## Session 3

# From Milk Recorder to Bulk Tank:

# Understanding The Factors Affecting Consistency In Fat & Protein Reporting

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AgTech - it's in our DNA

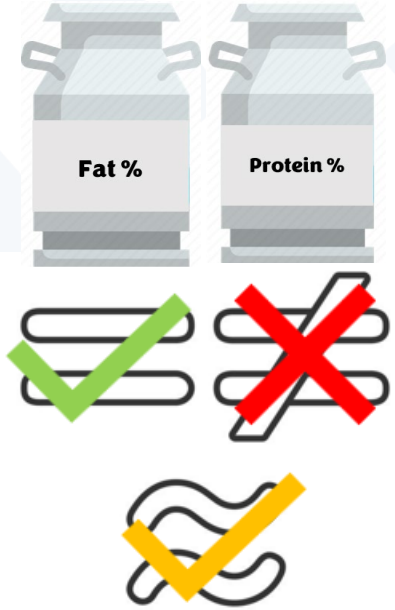
# Background

Milk Recording

Dairy Processor Bulk Collections

| | Litres | | | Fat % | | | Protein % | | | SCC ('000) | | | Total Cows | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | 2010 | 2009 | Diff '09-'10 | 2010 | 2009 | Diff '09-'10 | 2010 | 2009 | Diff '09-'10 | 2010 | 2009 | Diff '09-'10 | 2010 | 2009 |
| Jan | 0 | 16,271 | N/A | 0 | 4.38 | N/A | 0 | 3.38 | N/A | 0 | 174 | N/A | 243 | 217 |
| Feb | 40,626 | 43,678 | -7% | 4.53 | 4.95 | -0.42 | 3.53 | 3.68 | -0.15 | 187 | 214 | -27 | 260 | 251 |
| Mar | 124,021 | 112,205 | 10.5% | 4.13 | 4.1 | 0.03 | 3.13 | 3.31 | -0.18 | 128 | 152 | -24 | 265 | 255 |
| Apr | 169,077 | 132,957 | 27.2% | 3.91 | 3.97 | -0.06 | 3.32 | 3.39 | -0.07 | 153 | 129 | 24 | 270 | 255 |
| May | 181,433 | 159,633 | 13.7% | 3.98 | 3.91 | 0.07 | 3.38 | 3.37 | 0.01 | 130 | 142 | -12 | 269 | 253 |
| SubTotal | 515,157 | 464,744 | 10.8% | 4.03 | 4.09 | -0.06 | 3.31 | 3.39 | -0.08 | 142 | 149 | -7 | 261 | 246 |
| Jun | | 145,649 | | | 4.05 | | | 3.46 | | | 113 | | | 253 |
| Jul | | 128,163 | | | 4.25 | | | 3.51 | | | 121 | | | 252 |
| Aug | | 119,110 | | | 4.43 | | | 3.62 | | | 109 | | | 252 |
| Sep | | 107,579 | | | 4.59 | | | 3.8 | | | 109 | | | 247 |
| Oct | | 103,657 | | | 4.72 | | | 3.95 | | | 107 | | | 245 |
| Nov | | 49,451 | | | 5.04 | | | 4 | | | 172 | | | 217 |
| Dec | | 4,699 | | | 5.43 | | | 4.31 | | | 460 | | | 216 |
| Total | | 1,123,052 | | | 4.29 | | | 3.56 | | | 162 | | | 243 |

Reporting

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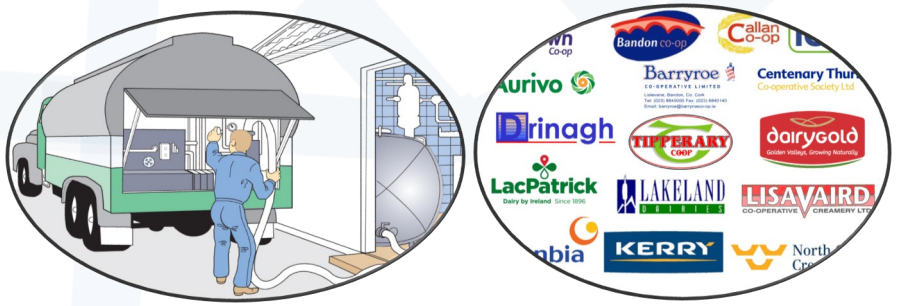
Reporting

