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Session 3

From Milk Recorder to Bulk Tank:

**Understanding The Factors Affecting Consistency
In Fat & Protein Reporting**

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Background

Milk Recording

Reporting

Breeding Values

Fat %

Protein %

Dairy Processor Bulk Collections

Reporting

A + B - C
Fat + Protein - Yield

Milk Price calculation

Aims

Milk Recording Report
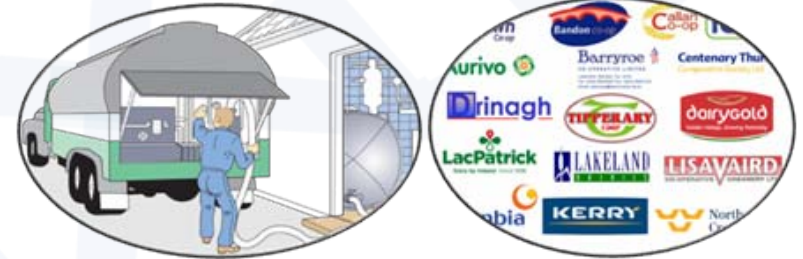
Dairy Processor Report

1. Quantify the actual level of discrepancies in fat and Protein %

2. Identify the factors which contribute to these discrepancies

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Analysis

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Database

- Data from 2023
- Minimum of 4 Milk Recordings
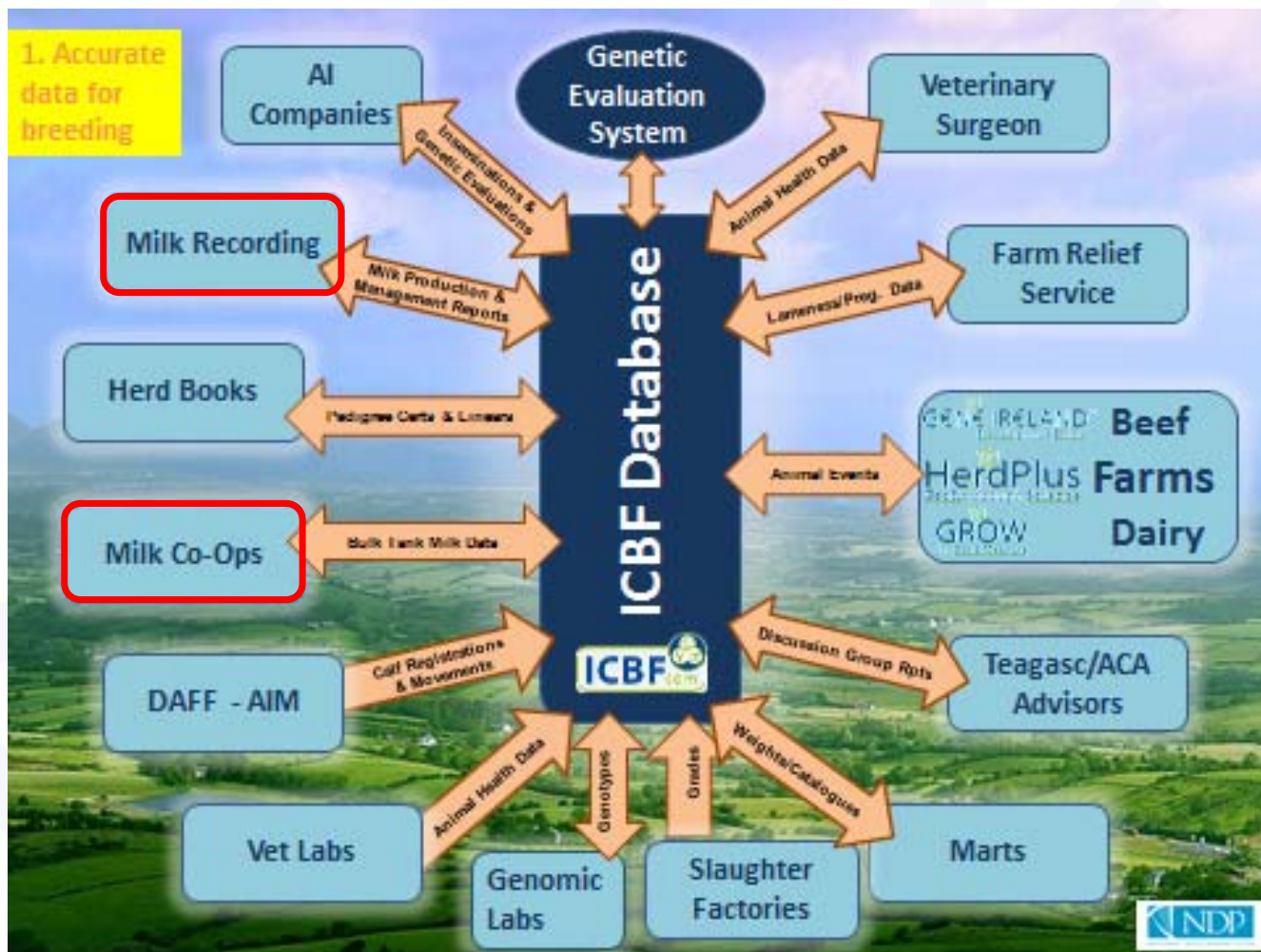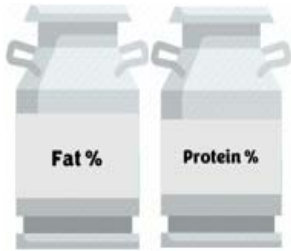
Milk Recording
Test Day Average

