Ewe Stayability

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SIL Technical Note

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Subject: Stayability
Relates to: Selection for productive and long-lived ewes
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Summary

- A research breeding value is available for Stayability (STAY rBV)

- Currently based on ewe age when data was last recorded, given the ewe entered the flock as a two-tooth

- Stayability breeding value (STAY rBV) is expressed as extra years animals will stay in the flock e.g. a STAY rBV of +0.3 is equivalent to an extra 0.3 of a year

- Future – SIL intends to move to a more commercial farm focused definition of stayability using exit fates to distinguish between ewes culled for commercial reasons and sound ewes culled for other reasons

Background

The ideal ewe is productive and long-lived. After being chosen to join the breeding flock as a two tooth ewe, she completes 4-5 or more lambing events depending on the farm type, before being sold as an aged ewe. In reality, each year some younger ewes are culled for commercial reasons (physical soundness) or lack of current (e.g. dry) or predicted lower future production (e.g. wet/dries etc.). High losses mean more replacements must be reared which is a cost to the system.

A measure of this is termed "stayability" and its intended to reflect the ability of the ewe to stay productive in a commercial flock by avoiding natural attrition and culling. Stayability in commercial flocks may differ from ram breeder flocks. In commercial flocks decisions are based predominantly on soundness and limited knowledge of performance. For ram breeder flocks ewes may leave based on additional knowledge of genetic merit and pedigree which can impact on culling decisions. Ideally we want to select for "commercial stayability". To do this we need information on why ewes are lost from the flock. Currently such detailed data is lacking for many recorded flocks. However, a good first attempt assesses "simple stayability" to identify genetic lines that stay in the ewe flock longer.

Stayability current definition

Simple stayability is currently based on whether a ewe remains in the flock to a particular age (3-6 years) given she entered the flock as a two tooth. Age at exit is based on the age at last record on the ewe– e.g. a record of live weight at mating, body condition score, pregnancy scanning record, dam fate or number of lambs born.

The advantage of this definition of stayability is that it can be used across all flocks and all ewes within a flock are informative, including the young ones. Analysis of SIL data indicates that stayability defined in this way has a heritability of 7 to 9%, and has a positive genetic association with NLB (40%) and early growth (23%). However the disadvantage of this approach is that it does not discriminate on why a ewe left the flock.

Future Stayability evaluation

In future, SIL intends to move to using exit fate codes to distinguish between ewes that have left the flock for commercial culling reasons and those that have left due to culling of physically sound ewes based on knowledge of performance or pedigree. This will allow more precise estimates of genetic merit for "commercial farm stayability".

Exit fates can be recorded at any time and in combination with recording of other traits. Exit fates can be recorded on all ages and sex groups, but stayability only uses information for those ewes present in the flock as two tooths. Therefore SIL recommends breeders record exit fate codes (EXITFATE) including the date of culling for all ewes and rams leaving the stud flock.

Exit fates are grouped into three categories:

- Commercial culls (C) – culling of sheep considered unsound or with poor current or future performance - e.g. feet/teeth/health issues, dries, or wet dries. Any commercial farmer would be able to cull on these reasons.

- Knowledge culls (K) – culling of sound sheep for reasons you can only know for fully recorded stud sheep – e.g. index or breeding values, sire lines

- Unknown (U) – reason for exiting the stud flock is unknown.

Optional - If desired, a more detailed exit fate code, specifying the main reason for culling, can be recorded under each category e.g. Commercial cull P1 – failed to get pregnant. It may be possible at some future date to look into the genetics of particular culling reasons – e.g. bearings or feet problems.

Reporting Stayability BVs

Stayability breeding value (STAY rBV) is expressed as extra years a ewe (or a ram's progeny) will stay in the flock. A positive BV indicates an increased likelihood of being retained in the flock while a negative BV indicates a decreased likelihood. For example a STAY rBV of 0.5 is equivalent to an extra half year.

