



New approach in predicting the fat content in 2x milking

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Analysis results from Sep 1st, 2019 to March 1st, 2020

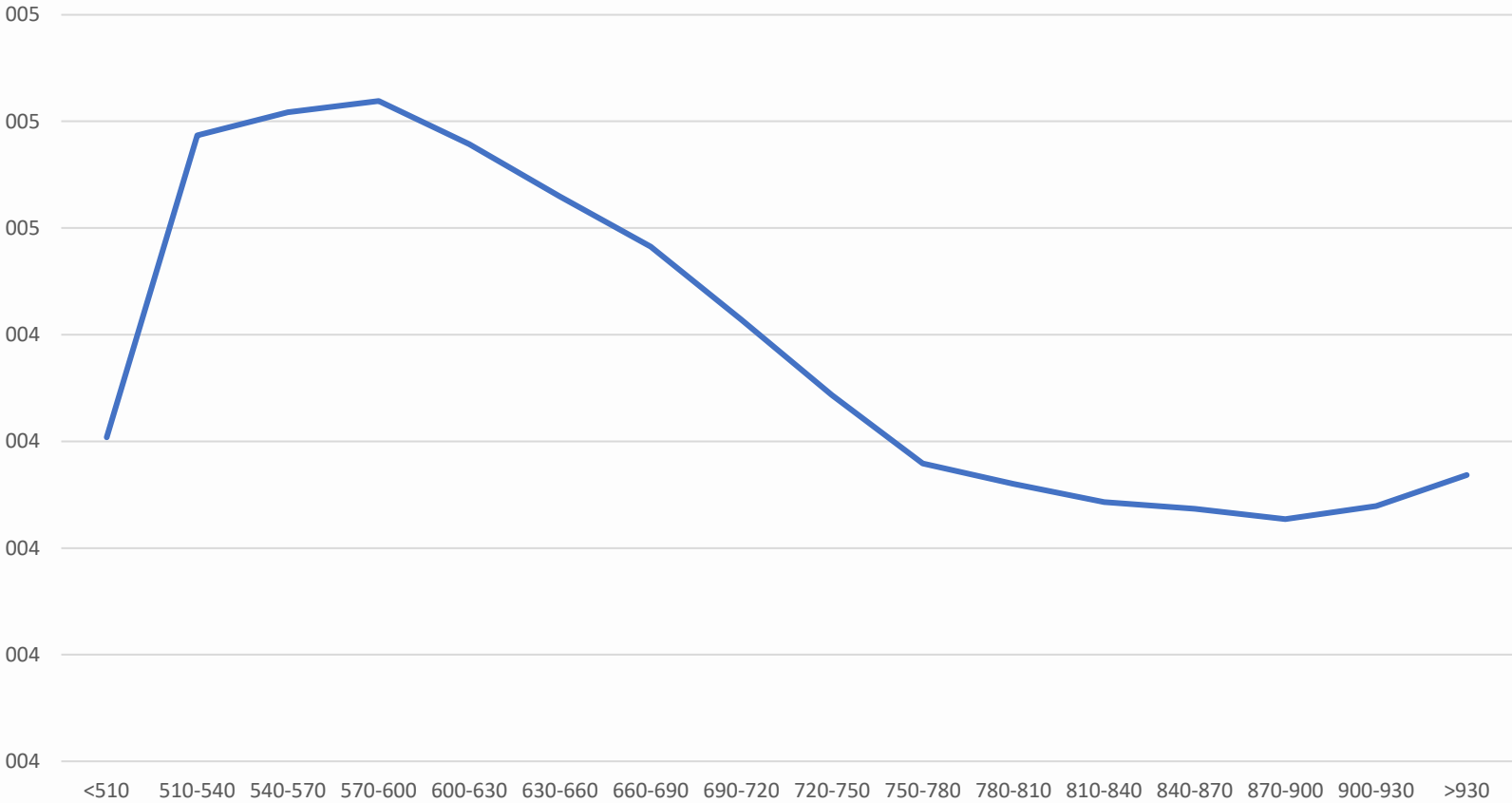
Conclusion = the factors used are no longer sufficient for the Finnish situation

