WORLD GRAIN NETWORK

Supplementary material to the worldwide inter-laboratory study conducted in February/March 2022

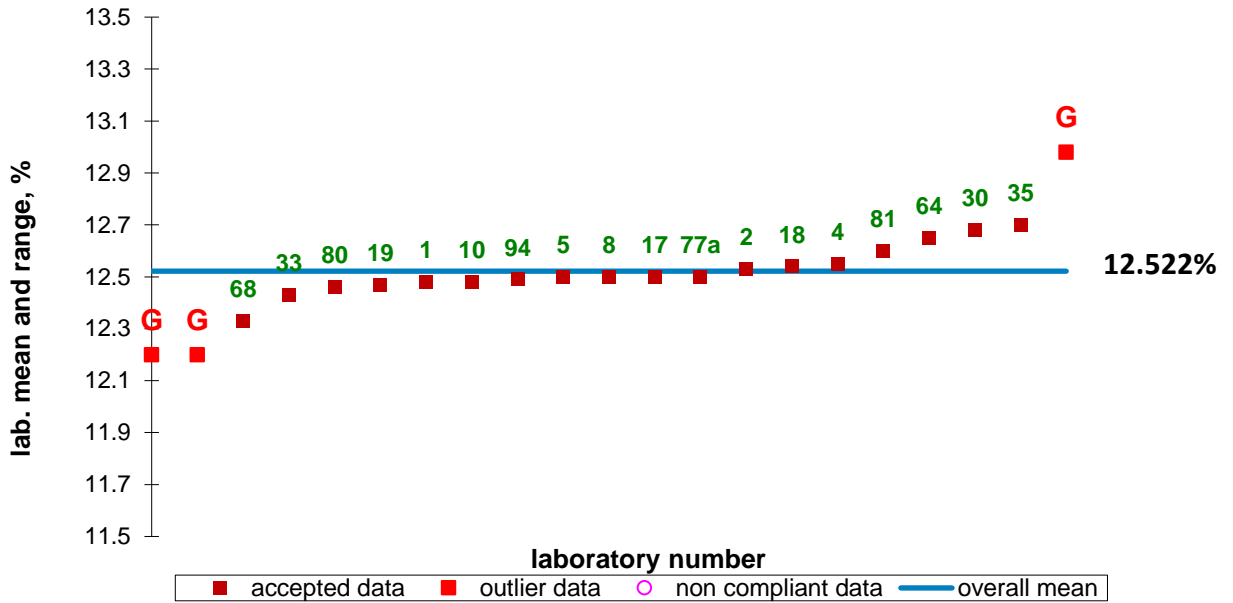# Contents

1   Introductory remarks

The World Grain Network Ring test has grown to the extent where it is necessary to collect a substantial part of the results in a supplementary material document. The statistical evaluation of each individual sample for the main parameters with graphs are therefore presented in the subsequent chapters. This material comprises protein and moisture in Wheat and Barley as well as oil and moisture in Rapeseed. All samples for reference results are shown whereas selected examples of predicted results from local and ANN models are presented.
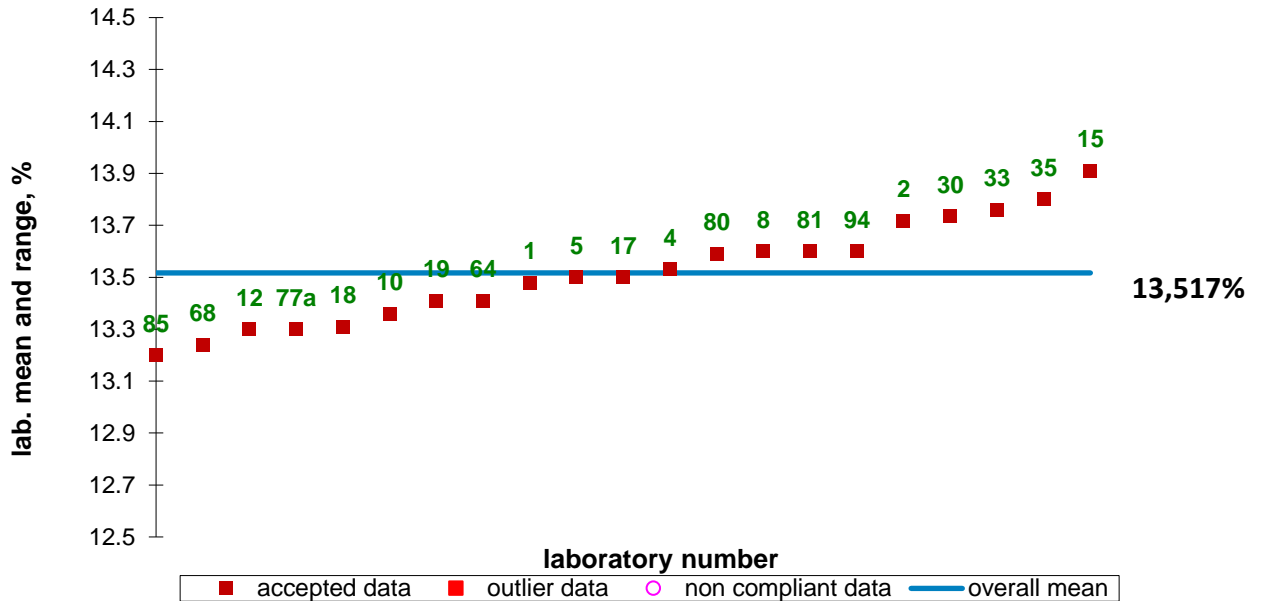
2   Protein in Wheat & Barley by reference methods
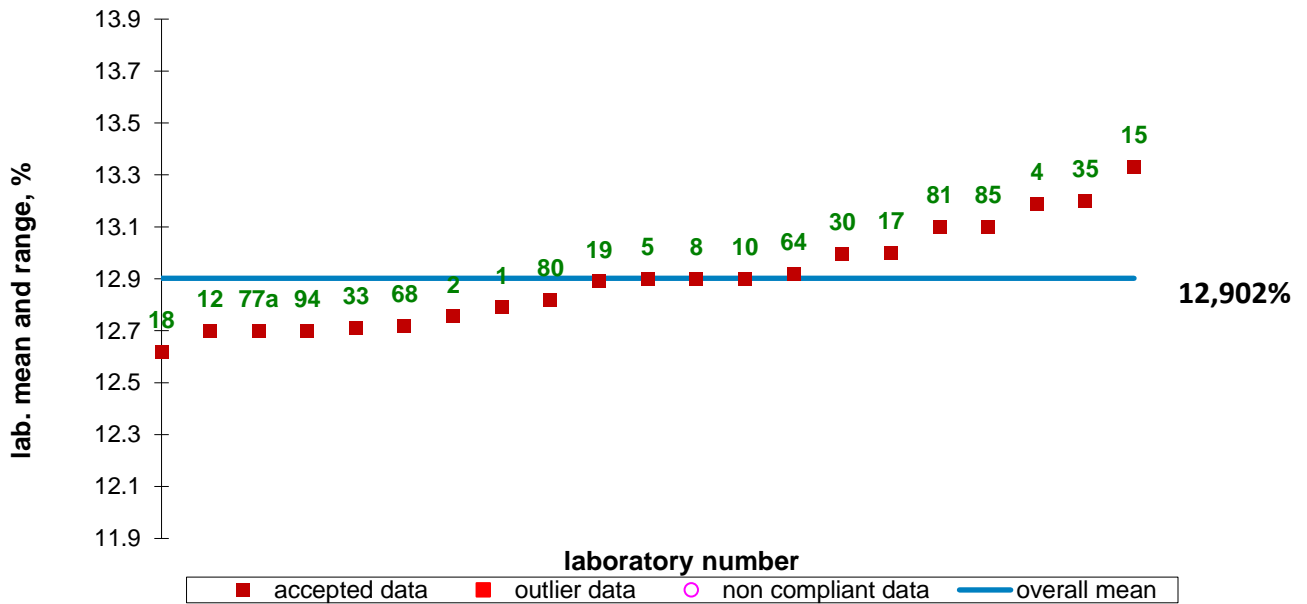
WGN 2022, protein, sample W1, reference

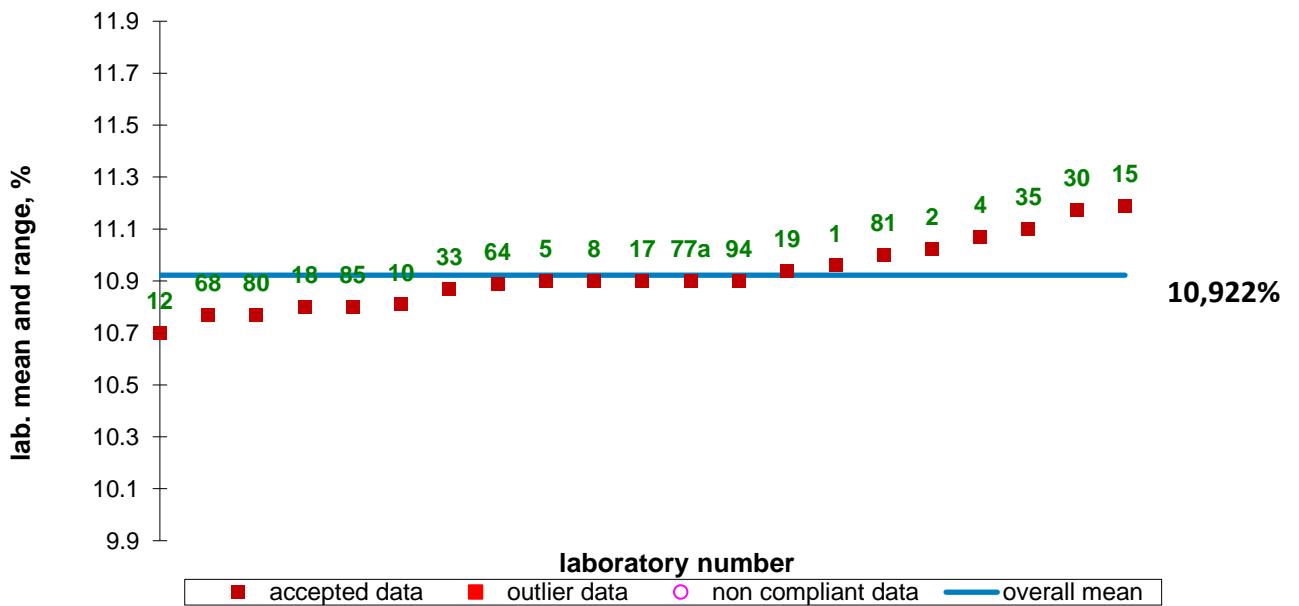Outliers 12, 15 and 85.

WGN 2022, protein, sample W2, reference
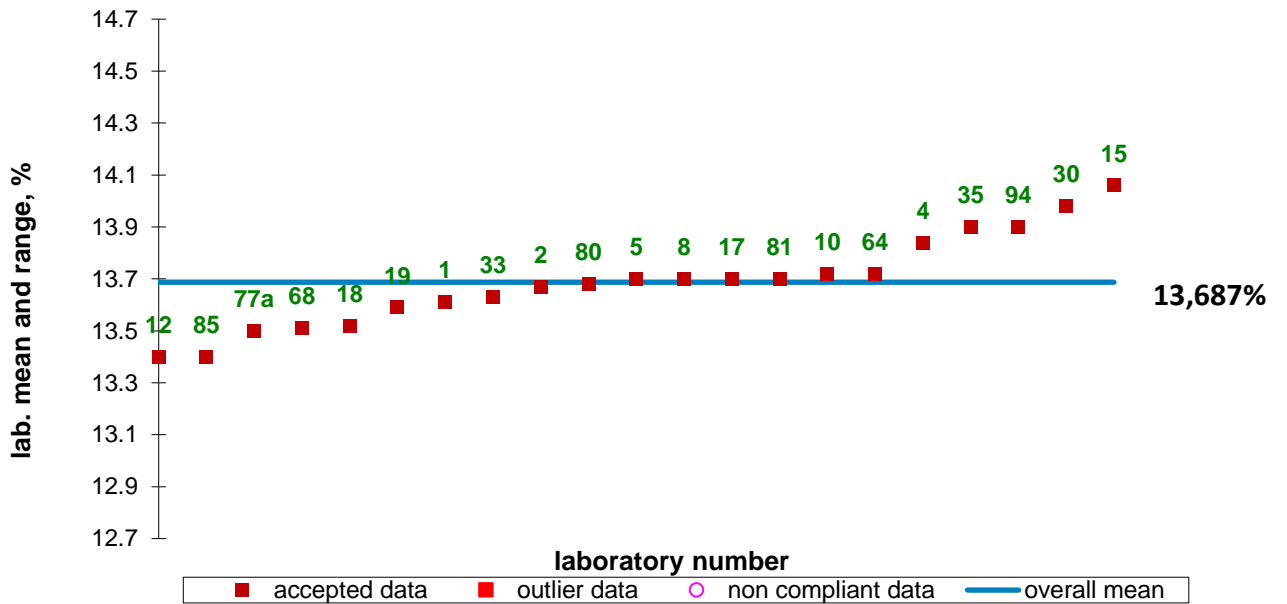

No outliers.

WGN 2022, protein, sample W3, reference

No outliers.

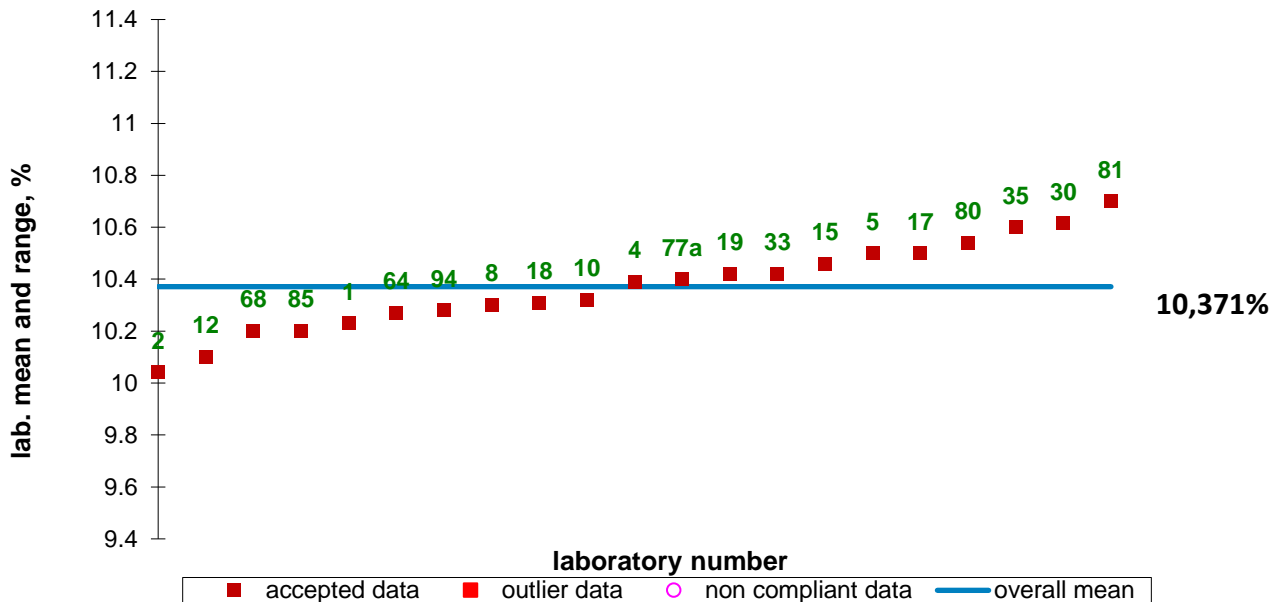## WGN 2022, protein, sample W4, reference

No outliers.

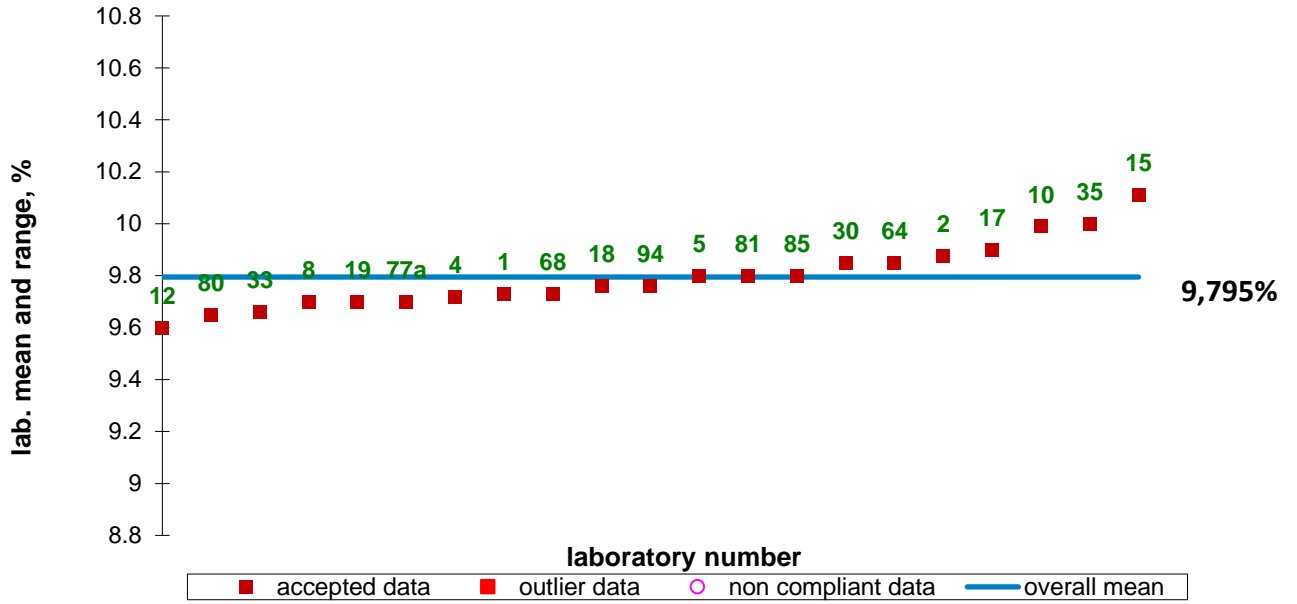## WGN 2022, protein, sample W5, reference

No outliers.

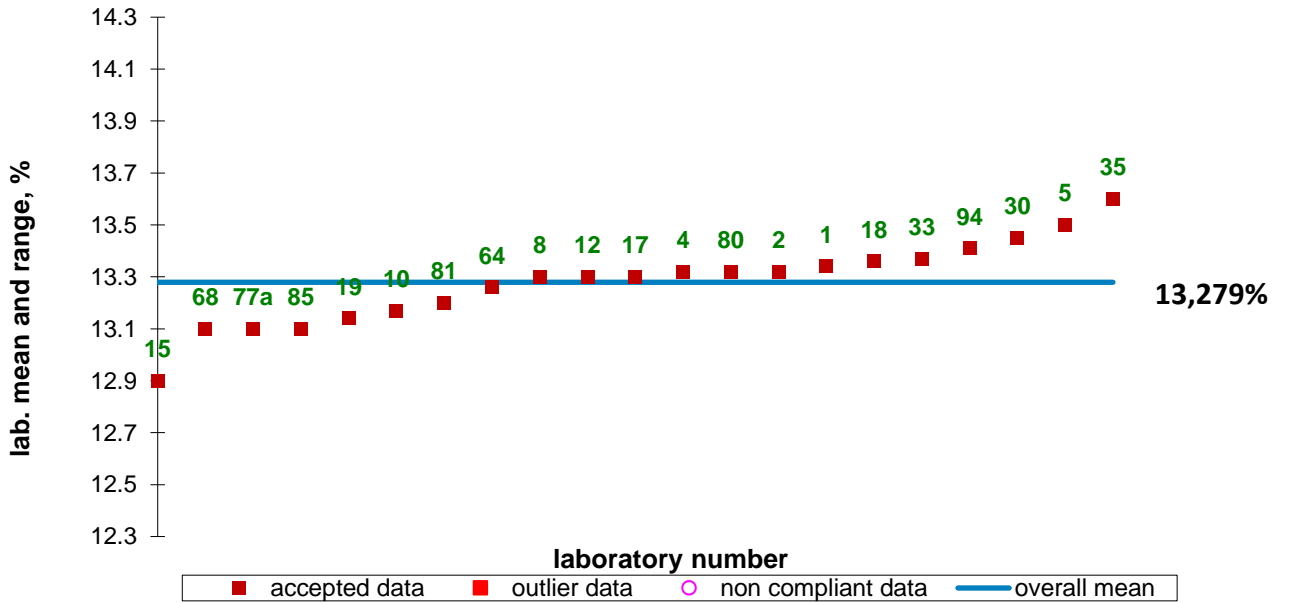## WGN 2022, protein, sample W6, reference

No outliers.