Breeding Values

Milk Price calculation

# Aims

Milk Recording Report

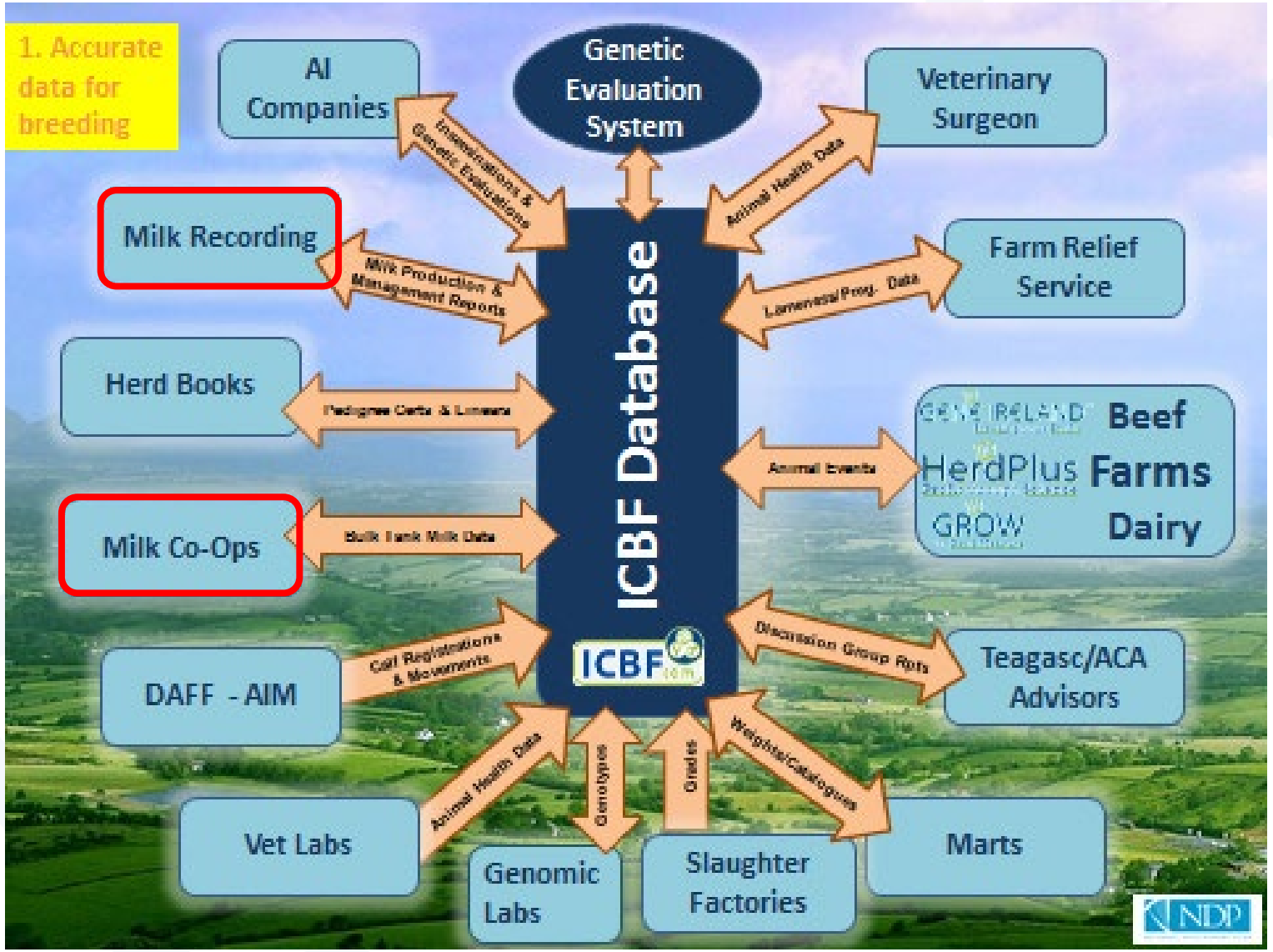



Dairy Processor Report

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

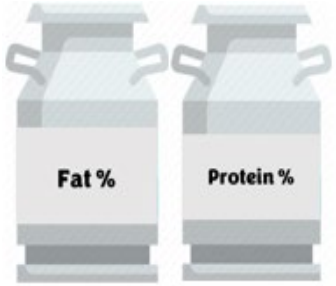
2. Identify the factors which contribute to these discrepancies