Sample type	Number of samples	Analysed protein %	Analysed fat % (direct average)	Corrected fat % (Delorenzo & Wiggans)
Morning samples	56844	3.64	4.23	4.37
Evening samples	69534	3.69	4.70	4.55
Proportional samples	25338	3.66	4.40	4.42



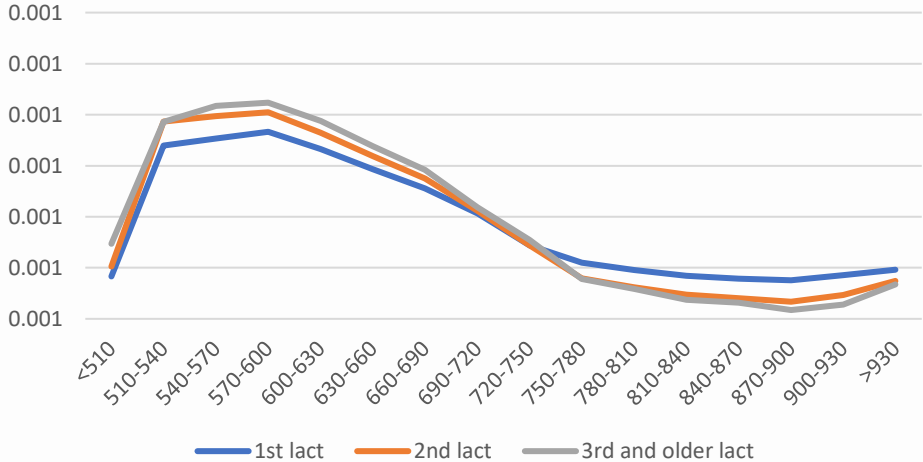
Direct effect of milking interval on the fat content of samples

Based on 7.5 million samples from years 2003 to 2019

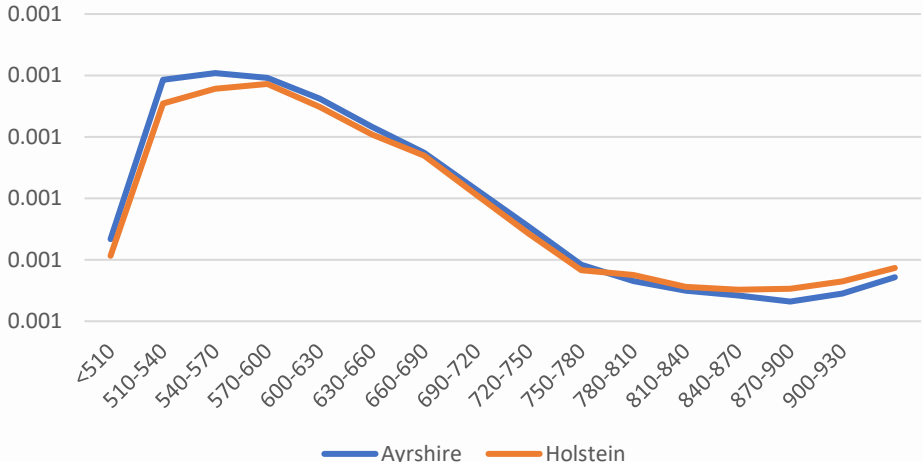


Effect of milking interval on milk fat content, classified

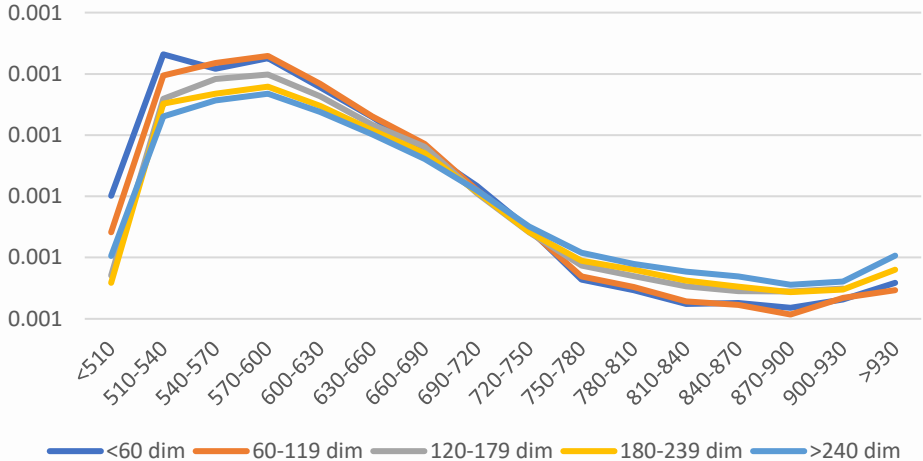
Effect of milking interval by lactation number