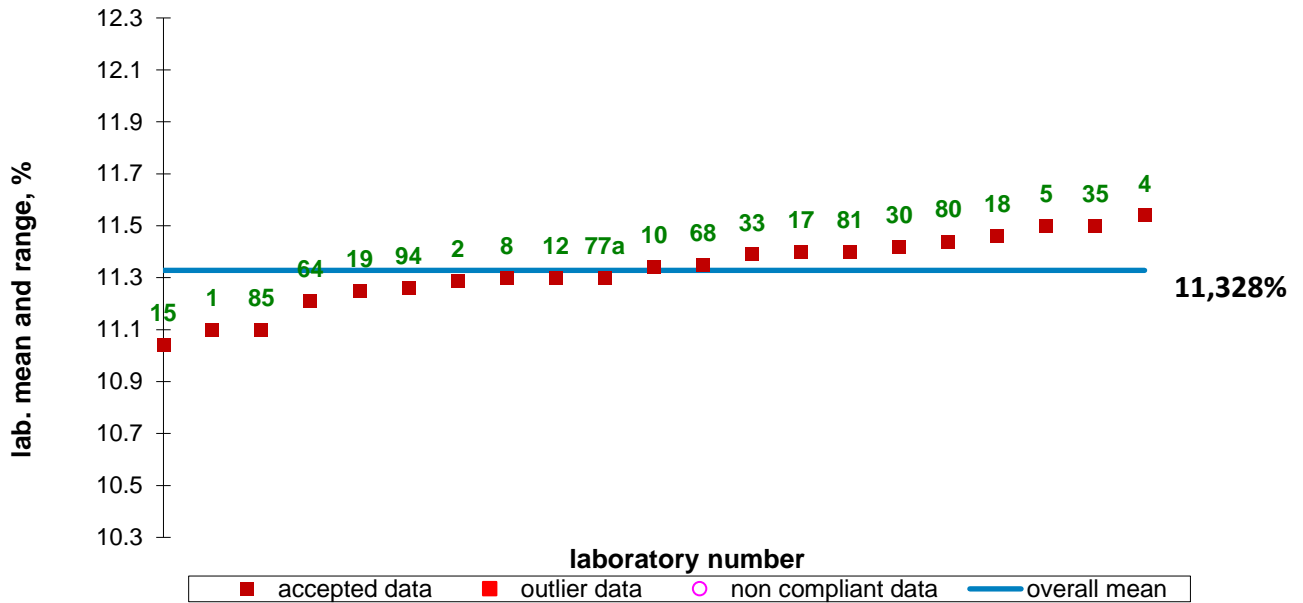## WGN 2022, protein, sample W7, reference

No outliers.

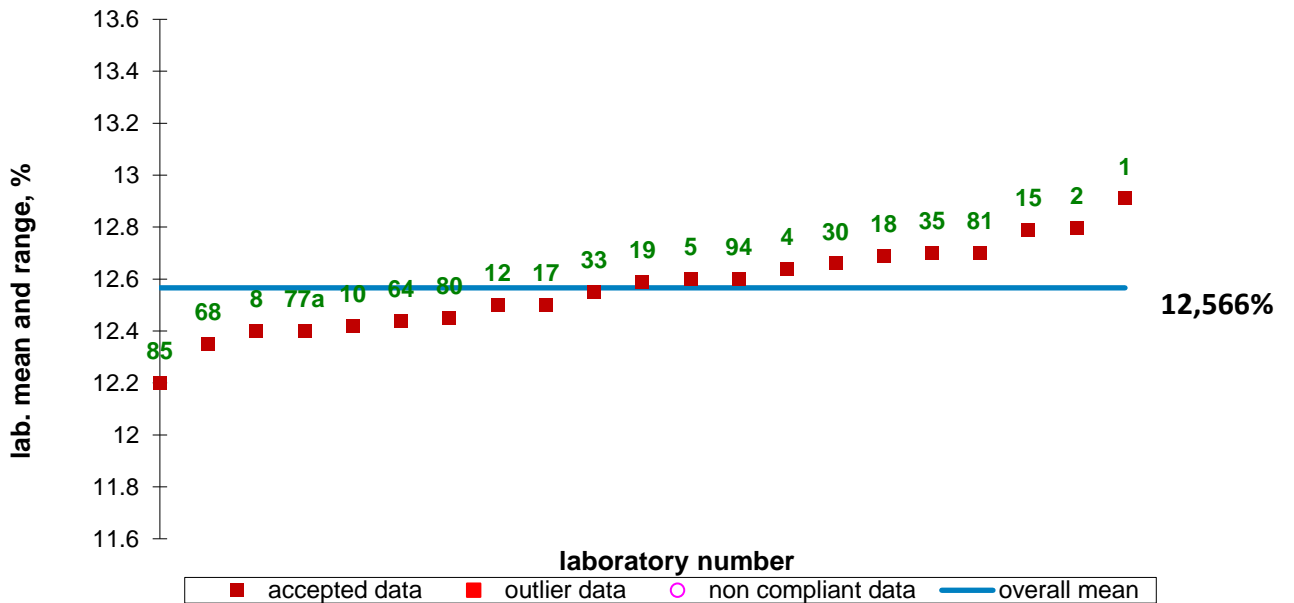## WGN 2022, protein, sample W8, reference

No outliers.

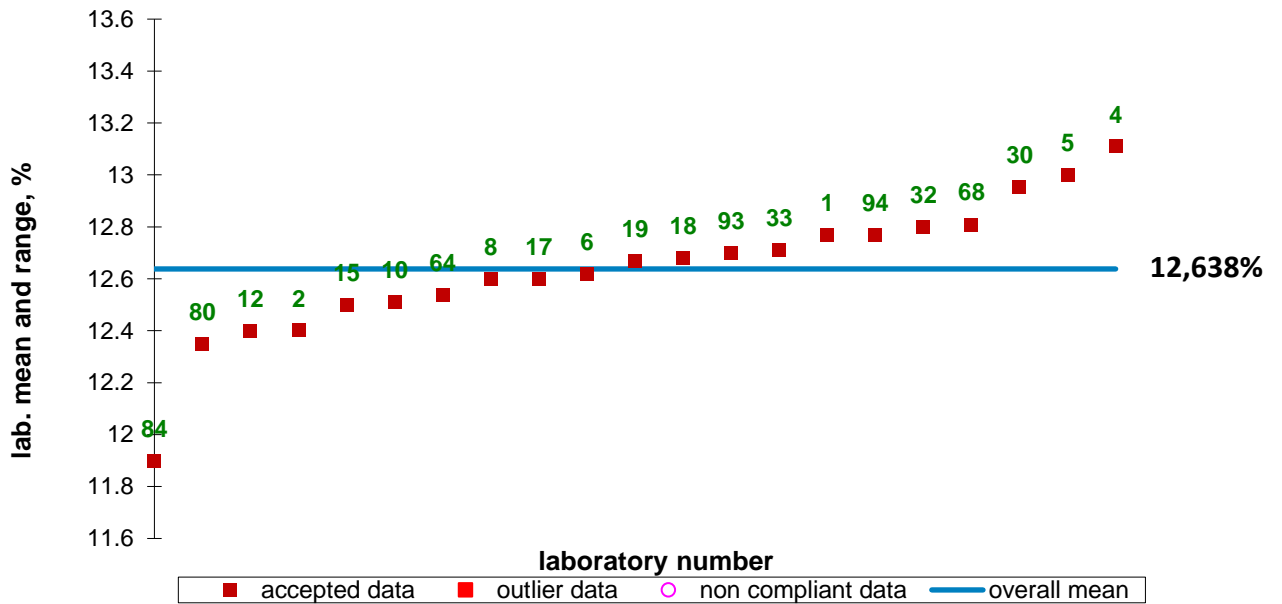## WGN 2022, protein, sample W9, reference

No outliers.

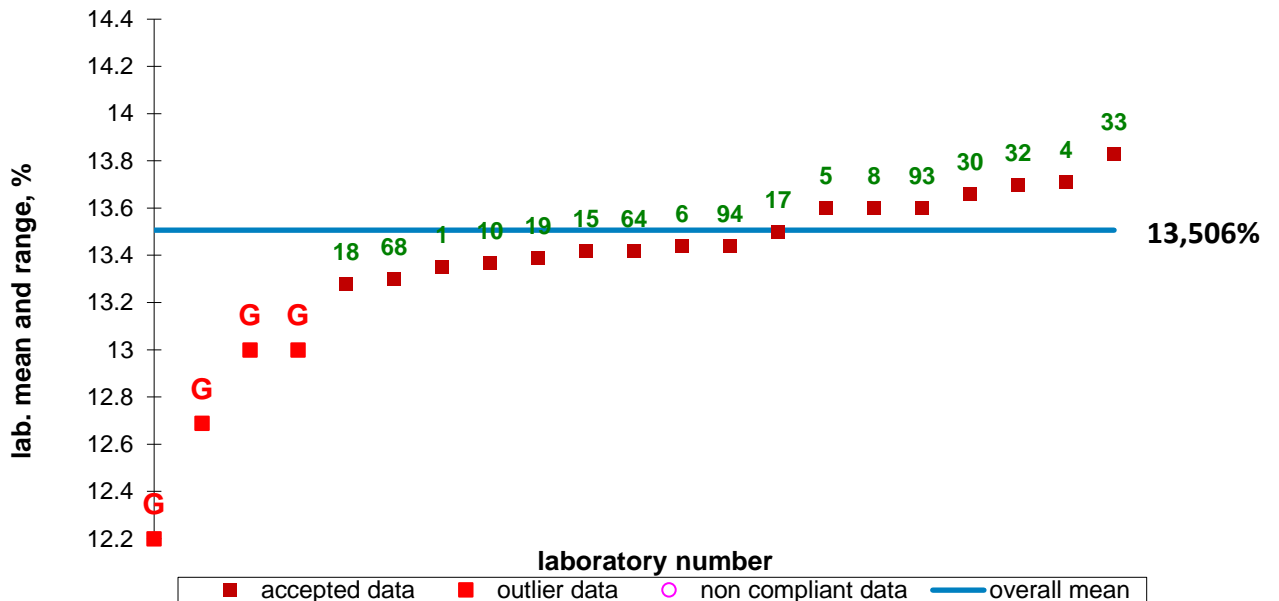## WGN 2022, protein, sample W10, reference

No outlier.

WGN 2022, protein, sample B1, reference

No outliers.

WGN 2022, protein, sample B2, reference

Outliers 2, 12, 80 and 84.

WGN 2022, protein, sample B3, reference

No outliers.

WGN 2022, protein, sample B4, reference

No outliers.

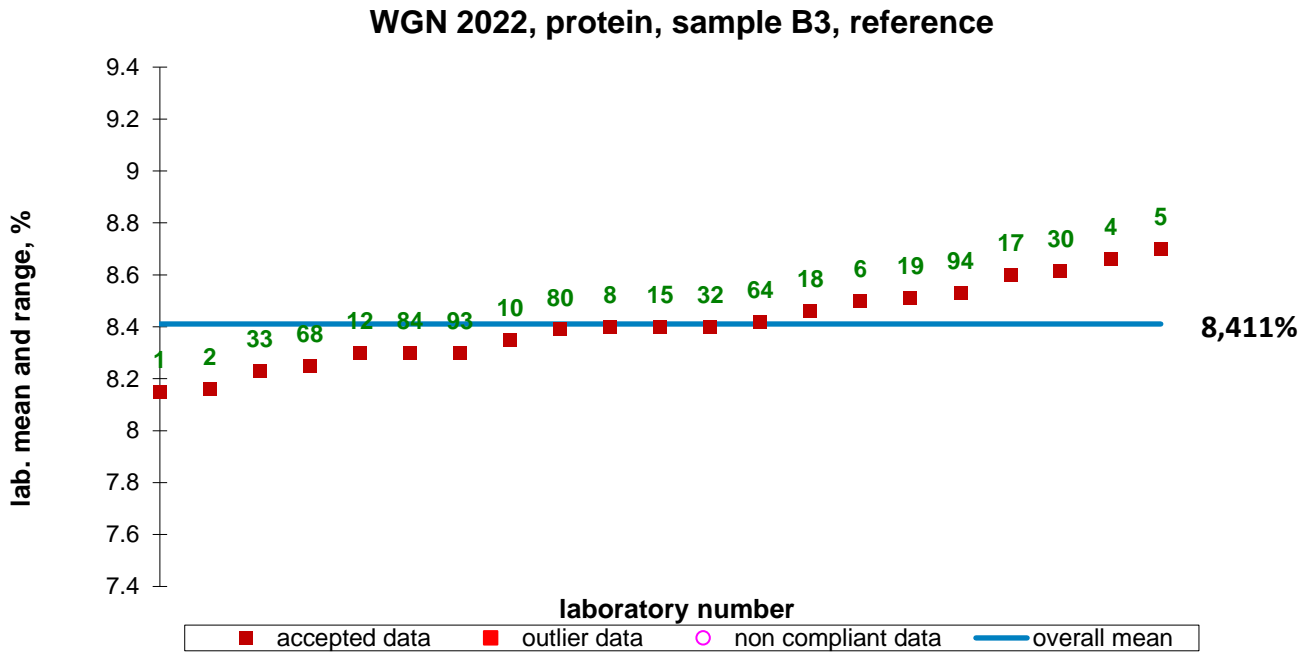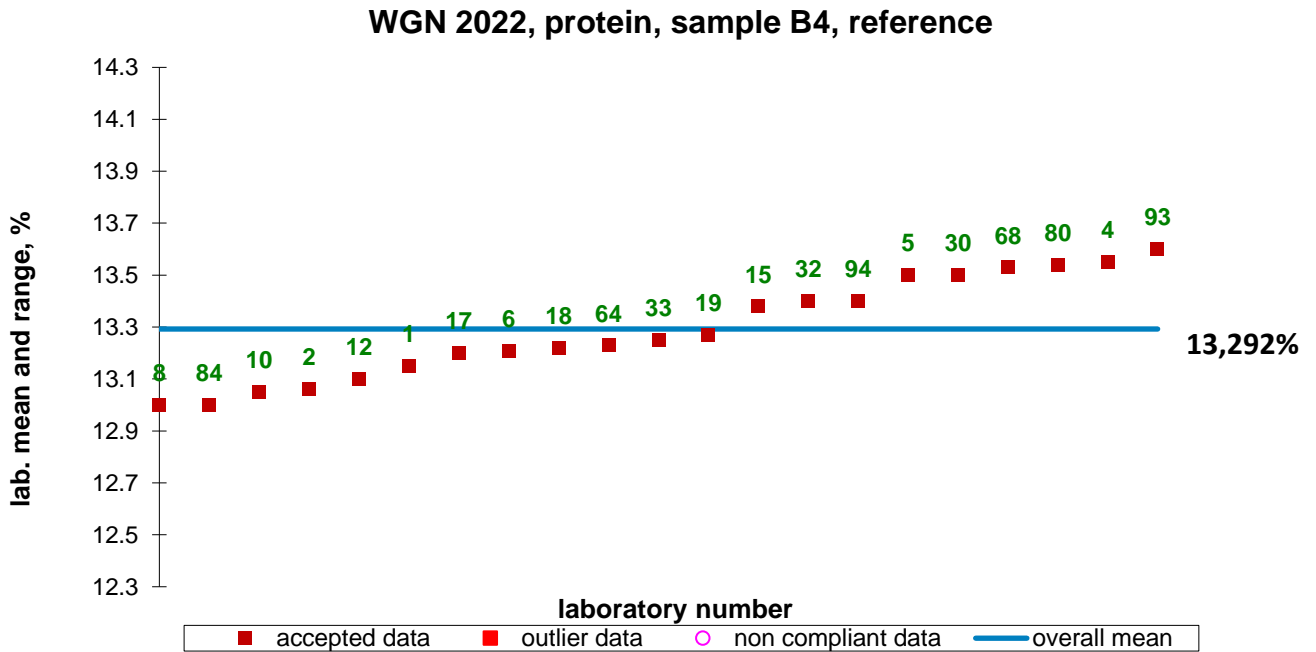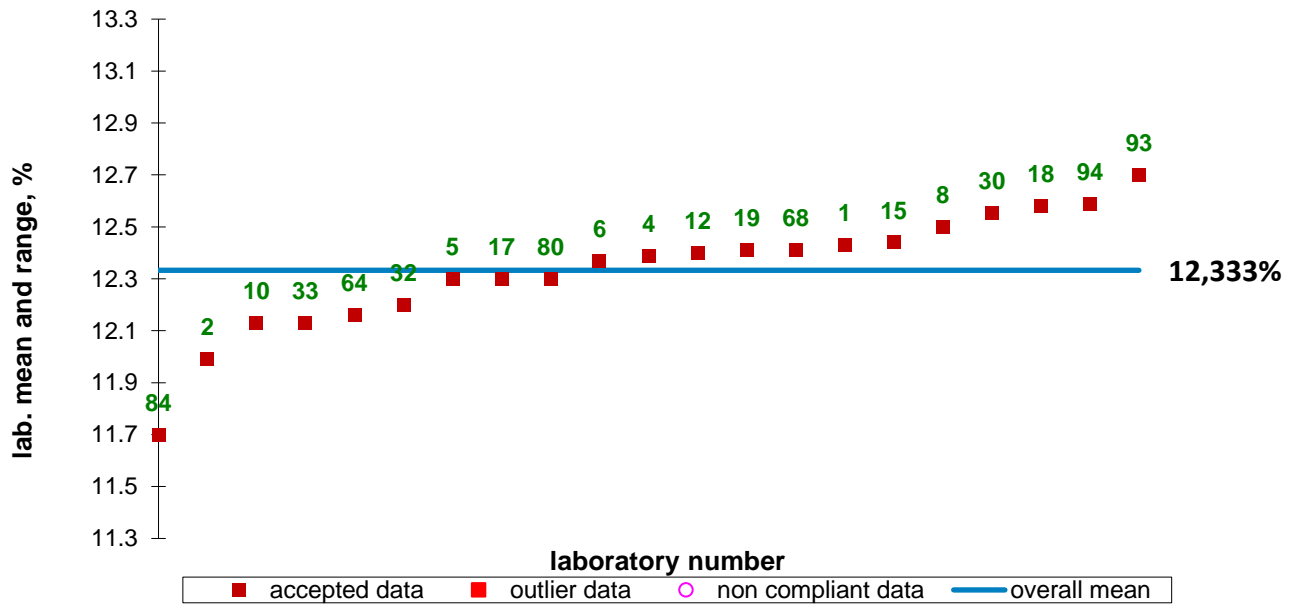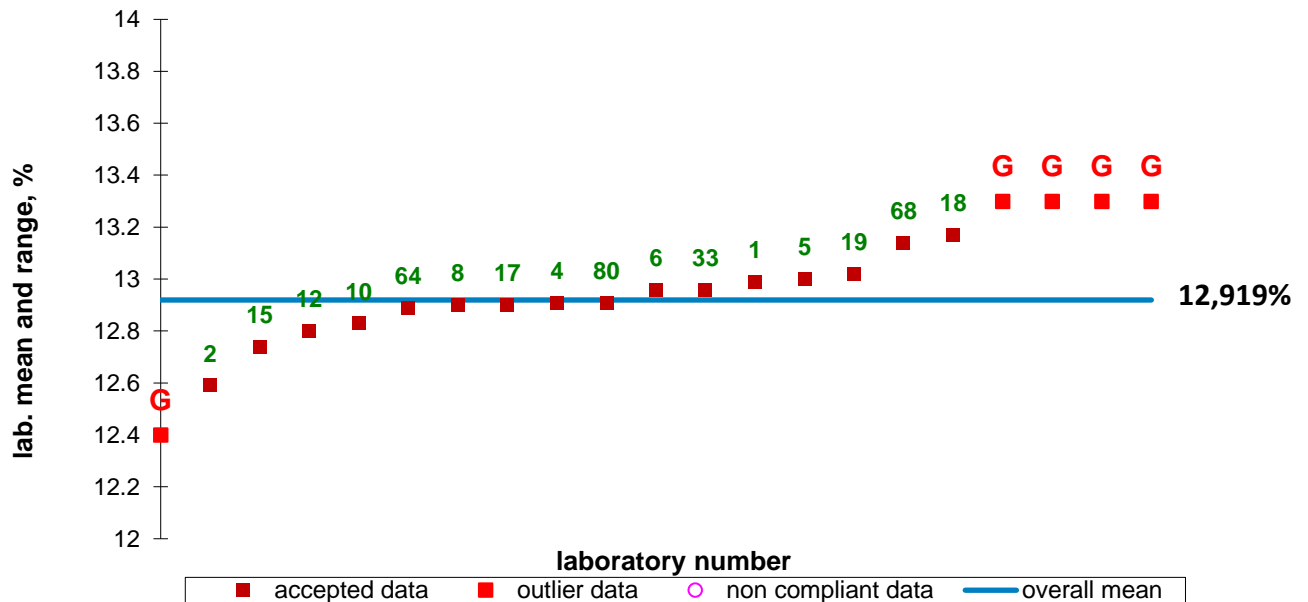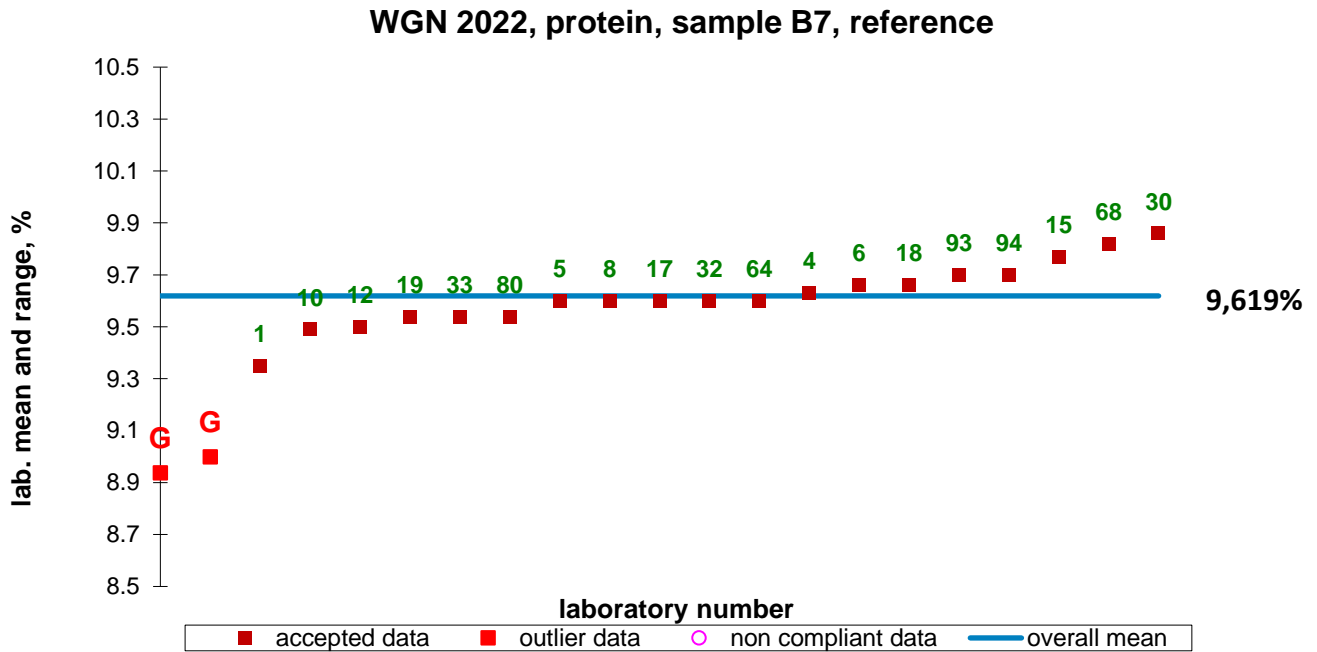**WGN 2022, protein, sample B5, reference**

No outliers.

