# Supporting information (SI) to

Single-step genome-wide association for selected milk fatty acids in Dual-Purpose Belgian Blue cows

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Table S1. Accuracy of mid-infrared predictions for fatty acid (FA) in milk (g/dl of milk)1 reported by Soyeurt et al. (2011)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Constituent  (g/dl of milk) | Mean | SD | SECV | R2cv | RPD |
| Fat | 3.650 | 1.150 | 0.04 | 1.00 | 25.6 |
| C4:0 | 0.100 | 0.030 | 0.01 | 0.89 | 3.0 |
| C6:0 | 0.067 | 0.024 | 0.01 | 0.95 | 4.3 |
| C8:0 | 0.042 | 0.016 | 0.00 | 0.93 | 3.8 |
| C10:0 | 0.100 | 0.040 | 0.01 | 0.92 | 3.6 |
| C12:0 | 0.120 | 0.050 | 0.01 | 0.92 | 3.6 |
| C14:0 | 0.400 | 0.130 | 0.03 | 0.95 | 4.3 |
| C16:0 | 1.050 | 0.390 | 0.10 | 0.93 | 3.8 |
| C18:0 | 0.380 | 0.180 | 0.06 | 0.88 | 2.8 |
| C18:1 *trans* | 0.140 | 0.070 | 0.03 | 0.84 | 2.5 |
| C18:1 *cis*-9 | 0.740 | 0.290 | 0.06 | 0.95 | 4.5 |
| Saturated FA | 2.420 | 0.820 | 0.08 | 0.99 | 10.8 |
| Monounsaturated FA | 1.060 | 0.370 | 0.06 | 0.97 | 5.8 |
| Polyunsaturated FA | 0.160 | 0.050 | 0.02 | 0.81 | 2.3 |
| Short-chain FA | 0.320 | 0.110 | 0.02 | 0.95 | 4.5 |
| Medium-chain FA | 1.800 | 0.620 | 0.12 | 0.96 | 5.1 |
| Long-chain FA | 1.530 | 0.570 | 0.12 | 0.96 | 4.8 |

1SECV = standard error of cross-validation; R2cv = cross-validation coefficient of determination; RPD = ratio of SD of GC data from the calibration set to the SECV.

Soyeurt, H., F. Dehareng, N. Gengler, S. McParland, E. Wall, D. Berry, M. Coffey, and P. Dardenne. 2011. Mid-infrared prediction of bovine milk fatty acids across multiple breeds, production systems, and countries. Journal of Dairy Science 94(4):1657-1667.

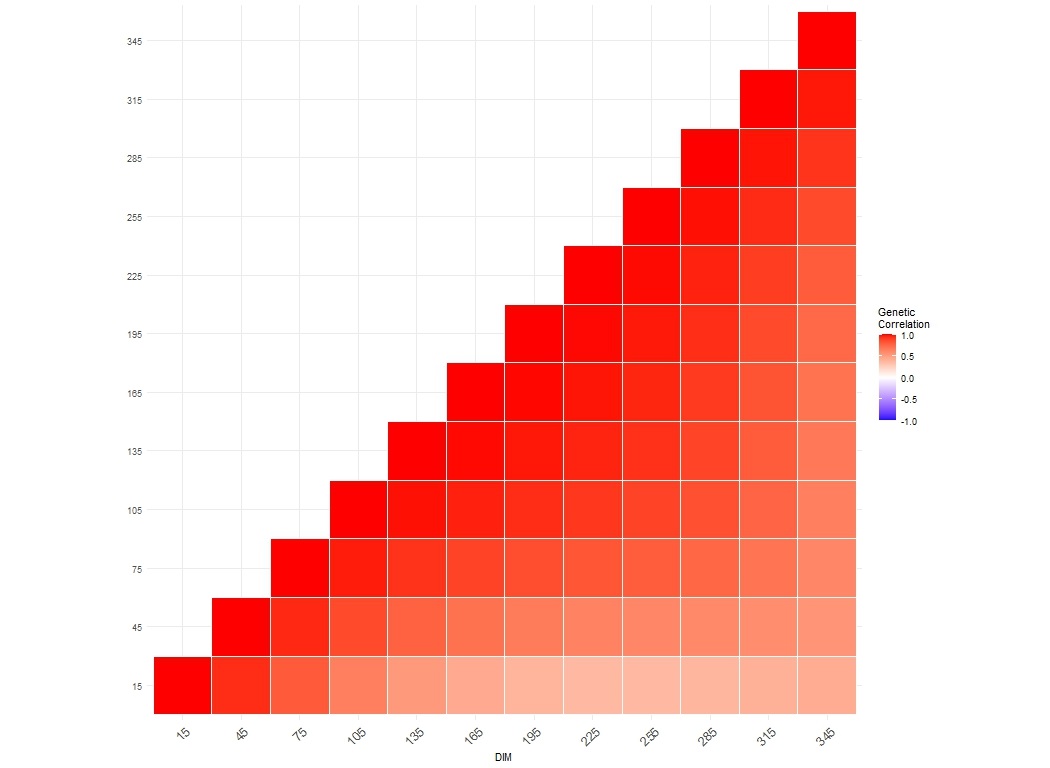


Figure S1. Heatmap of genetic correlation estimated among selected days in milk (DIM) for C4:0 in the first parity Dual-Purpose Belgian Blue cows

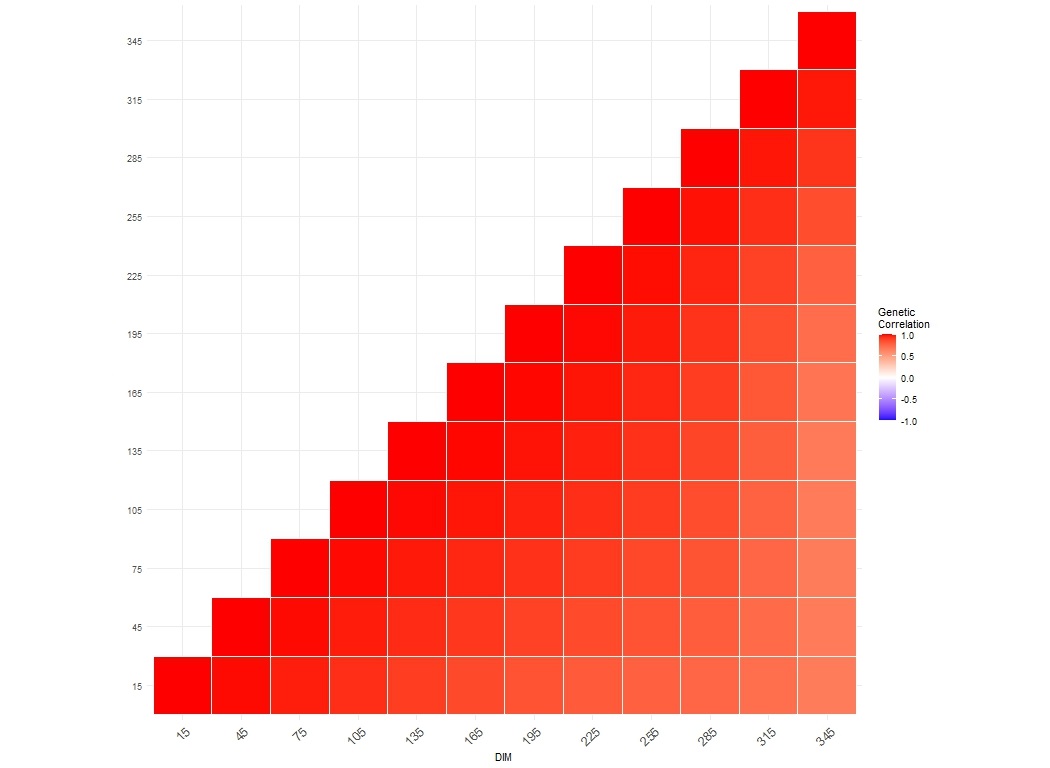


Figure S2. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C4:0 in the second parity Dual-Purpose Belgian Blue cows

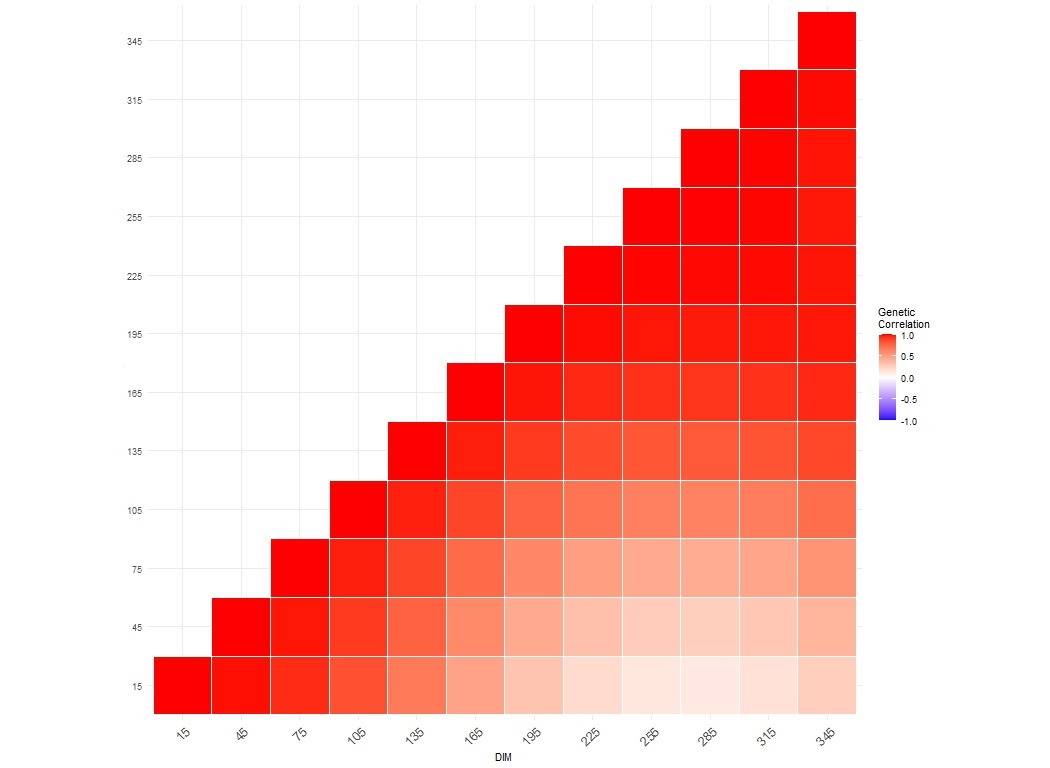


Figure S3. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C6:0 in the first parity Dual-Purpose Belgian Blue cows

