

7.7 Pathway Three: Genetic Selection

General Information

1. This pathway is only available to sheep; it is not available to goats.
2. Advise the producer that at the current time this pathway to certification is not recognized by the USDA, although this situation may change in the near future.
3. All requirements detailed in [7.4 Procedures Common to All Pathways](#) are applicable to flocks participating in this pathway.

*Assist Producer
in Pathway
Choice*

4. The accredited veterinarian is advised to assist the producer in the decision whether to only genotype rams and pursue selective breeding for resistance using 171RR rams exclusively, whether to genotype all breeding stock to access the 171R available in both the rams and the ewes, or whether they use genetic selection for scrapie resistance at all. This may be an iterative process of testing and decision making. The producer may undertake to test only breeding rams at first. With these results it may be possible to determine if there is a sufficient base of genetic resistance to scrapie to start a breeding program for scrapie resistance without substantial loss of other production traits using only 171RR rams. If there is an insufficient base of genetic resistance in the ram population, the producer may undertake to test the rest of the breeding flock. These results may then be reviewed to determine if there is a sufficient base of genetic resistance across the ewes and rams to breed for resistance to scrapie without substantial loss of other production traits.

*Genotype
Laboratory
Testing*

5. A veterinarian accredited to deliver the SFCP must supervise the collection of appropriate samples for genetic testing ([7.9-Appendix 1B](#)). The samples must be genotyped at a laboratory recognized by the CFIA for such purposes ([7.9-Appendix 1D](#)). Samples from 171RR rams must have the genotype confirmed by a second laboratory (only one of the two laboratories has to be recognized by the CFIA for genotype testing). The cost of this verification may be minimized by requesting the first laboratory to forward ONLY the extracted DNA to the second lab.

Whole Flock Approach - Application

6. When scrapie genetic testing results document that all breeding animals are either 171RR or 171QR, the owner must submit an application for enrollment into Level A of the SFCP, with all documentation detailed in [7.4 Procedures Common to All Pathways](#).
7. Compliance with all procedures documented in section [7.4 Procedures Common to All Pathways](#) is required upon acceptance into the program.

Whole Flock Approach - Acquisitions

8. Natural increases (home grown replacements): Lambs born from a mating involving at least one 171RR parent may be kept and used as breeding stock without requiring a genotype test.
9. Natural increases (home grown replacements): Lambs born from a mating not involving at least one 171RR parent must be genotyped if to be retained as breeding stock. Only 171RR or 171QR animals may be retained as breeding stock. Animals from non RR matings that are not genotyped must be removed from the flock by 12 months of age. If one of these animals is accidentally bred and lambs on the premises, the flock status will be suspended pending investigation.
10. Acquired replacement breeding stock (purchases/loans): Newly acquired breeding stock must be genotyped as 171RR or 171QR by a laboratory recognized by the CFIA for that purpose ([7.9-Appendix 1D](#)). Semen must be sourced from a ram genotyped as 171RR or 171QR by a laboratory recognized by the CFIA for that purpose ([7.9-Appendix 1D](#)).

Whole Flock Approach - Advancement

11. After 12 months at Level A, the producer may apply to advance to the Certified Level. Once a flock has reached the Certified Level, it maintains this level provided that the applicable requirements continue to be met.

Rams Only Approach - Preapplication

12. Following the producer's decision to pursue the rams only approach to selection for genetic resistance to scrapie, it will probably take a number of years of ram testing, selection, breeding and culling to assemble an entire flock that can be documented to be offspring from resistant rams. Through this period, the accredited veterinarian's role will be limited to sampling of the rams for genotyping.
13. Once the producer can document through breeding records that all remaining animals are offspring of a ram genotyped 171RR, the owner must submit an application for enrollment into level A of the SFCP, with all documentation detailed in [7.4 Procedures Common to All Pathways](#).
14. Compliance with all procedures documented in [7.4 Procedures Common to All Pathways](#) is required upon acceptance into the program.

Rams Only Approach - Acquisitions

15. Acquired replacement breeding stock (purchases/loans): Newly acquired breeding rams must be genotyped as 171RR by a laboratory recognized by the CFIA for that purpose ([7.9-Appendix 1D](#)). Semen must be sourced from a ram genotyped as 171RR by a laboratory recognized by the CFIA for that purpose ([7.9-Appendix 1D](#)). Purchased breeding ewes or embryos must be genotyped as 171RR or 171QR by a laboratory recognized by the CFIA for that purpose ([7.9-Appendix 1D](#)).

Rams Only Approach - Advancement

16. After 12 months at Level A, the producer may apply to advance to the Certified Level. Once a flock has reached the Certified Level, it maintains this level provided that the applicable requirements continue to be met.