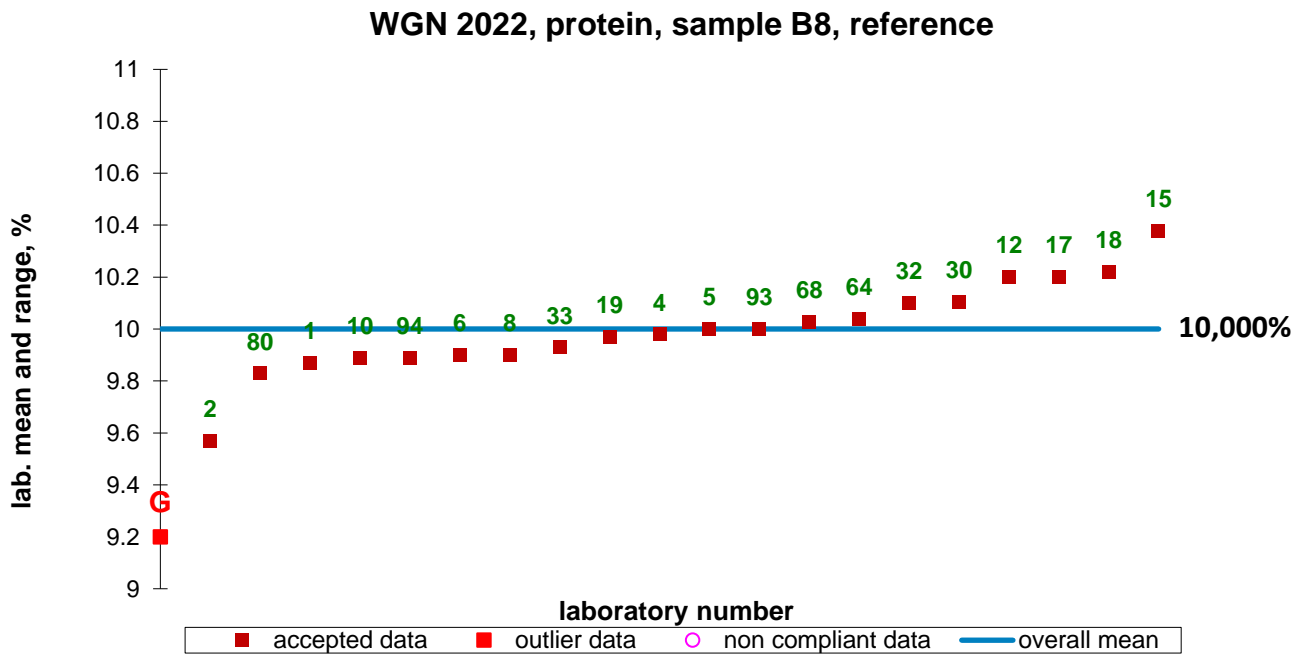**WGN 2022, protein, sample B6, reference**

Outliers 30, 32, 84, 93 and 94.
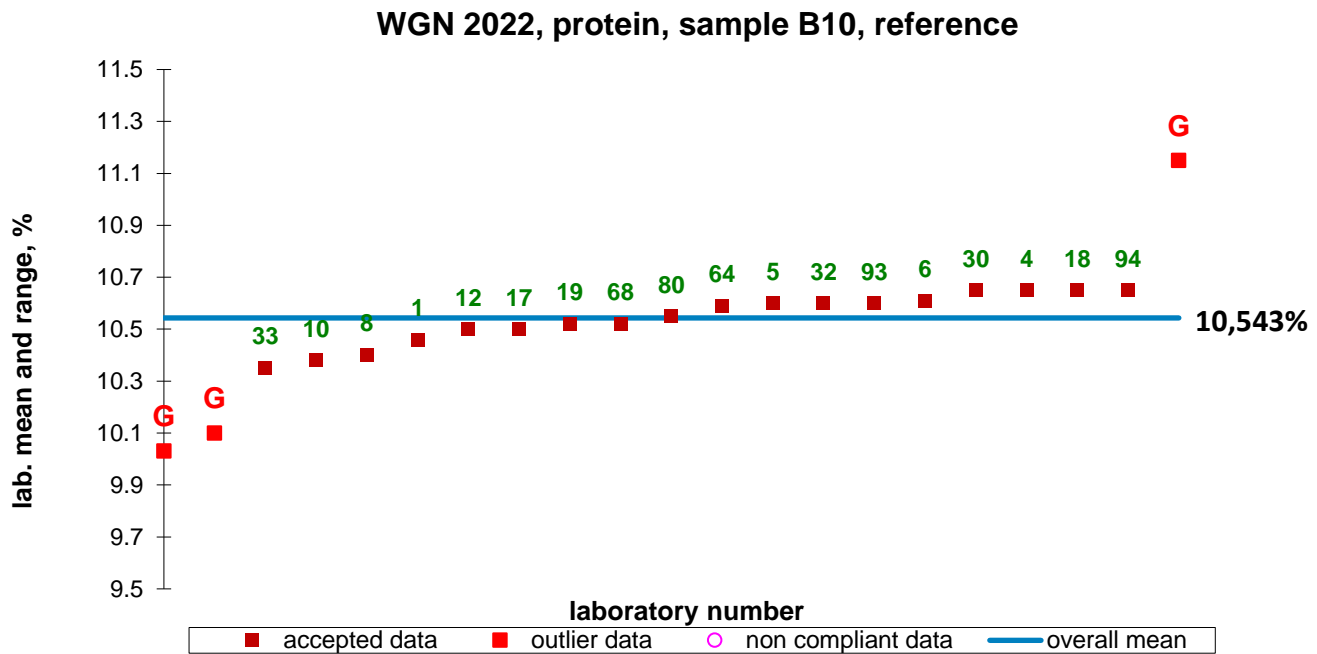
WGN 2022, protein, sample B7, reference

Outliers 2 and 84.

WGN 2022, protein, sample B8, reference

Outlier 84.

WGN 2022, protein, sample B9, reference

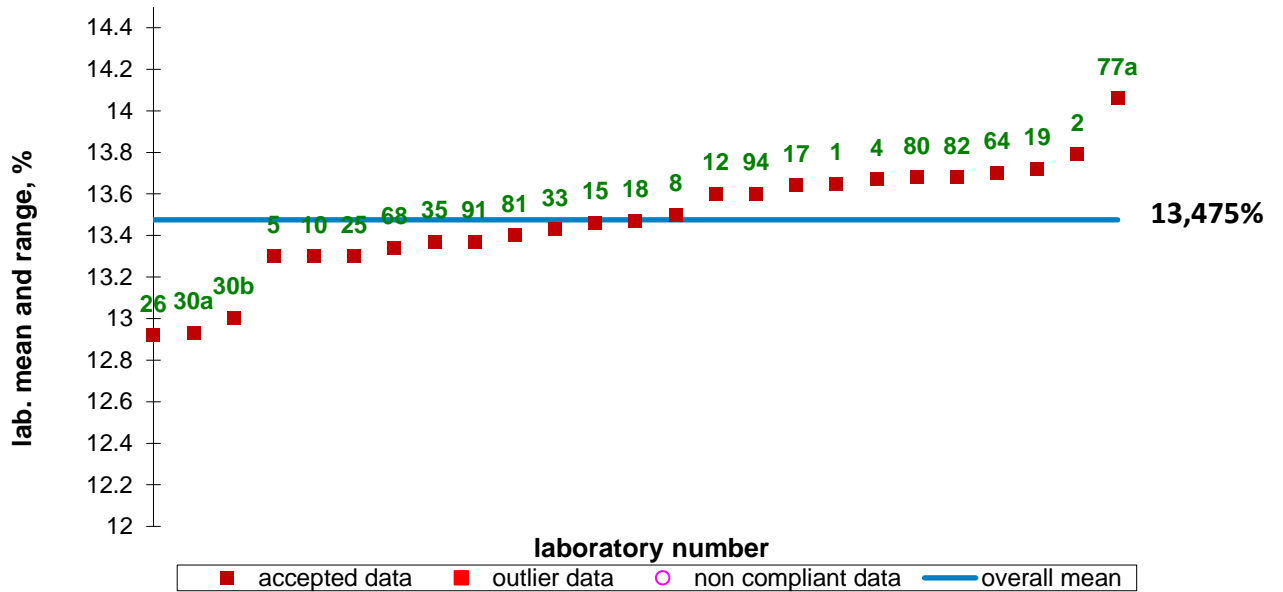No outliers.

WGN 2022, protein, sample B10, reference
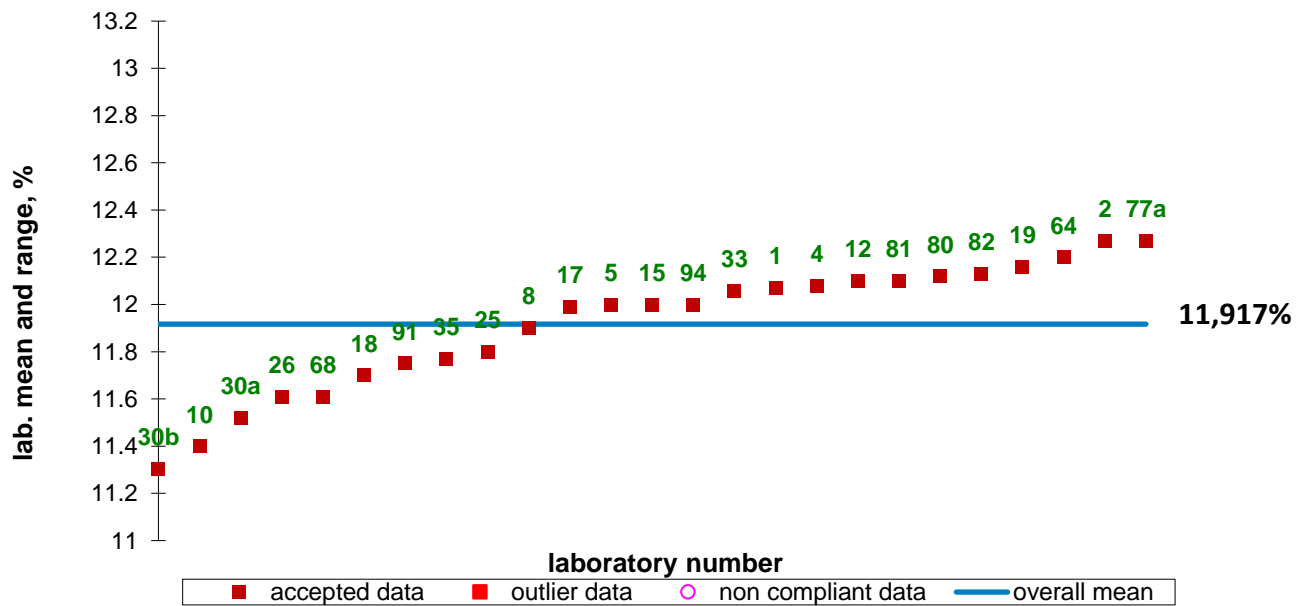

Outliers 2, 15 and 84.

3   Moisture in Wheat & Barley by reference methods
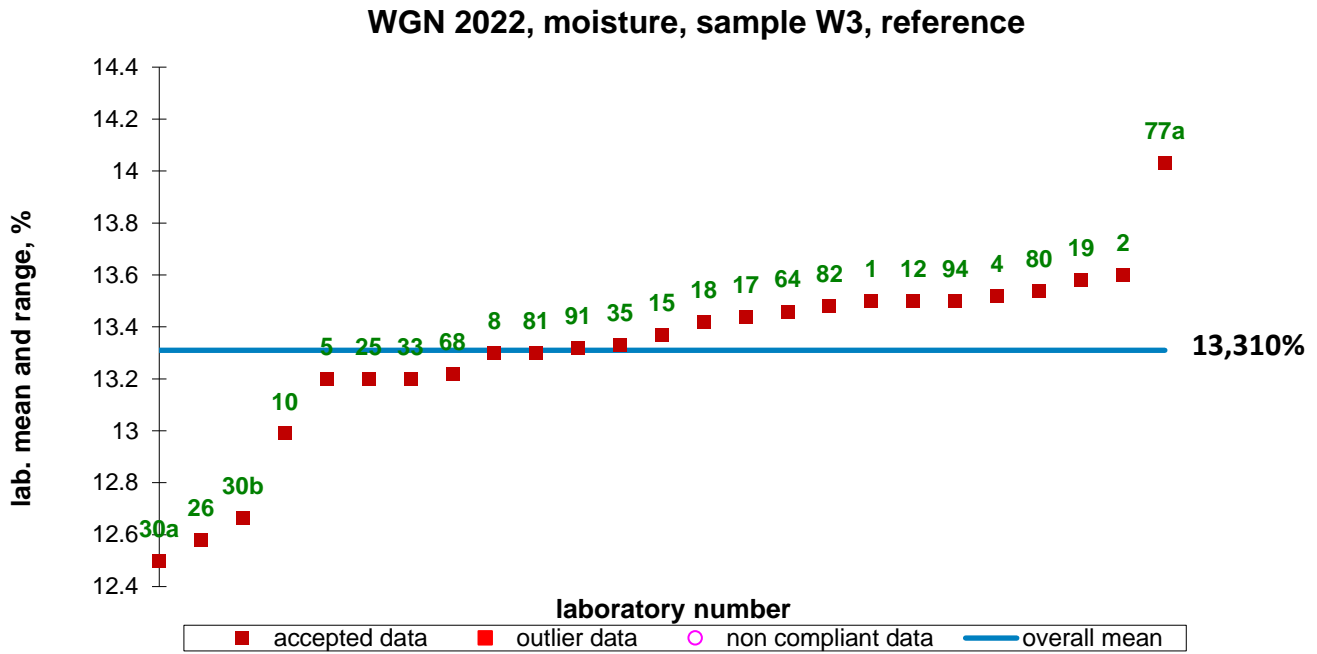
WGN 2022, moisture, sample W1, reference

No outliers.

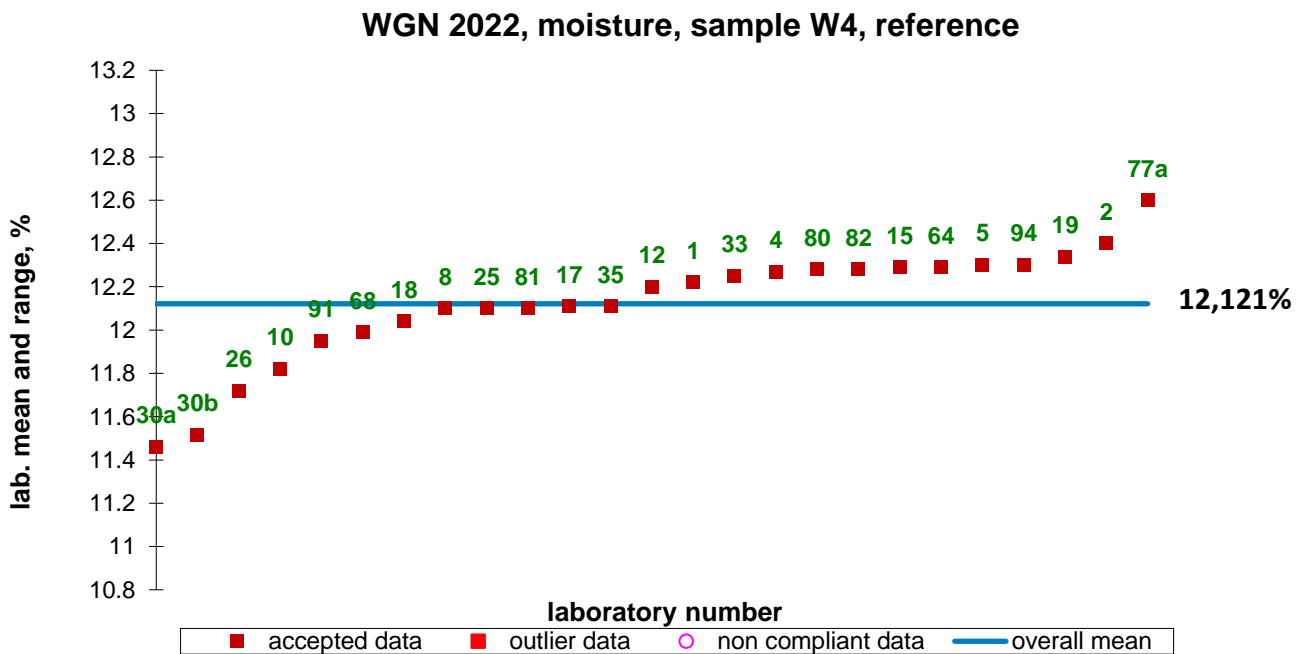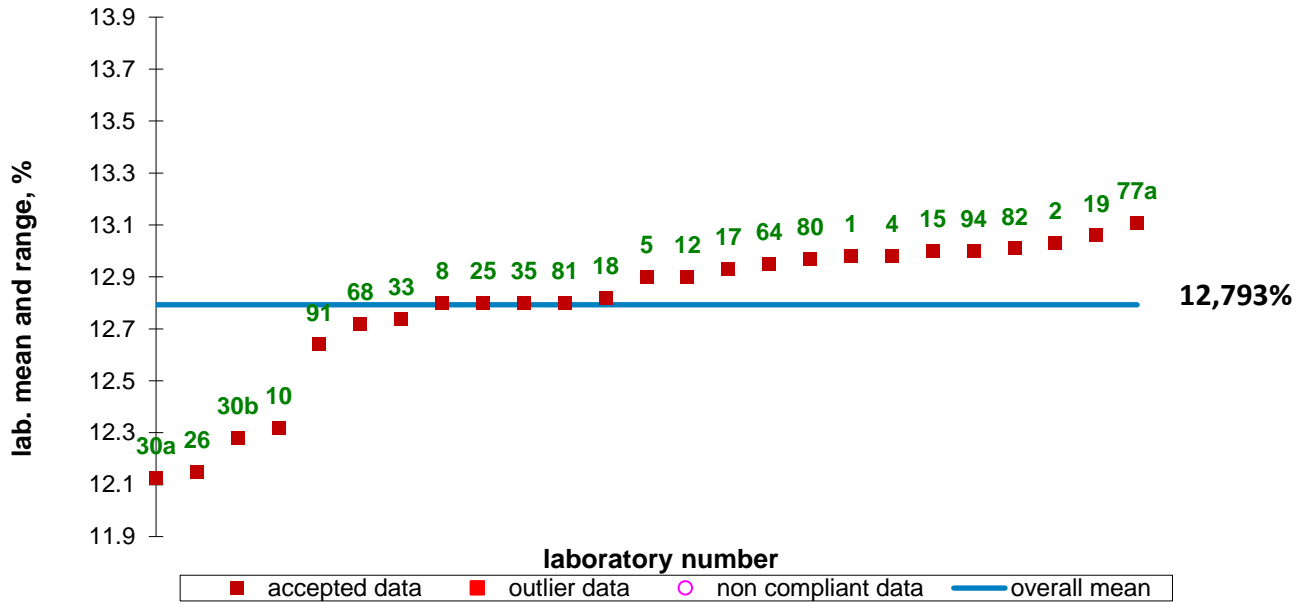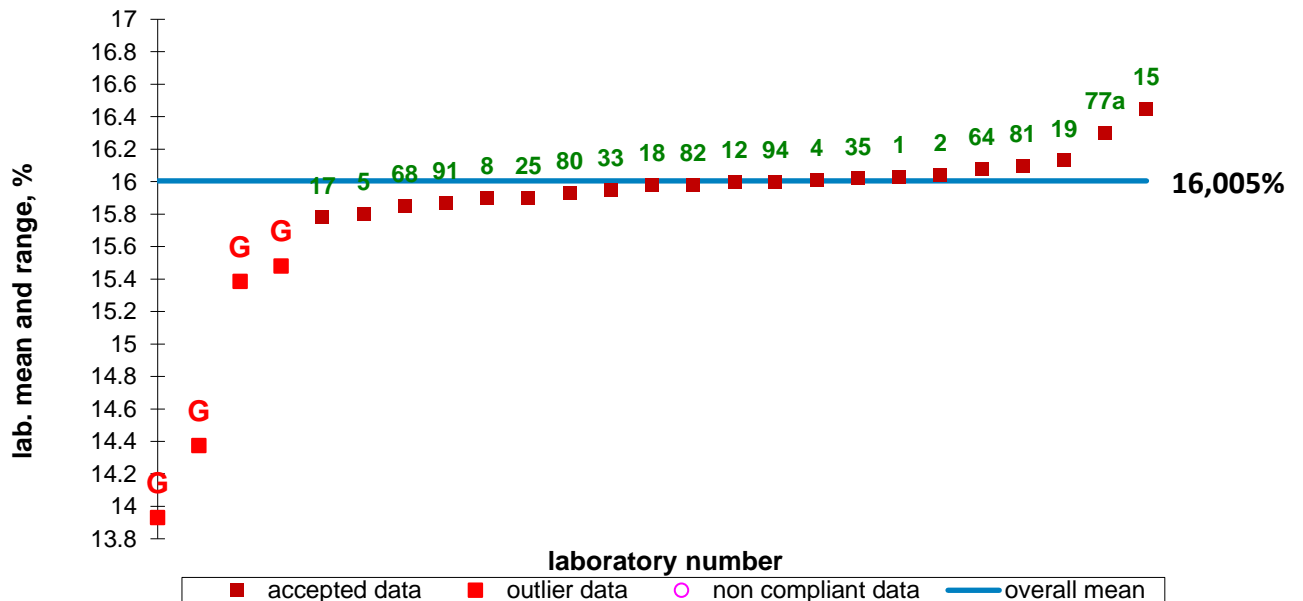### WGN 2022, moisture, sample W2, reference

No outliers.

