Genetic Options Can Help Battle to Reduce Flystrike

Internal parasite are the biggest production threat to the New Zealand Sheep industry and flystrike is perhaps our biggest animal welfare issue. Beef and Lamb calculated the financial cost of flystrike at $40-50m in 1999, with an estimated 3-5% of the NZ flock affected annually (Health and Bishop 1995). Farmers have put their trust in chemical intervention mainly as a preventative application and there has been little else added to the tool box to reduce farmers reliance on chemical treatments.

Selection for flystrike alone is highly environmentally dependent. It has a low heritability, especially when the incidence is low, at 0.18 h2 (Brandsma, Blain 1997). Research identified by Natalie Pickering in her 2013 PhD thesis showed a strong positive correlation in Romney based flocks between flystrike and dag score of 0.71. (Heath and Bishop,1995) found 81% of flystrike was in the breech area and only 9 % on the body
Scobie et al (2007,2008) found breech bareness was heritable at 0.33to 0.35 and reduced flystrike.
Wool characteristics such as fibre diameter, colour and fleece rot also contribute to a sheep's susceptibility to flystrike as does environmental factors such as humidity However, selection for low dag scores was found to be the best indirect prediction of flystrike, in dual purpose sheep.

The introduction of anthelmintic's back in the 1960's took the national flock from a higher level of natural tolerance, albeit at a lower level of production, to our current situation where dependence on regular drenching to maintain production in lambs and ewes is the common practise.

The same could be said for the treatment of flystrike with the blanket treatment of whole flocks on at least an annual basis, favouring the animals with no natural resistance. The discovery of the Aussie green fly in Northland in 1988 and its move throughout New Zealand changed the dynamics of flystrike with clean sheep also getting struck. Farmers moved to regular dipping to combat the green fly challenge. This strategy has not changed since then, and the question is now, do we have flocks that quite possibly would all get struck if they weren't treated.

Chemical intervention favours the weakest, they get protected, perform well and enter the breeding flock to breed more susceptible progeny. However, with increasing resistance to the Macrocyclic Lactones (MLs) and some resistance detected in one of

the two Insect Growth Regulator families (IGRs), total reliance on just two chemical families is clearly not a sustainable option for farmers in the medium to long term. Independent research on the current level of chemical resistance has not been done; NZ's entomology unit was disbanded almost 20 years ago

Management strategies such as shearing, and crutching do give short term control against flystrike but long term, we still need breeding strategies that identify resistant animals. NZ sheep breeders have focussed on performance traits with only a handful looking at the cost of production. A striking example of this is only 33 flocks out of 500 plus, in NZ objectively selecting for dag score, that are also genetically linked on SIL. The single biggest selection tool for combating flystrike and less than 7% of NZ breeders are doing this.

Stud breeders need to take the leadership role with breeding sheep with at least some resistance to flystrike. At the very minimum, breeders should be selecting for dag score. If they can do this with minimal drenching this will speed up their genetic progress. The lifetime progeny from one ram, not selecting against dags, can generate over $6000 of crutching costs to their farming clients. Breeders are passing these costs onto their clients

This best opportunity to select for flystrike tolerance or resistance is to do this in an environment where animals aren't blanket treated on a regular basis. On our property we have culled susceptible sheep for 15 years and identified susceptible family lines including one sire at the start which had 68% of all fly struck stud lambs that year

We are down to 0-1% flystrike in stud sire lines but two North Island sire's which were progeny tested this past season had 20 & 24% of their lambs struck. Had we treated and dagged all these lambs regularly we would not have gathered this information about their susceptibility to fly

In a year where one Northern Southland farmer lost lambs to a Haemonchus challenge in May, flystrike was also prevalent in the deep south from December into May. We had 0.8% of full wool four tooth ewes, mainly body struck by the Aussie green fly and treated from December to March. There are enough flies to strike every sheep in the country but as in nature, flies only take out the weak or the susceptible ones. In our flock 99% showed resistance under a 4-month challenge period with no preventative treatments.

If stud breeders are serious about breeding some resistance into their flock the best genetic gains require not blanket treating ewe and ram lamb replacements for flystrike

and then treating and culling any infected lambs. This will leave you with a more resistant flock in the long term. There is a short-term cost with close monitoring of stock but to make progress you need to identify the winners and get rid of the losers.

Commercial farmers should at least be focussing on dag score to reduce flystrike in their flock. With contract crutching costing over $2/head there are many reasons to cull your most daggy replacements before they enter the flock. A daggy ewe lamb will generally stay daggy and may need up to 14 crutching's in her lifetime. Your stud breeder should also be selecting for dag score otherwise your results will be disappointing. Farmers can also choose to challenge their ewe hogget replacements and cull those which get struck. The short-term cost of monitoring will improve your flock's resistance to flystrike and reduce the need for chemical intervention in the medium to long term.

We need to use this time wisely before increasing chemical resistance, consumer concerns about residues in meat and wool plus animal welfare concerns place even more constraints on how we farm. Selection for a level of resistance to flystrike is a long-term game just like for worm resistance, but farmers need to at least start the race. With even more climatic extremes this issue will only continue to cost farmers even more time and money each and every year.

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