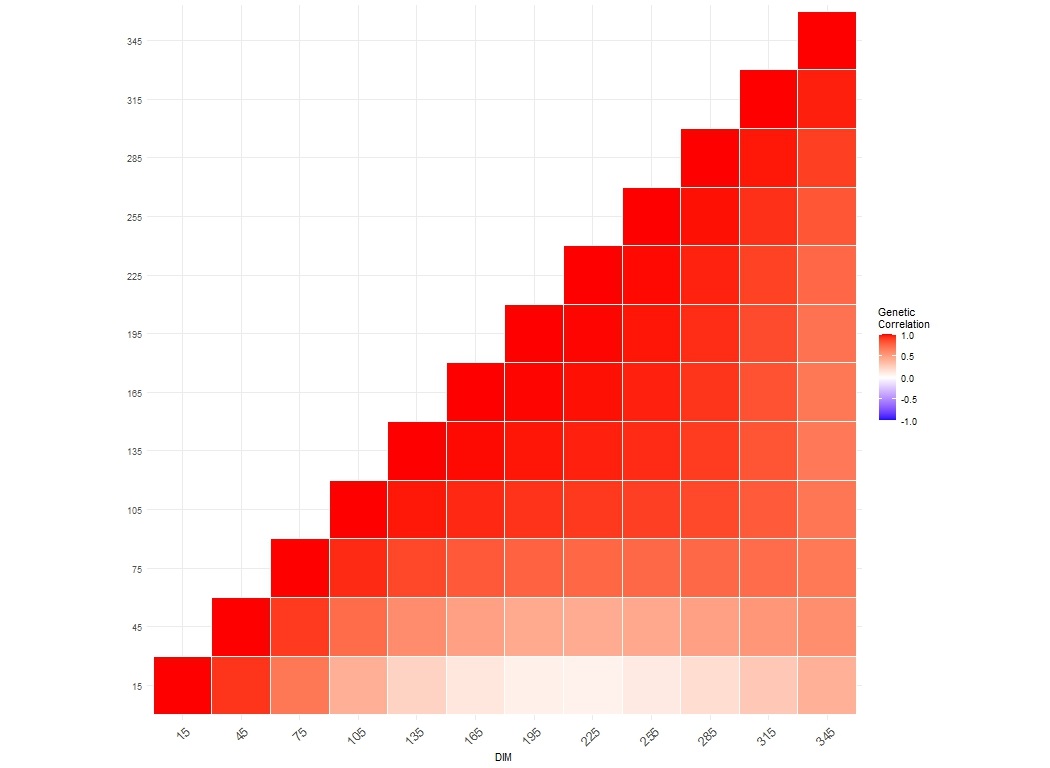


Figure S4. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C6:0 in the second parity Dual-Purpose Belgian Blue cows

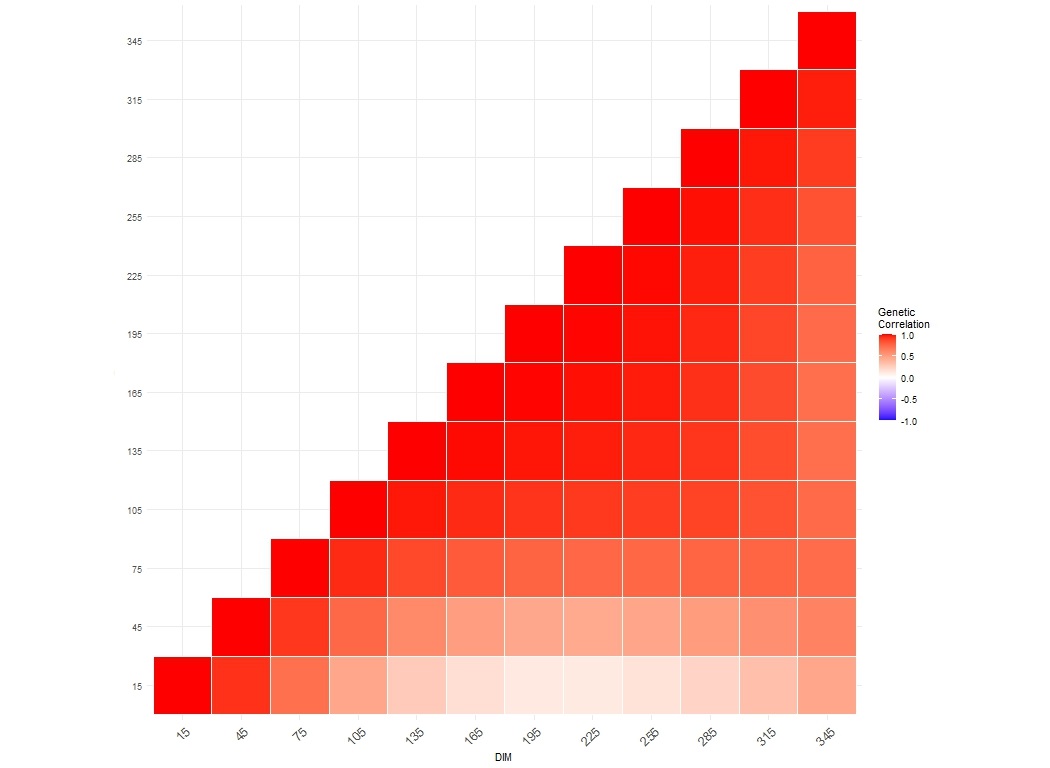


Figure S5. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C8:0 in the first parity Dual-Purpose Belgian Blue cows

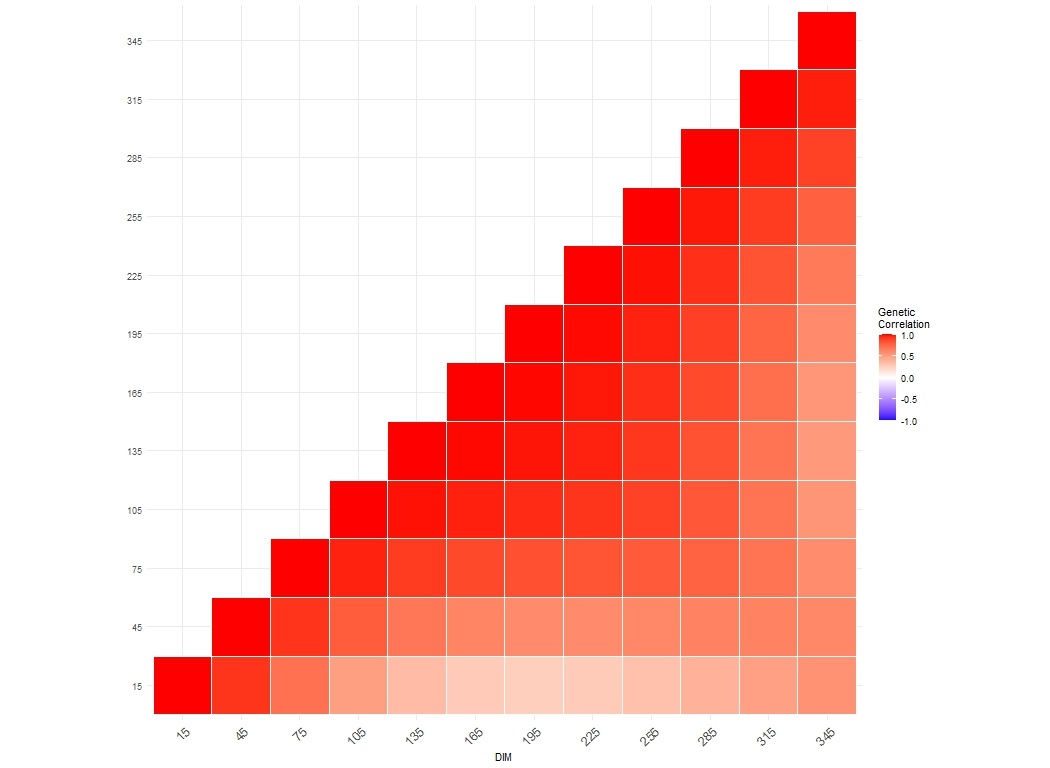


Figure S6. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C8:0 in the second parity Dual-Purpose Belgian Blue cows

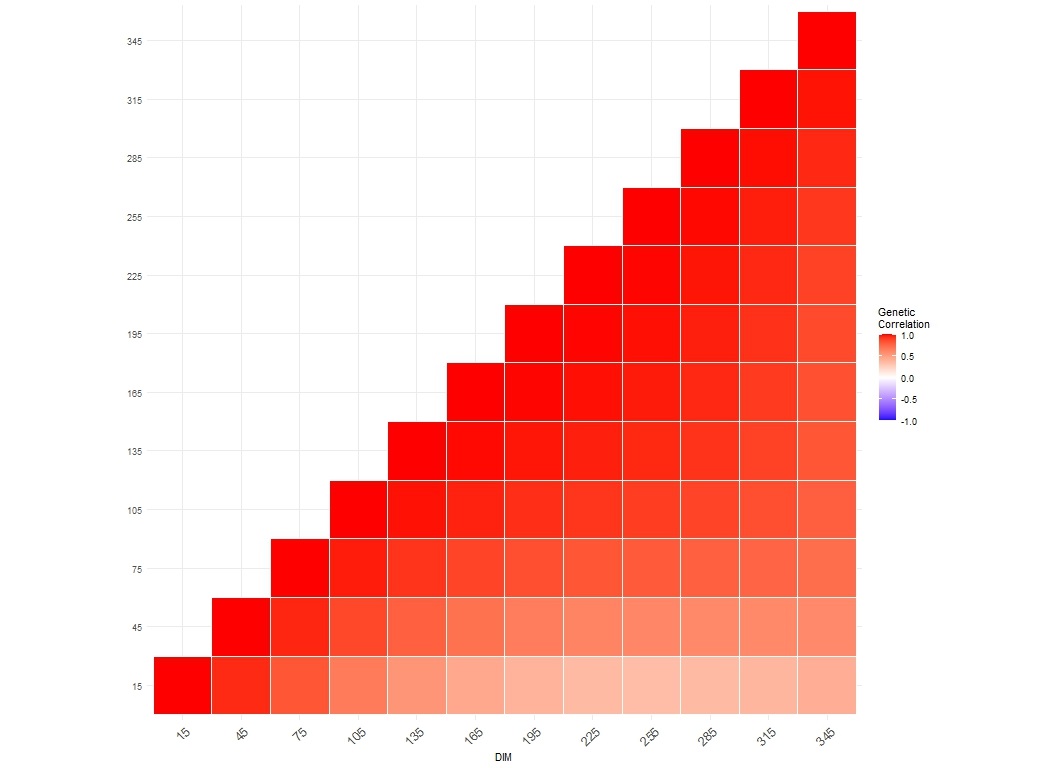


Figure S7. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C10:0 in the first parity Dual-Purpose Belgian Blue cows