Dairy Processor
Bulk Averages
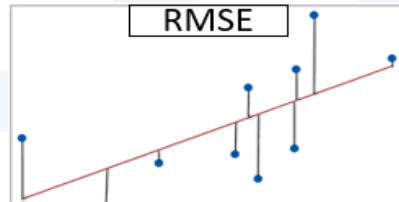
Fat % Protein %

RMSE

Pearson Correlation
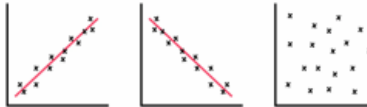
Positive Correlation   Negative Correlation   No Correlation

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Analysis

Pearson Correlation (r)
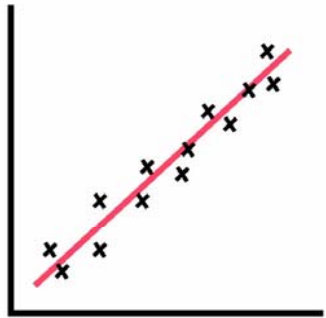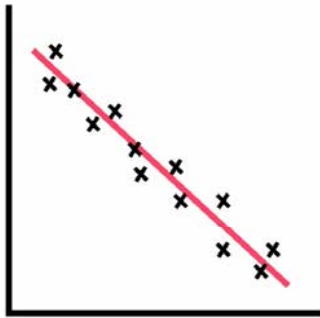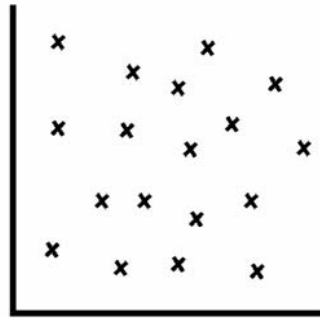
Positive Correlation	Negative Correlation	No Correlation
r ≈ 1	r ≈ -1	r ≈ 0
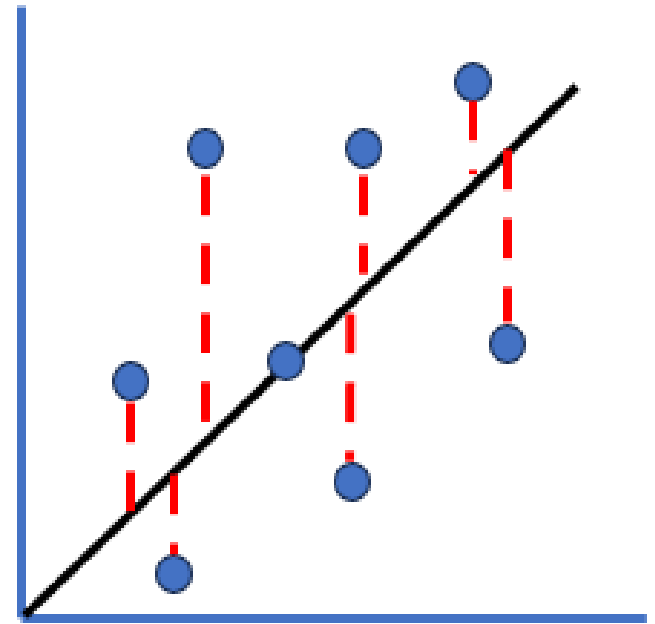
RMSE

