Data manipulations:

- replace all negative LFe values ​​in the file with the value 1

- lactations days: 0 - 300

- breed: Holstain

- Only lactations: 1 – 3

- omit lines with NaN value for “lactation.days”, “Somatic.Cells”

- due to transformation replace all 0 in SCC in the file with the value 1

|  |  |  |
| --- | --- | --- |
| Lactations | | |
| 1 | 2 | 3 |
| 534276 | 416290 | 254514 |

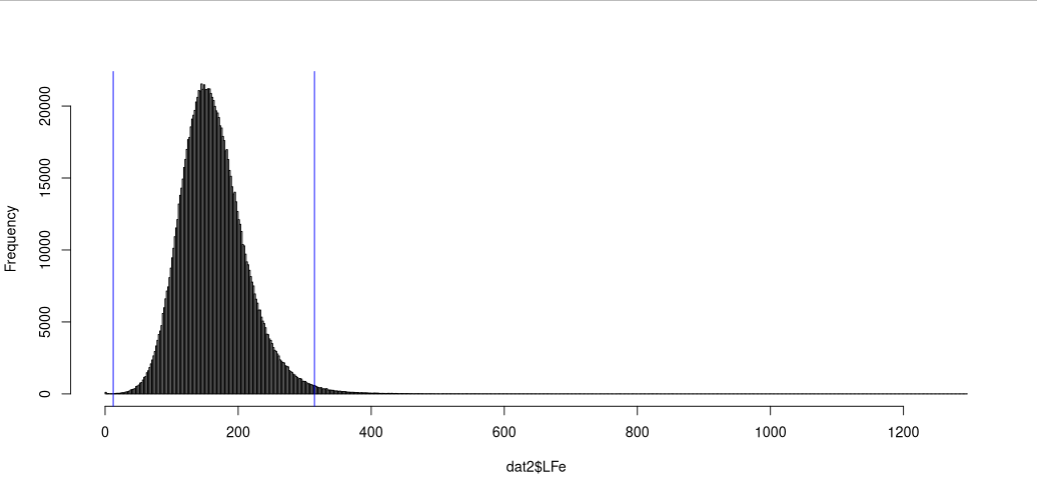
What with repeated measuremet by animal, lactation and lactation day?

Now removed.

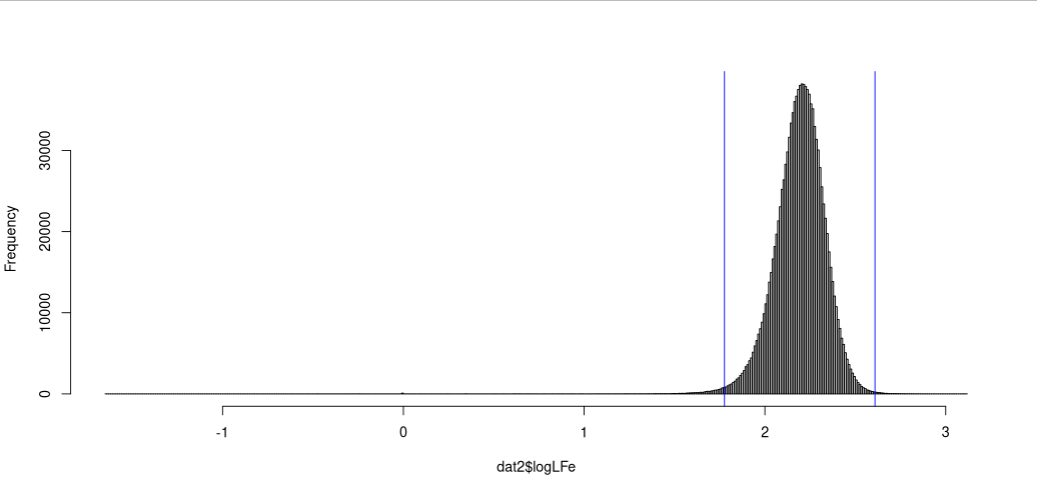
|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Herd | cow | lac | Day | date | milk | fat | prot | lac | s.cells | Lfe |
| 811721011 | CZ000269421972 | 1 | 171 | 2021-07-13 | 32.4 | 3.49 | 3.27 | 4.78 | 582 | 110.52 |
| 811721011 | CZ000269421972 | 1 | 171 | 2021-07-13 | 32.4 | 4.24 | 3.49 | 5.12 | 5 | 167.967 |

Histogram LFe with extreme value bounder

blue - +- 3sd



Histogram – log10(LFe)

