




Irish hill sheep breeding – a new era beckons



Owner: MATTHEW FAHEY • Dungannon, Co. Waterford • DQR: %		
Breeder: TIM, PATRICK & LUCY HARRINGTON • Ballydoole, Co. Cork • DQR: %		
BANTRY ID#41283877188		
DOB: 01-APR-2022 • Perth • Male • Sire is DNA Verified • Scrapie: Type 2		
Sire:	Dam:	
BANTRY		
ID#41283877188		
Owner: MATTHEW FAHEY • Dungannon, Co. Waterford • DQR: %		
Breeder: DAVID F CUNNINGHAM • Lismore, Co. Waterford • DQR: %		
D F CUNNINGHAM ID#41283877188		
DOB: 01-APR-2021 • Perth • Male • Sire is DNA Verified • Scrapie: Type 2		
Sire:	Dam:	
BANTRY		
ID#41283877188		
Owner: MATTHEW FAHEY • Dungannon, Co. Waterford • DQR: %		
Breeder: MARE DAILY • Ballydoole, Co. Cork • DQR: %		
M DAILY ID#41283877188		
DOB: 01-MAR-2021 • Perth • Male • Sire is DNA Verified • Scrapie: Type 2		
Sire:	Dam:	
BANTRY		
ID#41283877188		



National Hill Sheep Conference 2024
David Coen



Who am I?



Where were we in 2023

- 2 Hill groups engaged through Flockbook recording
- 240 Hill rams genotyped pre-2023
- Sales catalogues providing little information
- Very little ancestry information to buyers
- Scrapie genotypes an unknown on the Hill
- Inbreeding thought an issue with no facts



What have we achieved to date

- Group Engagement
- DNA collection days
- Large numbers of hill rams genotyped
- Developed Catalogues specifically for Hill ram sales
- Hill sheep recorded on National Database providing a baseline for hill sheep improvement



17 Hill Groups now engaged



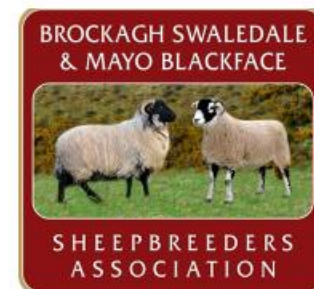
SW Donegal Blackface
Sheep Breeders Group



West Kerry
Scotch Mountain Sheep
Breeders Society




Waterford Blackface Sheep
Breeders



Donegal Blackface Sheep
Breeders Association



What have we achieved to date

- Group Engagement 
- DNA collection days
- Large numbers of hill rams genotyped
- Developed Catalogues specifically for Hill ram sales
- Hill sheep recorded on National Database providing a baseline for hill sheep improvement



DNA collection days

DNA Collection days

- 17 - Collection days Nationally
- Over 2,250 rams across All breeds collected this way

Involves breeders bringing rams to marts, where they are genotyped directly by Sheep Ireland Staff

Opportunity to discuss Hill breeding with farmers on the ground



What have we achieved to date

- Group Engagement ✓
- DNA collection days ✓
- Large numbers of hill rams genotyped
- Developed Catalogues specifically for Hill ram sales
- Hill sheep recorded on National Database providing a baseline for hill sheep improvement



Numbers of hill rams genotyped

- 4,920 rams genotyped Nationally
- Across 10 different Breeds
- Across all ages from 2011-2023
- Collected through
 - DNA Collection days
 - Phone calls
 - Online hill form















What have we achieved to date

- Group Engagement ✓
- DNA collection days ✓
- Large numbers of hill rams genotyped ✓
- Developed Catalogues specifically for Hill ram sales
- Hill sheep recorded on National Database providing a baseline for hill sheep improvement