RMSE ⬇

Results

Fat & Protein Percent - Milk Recording & Bulk
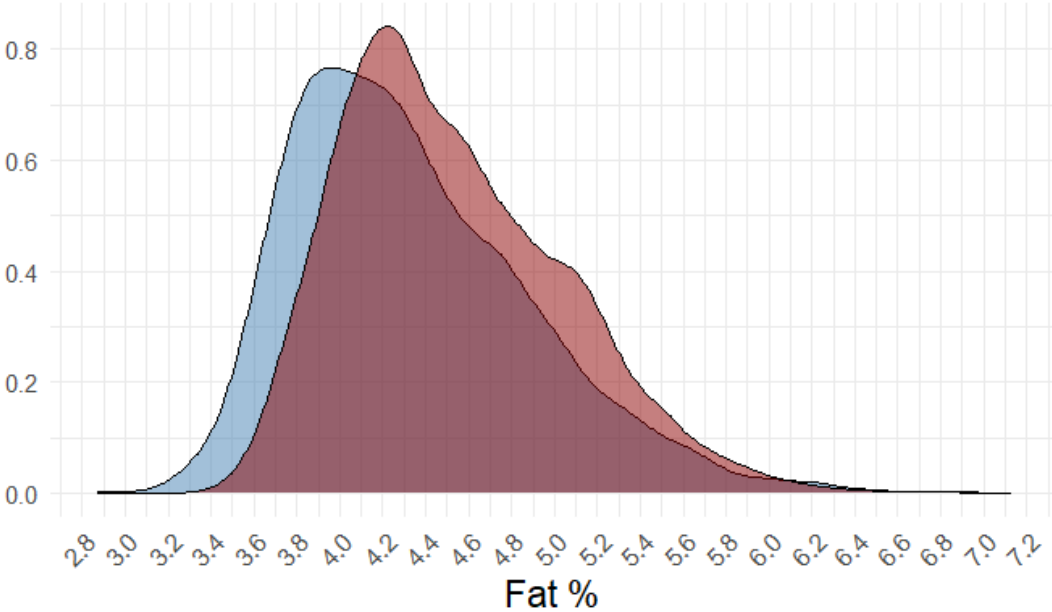
Source: MR_Fat, Bulk_Fat