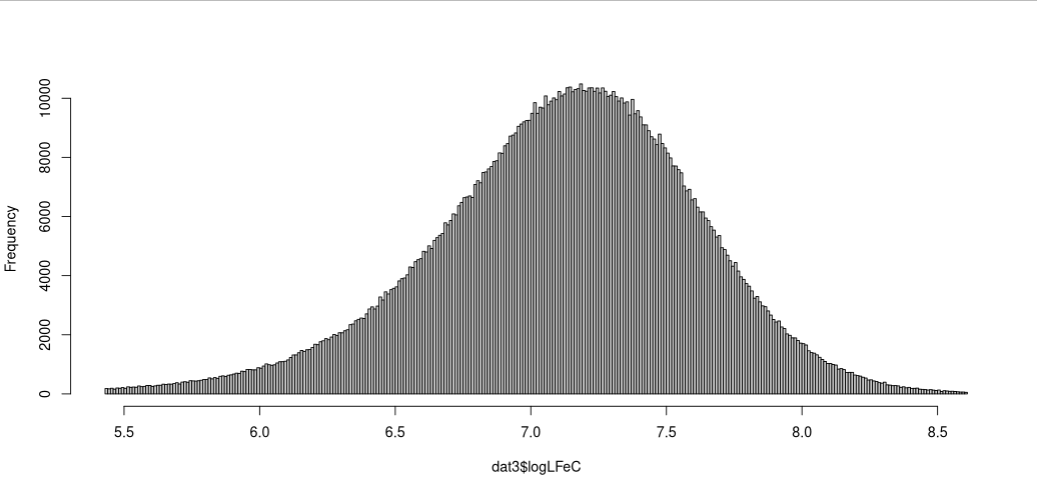


After outlier value correction – log10(LFe)

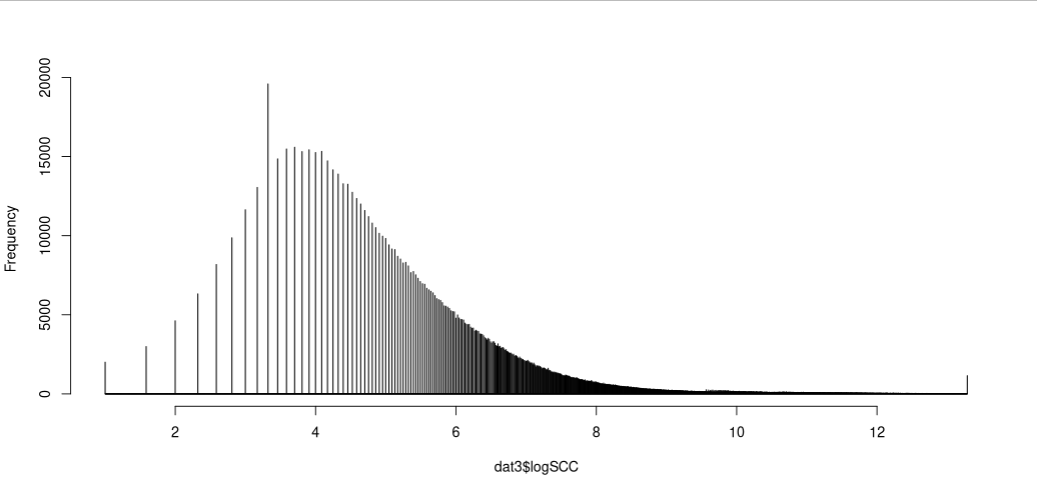


After corection: LF C values for all original LF values, correct each LF value by the constant -16.6 mg/l (it was derived as the difference between the averages of the LF HPLC file (n = 231) and the LF MIR-FT of the Slovak database (148.4 – 165))

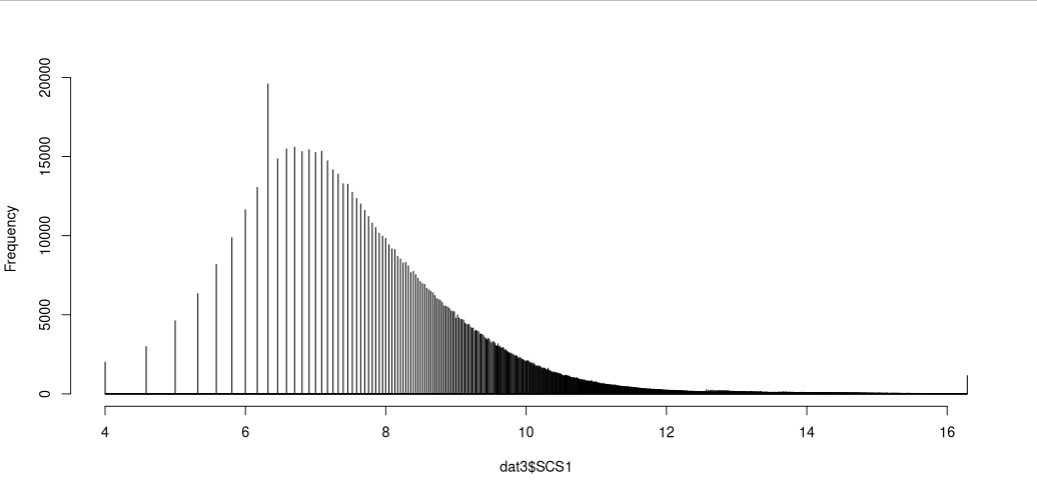
Histogram log10(LFeC)