WGN 2022, moisture, sample W3, reference

No outliers.

WGN 2022, moisture, sample W4, reference

No outliers.

WGN 2022, moisture, sample W5, reference

12,793%

No outliers.

WGN 2022, moisture, sample W6, reference

16,005%

Outliers 10, 26, 30 and 30b.

WGN 2022, moisture, sample W7, reference

Outliers 10, 26, 30a, 30b and 77a.

WGN 2022, moisture, sample W8, reference

Outliers 26, 30a and 30b.

WGN 2022, moisture, sample W9, reference

Outliers 26, 30a and 30b.

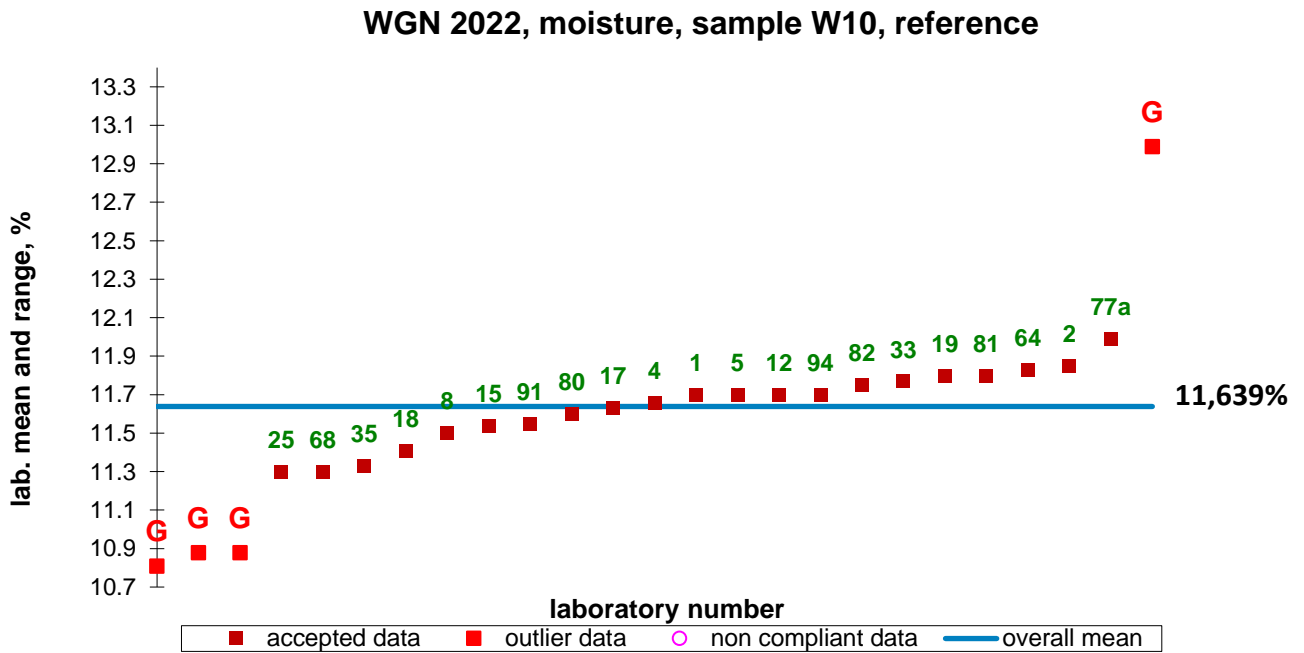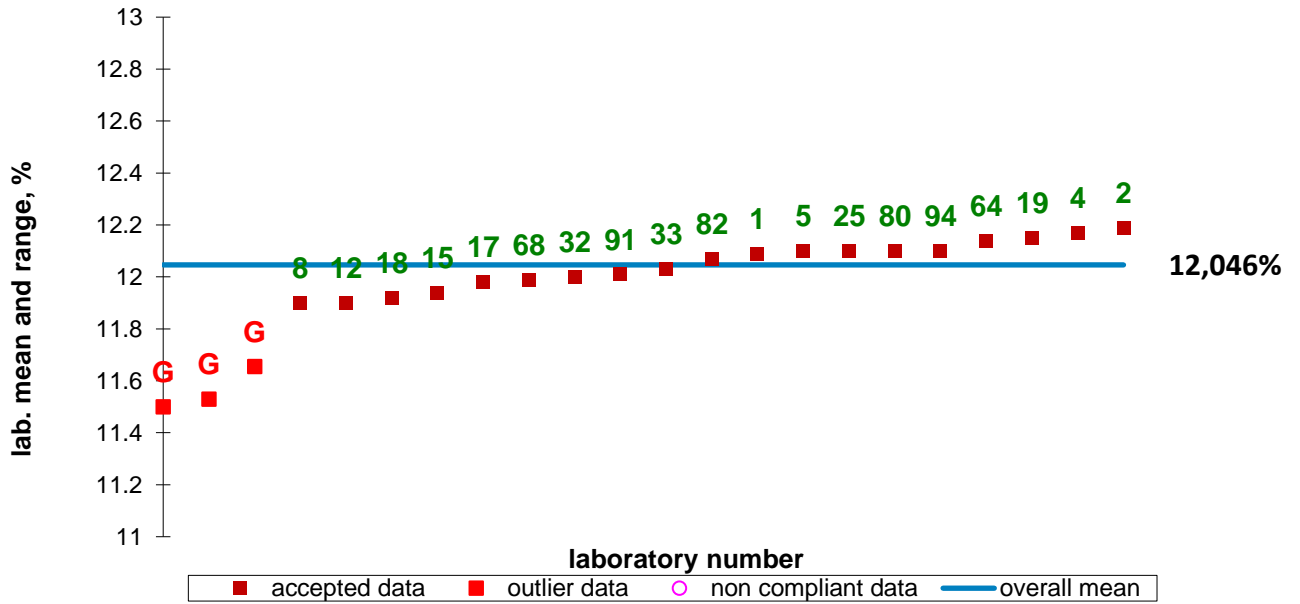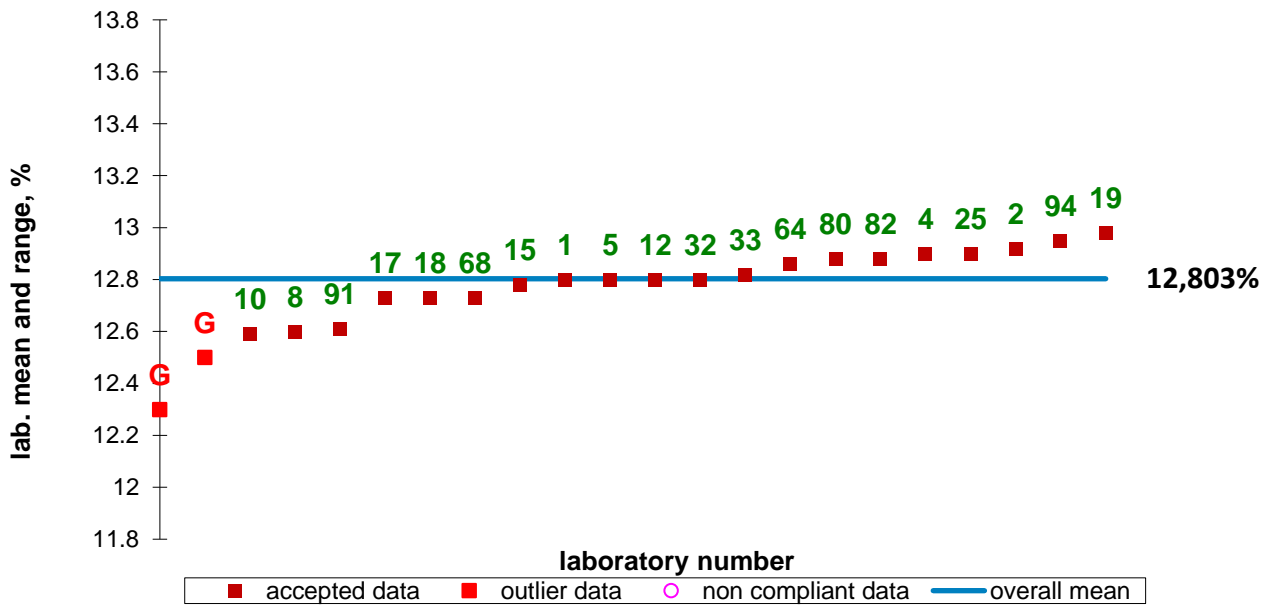## WGN 2022, moisture, sample W10, reference

Outliers 10, 26, 30a and 30b.

WGN 2022, moisture, sample B1, reference
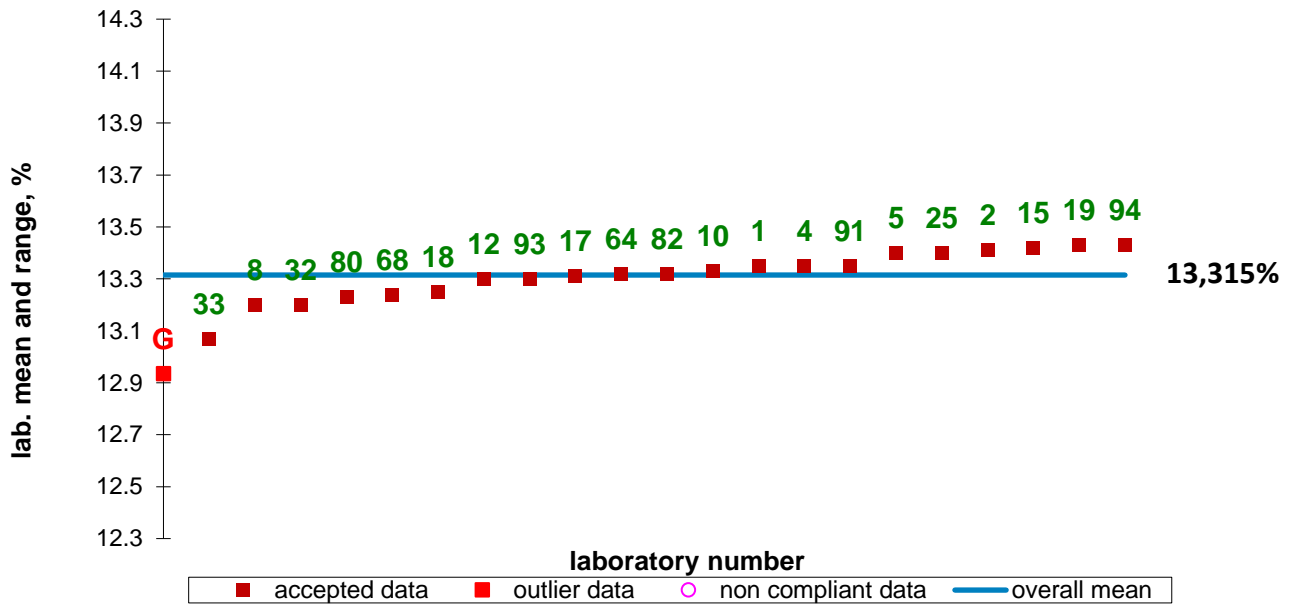

Outliers 10, 30a and 93.

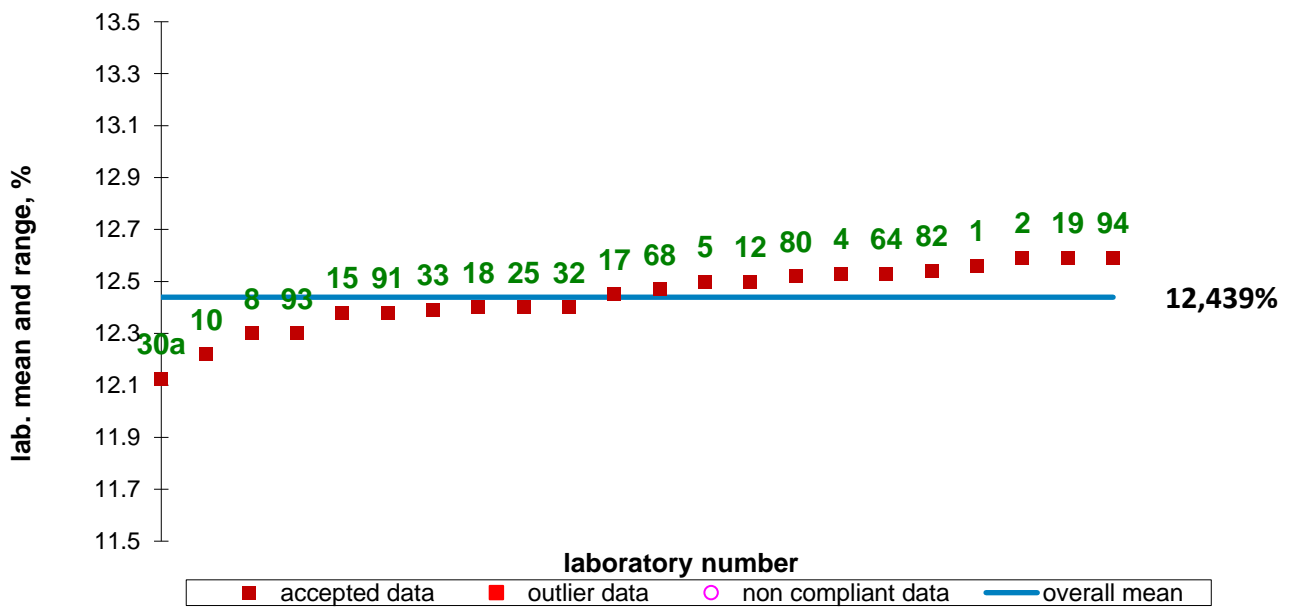**WGN 2022, moisture, sample B2, reference**

Outliers 30a and 93.

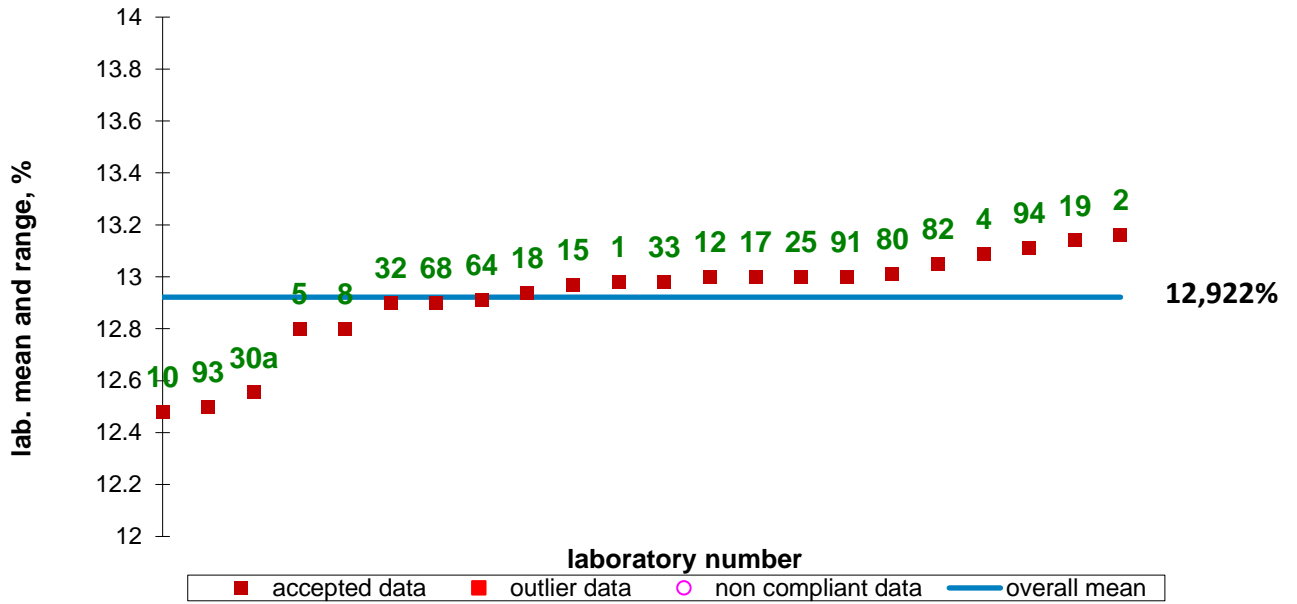## WGN 2022, moisture, sample B3, reference

Outlier 30a.

WGN 2022, moisture, sample B4, reference
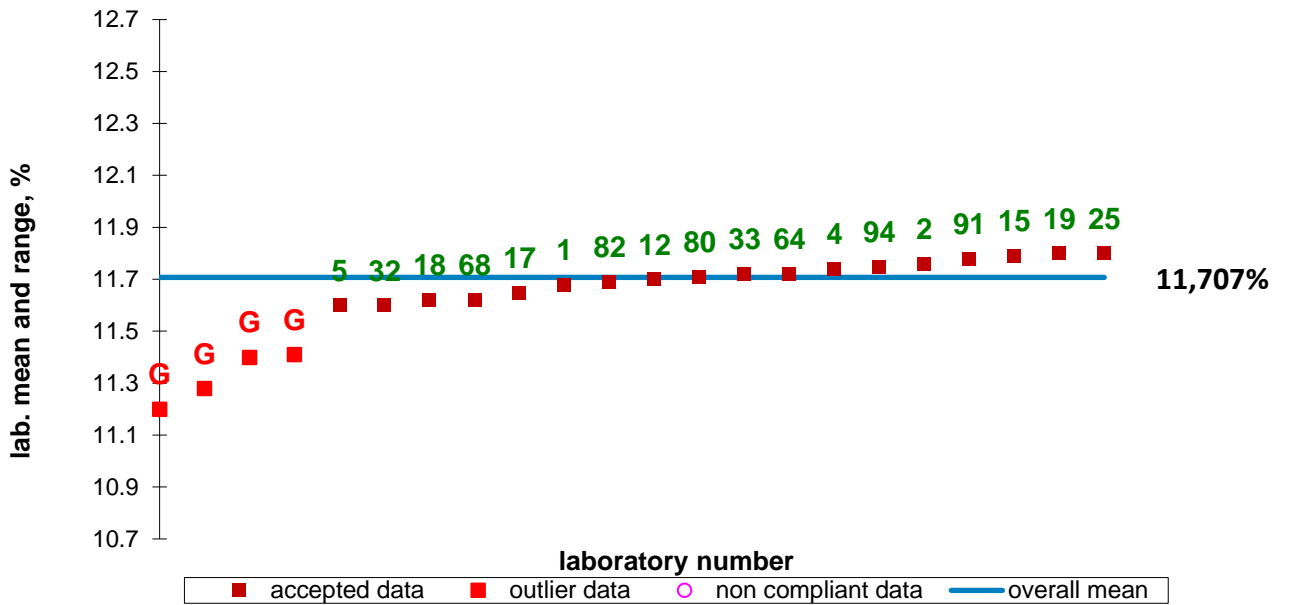

No outliers.