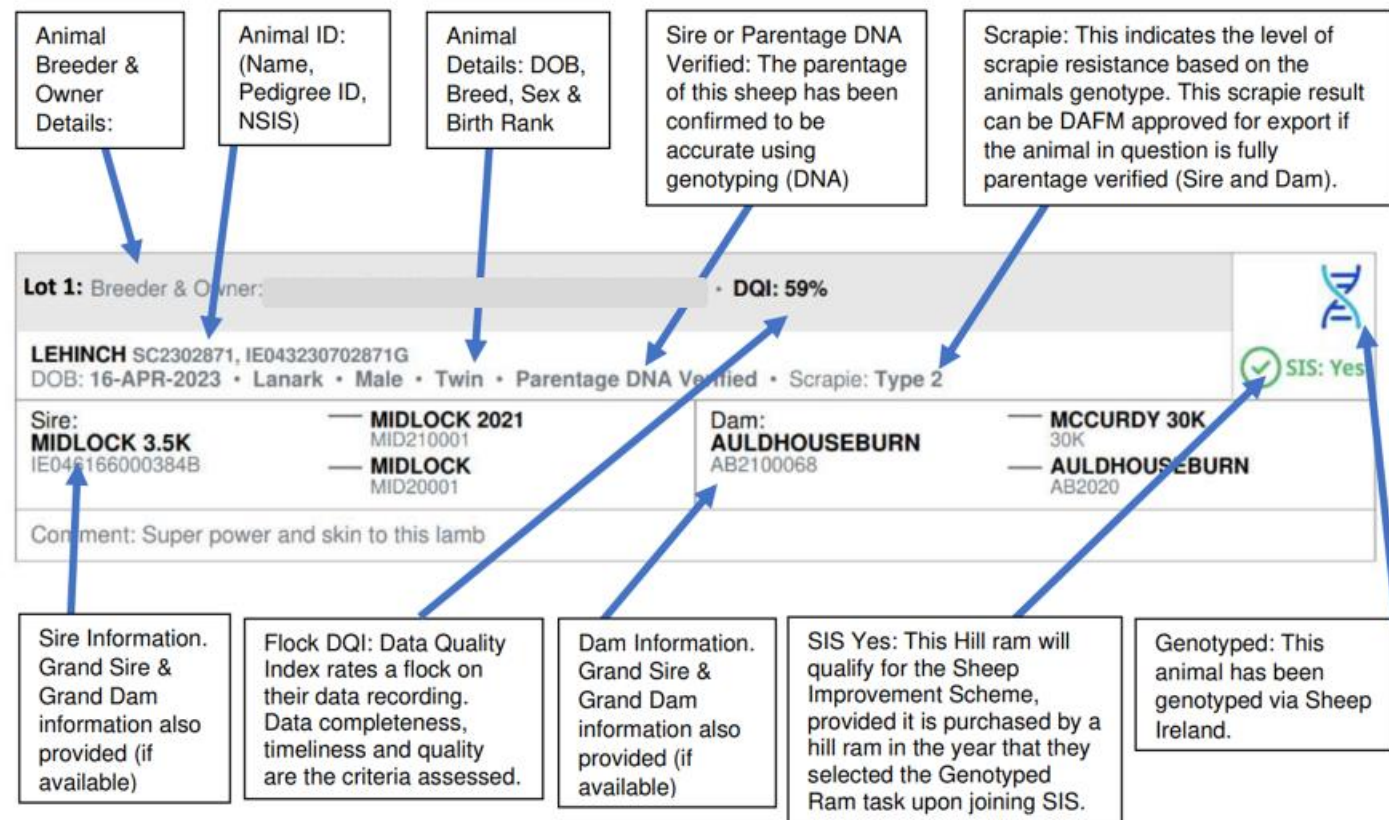


2023 Hill Sales Catalogue

Lot 54: Breeder & Owner: [REDACTED] - DQI: %		
TRENEARLA IE044336625926H DOB: 01-APR-2022 • Lanark • Male • Single • Sire is DNA Verified • Scrapie: Type 3		 SIS: Yes
Sire: MIDLOCK 2.2K IE044336623417F	Dam: TRENEARLA IE044336622950E	
Comment: Well built hill type tup. Lovely colouring & hair. Midlock Breeding both sides.		
Lot 55: Breeder & Owner: [REDACTED] - DQI: %		
TRENEARLA IE044336625816E DOB: 01-APR-2022 • Lanark • Male • Single • Sire is DNA Verified • Scrapie: Type 2		 SIS: Yes
Sire: O MULLEN 17K IE044336627108E	Dam: TRENEARLA IE044336621800F	
Comment: Big stretchy high tup. Off super 10k Hartside ewe & 17x OMullen		
Lot 56: Breeder & Owner: [REDACTED] - DQI: %		
TRENEARLA IE044336625922J DOB: 01-APR-2022 • Lanark • Male • Single • Scrapie: Type 3		 SIS: No
Sire: [REDACTED]	Dam: TRENEARLA IE044336623202J	
Comment: Big active ram full of life, great bone, lengthskin. Dam 10k Hartside. Sire son of 5k Highsteward		
Lot 57: Breeder & Owner: [REDACTED] - DQI: %		