Reporting STAY rBV accuracy can be helpful in determining how much information was available for a particular animal on which the BV was estimated. Stayability BVs will be more accurate on older sires than younger sires as there is more information available on progeny as well as related animals.

Stayability and Indexes

As a research breeding value[1] (rBV), stayability is currently not included in SIL indexes. SIL will develop a stayability sub-index which indicates the economic value of the trait in a maternal (DP) sheep flock. The value comes from a reduction in the number of replacements required. That means more pressure can be put on selection of replacements and less feed is needed for animals not producing a lamb.

Need more information?

Contact your SIL bureau or call 0800-745-435 (0800-SIL-HELP).

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[1] A SIL research BV (rBV) is based on preliminary research. These are released for use so breeders can provide feedback to SIL on how well they identify good or poor lines of sheep for the trait. Typically they do not have an economic weighting so there is not a sub-index for the trait. Once further work has verified the BV is behaving as expected, it is re-designated as a standard eBV &/or a BV of another type.

EXIT FATE codes

Animals leaving a flock can be coded with just the high level Code Type (C,K or U letter) or with a sub-code (letter plus digit). You can code animals for more than one sub-code e.g. H1L3 or P2L4L6

General Category	Code Type	EXITFATE Code	Explanation
Commercial reasons	C	C	Reasons animals leave a commercial flock
Knowledge reasons	K	K	Culling reasons based on breeder knowledge OR reasons that should not affect the stayability trait itself
Missing	U	U	Unknown - animal missing
Died	C	D1	Died unknown reason - not at lambing
	C	D2	Died at lambing
	C	D3	Died due to pregnancy related disease e.g. pregnancy toxemia
	C	D4	Died due to other known disease - **specify in remark trait 'EXITREM'**
Pregnancy & lambing	C	P1	Culled as failed to get pregnant
	C	P2	Culled as mated late (e.g. to follow-up sire)
	C	P3	Culled due to lambing but no lambs recorded (Wet Dry)
	C	P4	Culled due to bearing problem
	C	P5	Culled due to assisted birth / assisted mothering of own lambs
Health & physical condition	C	H1	Culled due to poor condition
	C	H2	Culled due to excess (fat) condition
	C	H3	Culled due to disease - non-fatal e.g. footrot, FE
	C	H4	Culled due to teeth or mouth breakdown
	C	H5	Culled due to feet or leg breakdown
	C	H6	Culled due to eye problem
	C	H7	Culled due to udder problem
	C	H8	Culled due testicle problems in rams
	C	H9	Culled due to other reason - **specify in remark trait 'EXITREM'**
Abortion	C	A1	Culled due to being <u>**one of a few ewes aborting**</u> (no abortion storm)
	K	A2	Culled due to being <u>**one of many ewes aborting**</u> (an abortion storm)
Lamb production	K	L1	Culled as lambs born dead
	K	L2	Culled as poor mother (at lambing) / low maternal survival
	K	L3	Culled due to low number of lambs over 2 or more lambings
	K	L4	Culled due to lamb losses
	K	L5	Culled due to litter size at <u>most recent lambing only,</u> incl scanning
	K	L6	Culled due to low total weight of lambs weaned
Misadventure	K	M1	Died due to misadventure e.g. smothered in yards, run over
	K	M2	Culled due to misadventure e.g. shearing injury
Physical faults	K	X1	Culled due to lambs born with obvious fault
	K	X2	Culled due to wool problem in ewe e.g. break or quality, black spots
	K	X3	Culled due to faults seen in other relatives
	K	X4	Culled due to breed type fault: pink noses, white hooves, horns, scurs
Genetic merit	K	G1	Culled due to animals own BVs or indexes
	K	G2	Culled due to BV or index of relative e.g. sire
	K	G3	Culled due to own gene test result
Structure of flock	K	S1	Culled for age - flock policy
	K	S2	Culled when flock size was reduced i.e. greater than normal culling
	K	S3	Sold for stud use
	K	S4	Sold for commercial use