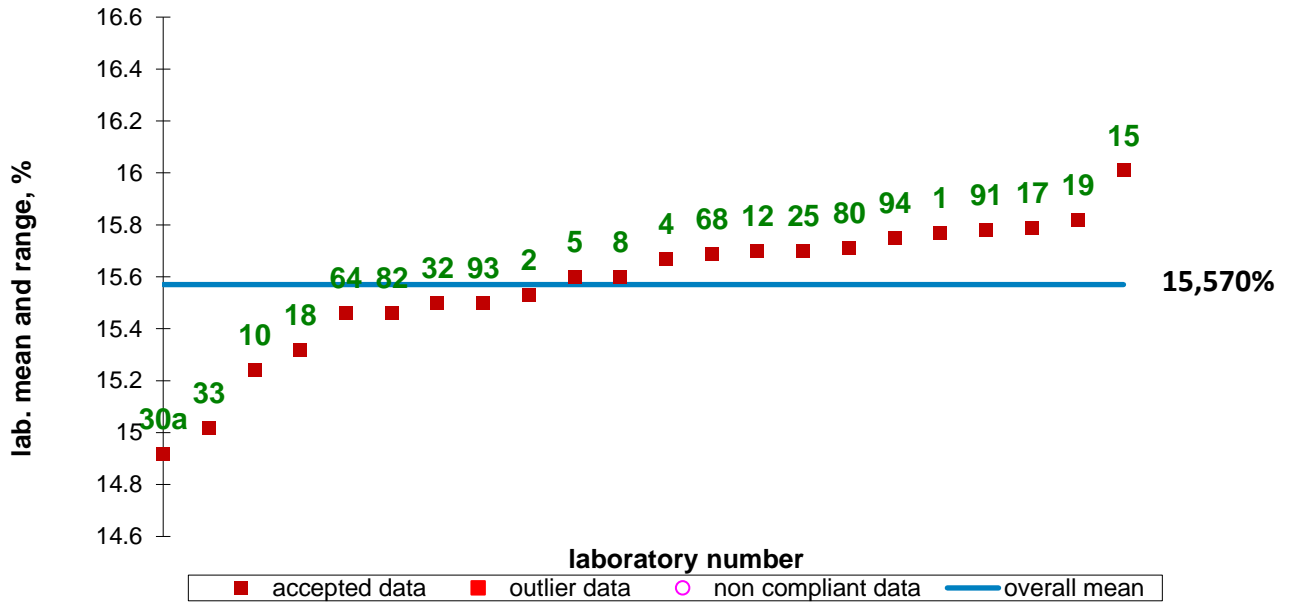## WGN 2022, moisture, sample B5, reference

No outliers.

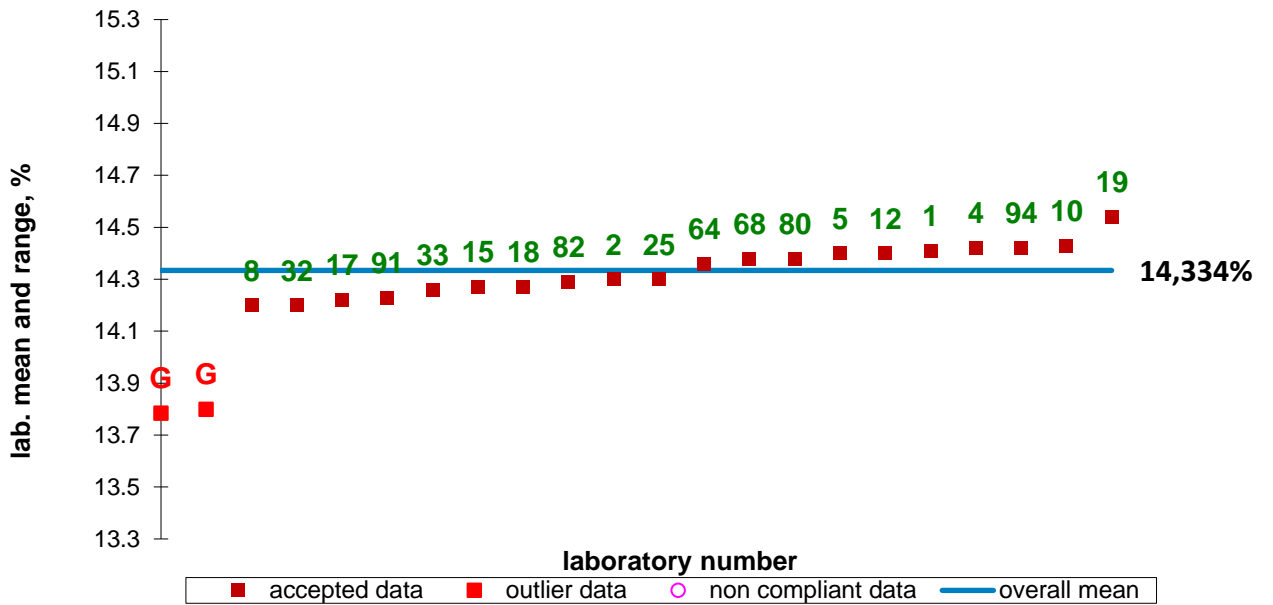## WGN 2022, moisture, sample B6, reference

Outliers 8, 10, 30a and 93

WGN 2022, moisture, sample B7, reference

No outliers.
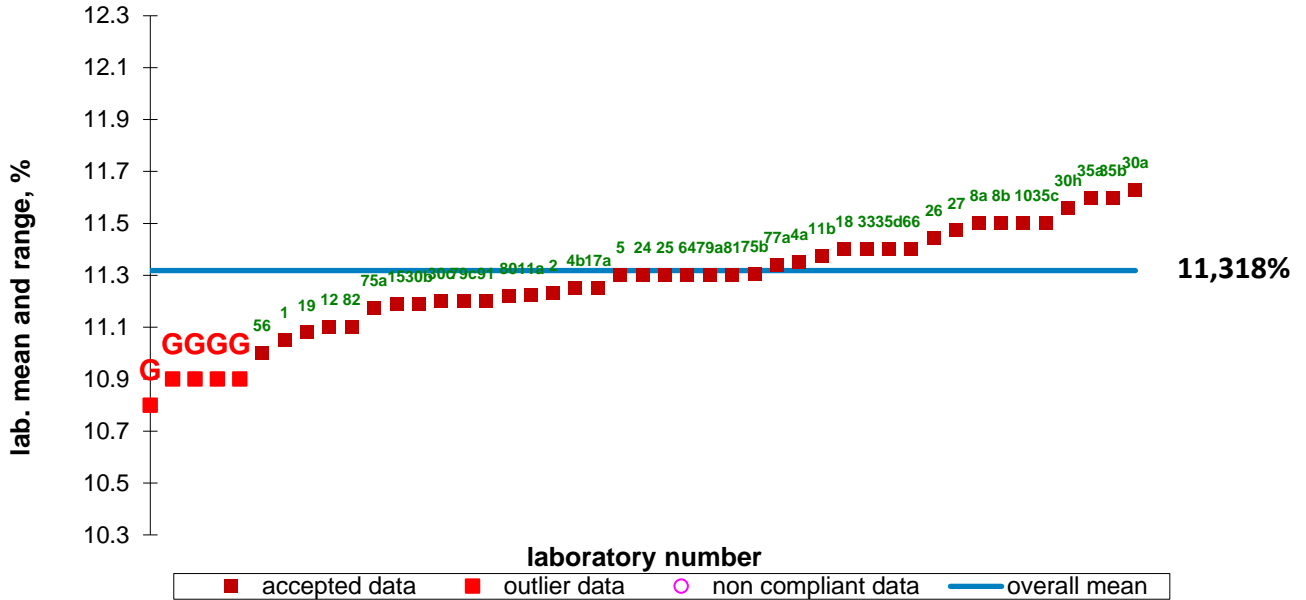
WGN 2022, moisture, sample B8, reference

Outliers 30a and 93

WGN 2022, moisture, sample B9, reference

Outlier 30a.

WGN 2022, moisture, sample B10, reference

Outliers 30a and 93

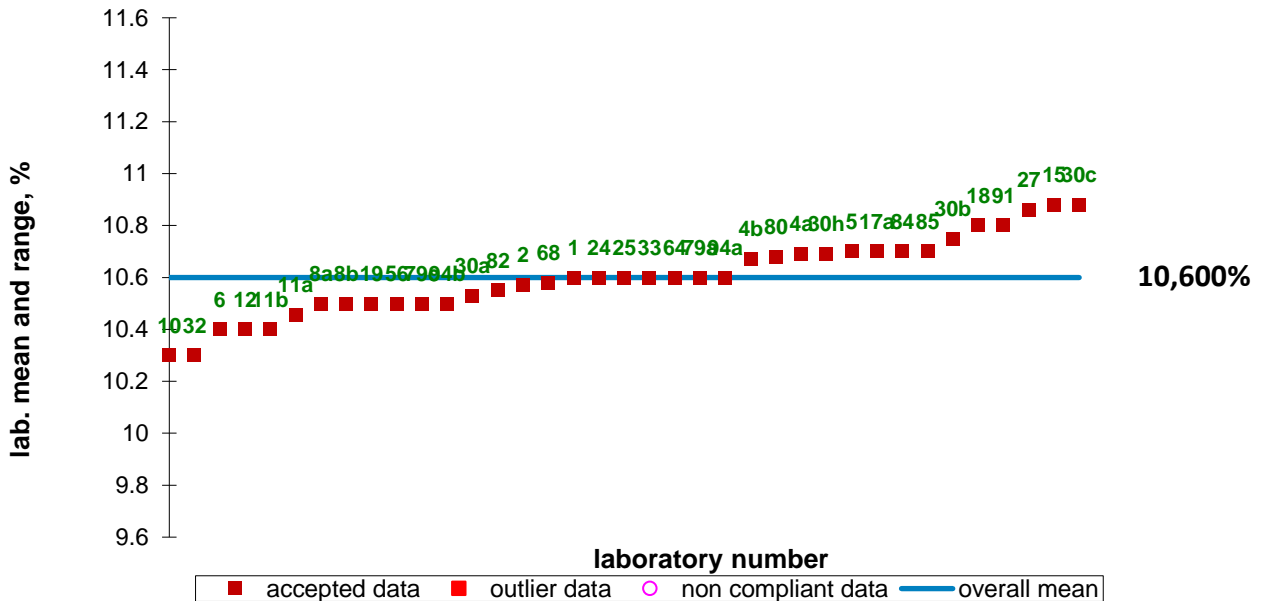## 4   Protein in Wheat & Barley by local NIR prediction models

Only two examples are given

WGN 2022, protein, sample W9, local

Outliers 68, 79b, 85, 94a and 94b.
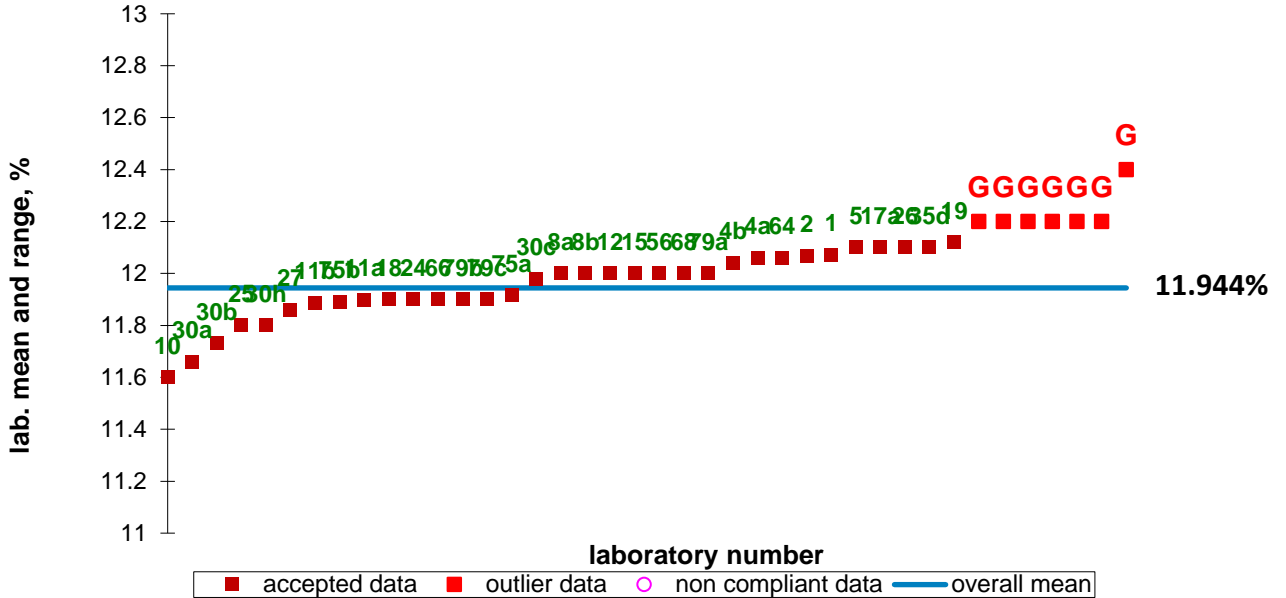
WGN 2022, protein, sample B10, local

No outliers.

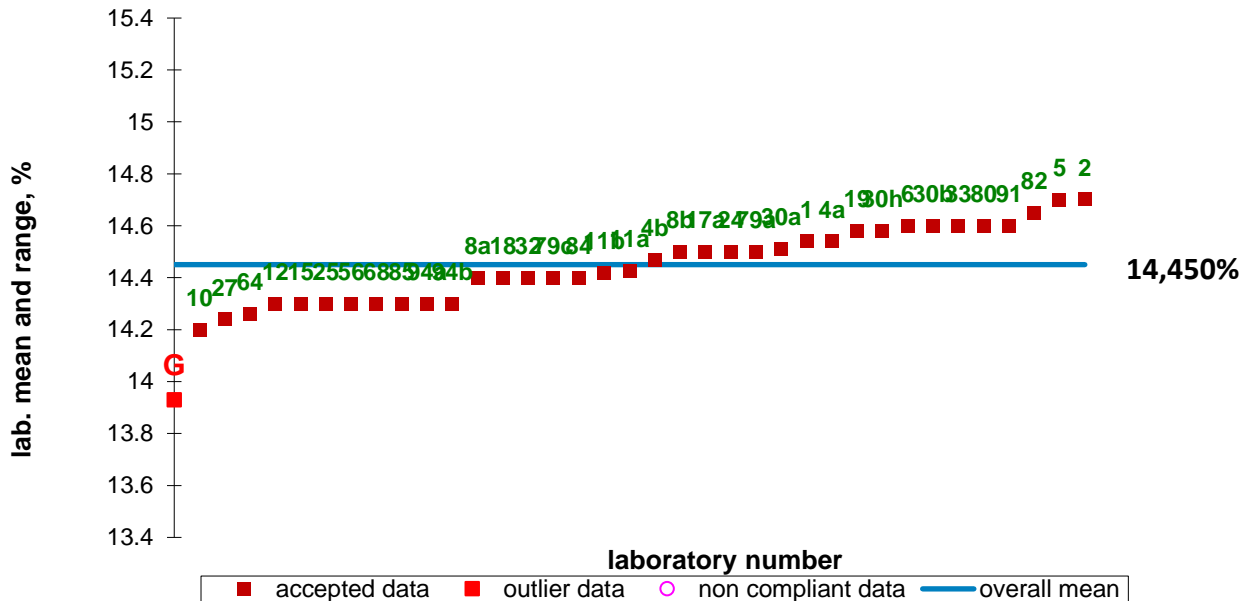## 5   Moisture in Wheat & Barley by local NIR prediction models

Only two examples are given

WGN 2022, moisture, sample W2, local

Outliers 33, 35a-35c, 77a, 80 and 81.

WGN 2022, moisture, sample B8, local
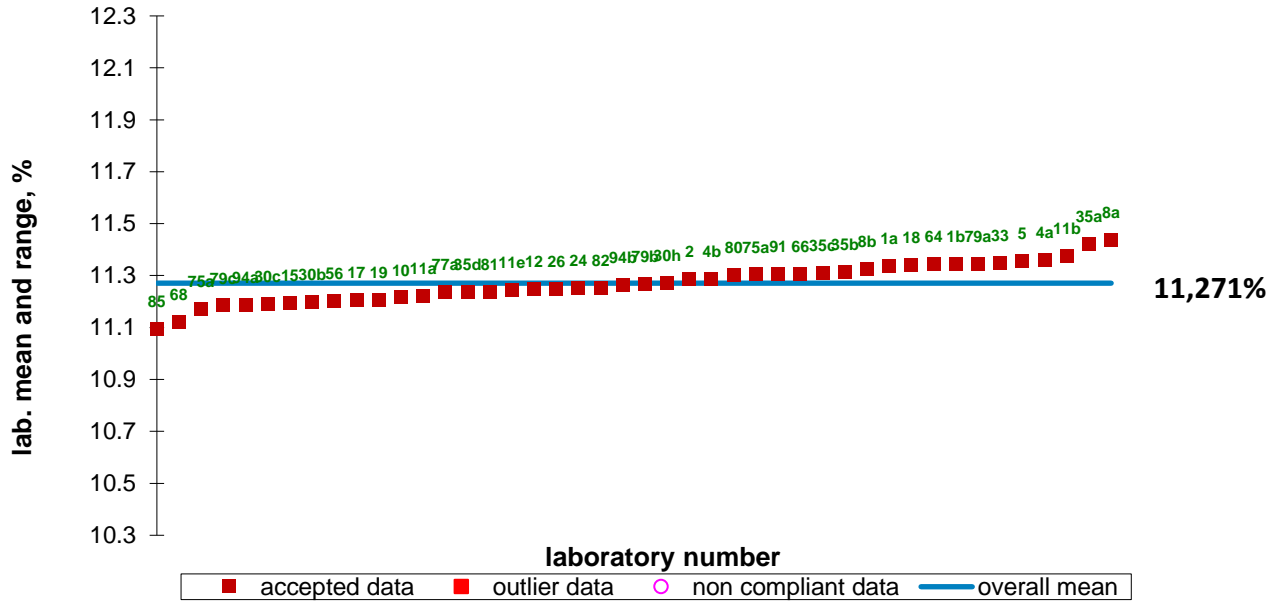

Outlier 30c.
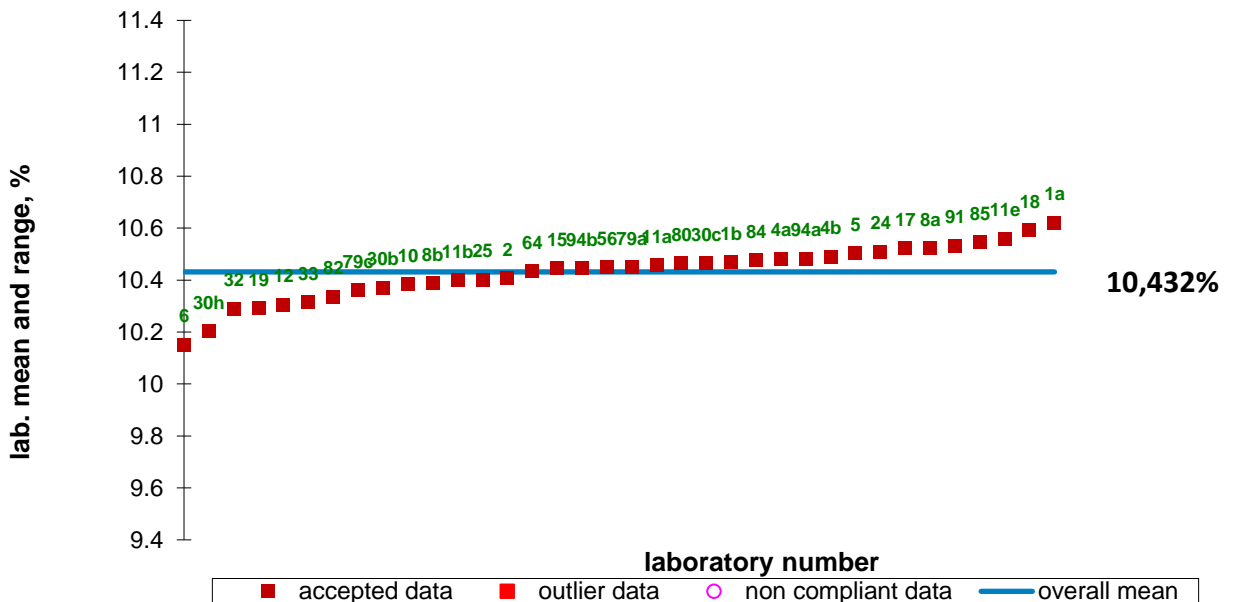
6   Protein in Wheat & Barley by ANN model WB003034

Only two typical examples are given here:

WGN 2022, protein, sample W9, ANN

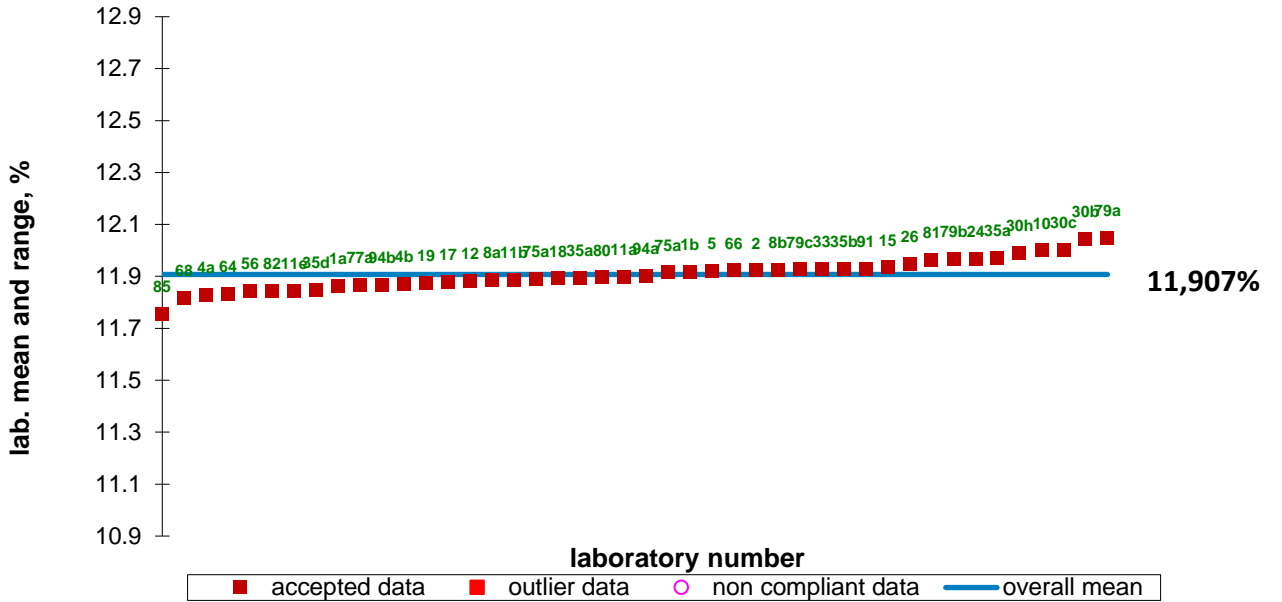No outliers.