TRENEARLA IE044336625657G DOB: 01-APR-2022 • Lanark • Male • Single • Scrapie: Type 3		 SIS: No
Sire: [REDACTED]	Dam: TRENEARLA IE044336622923H	
Comment: Built like a bull, some carcase & confirmation. Connachton dam/ Highsteward Sire		
Lot 58: Breeder & Owner: [REDACTED] - DQI: %		
TRENEARLA IE044336625780G DOB: 01-APR-2022 • Lanark • Male • Single • Sire is DNA Verified • Scrapie: Type 1		 SIS: Yes
Sire: CROSSFLATT 50K 001 IE044336626641D	Dam: TRENEARLA IE044336602185G	
Comment: Big lengthy lad, Super coat & bone. Great colours. Crossflat and Highsteward Breeding		
Lot 59: Breeder & Owner: [REDACTED] - DQI: %		
TRENEARLA IE044336625706B DOB: 01-APR-2022 • Lanark • Male • Single • Scrapie: Type 3		 SIS: No
Sire: [REDACTED]	Dam: TRENEARLA IE044336623230H	
Comment: Big stretchy high tup. Off super 10k Hartside ewe & 17x OMullen		

Hill Sales Catalogue

- First Catalogue specifically designed for the Hill Sector
- Ran instantly from the national database.
- Very quick and easy for group reps once tag numbers have been obtained.
- 100% clarification on ram SIS eligibility
- Catalogue can be used as proof of ram SIS qualification