Histogram: log2(SCC)



Histogram: SCS : (log2(Somatic.Cells/100000)) + 3



Descriptin statistics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Min. | 1st Qu. | Median | Mean | 3rd Qu. | Max. | NA's |
| Milk.yield | 3.00 | 26.80 | 33.40 | 33.47 | 40.00 | 99.20 | 9475 |
| fat | 0.520 | 3.510 | 4.010 | 4.072 | 4.570 | 9.900 |  |
| prot | 1.020 | 3.230 | 3.480 | 3.509 | 3.750 | 8.590 |  |
| lact | 0.910 | 4.770 | 4.920 | 4.891 | 5.050 | 5.730 |  |
| urea | 4.0 | 22.3 | 28.2 | 28.5 | 34.4 | 219.7 | 35990 |
| Somatic.Cellls | 2.0 | 26.0 | 67.0 | 320.5 | 201.0 | 9999.0 |  |
| log2(SCC) | 1.000 | 4.700 | 6.066 | 6.333 | 7.651 | 13.288 |  |
| SCS | 4.000 | 7.700 | 9.066 | 9.333 | 10.651 | 16.288 |  |
| LFe | 59.72 | 129.93 | 158.80 | 163.83 | 191.90 | 406.30 |  |
| LFeC | 1.776 | 2.114 | 2.201 | 2.196 | 2.283 | 2.609 |  |
| log10(LFe) | 43.12 | 113.33 | 142.20 | 147.23 | 175.30 | 389.70 |  |
| log10(LFeC) | 5.430 | 6.824 | 7.152 | 7.123 | 7.454 |  |  |

Correlations

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Som.Cells | log2(SCC) | SCS | LFe | log10(LFe) | LFeC | log10(LFeC) |
| Milk,yield | -0.147 | -0.266 | -0.266 | -0.537 | -0.519 | -0.537 | -0.514 |
| fat | 0.054 | 0.090 | 0.090 | 0.615 | 0.602 | 0.615 | 0.598 |
| prot | 0.102 | 0.188 | 0.188 | 0.783 | 0.761 | 0.783 | 0.756 |
| lact | -0.306 | -0.364 | -0.364 | -0.419 | -0.389 | -0.419 | -0.384 |
| Urea | -0.089 | -0.120 | -0.120 | -0.021 | -0.015 | -0.021 | -0.014 |
| Som.Cells | 1.000 | 0.661 | 0.661 | 0.179 | 0.166 | 0.179 | 0.164 |
| logSCC | 0.661 | 1.000 | 1.000 | 0.278 | 0.270 | 0.278 | 0.268 |
| SCS | 0.661 | 1.000 | 1.000 | 0.278 | 0.270 | 0.278 | 0.268 |
| LFe | 0.179 | 0.278 | 0.278 | 1.000 | 0.978 | 1.000 | 0.972 |
| logLFe | 0.166 | 0.270 | 0.270 | 0.978 | 1.000 | 0.978 | 1.000 |
| LFeC | 0.179 | 0.278 | 0.278 | 1.000 | 0.978 | 1.000 | 0.972 |
| logLFeC | 0.164 | 0.268 | 0.268 | 0.972 | 1.000 | 0.972 | 1.000 |

-------------------------------------------------------

**Firs lactation 0-300 days 60 – 180 days**

> cor(log10FLe,log2SCC) – dayn and dayn+1

[1] 0.06813942 0.0409511

> cor(LFe,SomCells) – dayn and dayn+1

[1] 0.04194984 0.04010798

Regression analysis

logSCC = a + b\*logLFe

Coefficients:

(Intercept) reg.coef

3.293 1.188

Som.Cells = a + b\*FLe

Coefficients:

(Intercept) reg.coef

98.7073 0.7448

2nd lactations

> cor(log10FLe,log2SCC) – dayn and dayn+1

[1] 0.1399649

> cor(LFe,SomCells) – dayn and dayn+1

[1] 0.0730908

Regression analysis

logSCC = a + b\*logLFe

Coefficients:

(Intercept) reg.coef

0.348 2.737

Som.Cells = a + b\*FLe

Coefficients:

(Intercept) reg.coef

84.745 1.656

3rd lactations

> cor(log10FLe,log2SCC) – dayn and dayn-1

[1] 0.1650634

> cor(LFe,SomCells) – dayn and dayn-1

[1] 0.09254836

Regression analysis

logSCC = a + b\*logLFe

Coefficients:

(Intercept) reg.coef

-0.2438 3.2781

Som.Cells = a + b\*FLe

Coefficients:

(Intercept) reg.coef

98.515 2.518

----------------------------------------------------------------------