# icbf Database



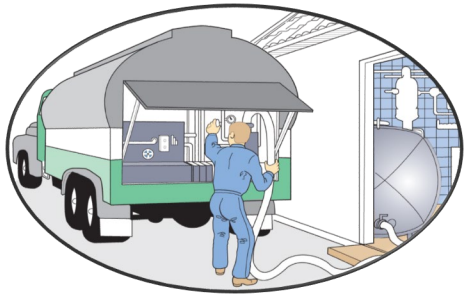
# Analysis

Database

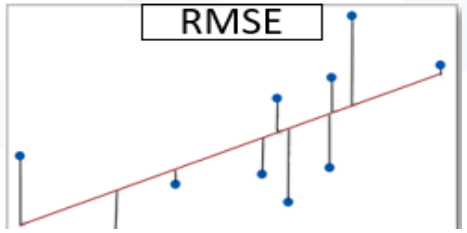


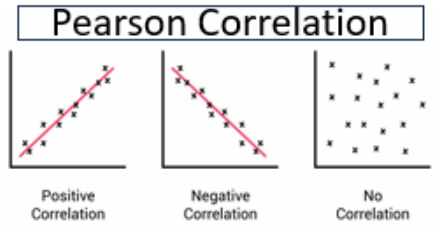

Milk Recording
Test Day Average

- Data from 2023
- Minimum of 4 Milk Recordings



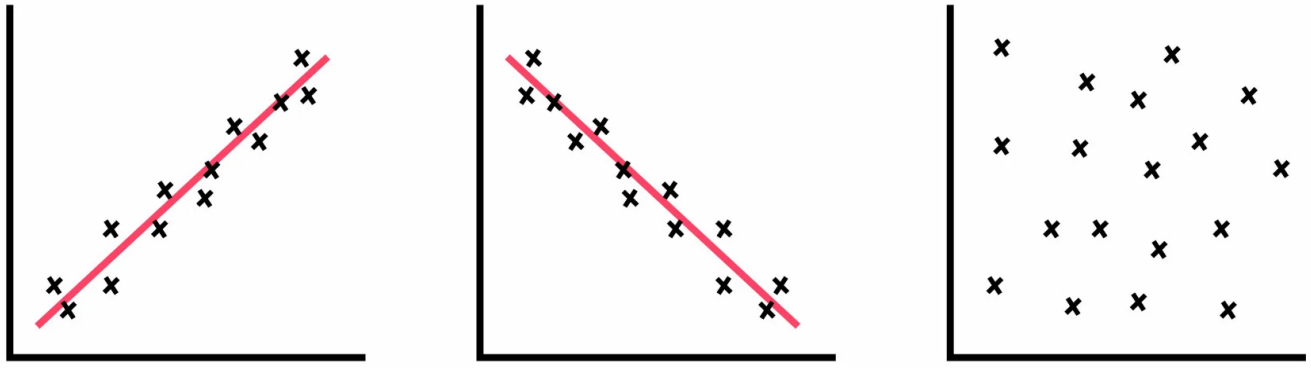
Dairy Processor
Bulk Averages