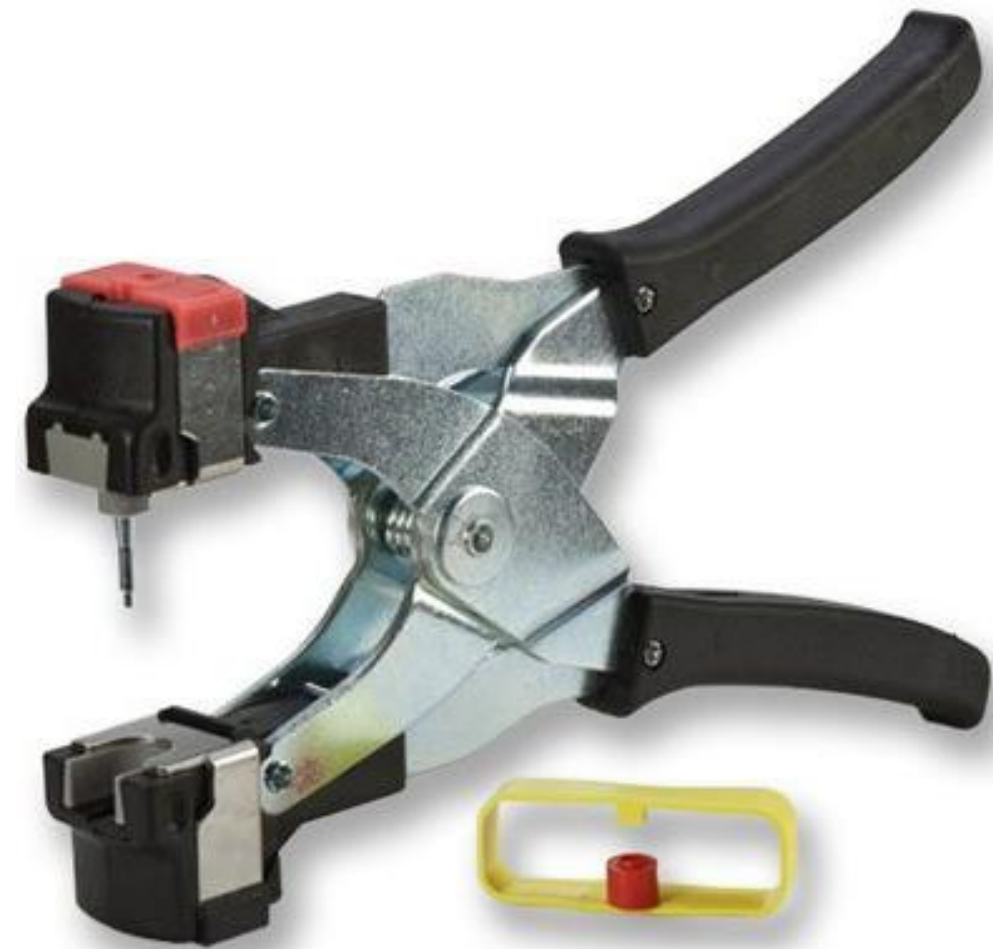


What have we achieved to date

- Group Engagement ✓
- DNA collection days ✓
- Large numbers of hill rams genotyped ✓
- Developed Catalogues specifically for Hill ram sales ✓
- Hill sheep recorded on National Database providing a baseline for hill sheep improvement



What is Genotyping?



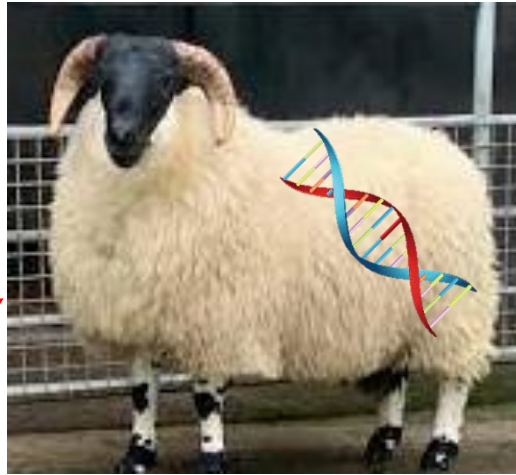
Genotyping & Irish Sheep

Irish ram breeders are currently getting

- Parentage verification (where parents have been genotyped too)
- Scrapie resistance level (scrapie genotype)
- Inbreeding coefficient (how inbred the animal is)
- Genomic genetic evaluation
- Visible and accurate breeding lines in catalogues.
- National database records for long term breeding strategies.

Sire Prediction and Verification

Who's my Daddy

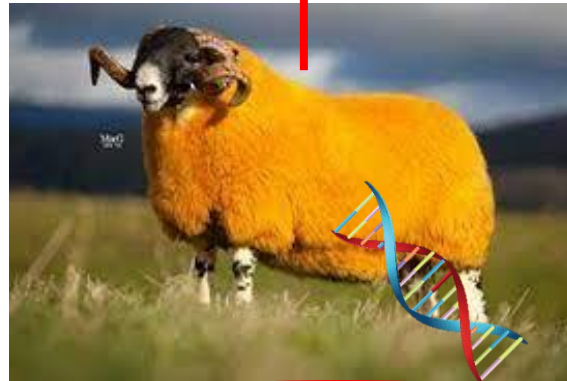


Proven through DNA

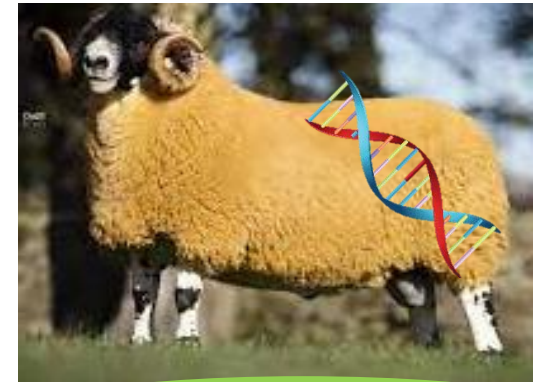
... **GTCACCGCTGAG** ...



... **ATTCGGGCTGTG** ...



... **CAGATAGGATTG** ...



... **GTCACCGCTGAG** ...