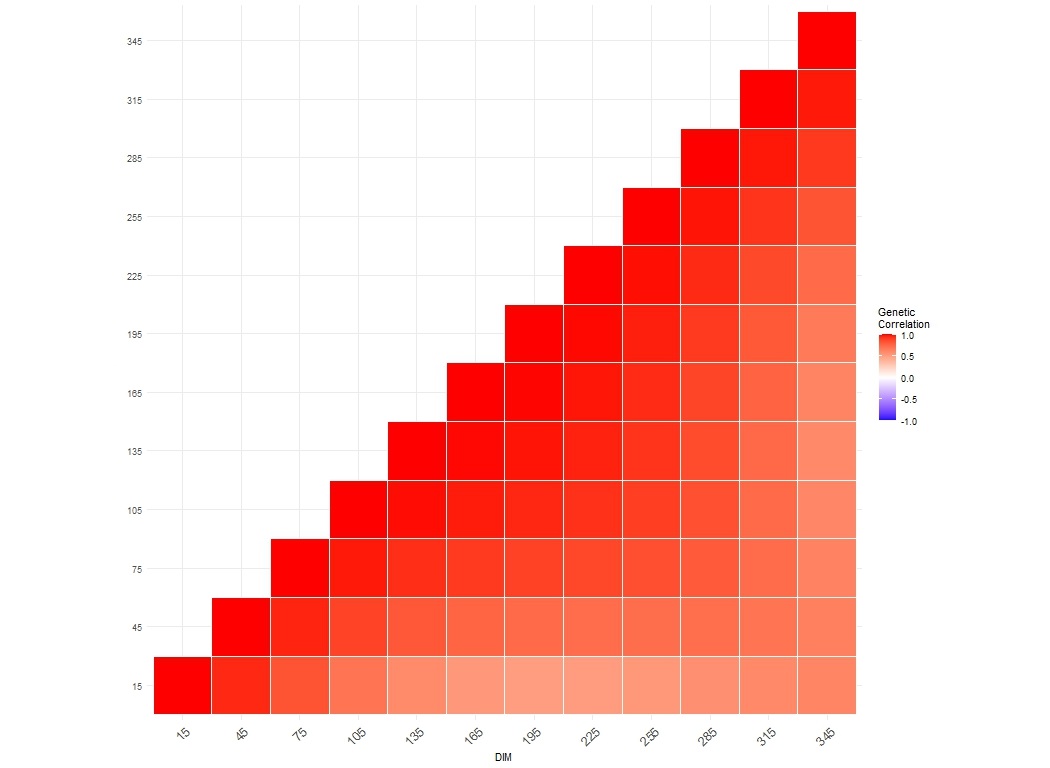


Figure S8. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C10:0 in the second parity Dual-Purpose Belgian Blue cows

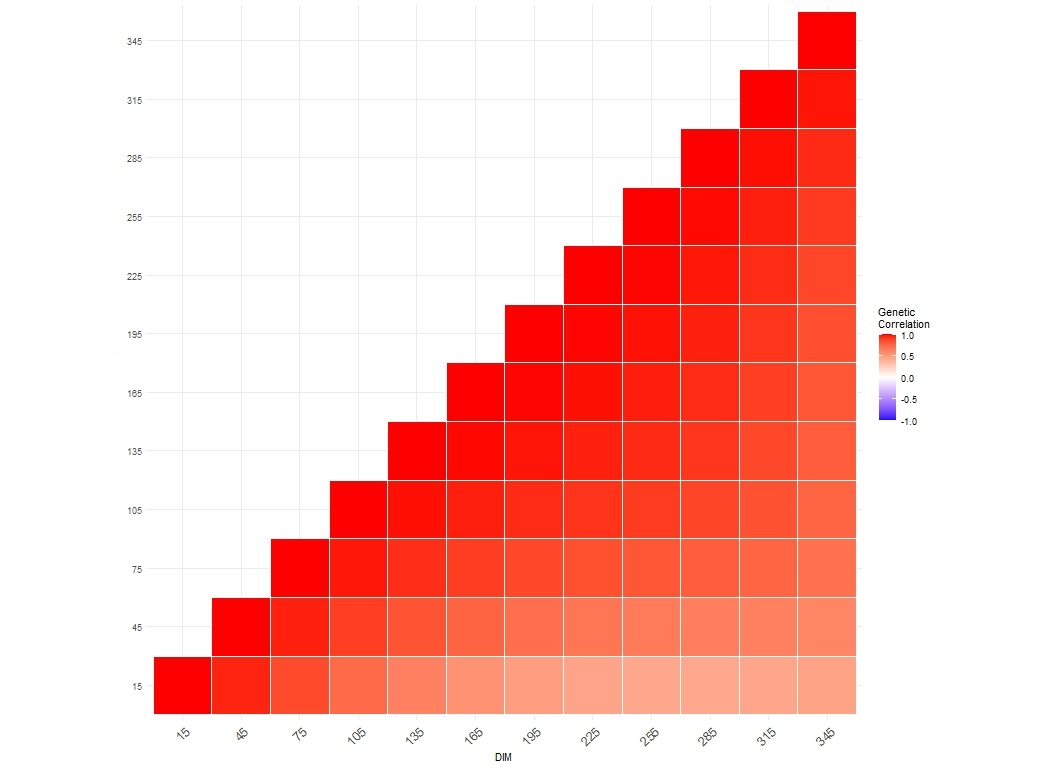


Figure S9. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C12:0 in the first parity Dual-Purpose Belgian Blue cows

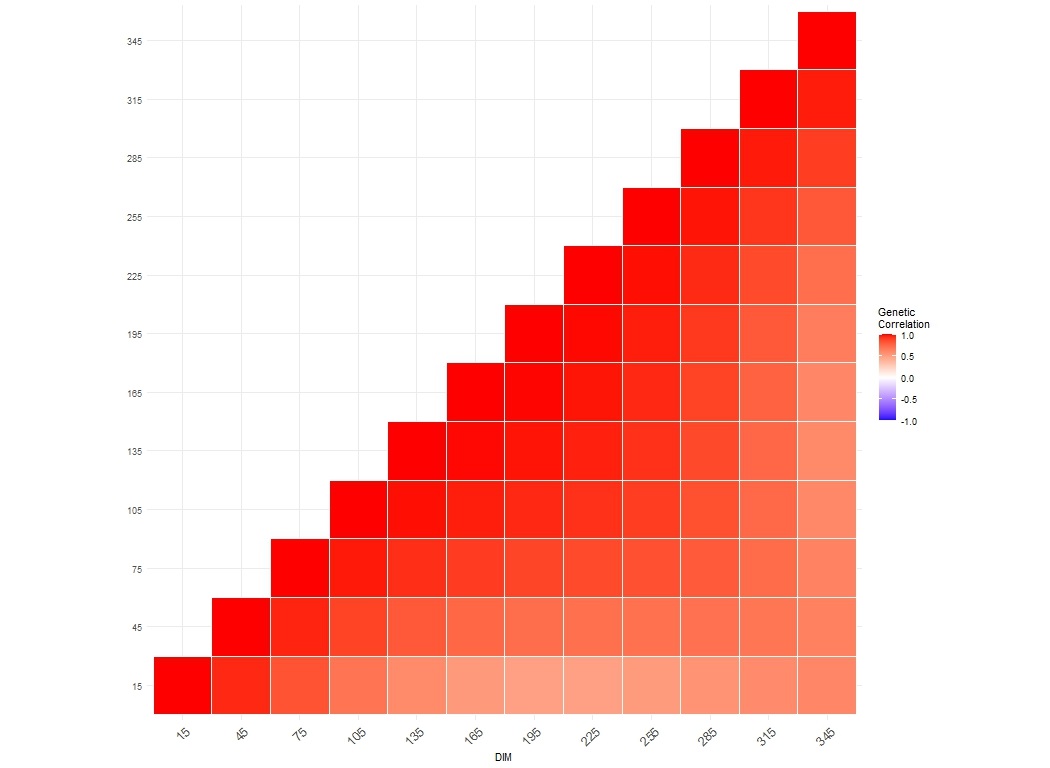


Figure S10. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C12:0 in the second parity Dual-Purpose Belgian Blue cows

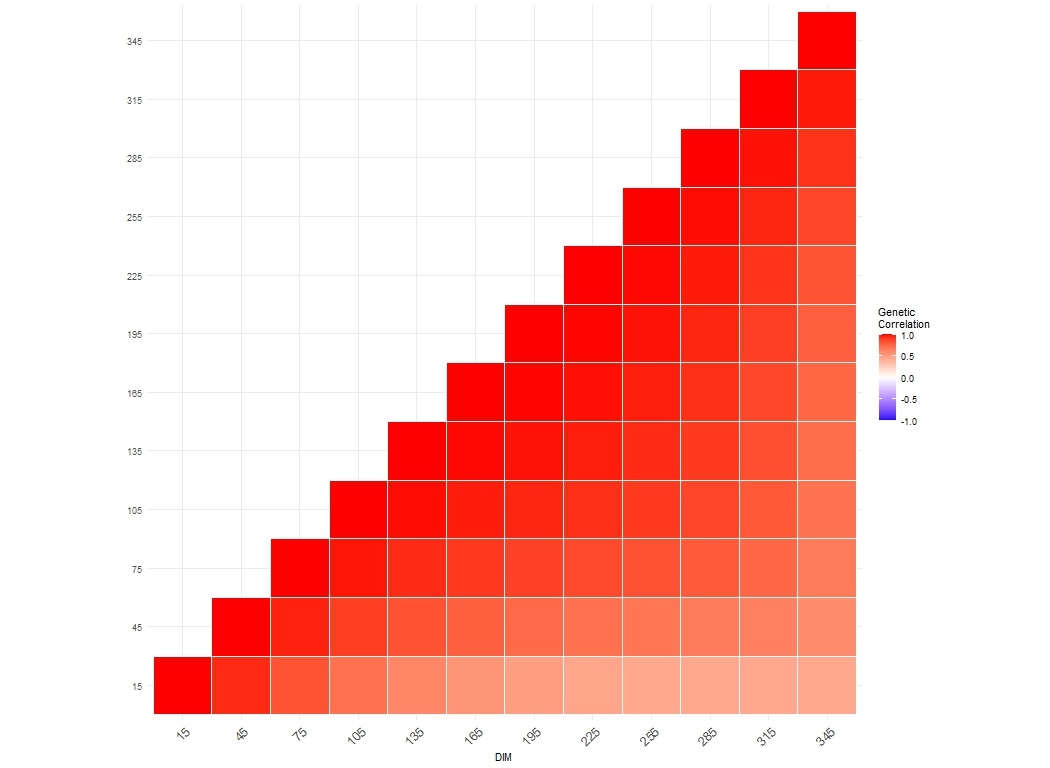


Figure S11. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C14:0 in the first parity Dual-Purpose Belgian Blue cows