# Analysis

## Pearson Correlation (r)



Positive Correlation

r ≈ 1

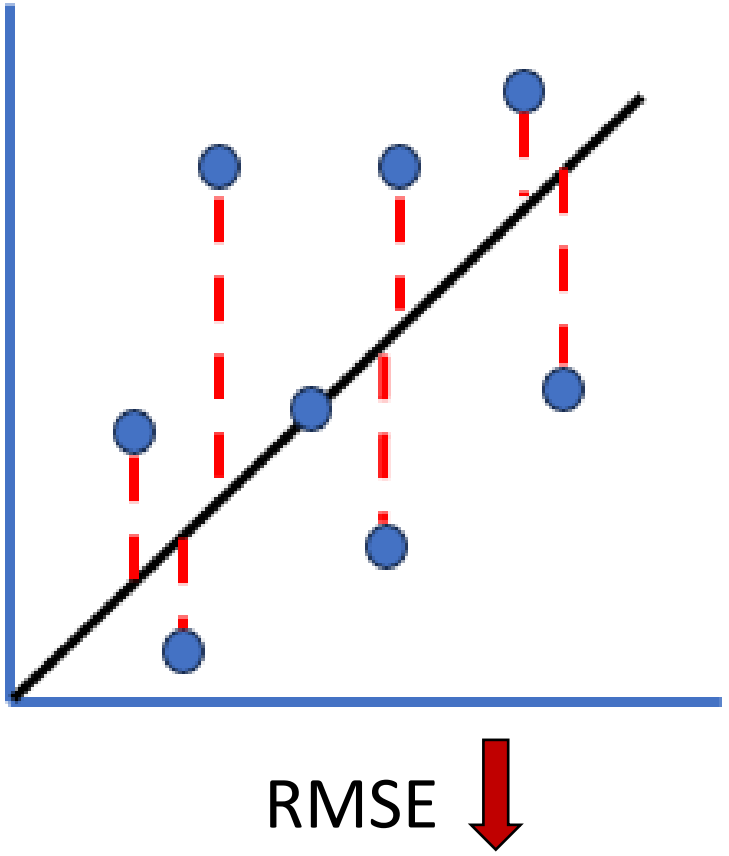
Negative Correlation

r ≈ -1

No Correlation

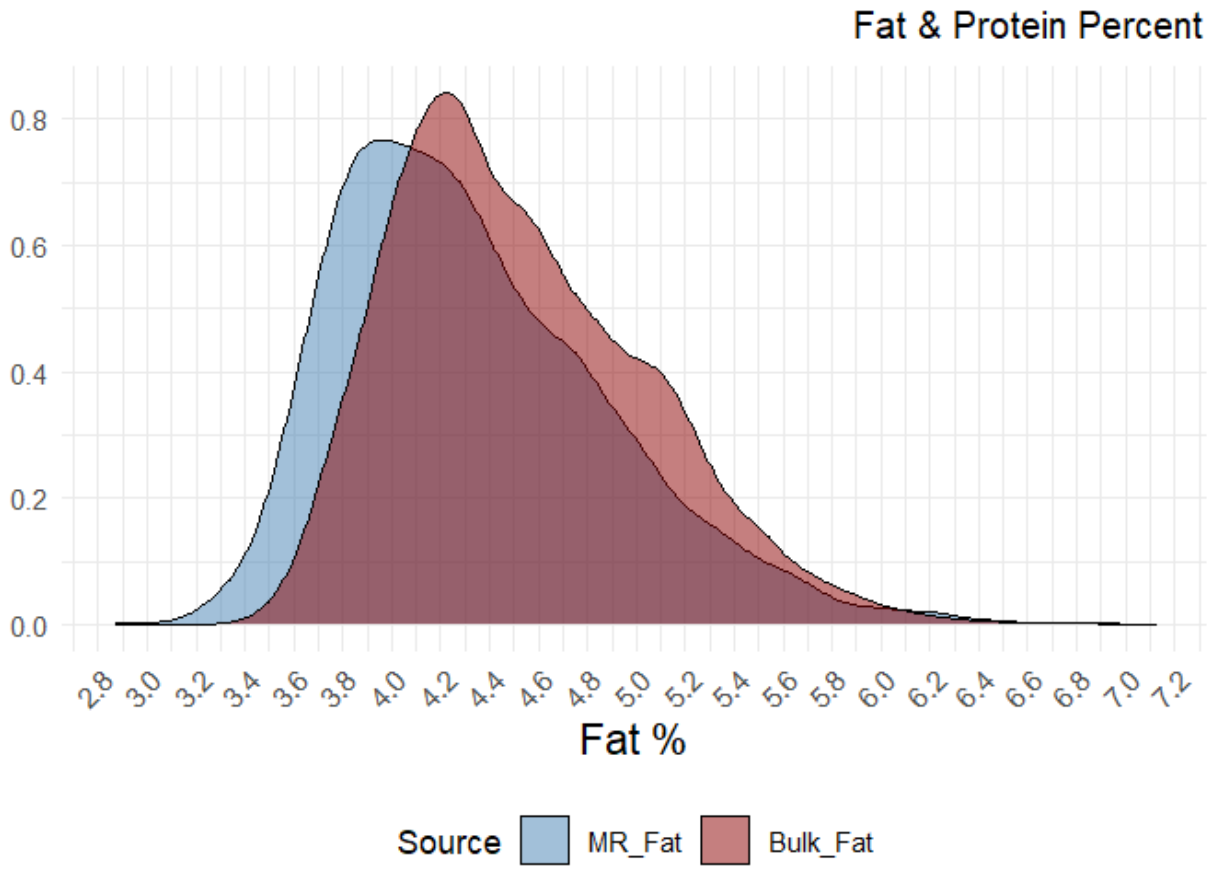
r ≈ 0

## RMSE



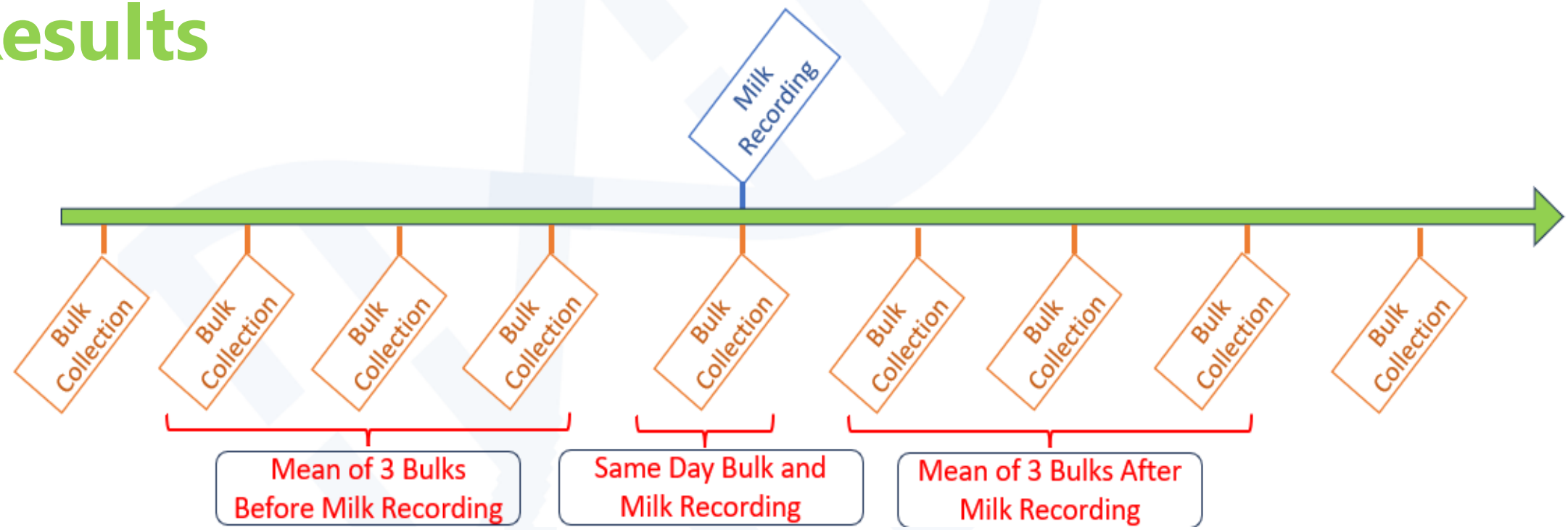
RMSE ↓

# Results




| | Correlation | RMSE |
|---|---|---|
| Fat | 0.86 | 0.47 |