What have we learned

- Scrapie results painting a clearer picture
- Inbreeding creeping up with every generation



Genomics

Scrapie (DAFM approved)

	Scrapie Type				
	1	2	3	4	5
Purebred Lowland animals	66.4%	28.1%	4.8%	0.5%	0.2%
Purebred Hill animals pre-2023	19.4%	44.8%	30.1%	2.0%	3.6%
Purebred Hill animals post-2023	18.7%	44.2%	28.0%	3.4%	4.2%

- Scrapie results are reported for each genotyped animal
- Purebred hill animals that have been genotyped to date have a significantly higher percentage of scrapie type three animals
- Type 4 & 5 scrapie is immerging slightly higher then anticipated
 - Type 1 = Most resistant to Scrapie
 - Type 5 = Least resistant to Scrapie

Genomics



Inbreeding Coefficient

Hill Rams year of Birth	Percentage inbreeding
Older Rams	1.88%
2019	1.96%
2020	2.29%
2021	2.46%
2022	2.66%
2023 to date	2.49%



Ram Breeds	Percentage inbreeding
Perth	2.67%
Cheviot	3.84%
Mayo/Connemara	1.17%
Lanark	5.41%
Swaledale	3.29%
Dingle Scotch	1.17%

Case study



Ram Lamb purchased
2021

Owner: MATTEW FAHEY • Dungarvan, Co. Waterford • DQI: %		
Breeder: • Ballydehob, Co. Cork • DQI: %		
IE041301600425G		
DOB: 01-MAR-2021 • Perth • Male • Sire is DNA Verified • Scrapie: Type 2		
Sire: BANTRY IE041286305113E	—	Dam: —
—	—	

Shearling Ram
purchased 2022 to run
with previous Lamb

Owner: MATTEW FAHEY • Dungarvan, Co. Waterford • DQI: %		
Breeder: • Lemybrien, Co. Waterford • DQI: %		
IE044336107642G		
DOB: 01-APR-2021 • Perth • Male • Sire is DNA Verified • Scrapie: Type 3		
Sire: BANTRY IE041286305113E	—	Dam: —
—	—	

Also purchased ram
lamb in 2022 to run
sparingly

Owner: MATTEW FAHEY • Dungarvan, Co. Waterford • DQI: %		
Breeder: • Bantry, Co. Cork • DQI: %		
IE041286307718B		
DOB: 01-APR-2022 • Perth • Male • Sire is DNA Verified • Scrapie: Type 2		
Sire: BANTRY IE041286305113E	—	Dam: —
—	—	

How will a flockbook help?

- Protection from breed dilution from other strains and inbreeding
- A foundation for systematic breed improvement
- A great platform to help promote the breed



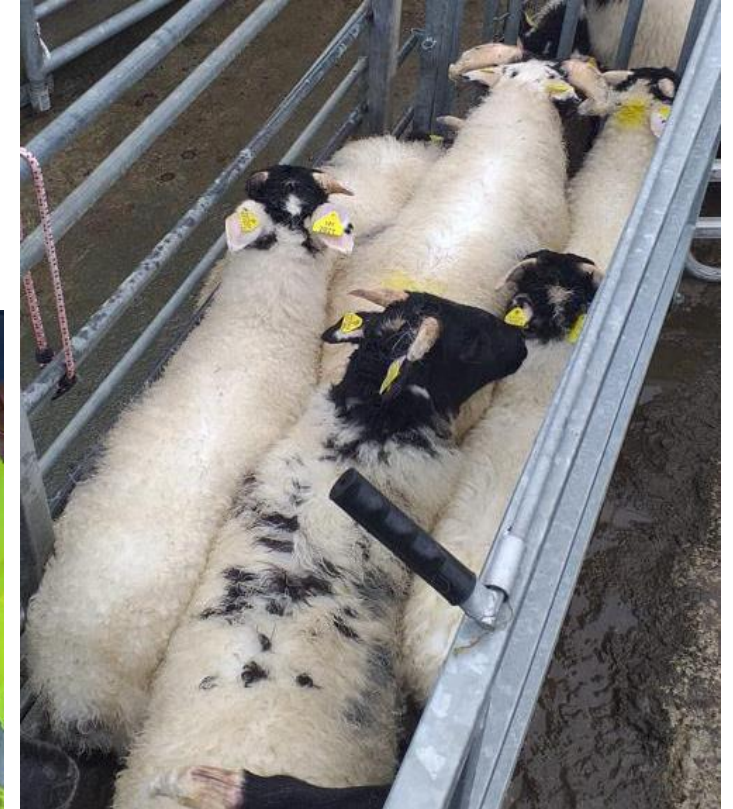
The screenshot shows the Sheep Ireland website with the 'Mayo Connemara Flockbook' selected. It features a search bar, filters for Sex, Year of Birth, Alive or Dead, Number of Progeny, Replacement Index, and Terminal Index. A map of Ireland is also visible.