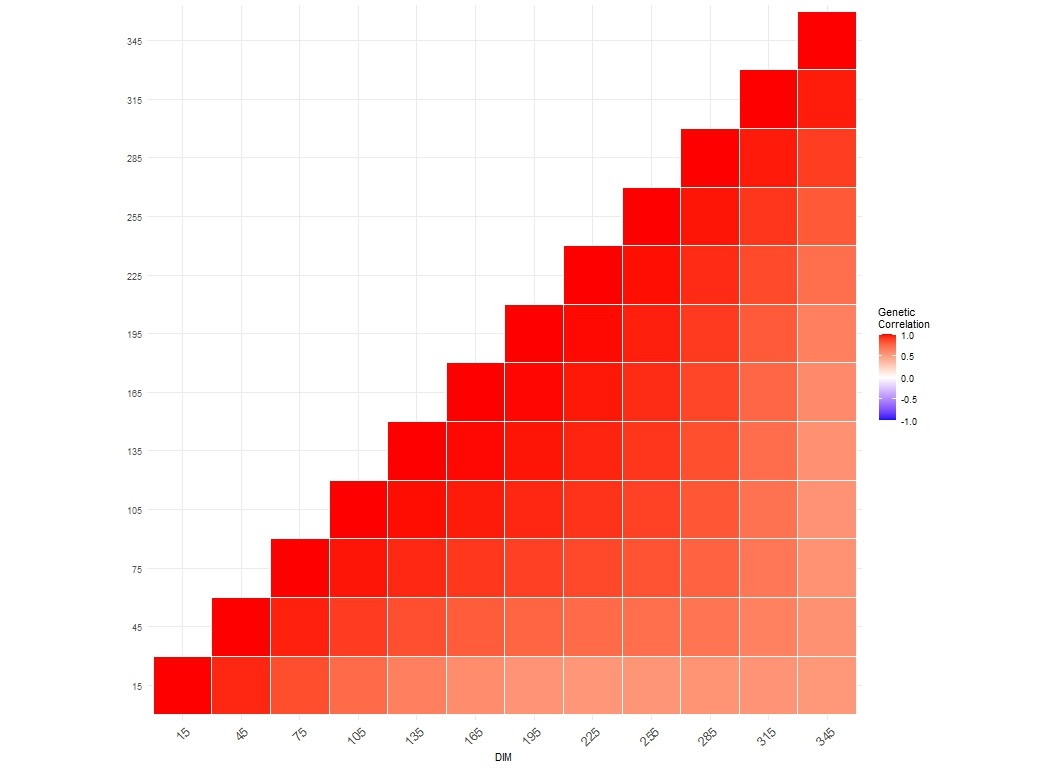


Figure S12. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C14:0 in the second parity Dual-Purpose Belgian Blue cows

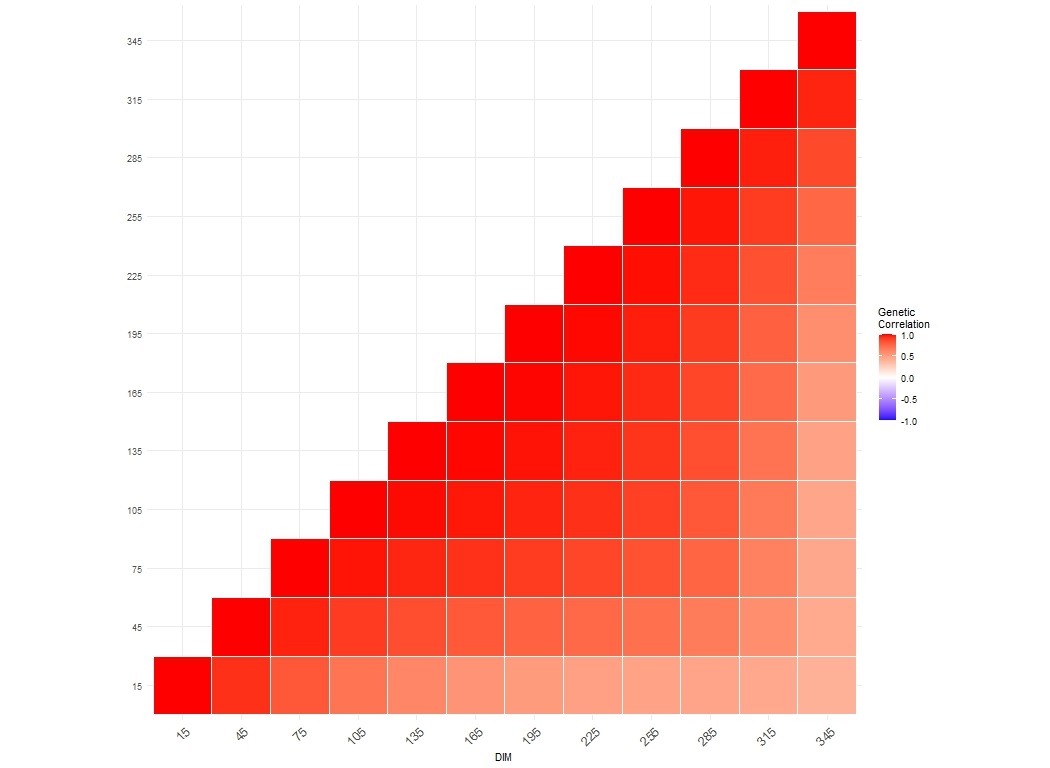


Figure S13. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C16:0 in the first parity Dual-Purpose Belgian Blue cows

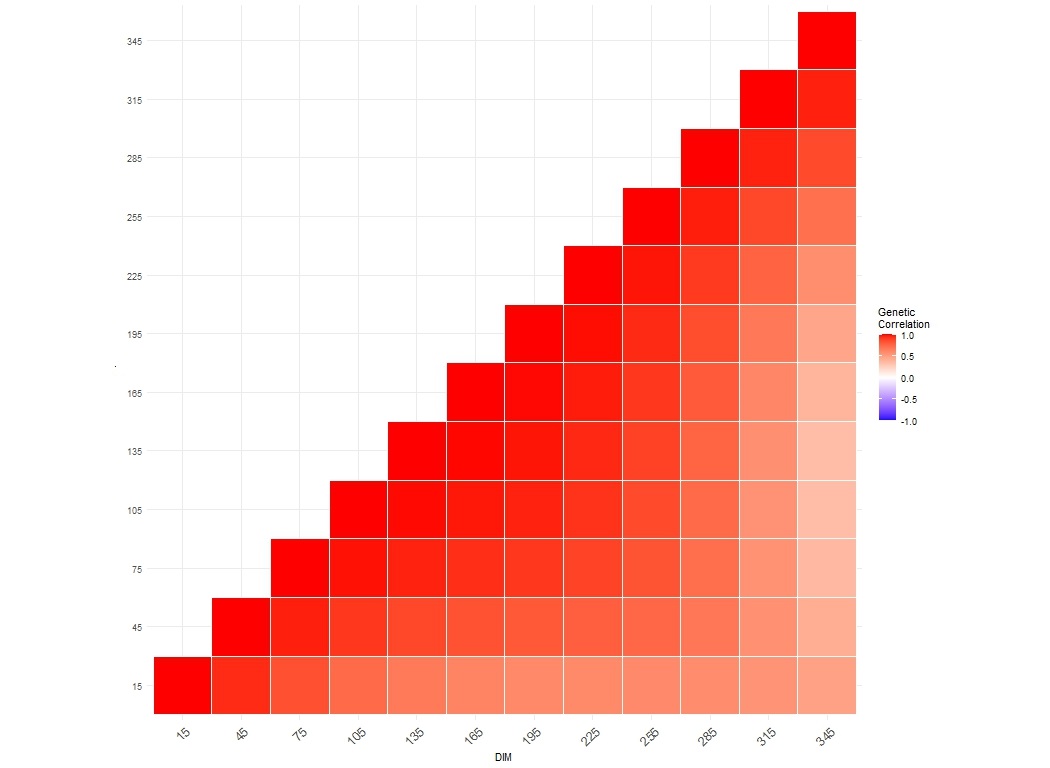


Figure S14. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C16:0 in the second parity Dual-Purpose Belgian Blue cows

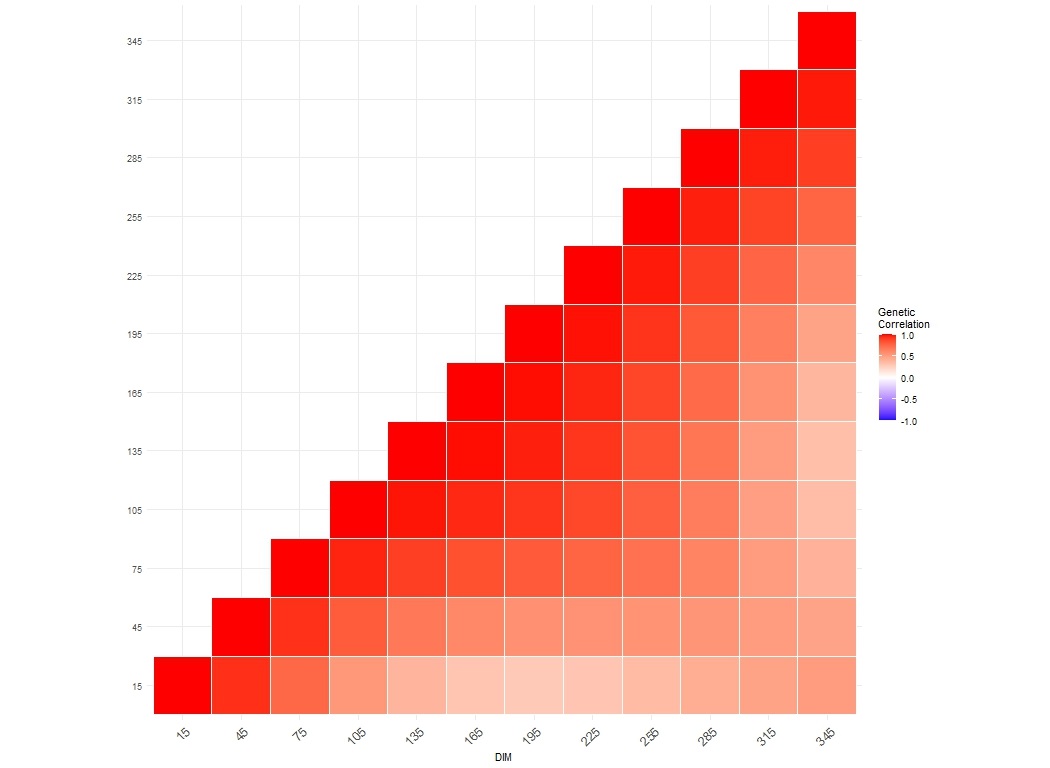


Figure S15. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C18:0 in the first parity Dual-Purpose Belgian Blue cows