# Results

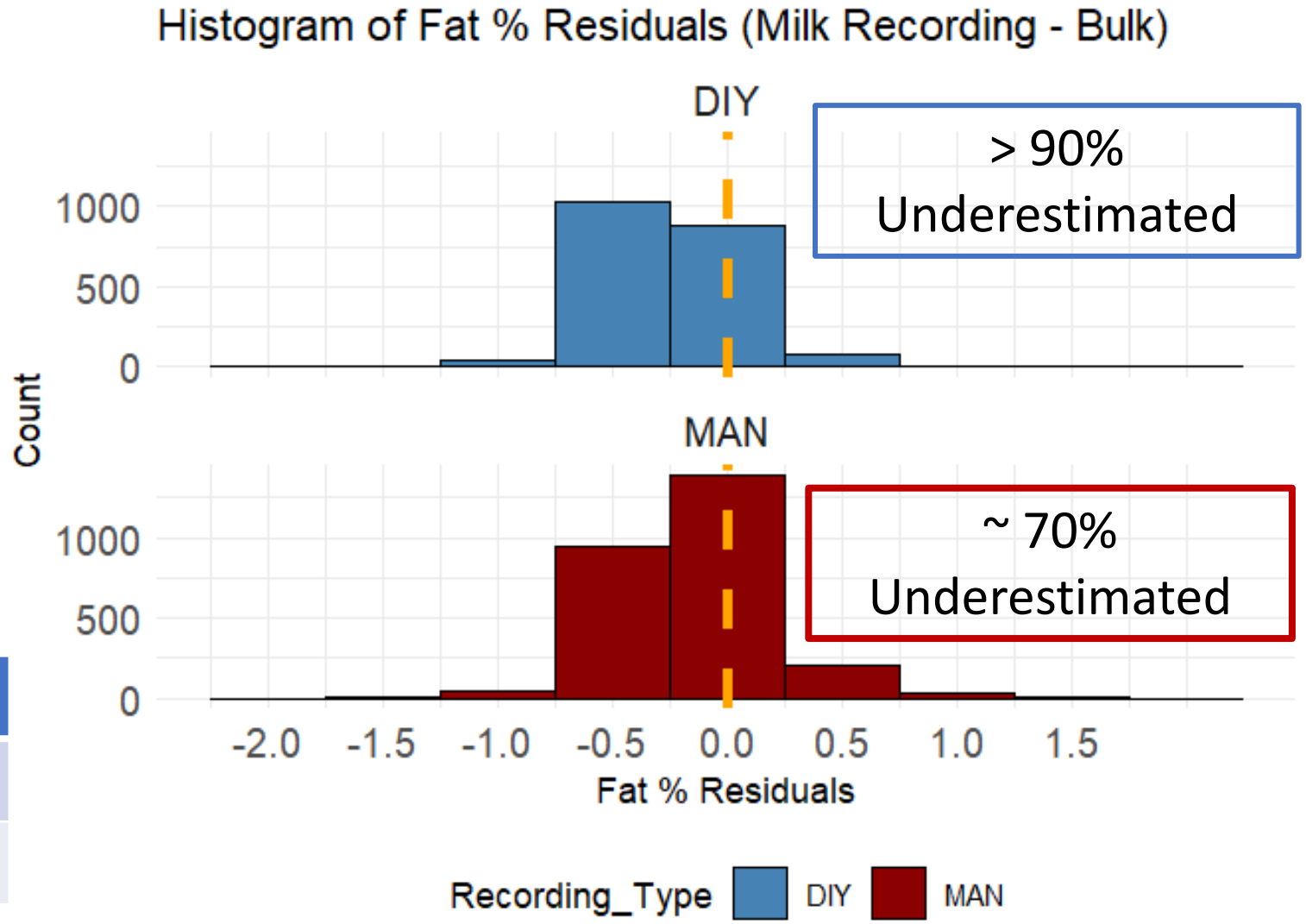



| Fat % | Correlation | RMSE |
|---|---|---|
| Same Day Milk Recording - Bulk | 0.86 | 0.35 |
| Mean 3 Bulks Before | 0.84 | 0.35 |
| Mean 3 Bulks After | 0.83 | 0.42 |

# Results

EDIY Manual

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

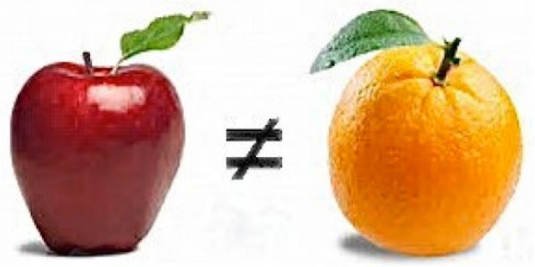