299 animals of 3621 animals found, 100 displayed

Animal	Sex	DOB	Region	Owner	Replacement	Terminal
ED46279500322D_CERPVSENEY_AN1900322	F	02-APR-2019	Mayo	Anthony O'Neill	★★★★★ 60.44	★★★★★ 60.35
ED46279500323F_CERPVSENEY_AN1900323	F	02-APR-2019	Mayo	Anthony O'Neill	★★★★★ 60.44	★★★★★ 60.35
ED46279500324F_CERPVSENEY_AN1900324	F	19-APR-2019	Mayo	Anthony O'Neill	★★★★★ 60.43	★★★★★ 60.21
ED46279500324F_CERPVSENEY_AN1900324	F	08-APR-2019	Mayo	Anthony O'Neill	★★★★★ 60.43	★★★★★ 60.13

Hill data & research continues to be collected

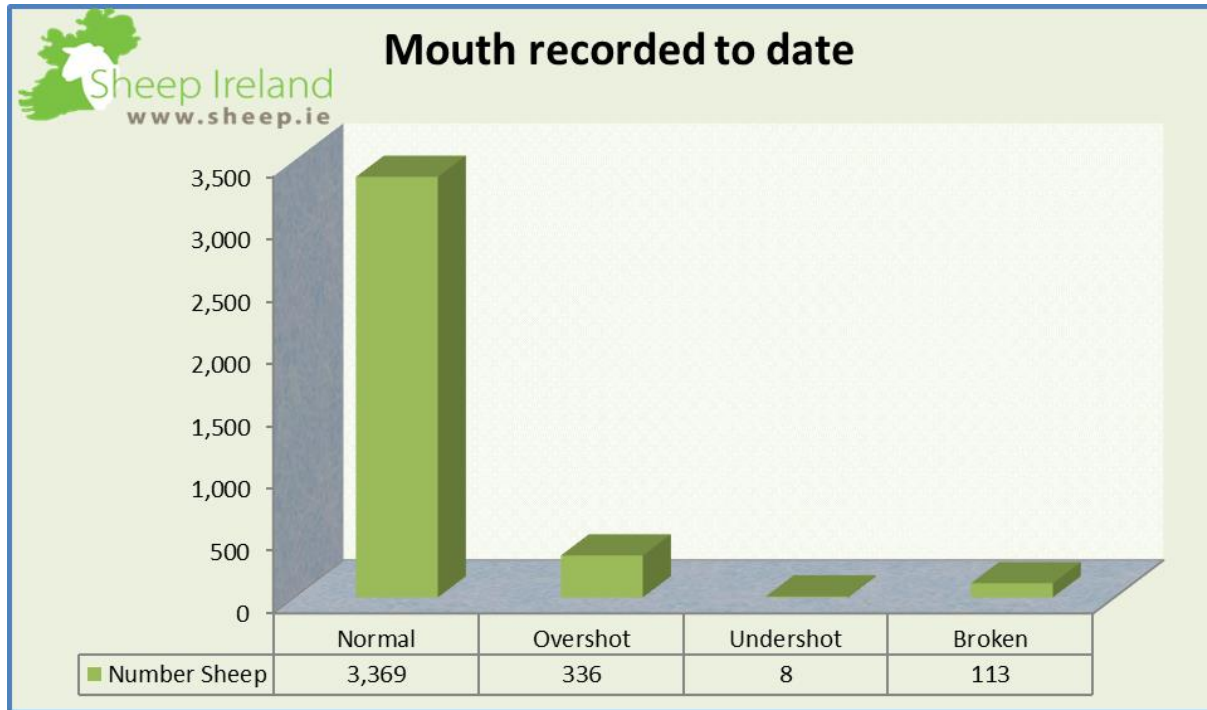
Flockbook and performance Recording



Hill data & research continues to be collected

Mouth Recording

- Aim is to find levels of heritability within this trait



Sheep Improvement Scheme

What is the task?