WGN 2022, protein, sample B10, ANN

No outliers.

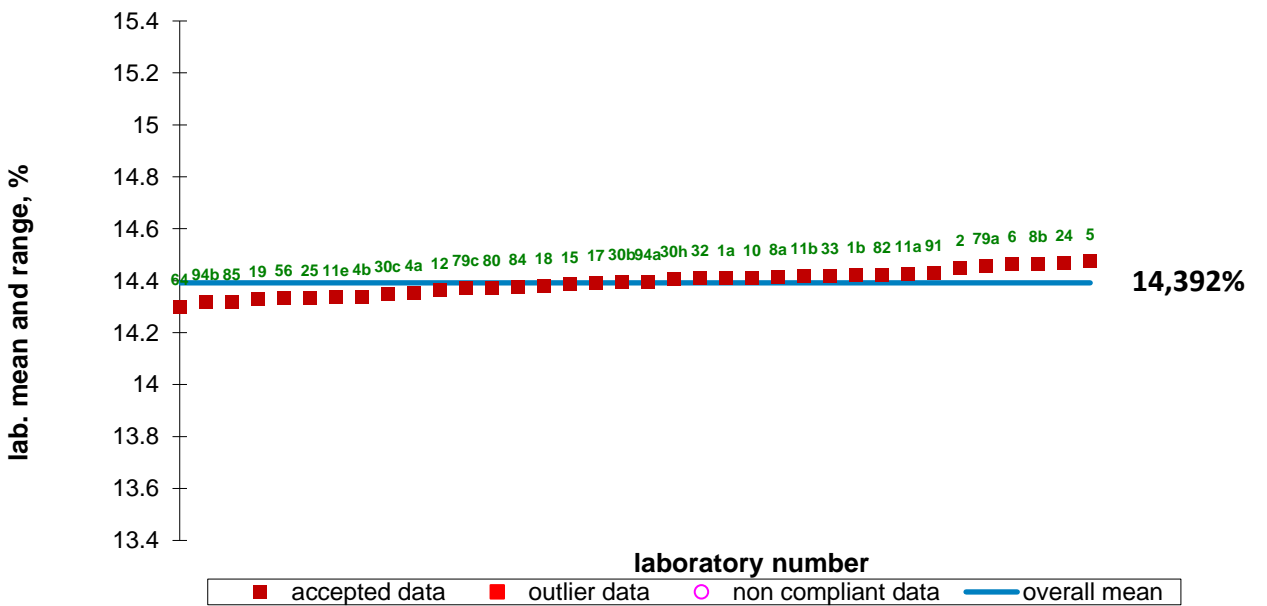## 7   Moisture in Wheat & Barley by ANN model WB003034

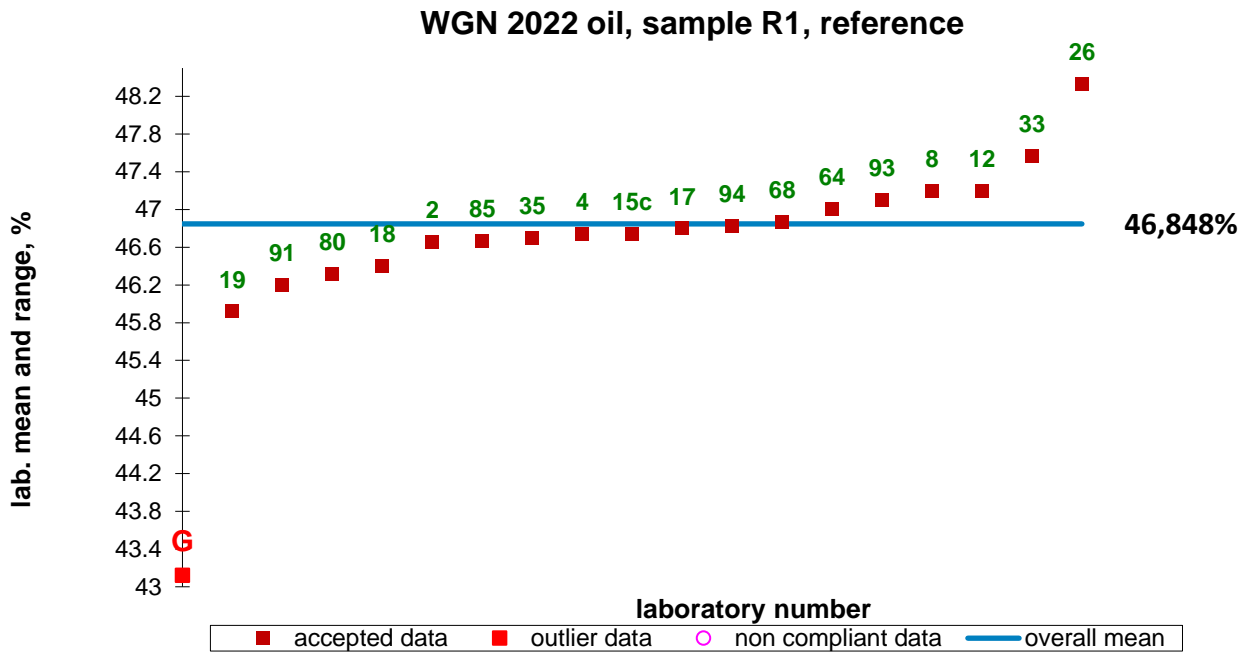Only two typical examples are given here:

WGN 2022, moisture, sample W2, ANN

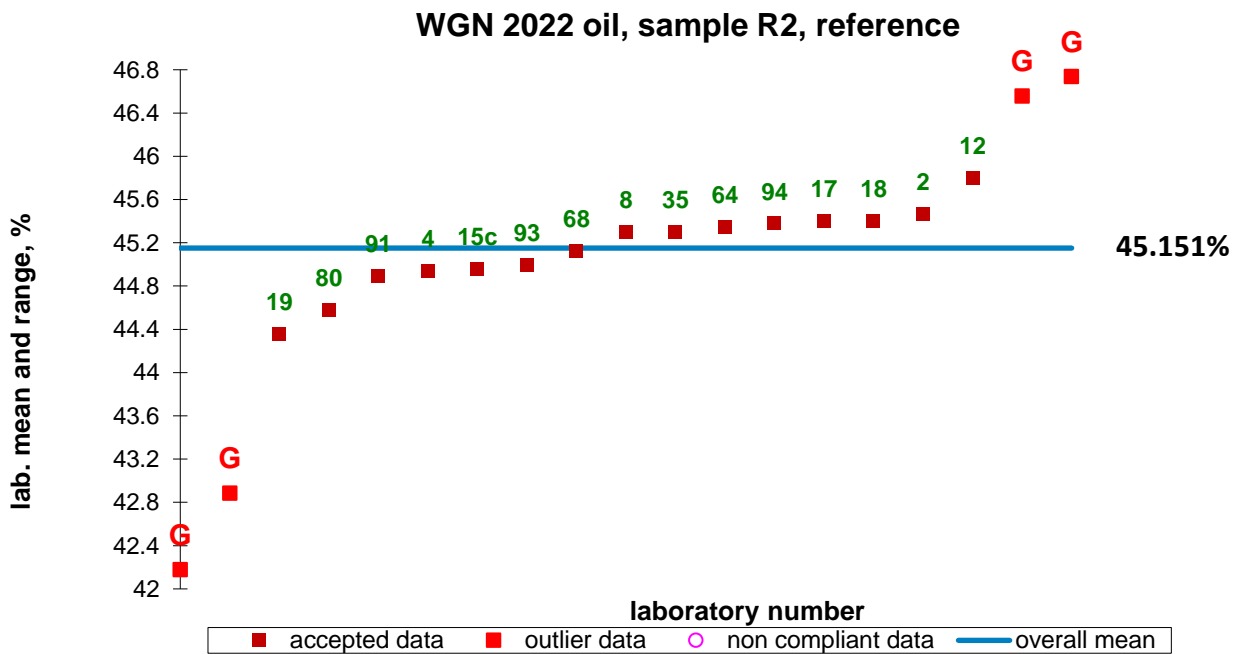

No outliers.

WGN 2022, moisture, sample B8, ANN

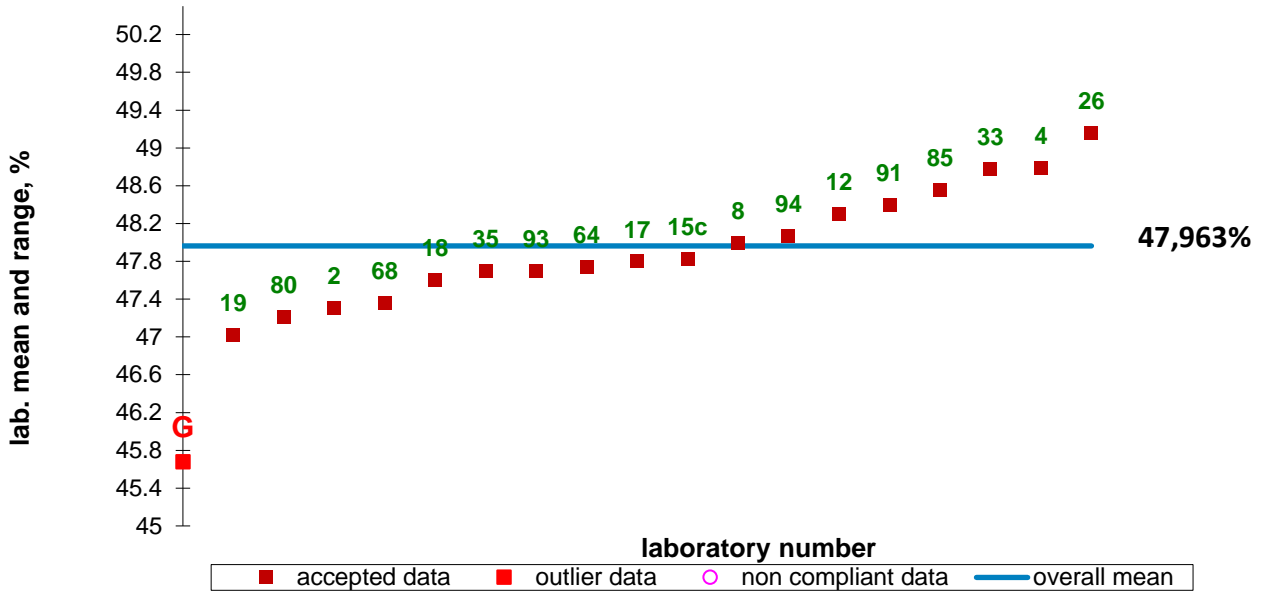No outliers.

8   Oil in Rapeseed by reference methods

WGN 2022 oil, sample R1, reference

Outlier 30a.

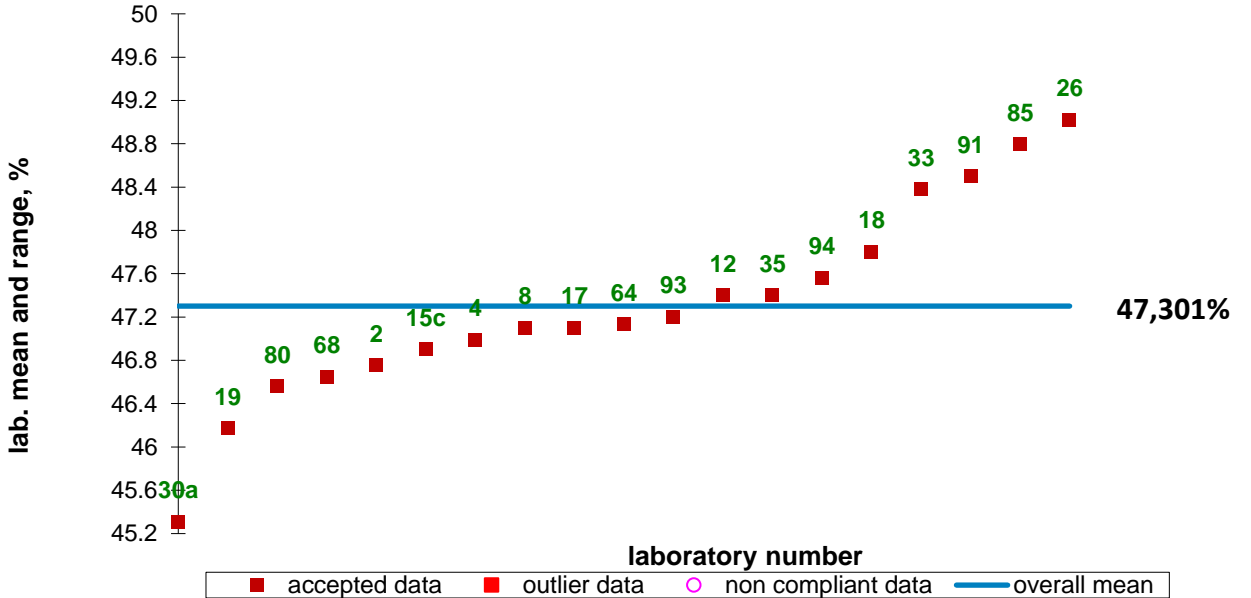**WGN 2022 oil, sample R2, reference**

Outliers 26, 30a, 33 and 85.
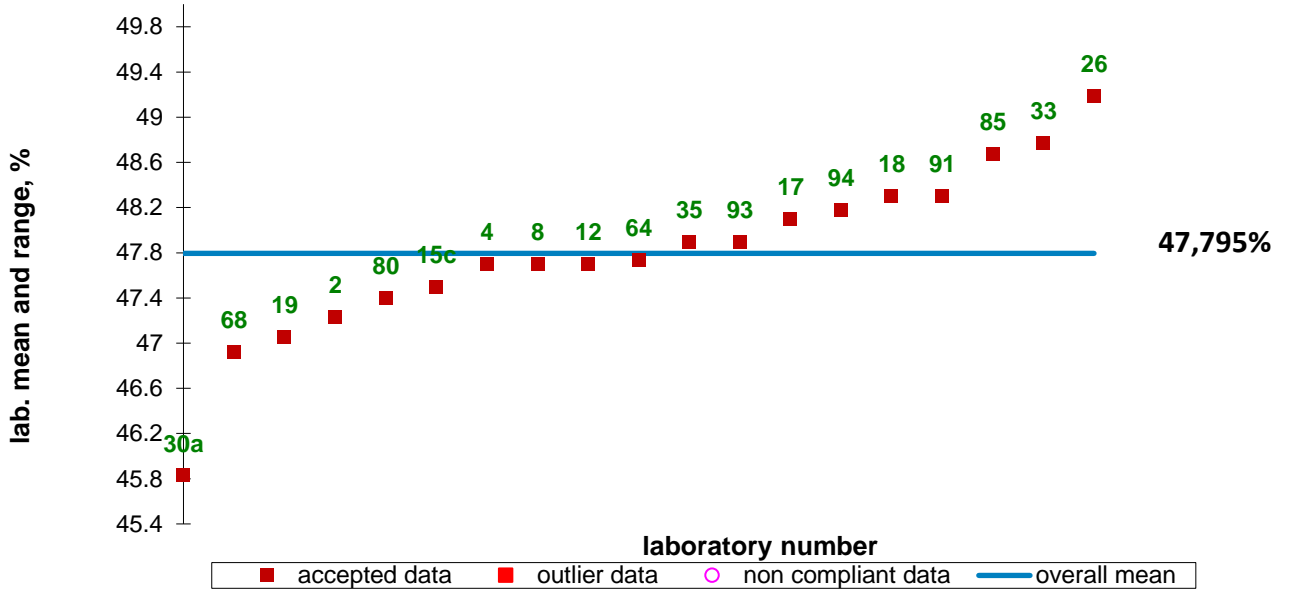
WGN 2022 oil, sample R3, reference

Outlier 30a.
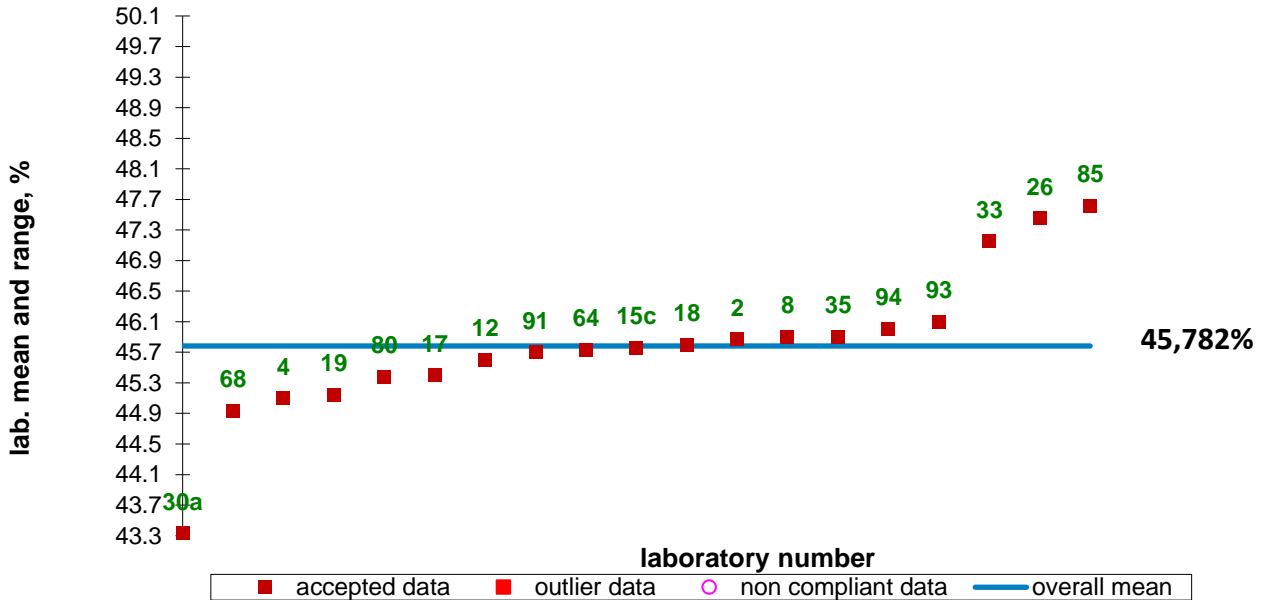
WGN 2022 oil, sample R4, reference

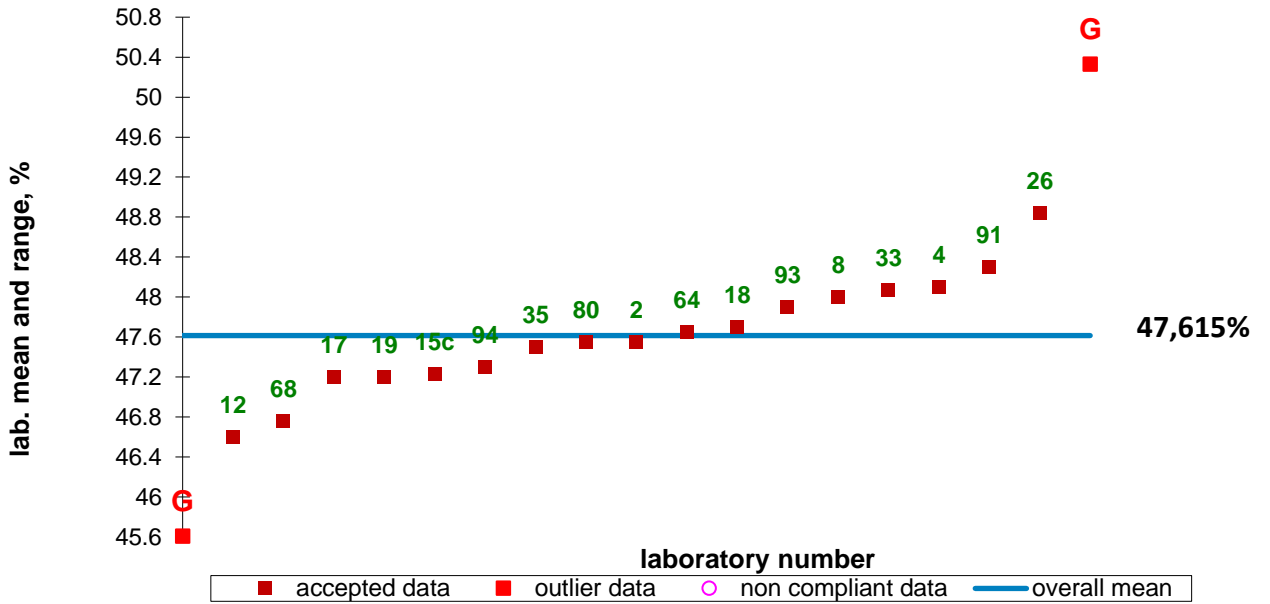No outliers.