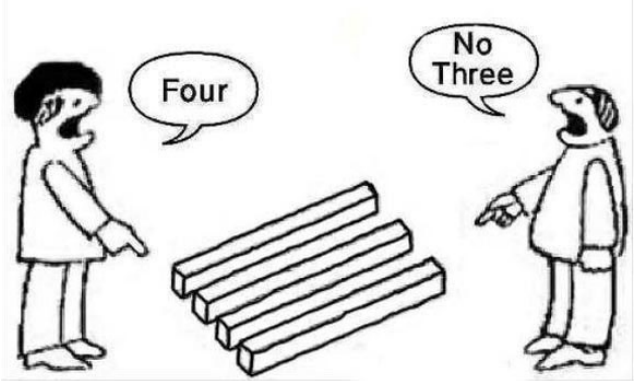
# Results

# 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

# Conclusions

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

2. Largest discrepancies occur in fat %.

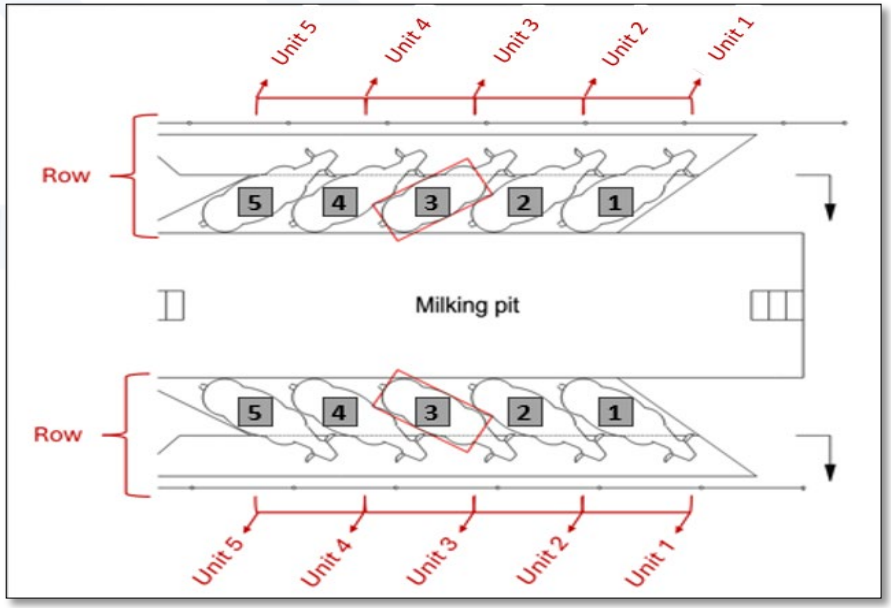
3. Factors such as recording meter type, test day yields and recording season do not easily explain why discrepancies occur

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

# 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

eagasc
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

Pasthenais

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

# icbf Acknowledging Our Members