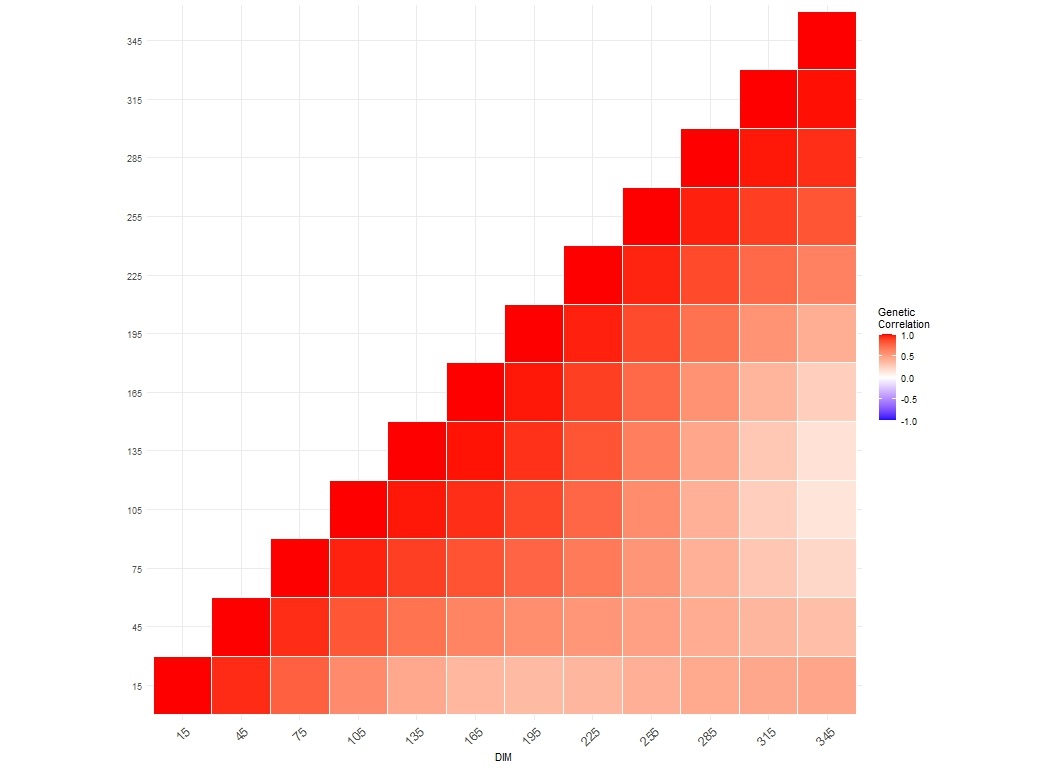


Figure S16. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C18:0 in the second parity Dual-Purpose Belgian Blue cows

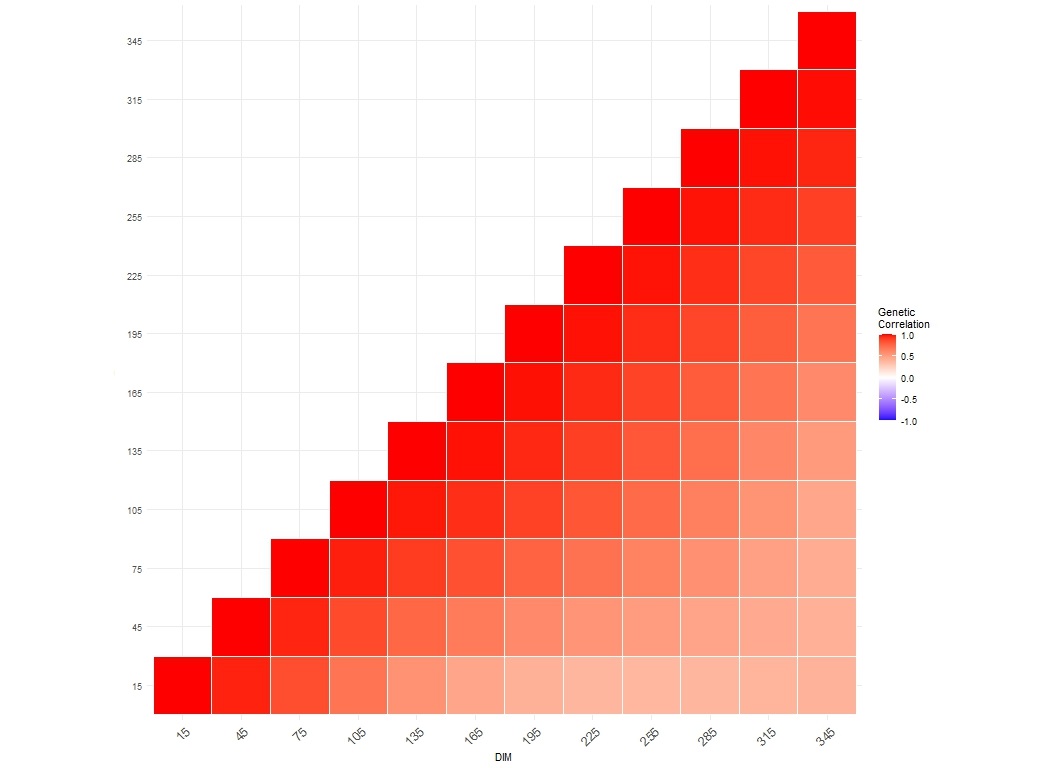


Figure S17. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C18:1 *trans* in the first parity Dual-Purpose Belgian Blue cows

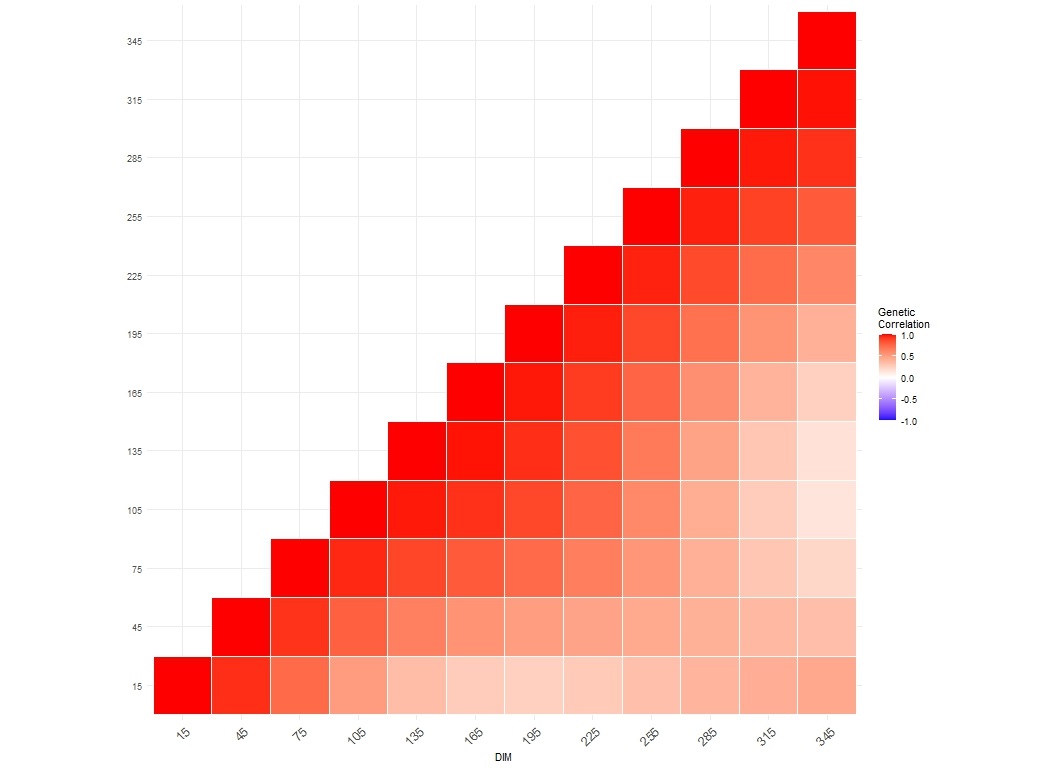


Figure S18. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C18:1 trans in the second parity Dual-Purpose Belgian Blue cows

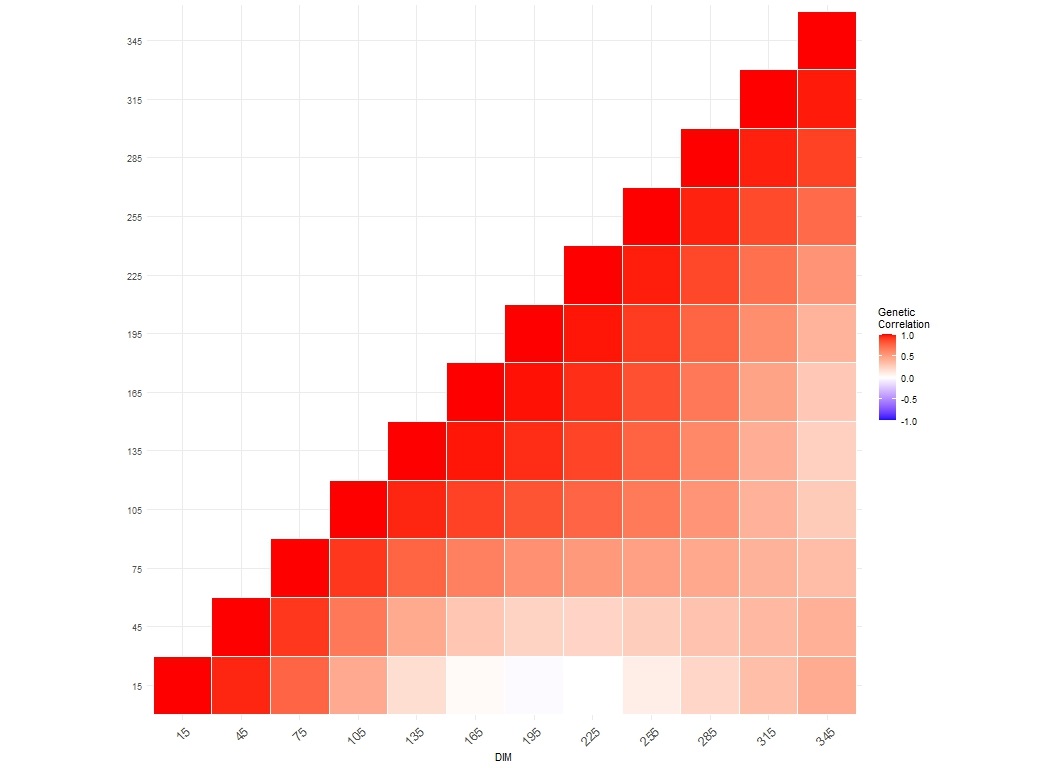


Figure S19. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C18:1 *cis*-9 in the first parity Dual-Purpose Belgian Blue cows