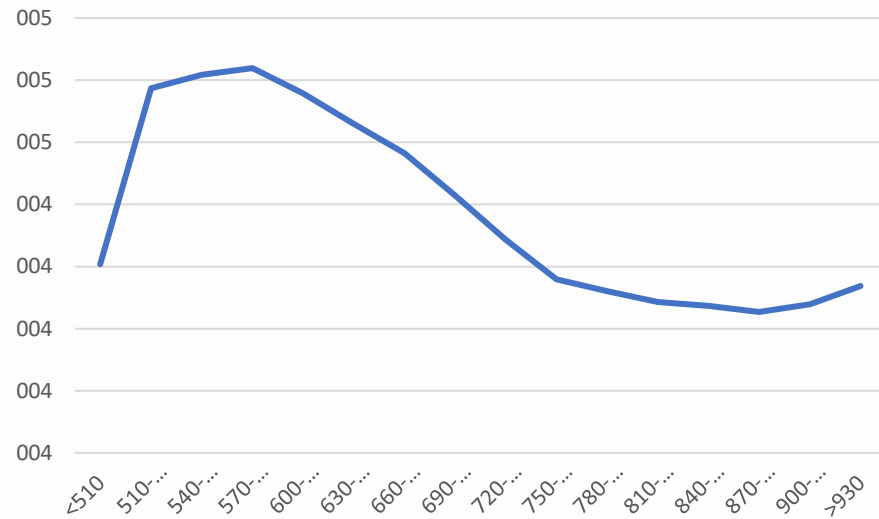
Effect of milking interval by breed



Effect of milking interval by phase of lactation



How to change this result into correction factors?



By making two assumptions:

- The recording day is 24 hours => we can assume that if the interval before sampling is 600 minutes, the other interval is 840 minutes
- The cow produces milk evenly around the 24-hour period => the one-milking milk weight corresponds to the preceding interval

This way, we can mirror the other milking and assume its milk weight and fat content.