	Correlation	RMSE
Fat	0.86	0.47

Results
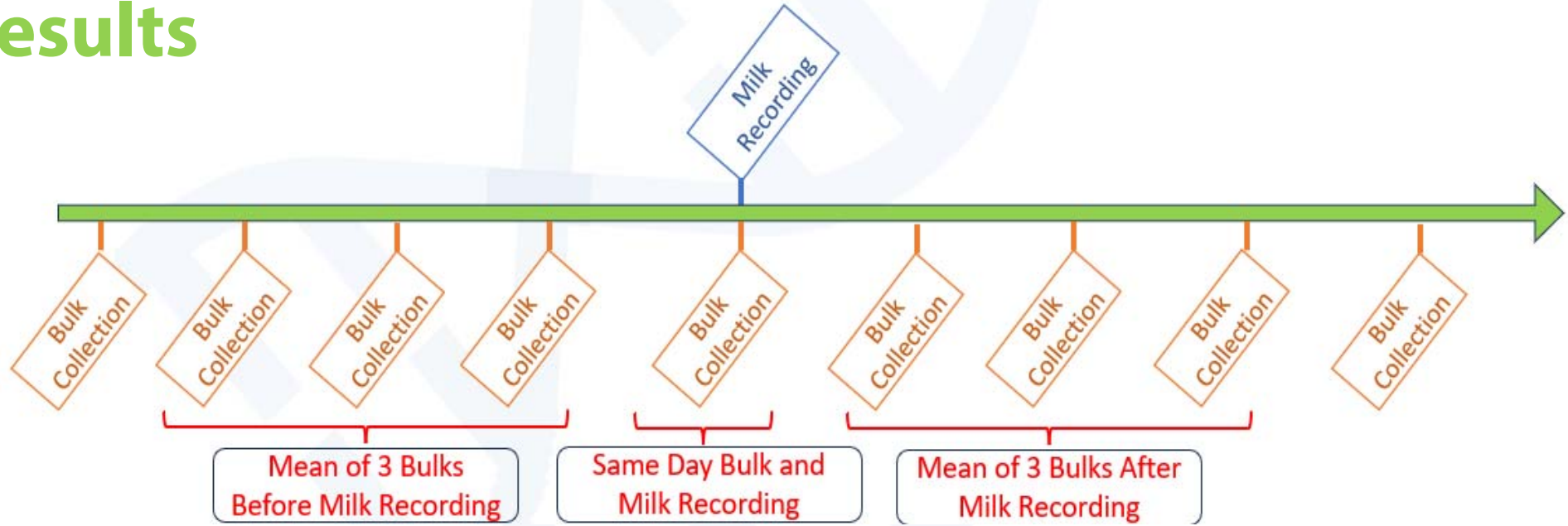
Fat %	Correlation	RMSE
Same Day Milk Recording - Bulk	0.86	0.35
Mean 3 Bulks Before	0.84	0.35
Mean 3 Bulks After	0.83	0.42

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Results

EDIY   Manual
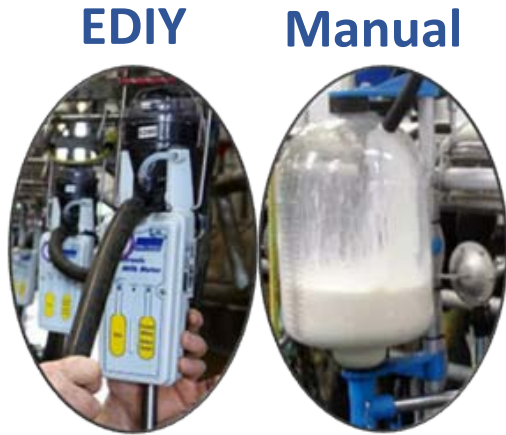
Meter Type	Correlation	RMSE
EDIY	0.89	0.36
Manual	0.82	0.35

Histogram of Fat % Residuals (Milk Recording - Bulk)