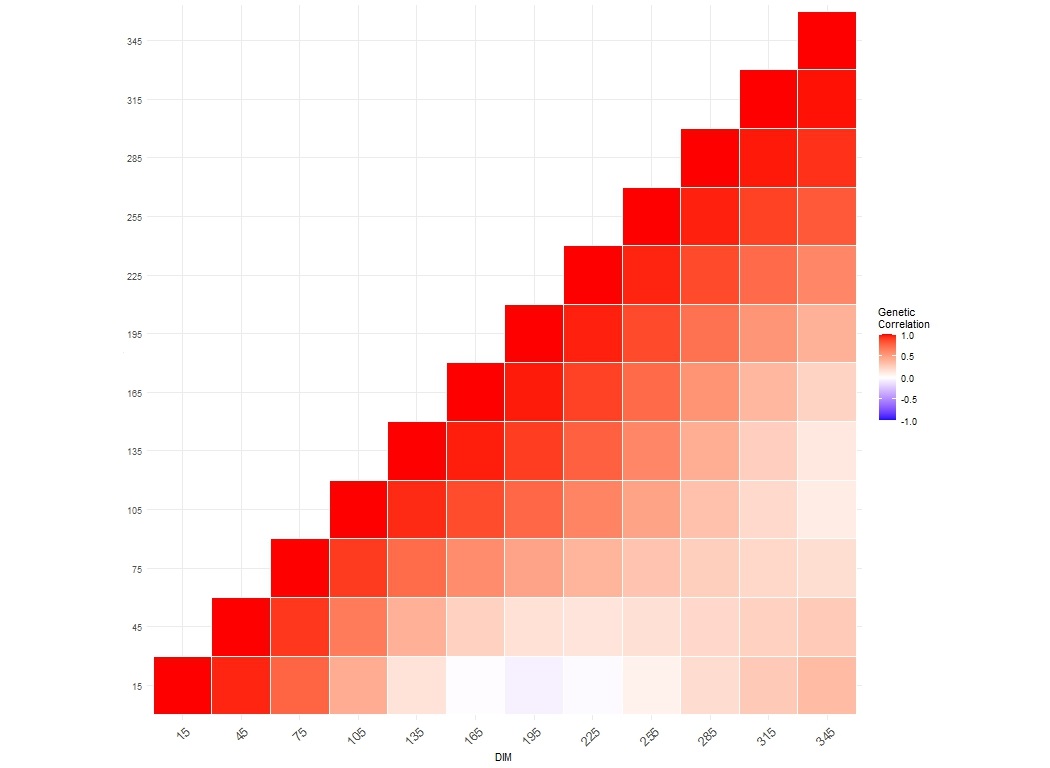


Figure S20. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for C18:1 *cis*-9 in the second parity Dual-Purpose Belgian Blue cows

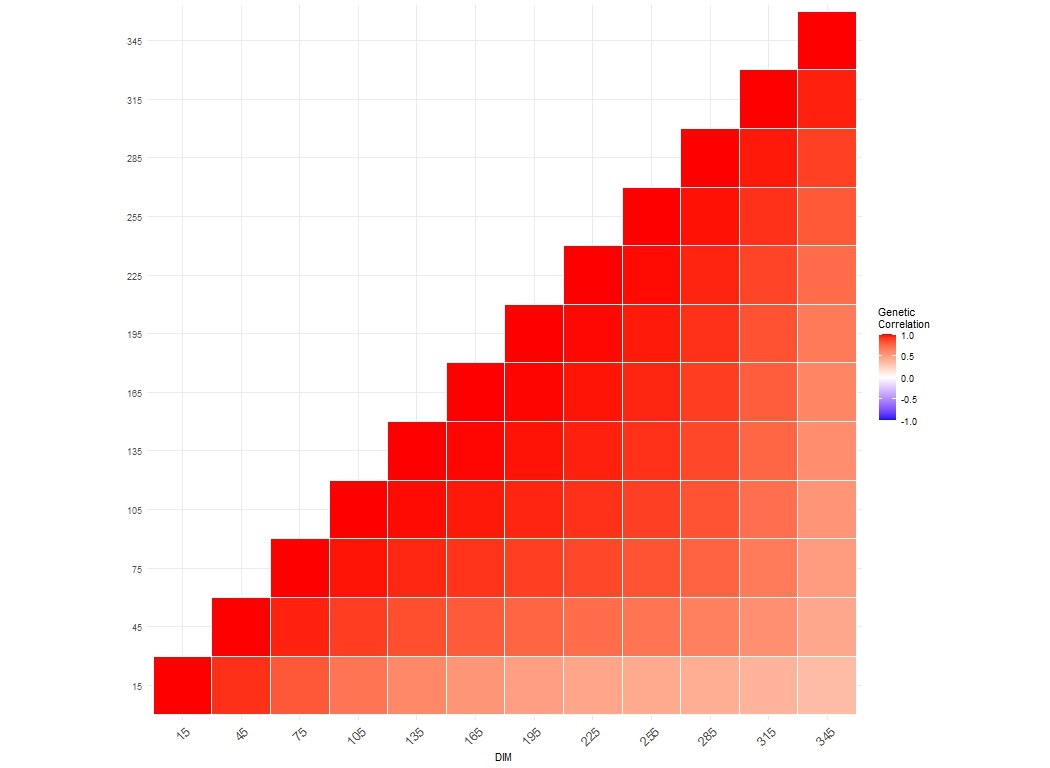


Figure S21. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for saturated fatty acids (SFA) in the first parity Dual-Purpose Belgian Blue cows

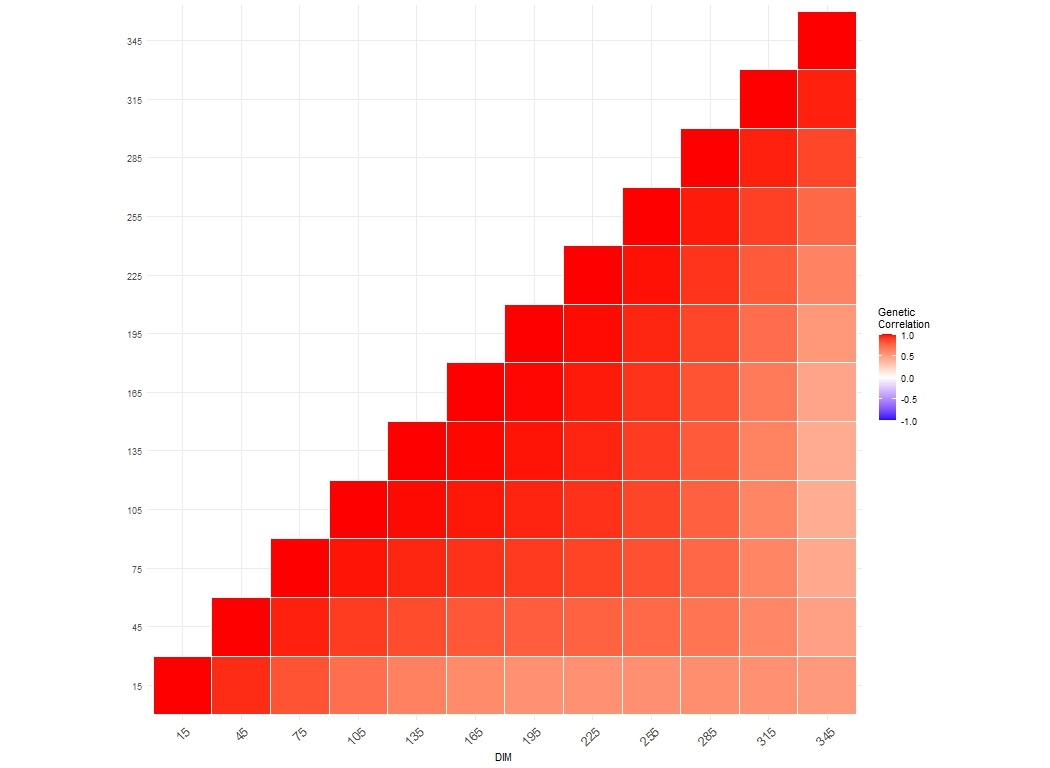


Figure S22. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for saturated fatty acids (SFA) in the second parity Dual-Purpose Belgian Blue cows

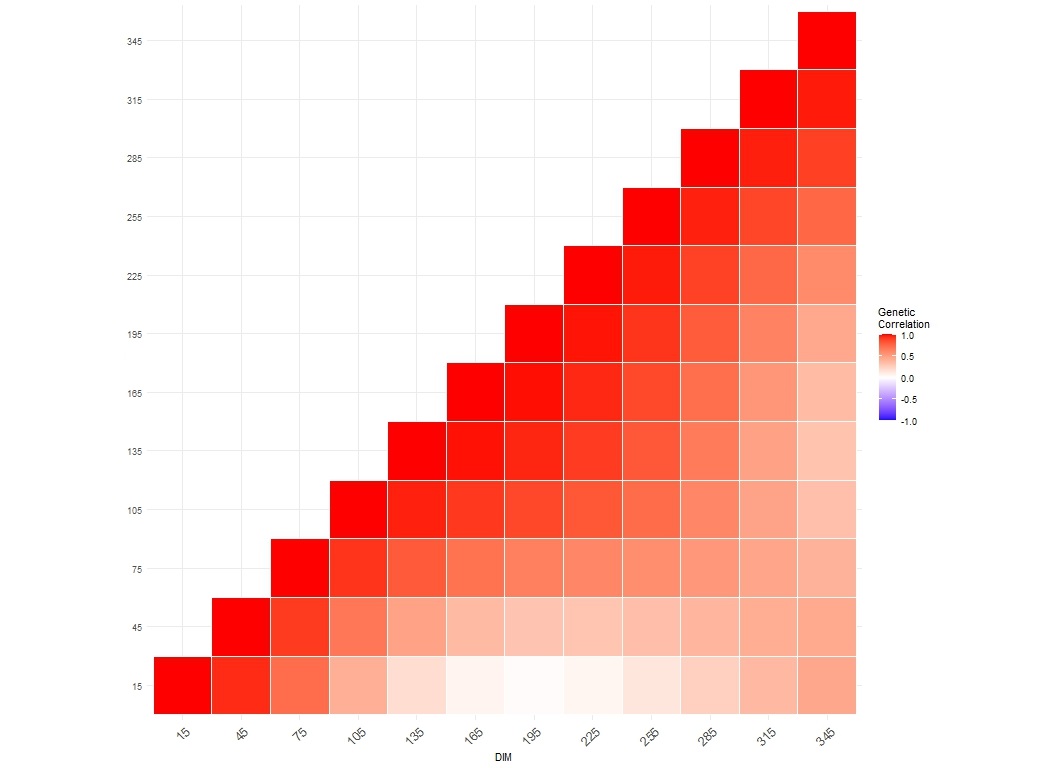


Figure S23. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for monounsaturated fatty acids (MUFA) in the first parity Dual-Purpose Belgian Blue cows