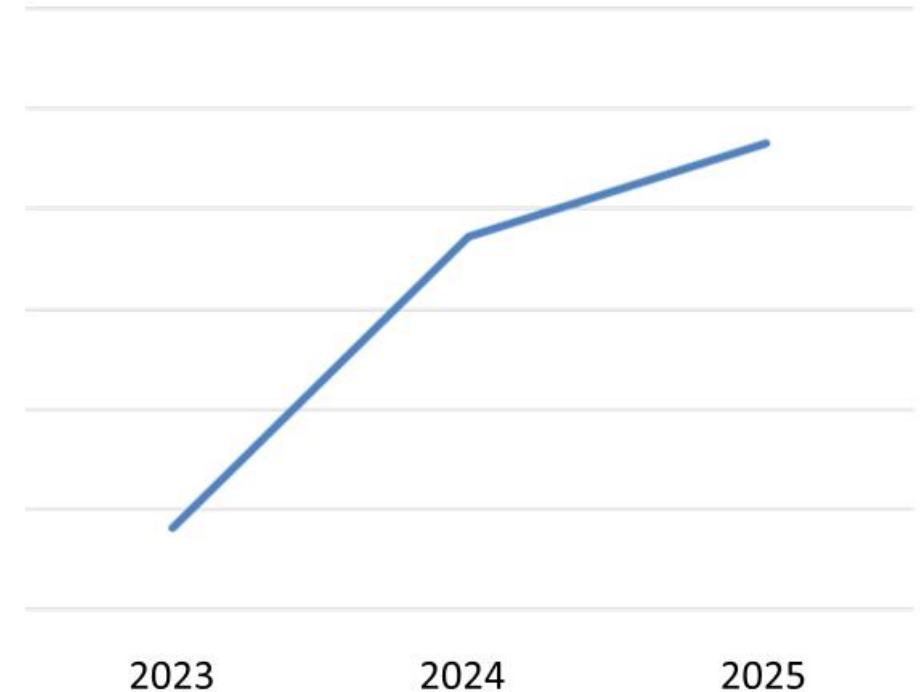
- Every farmer **must purchase and use** a Sheep Ireland genomically tested sire in the first 3 years of the SIS
 - Flocks over 150 ewes must complete a second time by year 5
- That ram must be Scrapie Type 1/2/3
- **Lowland Flocks:** Ram must be 4/5 Star on the Replacement or Terminal Index
- **Hill Flocks:** Ram must be Sire verified (Blackface Mountain / Cheviot). Lowland option also available to hill flocks

What's coming in 2024?

- Demand for SIS eligible hill rams to increase in 2024.
- More genotyped rams needed to meet this demand.



SIS Hill Ram Demand



Numbers of hill rams genotyped

Genotyped numbers not everything

Example

2022 born Hill rams Genotyped in 2023

• 1,889

(7.9%) failed due to being scrapie 4 or 5

• - 150

(32.4%) failed due to no sire genotyped

• - 611

(61.7%) qualify for SIS

• 1,166

What can an SIS ram do for commercial farmers

- Assured parentage through DNA verification
- Decrease your chances of Inbreeding
- Secure a healthy scrapie status in your flock
- Rams DNA is stored on national database that can lead to genetic linkage with research and future hill index development



Thank You

- Department of Agriculture, Food and the Marine
- Hill group representatives and members
- Livestock marts
- Teagasc advisory and research
- Other supporting Farm Rep Bodies

Take homes

Huge progress made in 2023

DNA providing a genetic baseline for Hill breed improvement

Demand for SIS to increase in 2024.

Hill farmers can have confidence in data provided

HUGE OPPORTUNITY:

Even after the SIS has finished the entire industry will continue to benefit via genetic gain and aiding the establishment of hill flockbooks