WGN 2022 oil, sample R5, reference

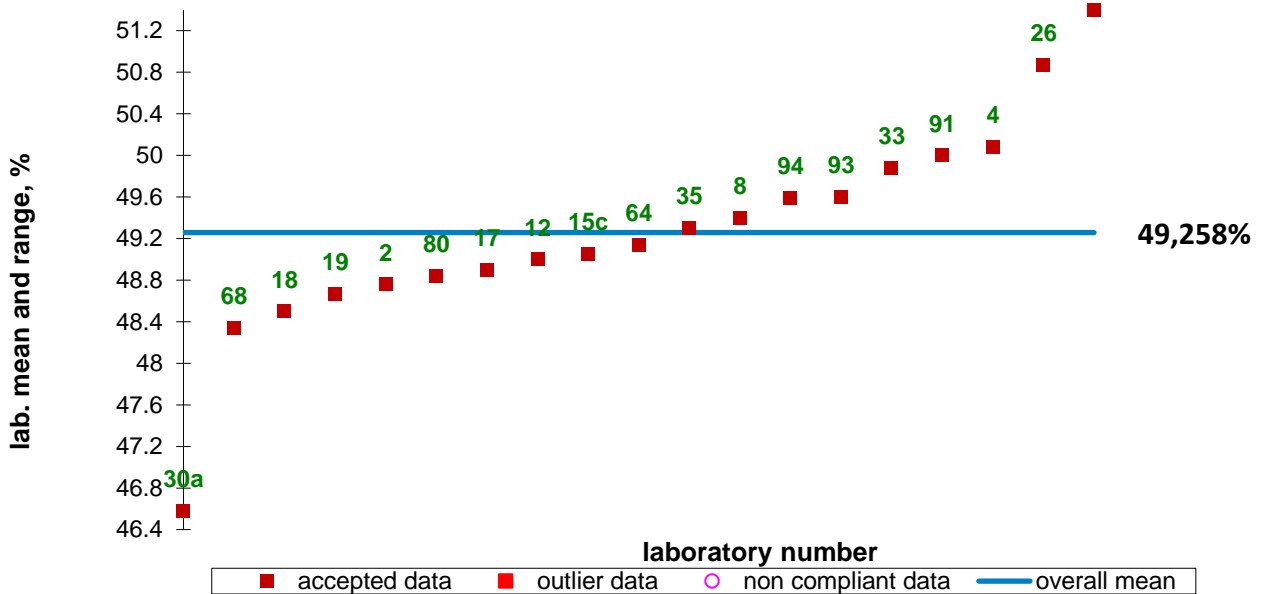No outliers.

WGN 2022 oil, sample R6, reference

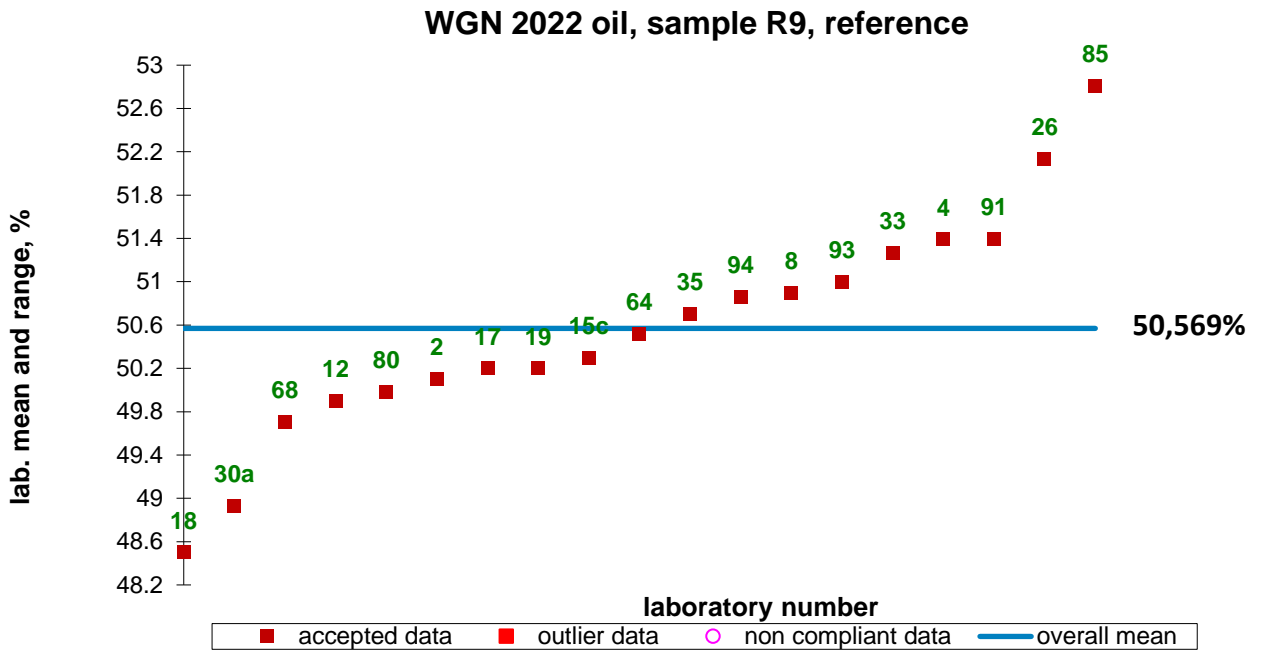No outliers.

WGN 2022 oil, sample R7, reference

Outliers 30a and 85.

WGN 2022 oil, sample R8, reference
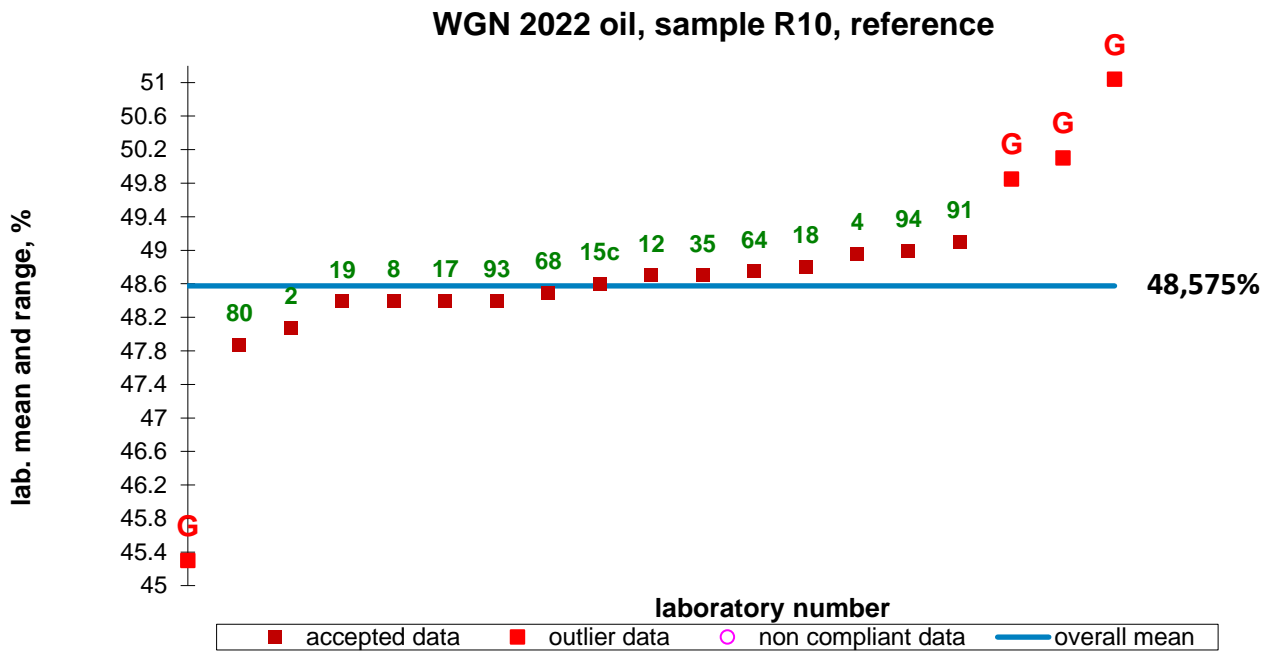

No outliers.

WGN 2022 oil, sample R9, reference

No outliers.

WGN 2022 oil, sample R10, reference
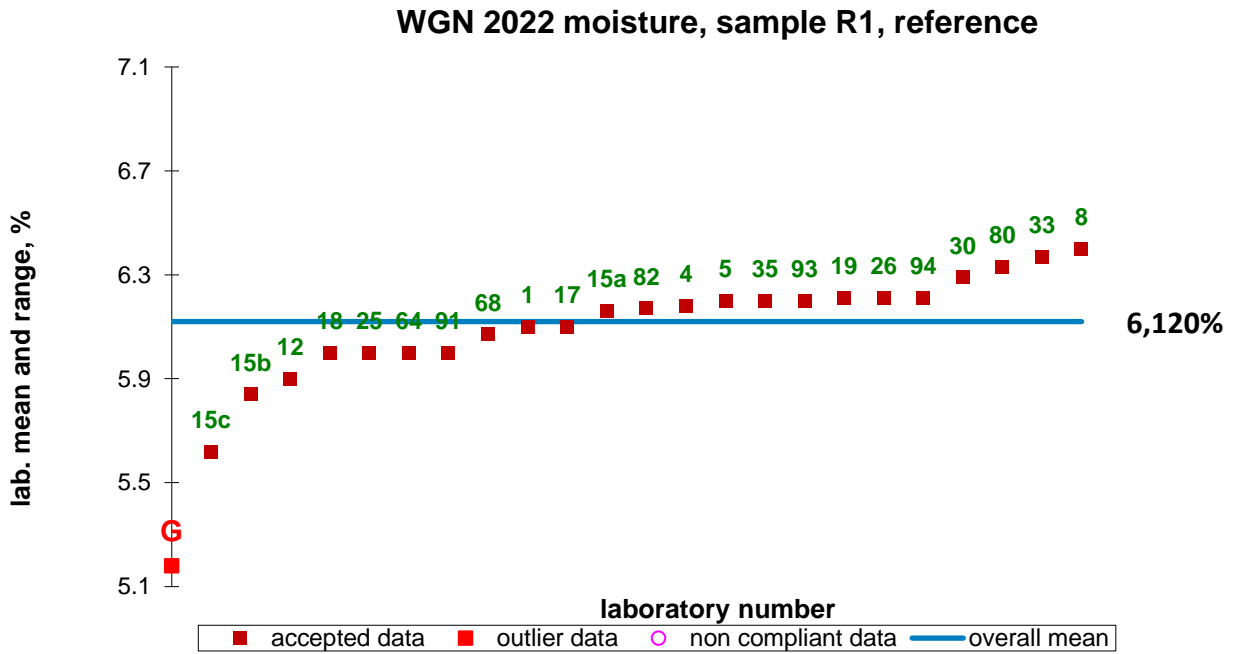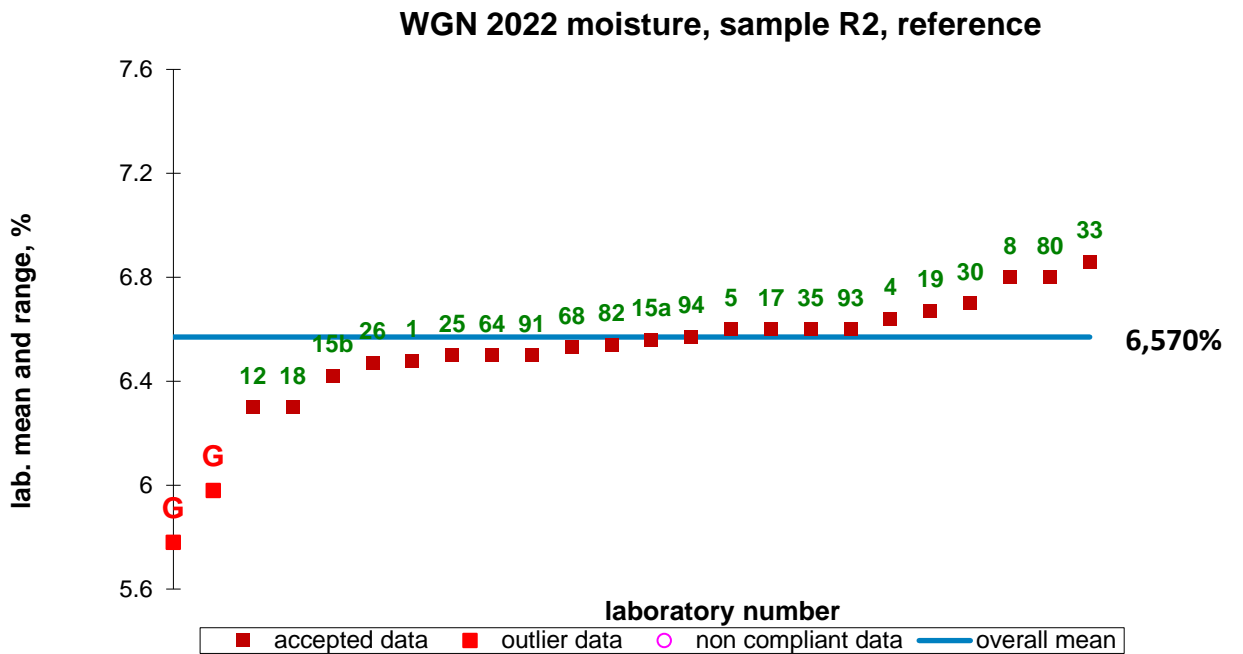

Outliers 26, 30a, 33 and 85.

9   Moisture in Rapeseed by reference methods

WGN 2022 moisture, sample R1, reference

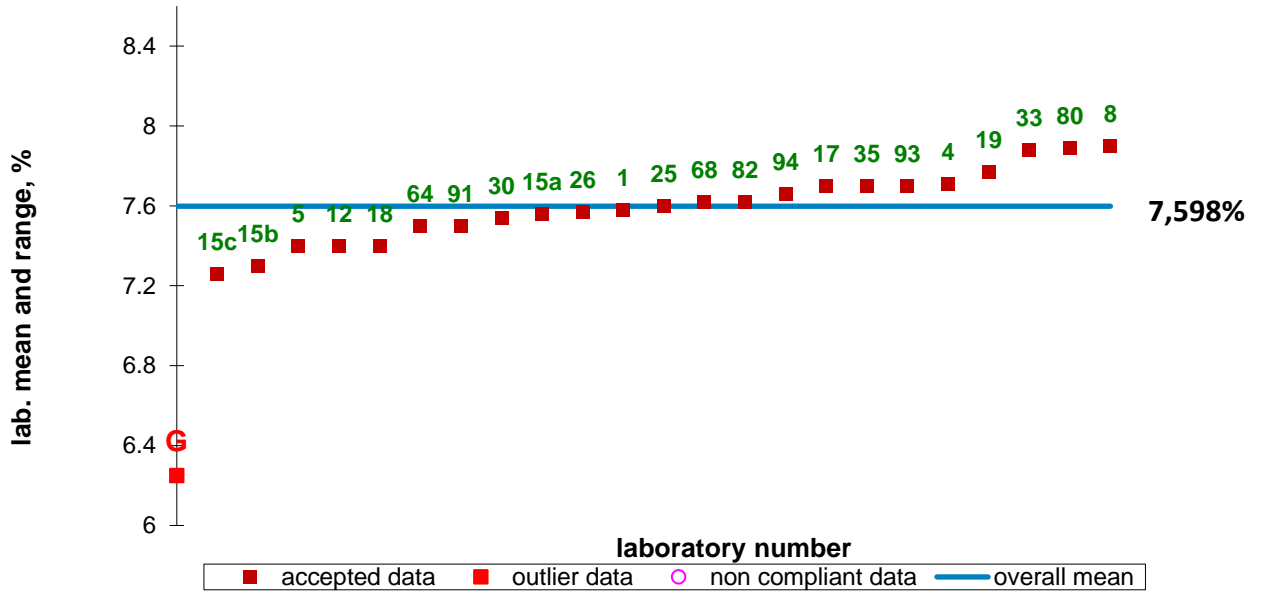Outlier 2.
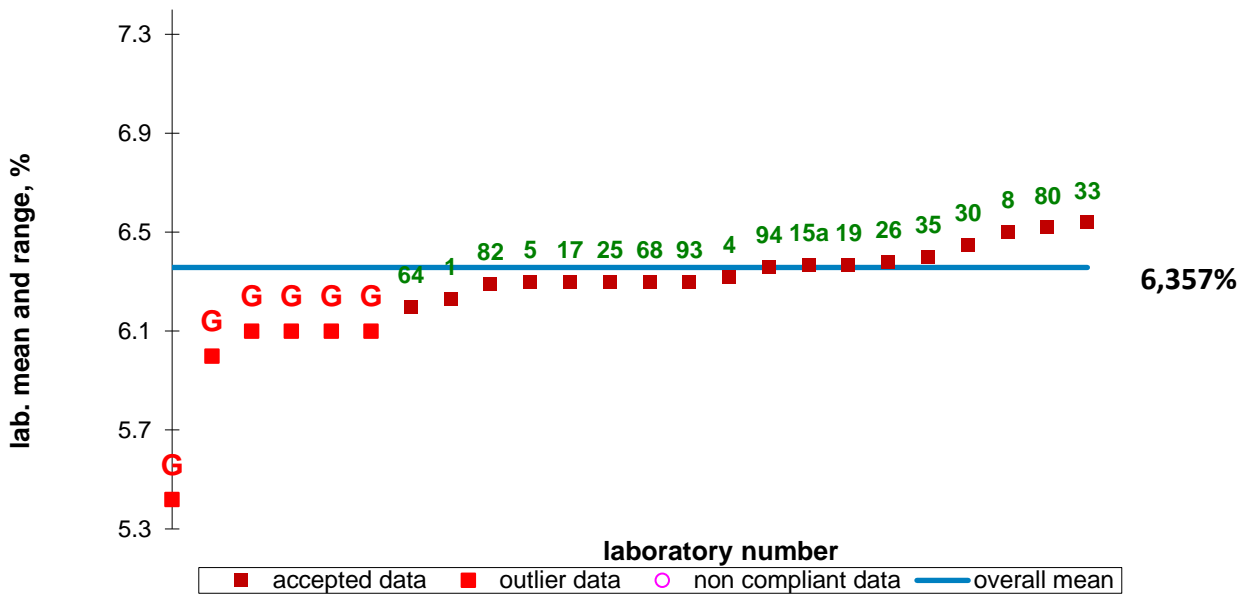
WGN 2022 moisture, sample R2, reference

Outliers 2 and 15c.
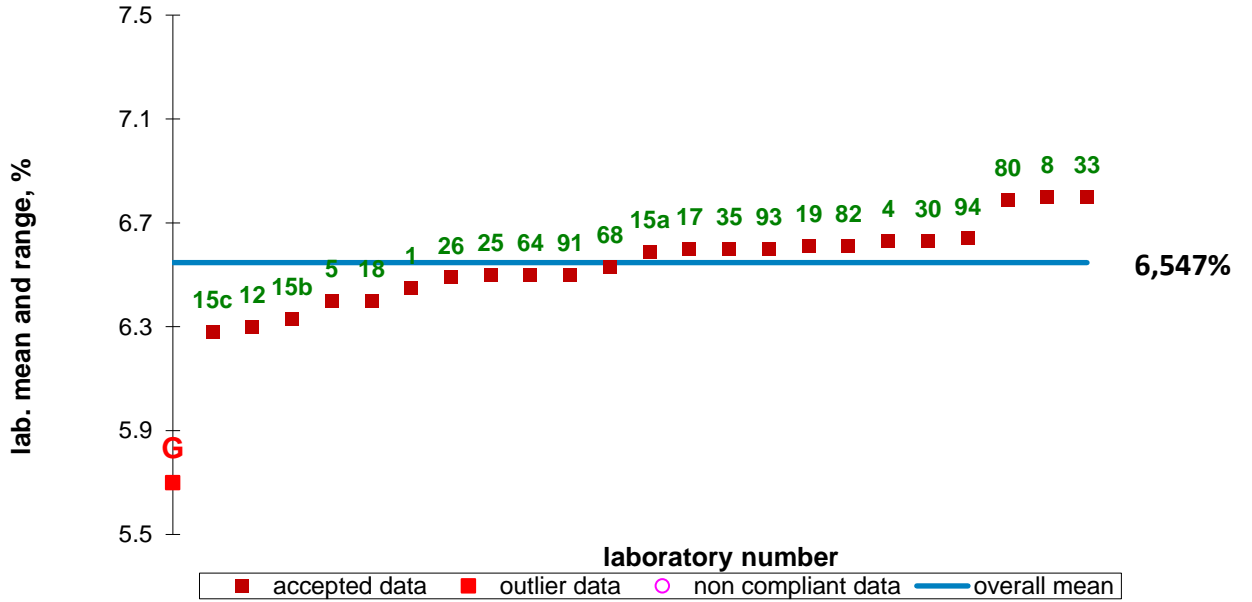
WGN 2022 moisture, sample R3, reference

Outlier 2.