How to change this result into correction factors? - II

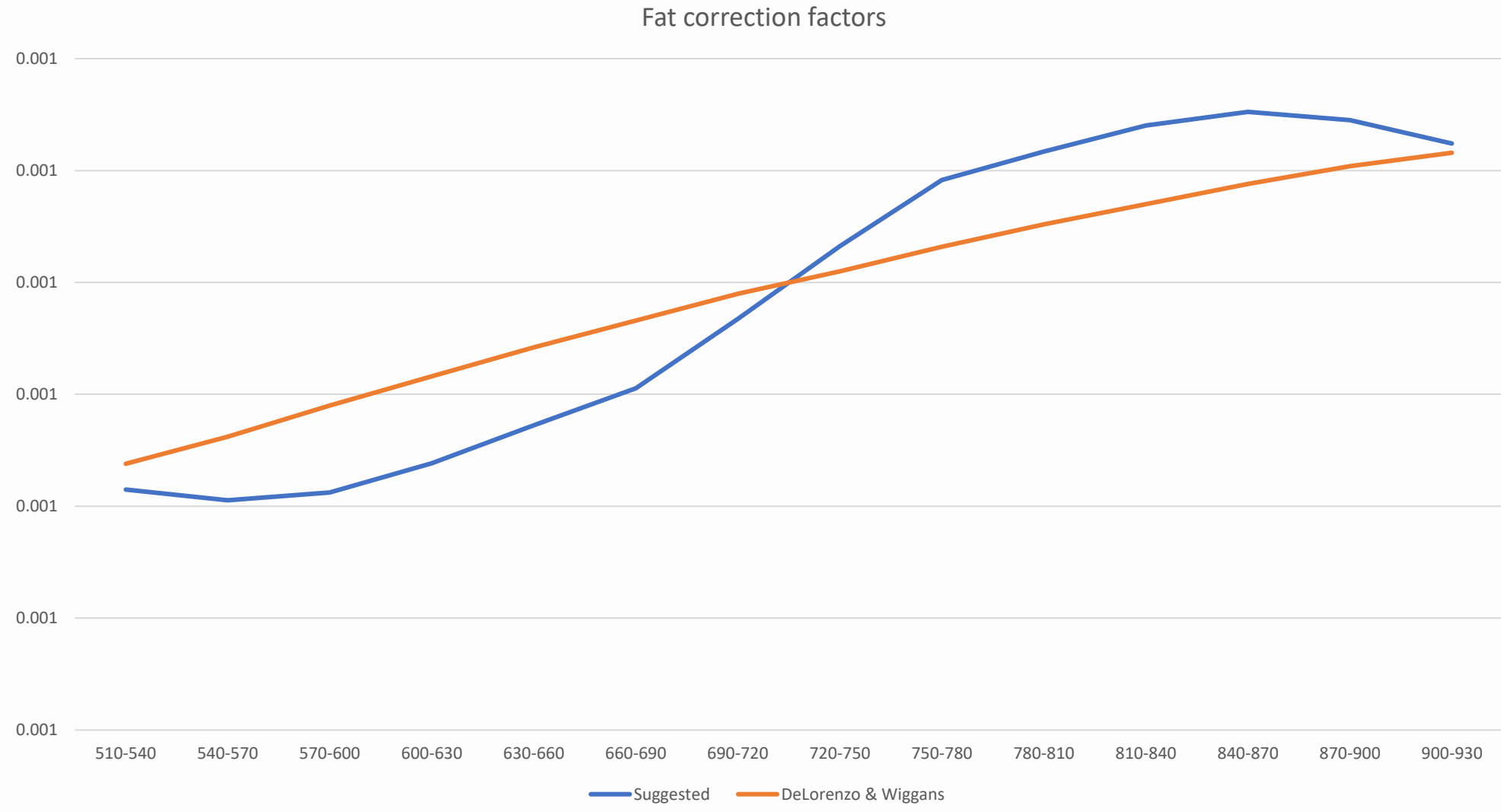
Correction factor =

$$\frac{[(\text{Sampled milk} * \text{sampled fat}) + (\text{Mirrored milk} * \text{mirrored fat})]}{(\text{sampled milk} + \text{mirrored milk})}$$

Interval before sampling, minutes	Average interval, minutes	Mirrored interval, minutes	Share of 24-h yield in the sampled milking	Avg fat in sampled milking	Avg fat in mirrored milking	Avg fat in 24 hours	Suggested correction factor
<510	495	945	0.34	4.21	4.14	4.16	0.989
510-540	525	915	0.36	4.77	4.08	4.33	0.907
540-570	555	885	0.39	4.82	4.05	4.35	0.903
570-600	585	855	0.41	4.84	4.07	4.38	0.906
600-630	615	825	0.43	4.76	4.09	4.37	0.919
630-660	645	795	0.45	4.66	4.12	4.36	0.936
660-690	675	765	0.47	4.56	4.16	4.35	0.953
690-720	705	735	0.49	4.43	4.29	4.36	0.984
720-750	735	705	0.51	4.29	4.43	4.36	1.016
750-780	765	675	0.53	4.16	4.56	4.35	1.046
780-810	795	645	0.55	4.12	4.66	4.36	1.059
810-840	825	615	0.57	4.09	4.76	4.37	1.070
840-870	855	585	0.59	4.07	4.84	4.38	1.076
870-900	885	555	0.61	4.05	4.82	4.35	1.073
900-930	915	525	0.64	4.08	4.77	4.33	1.062
>930	945	495	0.66	4.14	4.21	4.16	1.006



Correction factors calculated from the Finnish data - direct effect only



Analysis results from Sep 1st, 2020 to March 1st, 2021

Conclusion = the new factors are enough to bring the values to the same level

It is easy to recalculate the factors later if the situation changes radically

Sample type	Number of samples	Analysed protein %	Analysed fat % (direct average)	Corrected fat % (New factors)
Morning samples	54486	3.66	4.25	4.52
Evening samples	66684	3.70	4.73	4.48
Proportional samples	22528	3.68	4.44	4.45





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