Dutch HF cow colostrum quality based on IgG concentration and total bacterial cell count.

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INTRODUCTION

Calves rely on the passive transfer of immunoglobulin G (IgG) through consumption of sufficient amounts of high quality colostrum within the first hours after birth.

Besides the concentration of IgG, colostrum quality is also determined by its bacterial contamination.

To our knowledge, no recent data concerning the colostrum quality of Dutch Holstein Friesian (HF) cows are available.

OBJECTIVE

The purpose of this study was to assess the colostrum quality from Dutch HF cows using different methods.

The second aim of the study was to evaluate the influence of farm and veterinary practice on colostrum quality.

MATERIALS AND METHODS

86 Dutch HF colostrum samples were collected at the time of first colostrum feeding on 19 different commercial dairy farms managed by two veterinary practices (Practice A & Practice B).

Quantification of the IgG concentration: commercial competitive ELISA-test kit (BIO K420, MonoScreen QuantELISA Immunoglobulin Easy, Bio-X Diagnostics S.A., Rochefort, Belgium).

Indirect evaluation of IgG concentration: digital Brix refractometer (Milwaukee Refractometer MA871, Milwaukee Instruments Inc., USA).

Total bacterial cell count (TBCC): Bactoscan automatic bacterial count reader (Bactoscan™ FC+, FOSS, Denmark).

The relationship between the IgG concentration and the Brix value of colostrum was investigated with a Pearson's correlation.

The relationship between the IgG concentration and the TBCC of colostrum was evaluated using a Spearman's rank correlation.

This field study indicates that the colostrum quality of Dutch HF cows in general is variable and rather poor, with nearly 40% of all samples not meeting the minimal requirements for good-quality colostrum.

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RESULTS

Colostral IgG concentrations, Brix values, and TBVCC results for all samples tested and per veterinary practice are presented in **Table 1**.

IDENTIFIED CORRELATIONS:

▶ **Moderate positive** between the IgG concentration and the Brix value (rpearson = 0,65; CI95% [0,51 to 0,76]; p < 0,001).

▶ **Neglectable negative** between the colostral IgG concentration and the TBCC (ρspearman = -0.30; CI95% [-0,49 to -0,09]; p = 0,005).

This field study indicates that the colostrum quality of Dutch HF cows in general is variable between farms and veterinary practices, and rather poor, with nearly 40% of all samples not meeting the minimal requirements for good-quality colostrum[1] **(Fig.1)**.

TABLE 1. Measured parameters of colostrum samples from farms under care of Practice A and Practice B.

	Mean IgG concentration (G/L)	Mean Brix value (%)	Median TBCC (CFU/ml)
Recommended threshold	50	22	100.000
All tested samples	53,19 ± 17,61 (range: 14,14 – 63,07)	21,10 ± 4,21 (range: 9,33 – 29,27)	9.000 (range: 4.000 – 1.000.000)
Practice A	48,30 ± 18,71[a]	19,90 ± 4,4[a]	16.000[a] (range: 4.000 – 1000.000)
Practice B	58,68 ± 14,65[b]	22,45 ± 3,59[b]	6.000[b] (range: 4.000 – 1.000.000)

NOTE:

Figures within the same vertical category with different superscript letter differ statistically significantly (p<0.001).

FIGURE 1. Colostrum quality among 19 farms participating in the study, evaluated by three tests.

NOTE:

Dashed red line = good quality threshold.
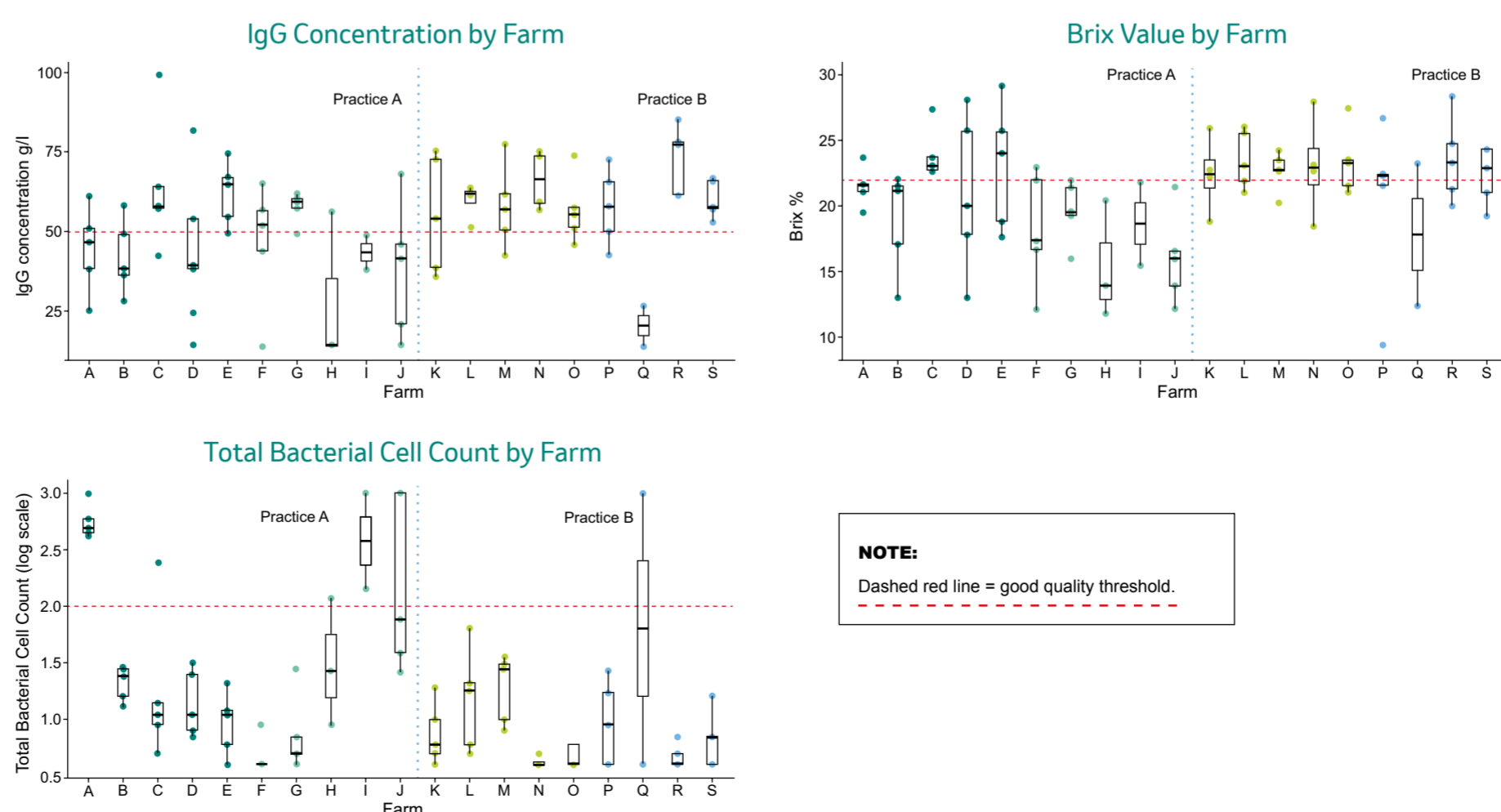
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