traits and some situations.

We need more and better information collected to best define breeding objectives for more challenging systems such as hill country.

You can give B+LNZ 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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