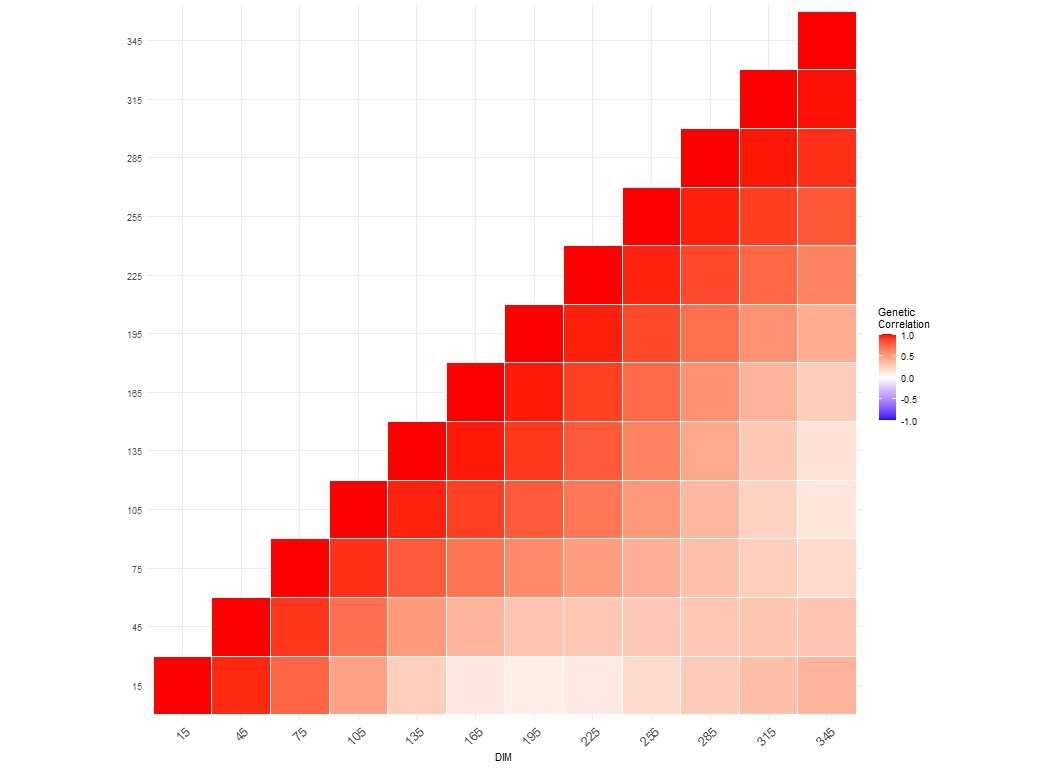


Figure S24. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for monounsaturated fatty acids (MUFA) in the second parity Dual-Purpose Belgian Blue cows

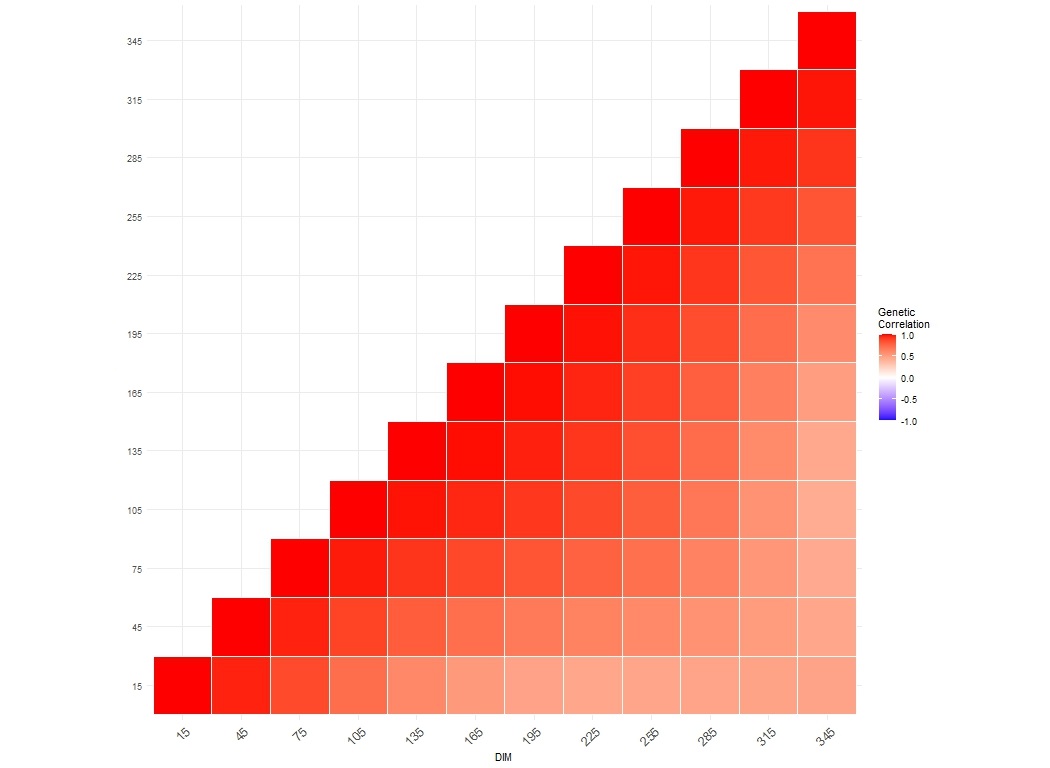


Figure S25. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for polyunsaturated fatty acids (PUFA) in the first parity Dual-Purpose Belgian Blue cows

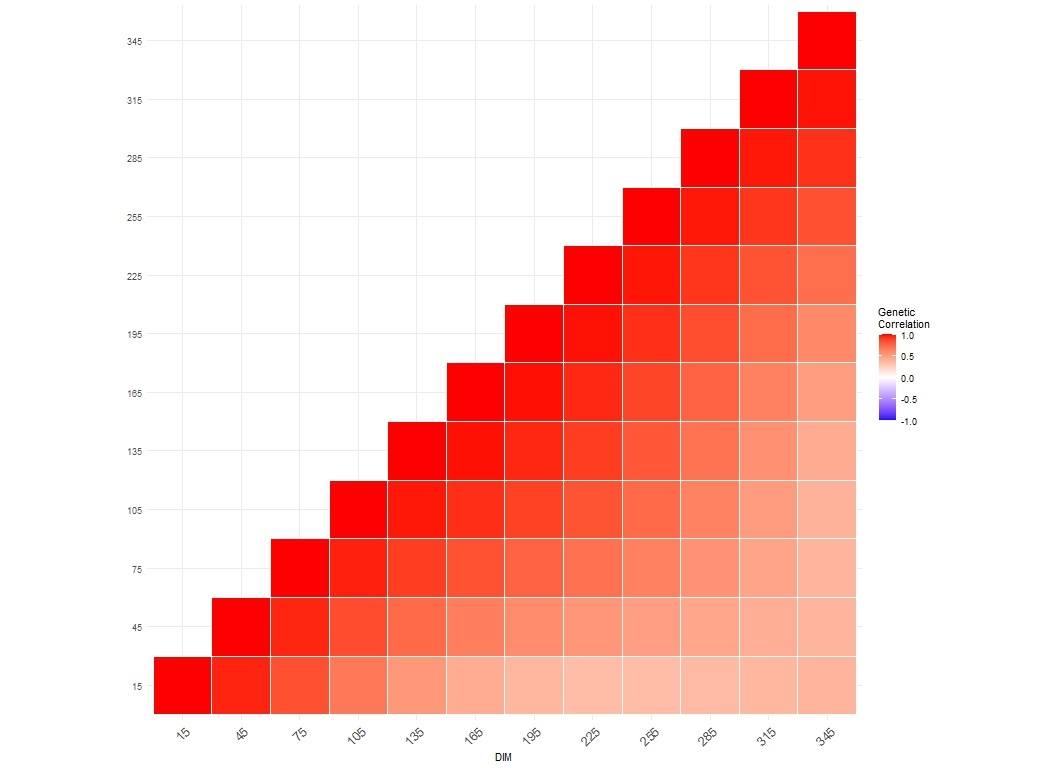


Figure S26. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for polyunsaturated fatty acids (PUFA) 9 in the second parity Dual-Purpose Belgian Blue cows

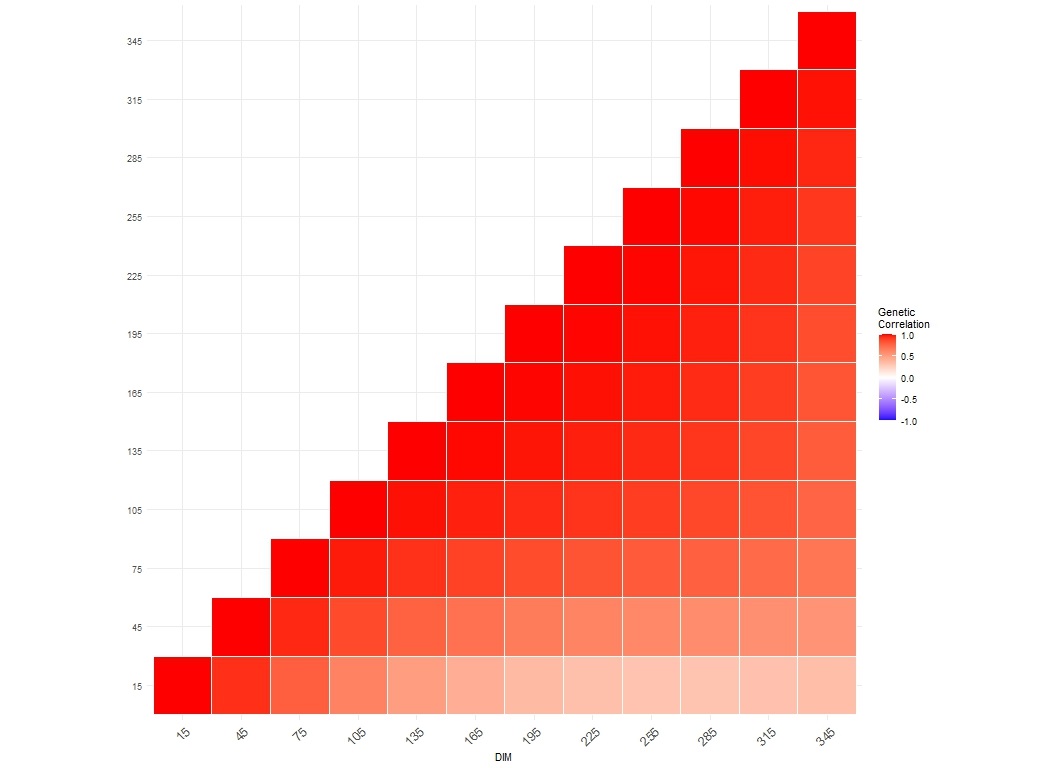


Figure S27. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for short-chain fatty acids (SCFA) in the first parity Dual-Purpose Belgian Blue cows

