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Federal Research Institute for Animal Health

Classical Scrapie in Icelandic Sheep

Identifying Risks and Protective Factors

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Introduction

Classical Scrapie is a fatal neurodegenerative disease affecting sheep, with a huge impact on economic sheep farming and animal welfare. Iceland has implemented extensive control measures to eradicate the disease, but outbreaks continue to occur, particularly in certain regions. This study aims to identify potential risk factors for disease transmission based on survey data from affected and non-affected farms across different regions of Iceland**.**

Methods

A questionnaire survey was conducted in three regions of Iceland between April and October 2024:

Region	Non-Outbreak Farms	Outbreak Farms	Farms in Total
Northwest Iceland	13	10	23
Southwest Iceland & Snæfellsnes	10		10
South Iceland	10	6	16
total	33	16	49

Table 1: *Number of farms surveyed by region, categorized into outbreak and non-outbreak farms*

The survey collected data about farm characteristics (land & flock size), annual management practices, animal movements, personal contacts and biosecurity measures. Risk factors were quantified and regional differences were analysed.

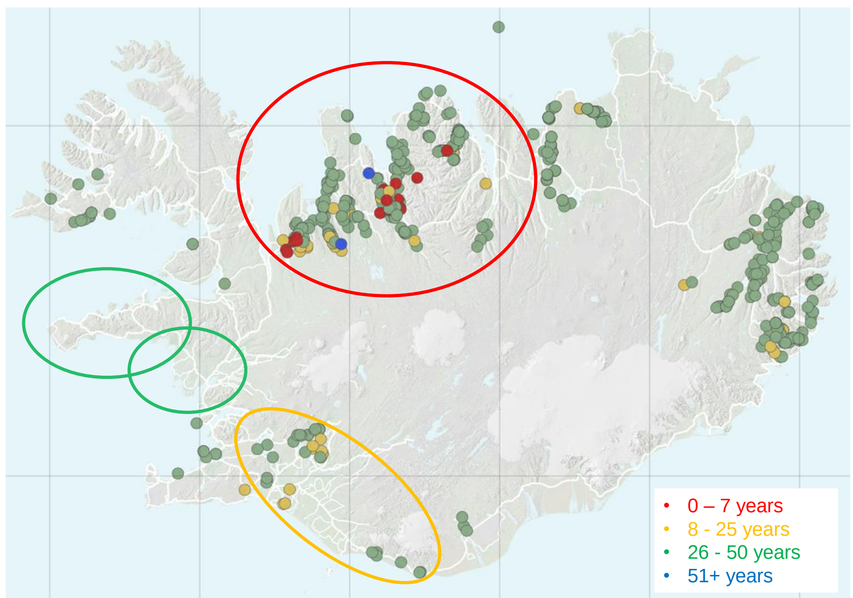

Figure 1: *Scrapie outbreaks per year and region with main a cluster in the North Western part of Iceland*

Results and Discussion

The persistence of Scrapie in Iceland is driven by factors like shared pastures, human and machinery movement. When livestock from multiple farms graze together, the risk of cross-contamination increases, especially without strong biosecurity measures. Machinery movement also spreads the disease, as equipment can carry it between farms. Farm size and burial practices further influence disease spread. Larger farms, with more animals and higher interaction, face greater risks, while carcass disposal on farm land, allows the disease to persist in the environment, complicating eradication efforts.

Factors	Potential Risk Factors	Potential Protective Factors

Persons	• External persons
	  • E.g. Veterinarians, Artificial insemination
	  • E.g. Farm workers, tourists, agricultural school students
		• No extern persons

Machinery	• Shared machinery	• Only used on own farm
Management	• Common mountain pastures & Réttir • Birth hygiene, birth on slatted floors • Manure/slurry on own fields, hay mostly own production, straw purchase	• Own pastures • Birth hygiene • Disposal of placenta
Breeding focus	• Natural breeding	• Resistant genotypes • Genotyped herds • Artificial insemination
Disposal of Carcasses	• Burial sides on farms	• Container • Renderer
Sale/Purchase	• Frequently sheep movements	• Less sheep movements • Movement of resistant sheep
Environment	• Loss of natural barriers • Sheep losses on pastures (2-5%)	• Natural barriers

Table 2: *Identified Risk and Protective Factors*

Conclusion

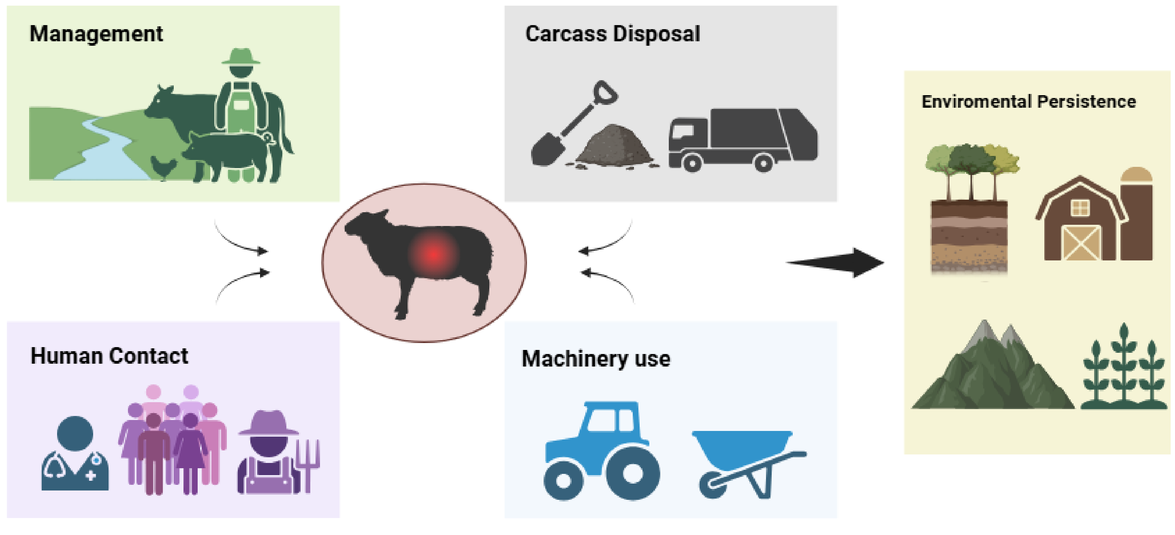

Figure 2: *Key risk factors for Classical Scrapie transmission and environmental persistence*

Scrapie persists in Iceland due to factors like shared pastures, farm size, human and machinery movement and improper carcass disposal. To reduce future outbreaks, strengthening biosecurity, breeding for genetic resistance, and improving carcass disposal are key strategies. These measures will help control the disease and work towards long-term eradication, ensuring a healthier sheep population.

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