> 90%
Underestimated

~ 70%
Underestimated

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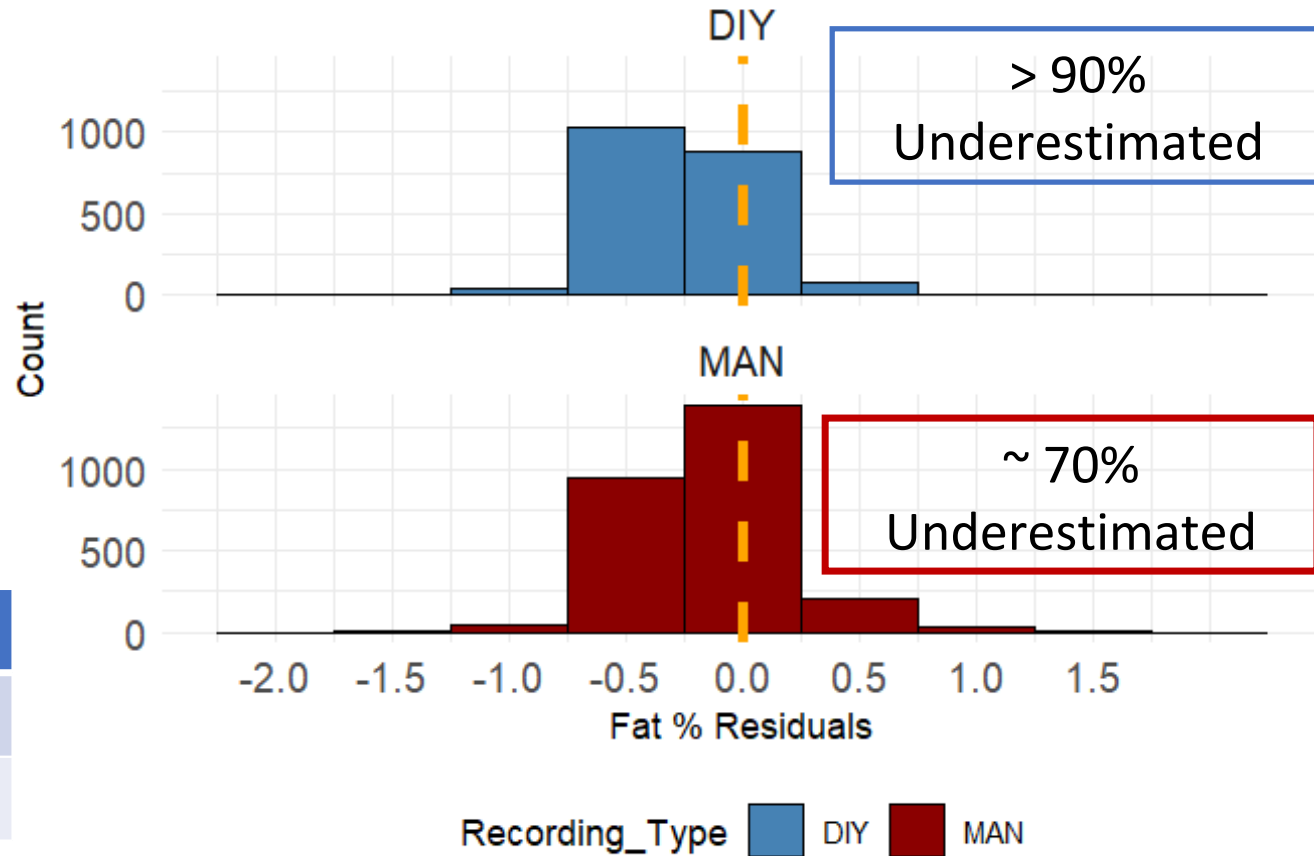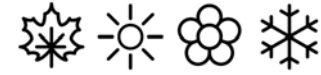
THERE'S NO SILVER BULLET

Discussion

1. Are we really comparing like with like?

- Trying to align the sampling of a bulk tank which often contains multiple milkings to a single milk recording.
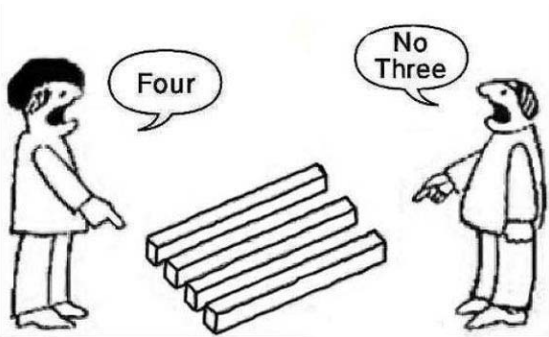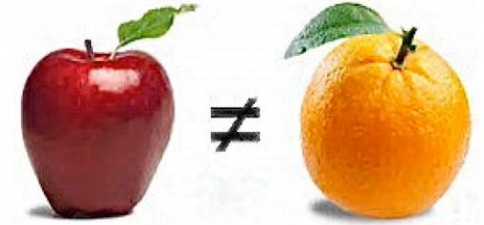
2. Assuming bulk tank sampling is the gold standard?

