

Merino Sheep can be bred for resistance to breech strike

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ABSTRACT

The use of surgical mulesing to prevent breech strike in Merino Sheep has become a high profile issue with parts of the community wanting it banned. The industry would like it phased out by 2010. The traits that predispose sheep to fly strike are variable and heritable. Breeding sheep for resistance to breech strike is possible and over time could be used to phase out mulesing.

INTRODUCTION

Considerable efforts were directed in the 1940s and early 1950s at breeding sheep that are resistant to breech strike because it accounts for up to 90% of all strikes in unmulesed sheep (1). However, with the advent of effective insecticides and the acceptance of the 'mules operation', research efforts were mainly directed at non-genetic sheep husbandry practices. Today the mulesing operation has become an integral part of most sheep production systems to prevent breech strike. Recently, due to a buildup of adverse community reaction to the surgical mulesing operation, the Sheep Industry has indicated that it will be phased out by 2010. Given the high profile of this issue sheep farmers are now very concerned whether this can be done. As breeding offers the only permanent long term solution, this paper focuses on whether it is possible to breed Merino sheep to become more resistant to breech strike.

REVIEW

Breech strike is a major concern to all Merino sheep farmers. An enormous amount of time and effort is applied on preventative activities such as crutching, jetting, mulesing. Research shows that moisture and temperature are the key ingredients for the development of breech strike in Merino sheep. Moisture can come from rain, urine, diarrhoea (scouring) or blood and other exudates from wounds. Moisture and temperature create favourable conditions for bacterial to become prolific on the skin of sheep resulting in a potent olfactory attractant for the gravid female fly and a nutrient medium for the early stage larvae. In addition sheep with more wrinkles and sheep with high wool coverage are more susceptible than sheep with less wool on the points. Other traits such as wool length, suint and wax content, fibre diameter and coefficient of variation of fibre diameter may also contribute to making sheep more susceptible to flystrike.

To successfully breed sheep that are resistant to breech strike there are three things to consider. Firstly the trait must be measurable, secondly there must be variation in the trait and thirdly the trait must be heritable. The response to selection is highest if a trait is selected for directly. However, flystrike occurs sporadically and nearly all Merinos are mulesed, crutched or jetted and these treatments protect animals from becoming infected. Therefore to identify sheep that are genetically resistant to an organism the sheep must be exposed to the organism in a natural state to allow the organism to challenge the sheep. However, the undesirable symptoms that this trait causes that happens sporadically does not always make this possible. The alternative is to focus on the predisposing traits that can make sheep less susceptible to breech strike.

Table 1 shows that all the currently known predisposing traits show genetic variation. More importantly, it shows that there is also a large amount of variation between animals for these traits. The only area where there is a shortage of information is for the woolfree skin area around the anus that prevents the formation of dags. However, recent photos in the media have clearly shown that there is variation between sheep for this trait. James (pers. comm.) on a small number of lambs, also showed that there was genetic variation for wool free area at birth, marking and post mulesing in Merino lambs. The variation in this trait implies that it should be possible to increase the wool free area in animals through selection.

Wrinkles have a dramatic effect on the susceptibility of sheep to breech strike. Seddon as quoted by Belscher (1953) categorised 1000 unmulesed Merino ewes into plain (A-type), intermediate (B-type) and wrinkled (C-type) type sheep according to the amount of wrinkles. These ewes were managed as

a single group and fly strikes were recorded over a four year period. Figure 1 shows how many times each type of sheep got fly strike. The plain-bodied ewes were much less susceptible to flystrike whereas the wrinkled type ewes were highly susceptible to flystrike. This shows that breeding plain-bodied animals will reduce flystrike.

Table 1. The variation and heritability of the predisposing traits to breech and flystrike.

| Trait | Variation (%) | Heritability | Reference |
|---------------------------------|---------------|--------------|---------------------|
| Wrinkles (neck, side, breech) | 25 – 50 | 0.20 – 0.80 | (2) |
| Faecal worm egg counts | 120 – 250 | 0.08 – 0.55 | (3) |
| Faecal consistency | 20 – 40 | 0.08 – 0.28 | (3) |
| Dags | 100 – 150 | 0.04 – 0.38 | (3) |
| Face cover | 30 | 0.08 – 0.57 | (2) |
| Wool on legs | 40 | 0.04 – 0.53 | (2) |
| Wool free skin area around anus | ? | 0.08 – 0.37 | James (pers. comm.) |
| Yellowness of wool | 10 – 30 | 0.10 – 0.40 | (2) |
| Wool wax | 43 | 0.63 | (4) |
| Suint | 50 | 0.58 | (4) |

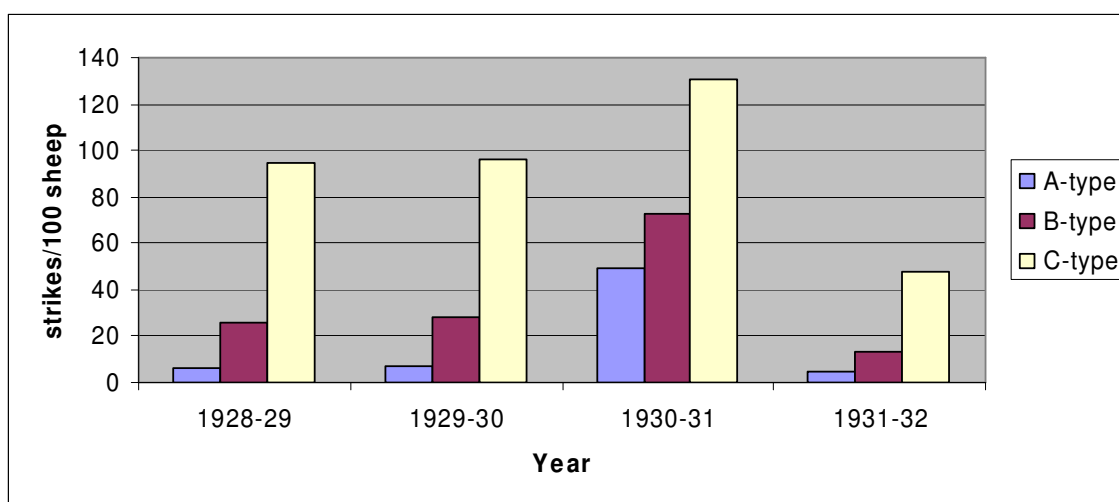


Figure 1. Incidence of flystrike in different types of Merino ewes (Belscher 1953).

CONCLUSION

The traits that predispose sheep to breech strike and that can be changed genetically are, wrinkles, clean area around the anus and vagina, resistance to worms, susceptible to diarrhoea (dags) and amount of suint in the fleece. These traits are all heritable and are variable between animals which makes it possible to breed sheep that are resistant to flystrike.

KEY WORDS

Mulesing, breeding, breech strike

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