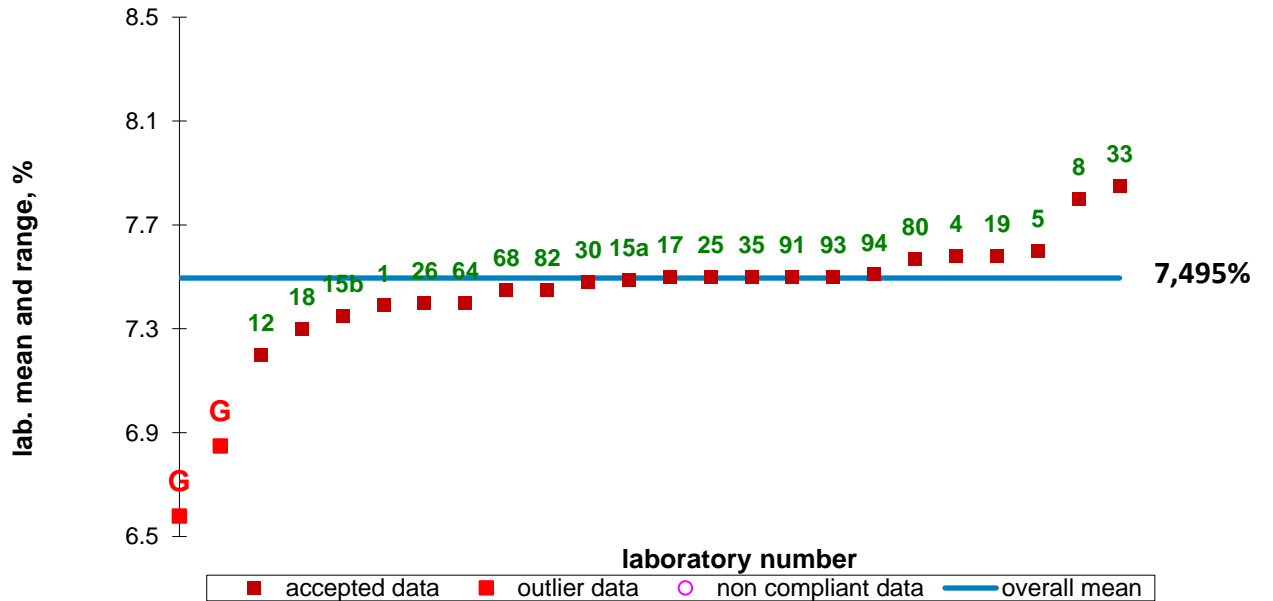**WGN 2022 moisture, sample R4, reference**

Outliers 2, 12, 15b, 15c, 18 and 91.

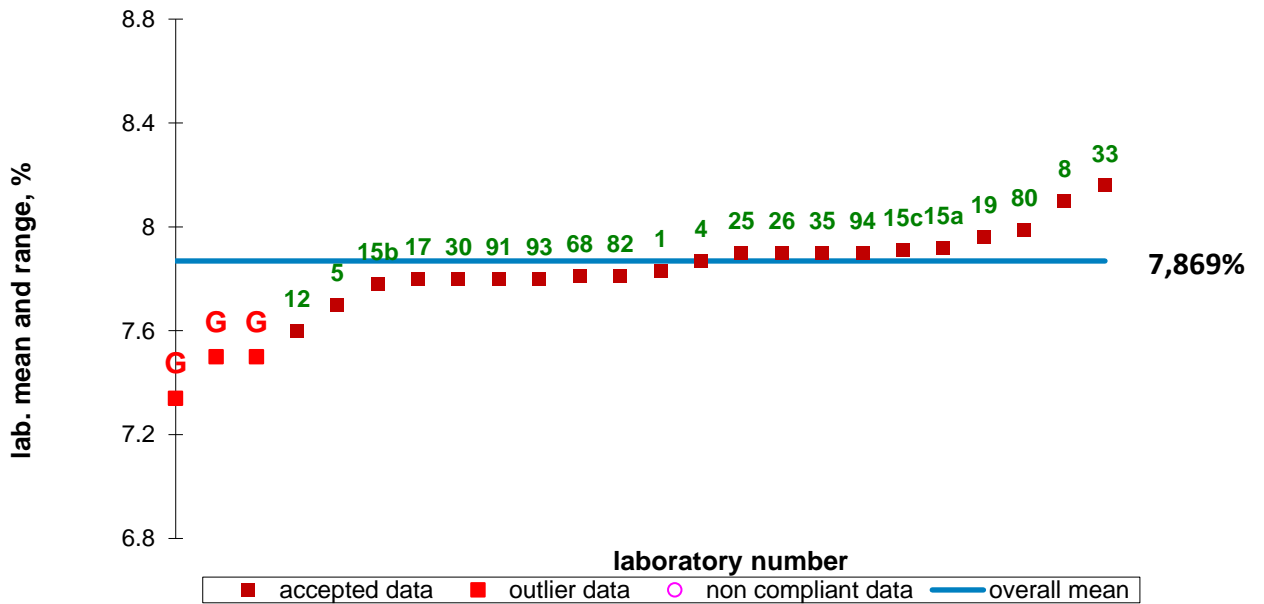### WGN 2022 moisture, sample R5, reference

Outlier 2.
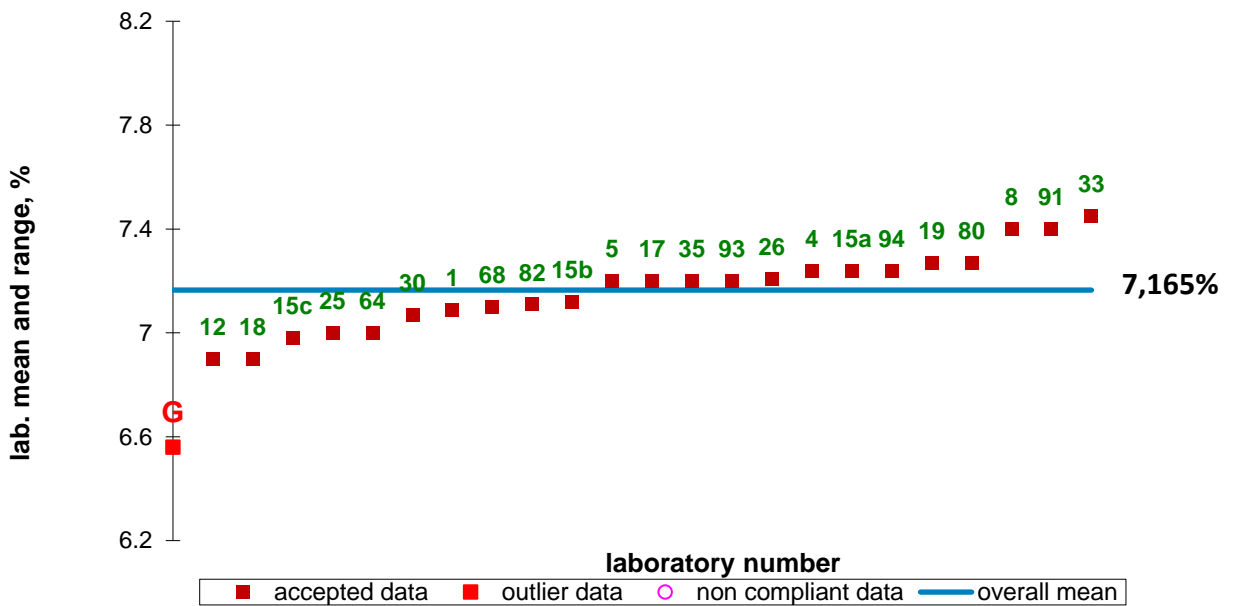
WGN 2022 moisture, sample R6, reference

Outliers 2 and 15c.
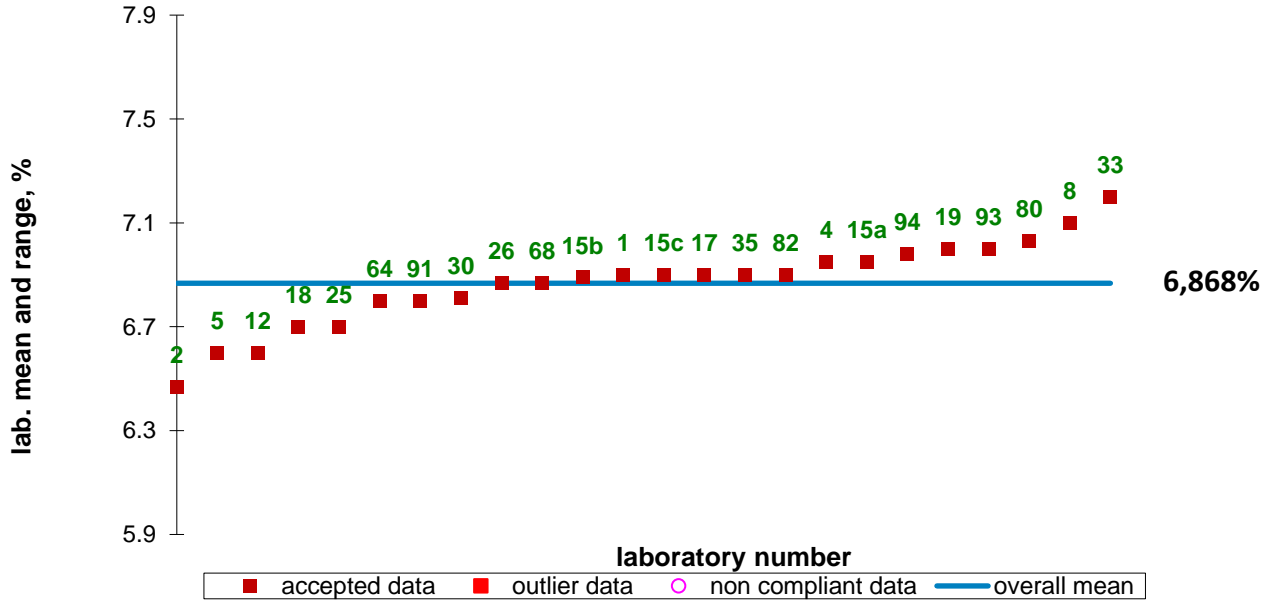
WGN 2022 moisture, sample R7, reference

Outliers 2, 18 and 64.
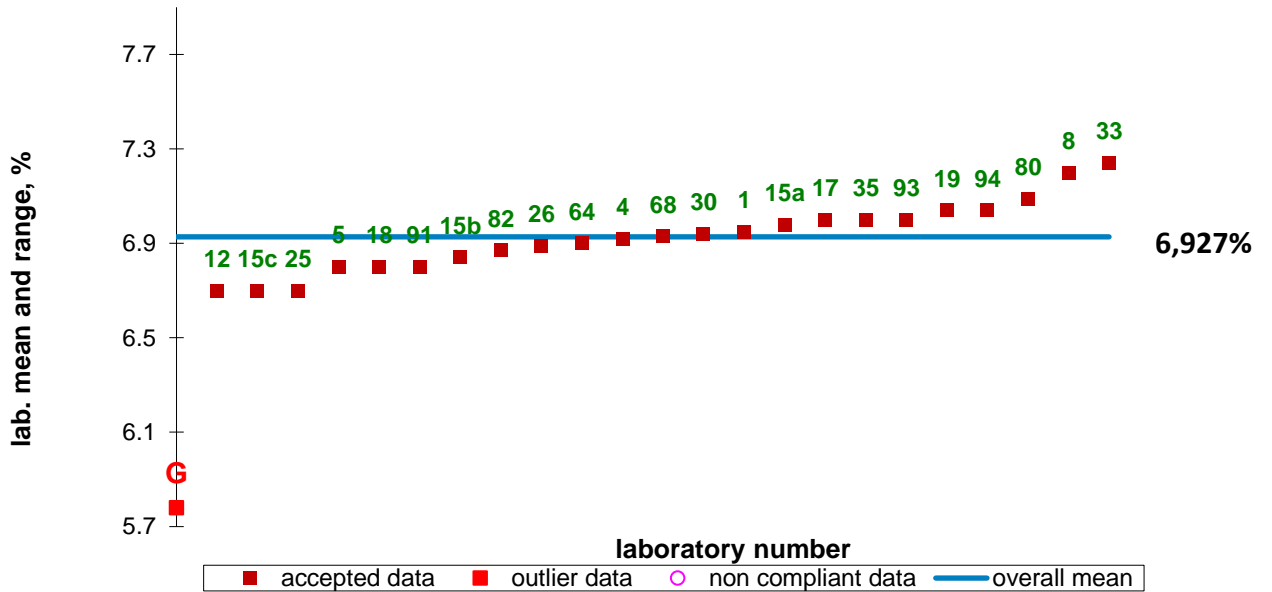

WGN 2022 moisture, sample R8, reference

Outlier 2.

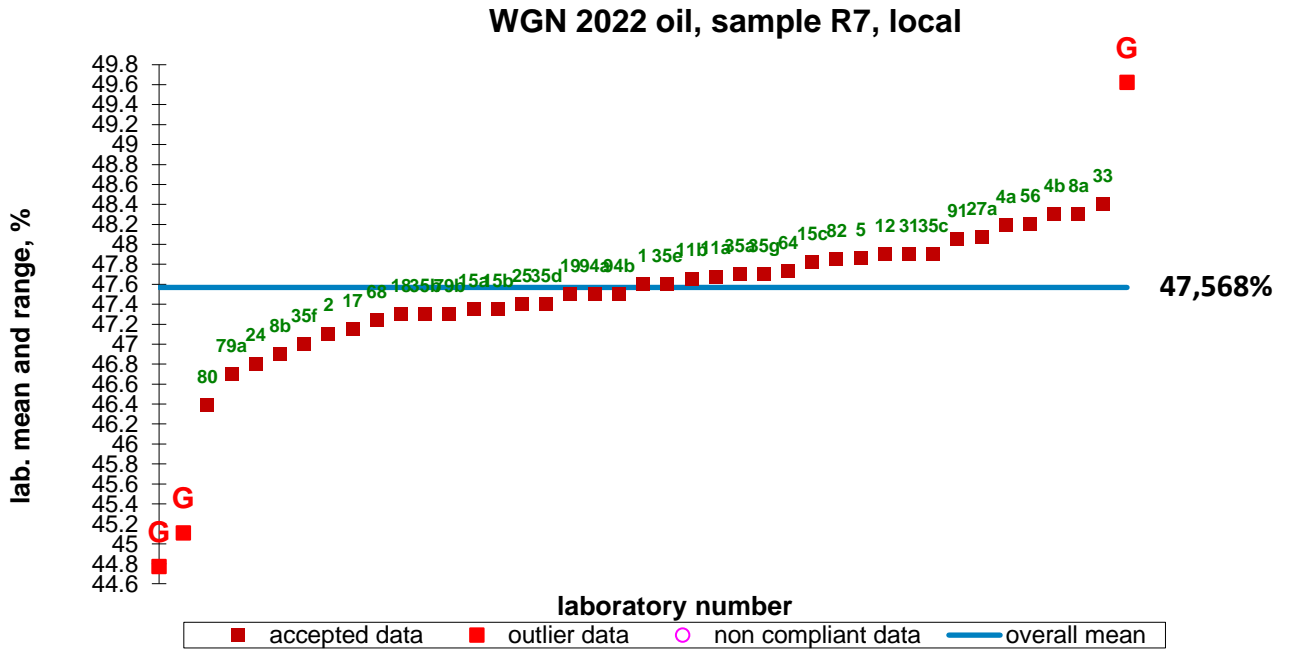## WGN 2022 moisture, sample R9, reference

No outliers.

WGN 2022 moisture, sample R10, reference

Outlier 2.

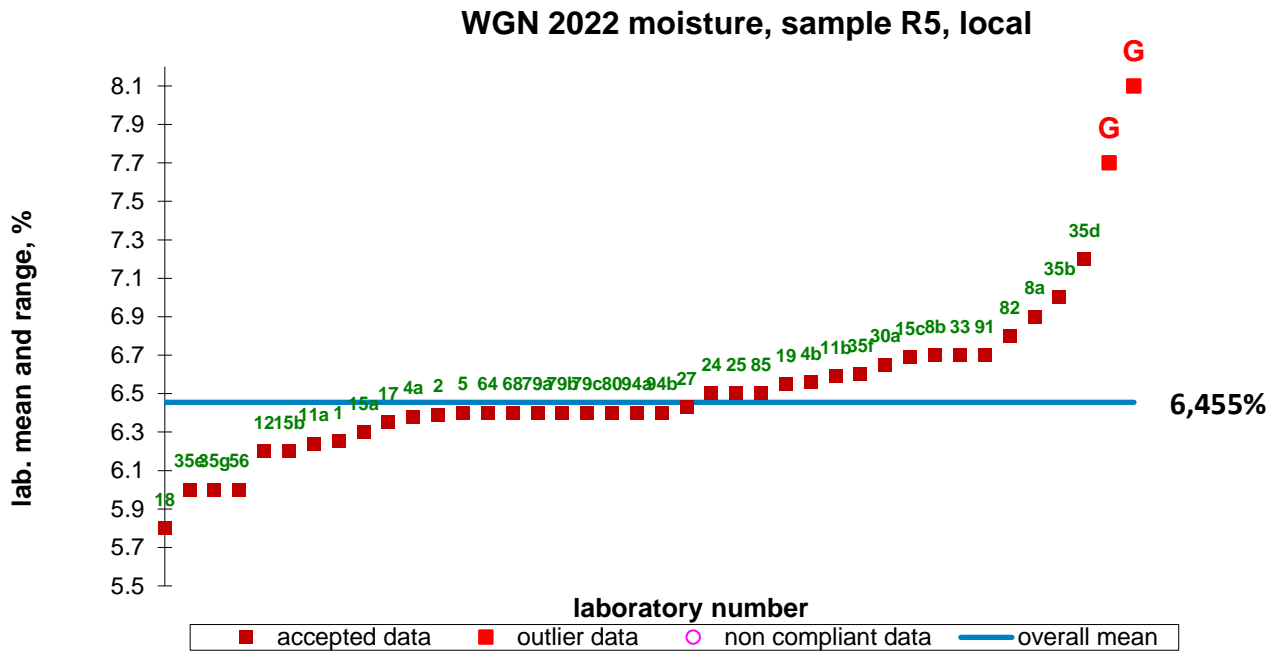## 10 Oil in Rapeseed by local NIR prediction models

Only one typical example is given

Outliers 30a, 79c and 85.

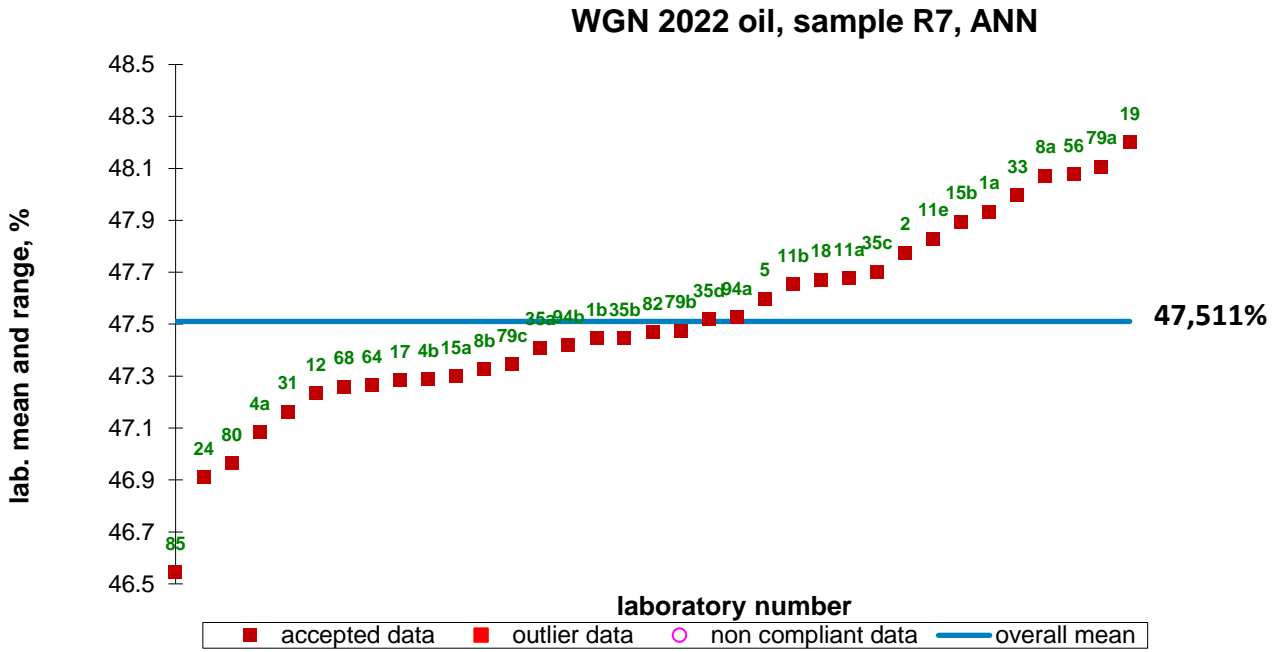## 11 Moisture in Rapeseed by local NIR prediction models

Only one typical example is given

WGN 2022 moisture, sample R5, local

Outlier 35a and 35c.

12 Oil in Rapeseed by ANN model RAOI0035

Only one typical example is given here:

WGN 2022 oil, sample R7, ANN

No outliers.

13 Moisture in Rapeseed by ANN model RAMO0026

Only one typical example is given here:

WGN 2022 moisture, sample R5, ANN

No outliers.