- What are the factors that can influence bulk collection sampling accuracy?

3. What is an acceptable level of error?

- Is there a level of error that can be accepted?

4. Several contributing factors

- Large variation in milking meters
- Need to look deeper

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Conclusions

1. On Average, milk recorded fat and protein % is underestimated compared to the bulk tank.

2. Largest discrepancies occur in fat %.

3. Factors such as recording meter type, test day yields and recording season do not easily explain why discrepancies occur

4. More in-depth analysis needed to investigate impact of on farm factors such as milk recording infrastructure

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What Next?

1. On Farm Trial

- Identify herds
- Assess milking machine/meter performance
- Establish whether linked to inconsistent reporting

2. Test day animal level analysis

- Dig deeper into test day animal level milk recording data

VistaMilk

Teagasc
AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

Our Farmer & Government Representation

An Roinn Talmhaíochta, Bia agus Mara
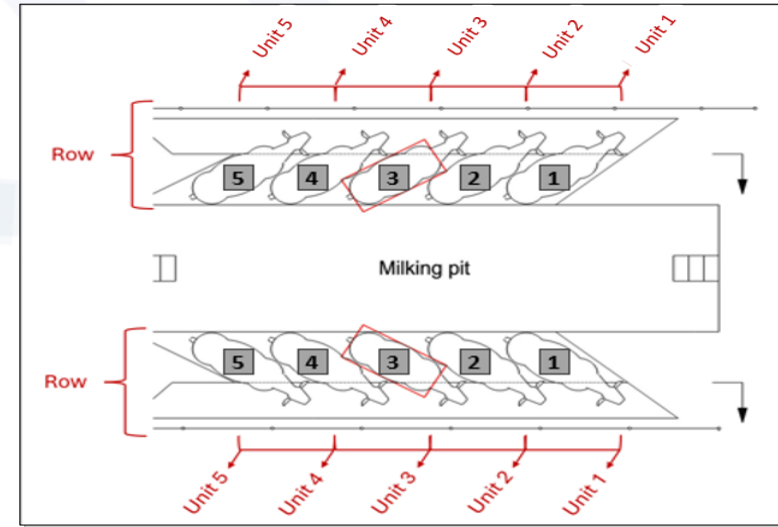Department of Agriculture, Food and the Marine

IRISH CREAMERY MILK SUPPLIERS ASSOCIATION

Feirmeoirí Aontaithe na hÉireann
The Irish Farmers' Association
IFA

Our AI & Milk Recording Organisations

DoveaGENETICS

MUNSTER BOVINE
Collectively Improving Farm Life

PROGRESSIVE GENETICS

TIPPERARY COOPERATIVE

Our Herdbooks

Parthenais

IRISH ANGUS CATTLE SOCIETY

THE IRISH ABERDEEN-ANGUS ASSOCIATION

IRISH SIMMENTAL

JERSEY CATTLE ASSOCIATION OF IRELAND

IRISH LIMOUSIN Cattle Society

IHFA — Irish Charolais Cattle Society

Irish Shorthorn Society Ltd.

SALERS Cattle Society of Ireland

IRISH HEREFORD BREED SOCIETY

Irish Aubrac

MRI Cattle Society of Ireland
Meuse Rhine Issel -- Milk & Muscle!

AYRSHIRES

EASBB

THE IRISH MOILED CATTLE SOCIETY

BLONDE D'AQUITAINE

IRISH BELGIAN BLUE

Droimeann Cattle Society

ISP

MONTBELIARDE

Ireland's native dairy breed

Norwegian Red Cattle Society

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