Faecal-NIRS for predicting animal-to animal variation in feed organic matter digestibility in cattle

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❯ Objective

To evaluate the use of faecal-NIRS for assessing the between-animal variability of organic matter digestibility (OMD) across different dietary and experimental conditions in cattle.

❯ Materials and methods

- Faecal samples from individual beef and dairy cows
- Individual in vivo OMD values
- N=454, 9 experiments, 4 EU sites, 50 diets
- NIRS spectra 400-2500 nm; calibration model validated by cross validation
- Regression analyses between measured OMD values and cross-validated OMD predictions; faecal-NIRS cross-validated predictions was considered as fixed factor and diet within experiment as random factor.

Results

Obs OMD = $1.72_{(\pm2.26)} + 0.98^{***}_{(\pm0.03)} \times$ NIRS_OMD

RSE = 2.05 %

- For a given diet, the correlation coefficient between measured and faecal-VIS/NIRS predictions were higher when measured OMD variability between animals was high.
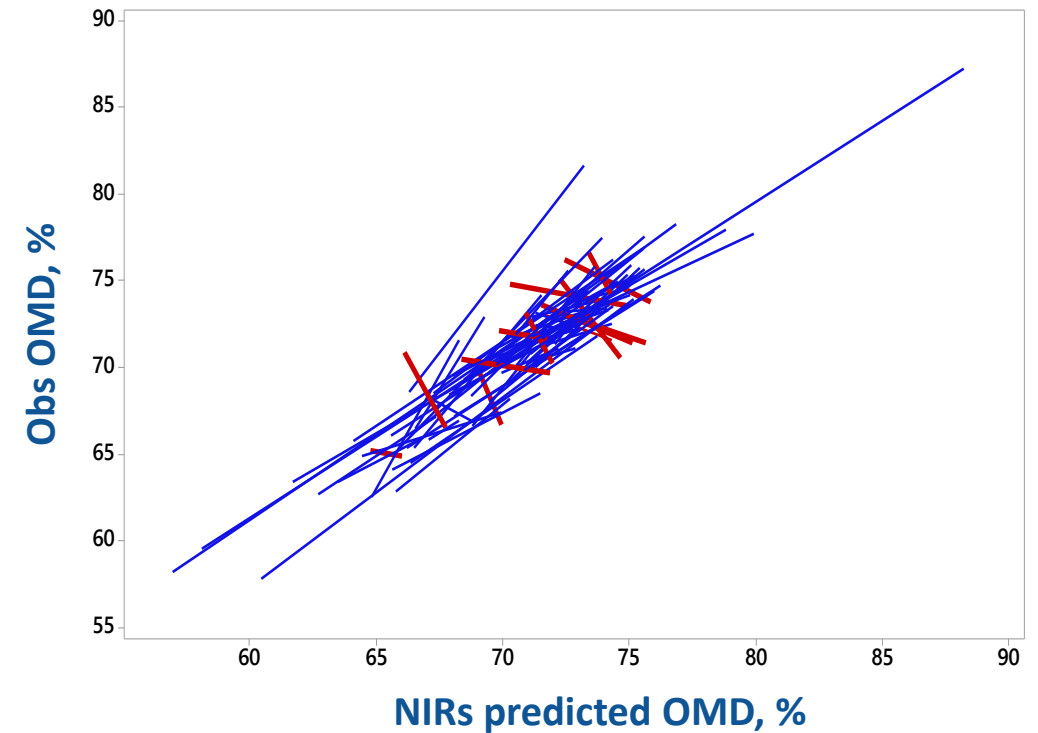
Figure 1. NIRs predicted vs observed values for OMD. Within diet relationship

Conclusions

- Potential use of faecal-VIS/NIR to discriminate individuals in terms of OMD within a same diet

- Our data highlight the potential of faecal-VIS/NIR to discriminate individuals in terms of OMD within a same diet. It could be used as an economical high-throughput tool for exploring between animal variability of OMD

Thanks for your attention