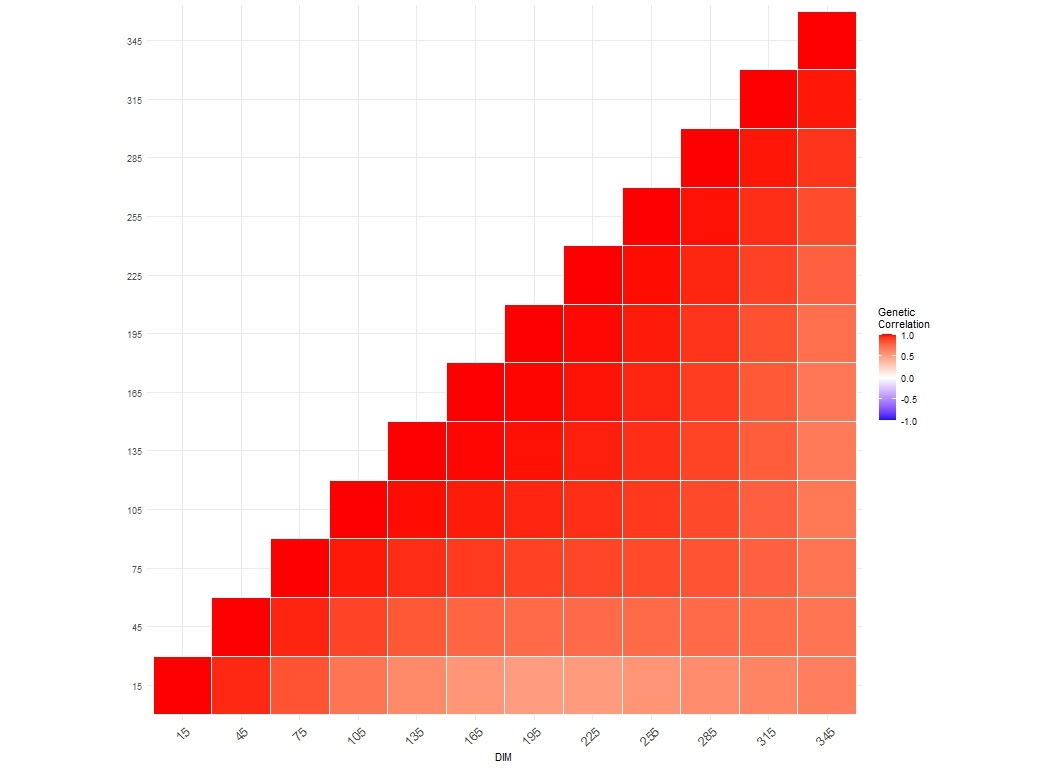


Figure S28. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for short-chain fatty acids (SCFA) in the second parity Dual-Purpose Belgian Blue cows

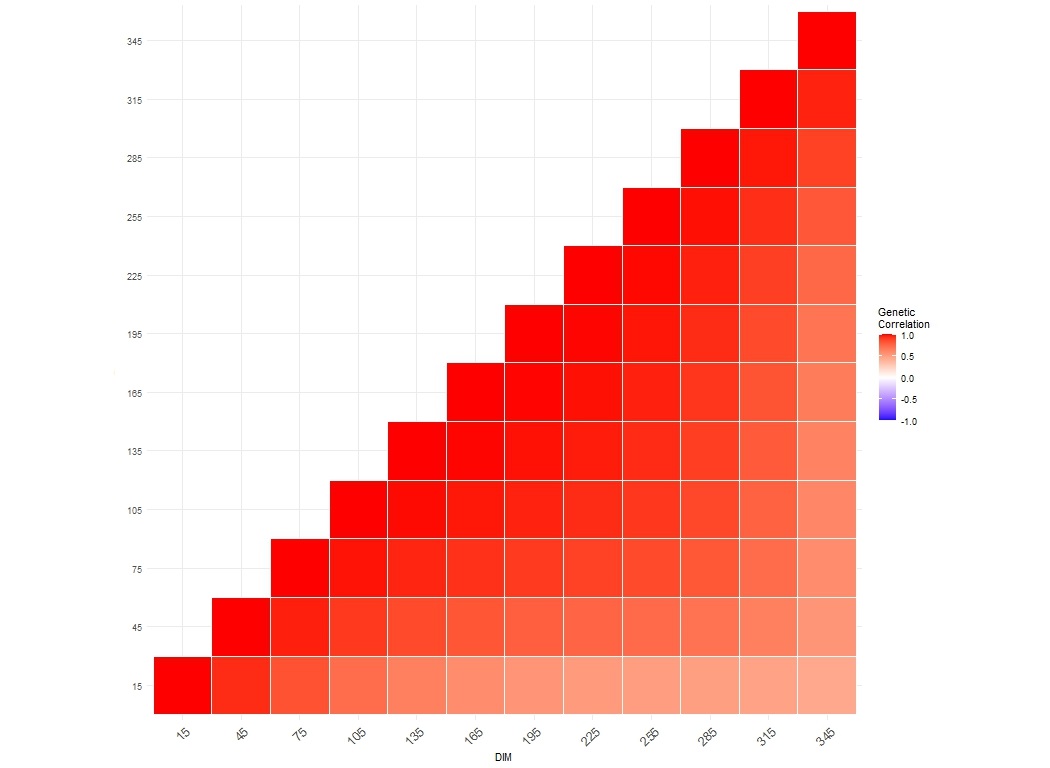


Figure S29. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for medium-chain fatty acids (MCFA) in the first parity Dual-Purpose Belgian Blue cows

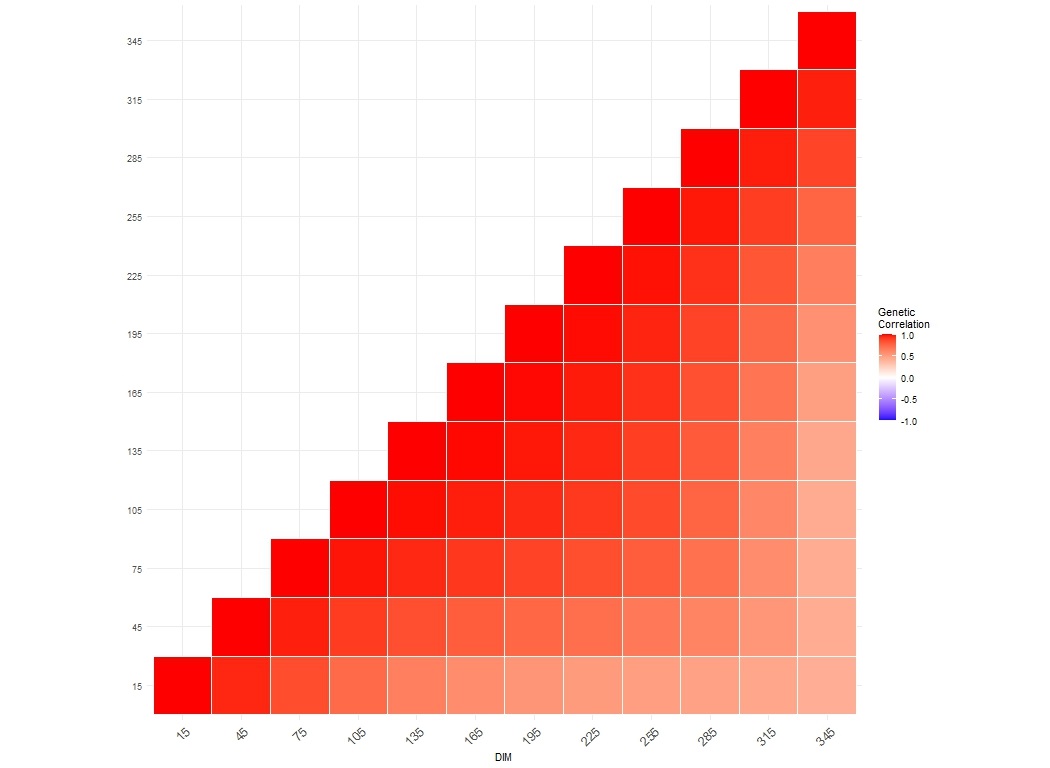


Figure S30. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for medium-chain fatty acids (MCFA) in the second parity Dual-Purpose Belgian Blue cows

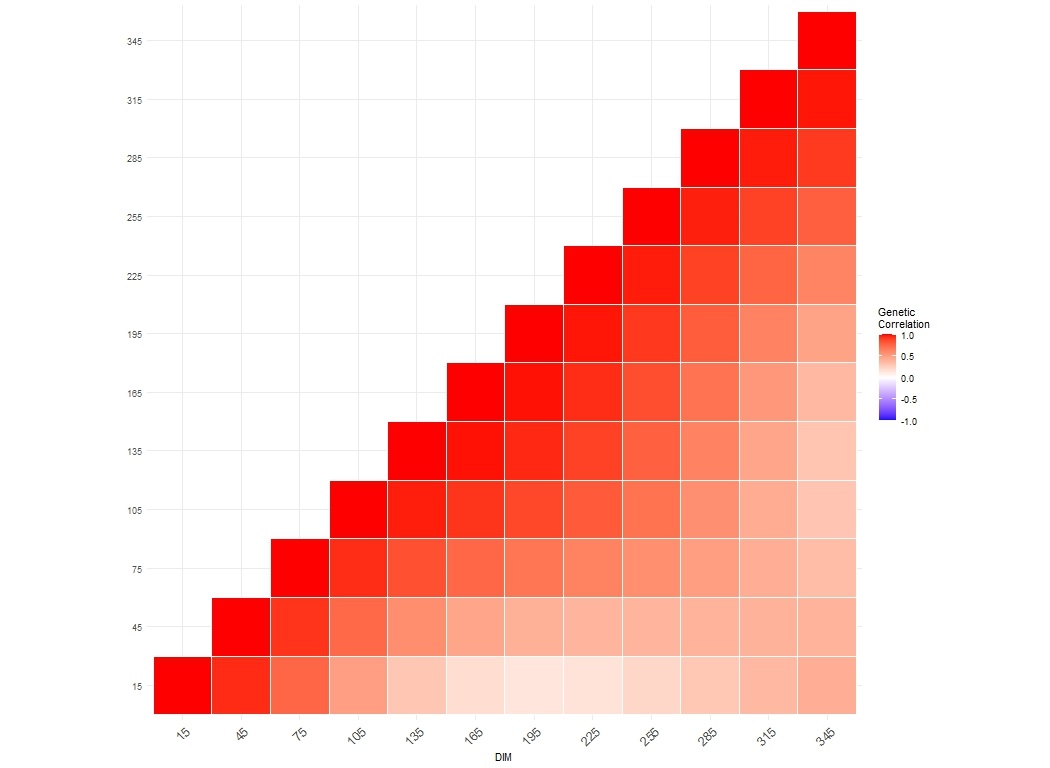


Figure S31. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for long-chain fatty acids (LCFA) in the first parity Dual-Purpose Belgian Blue cows

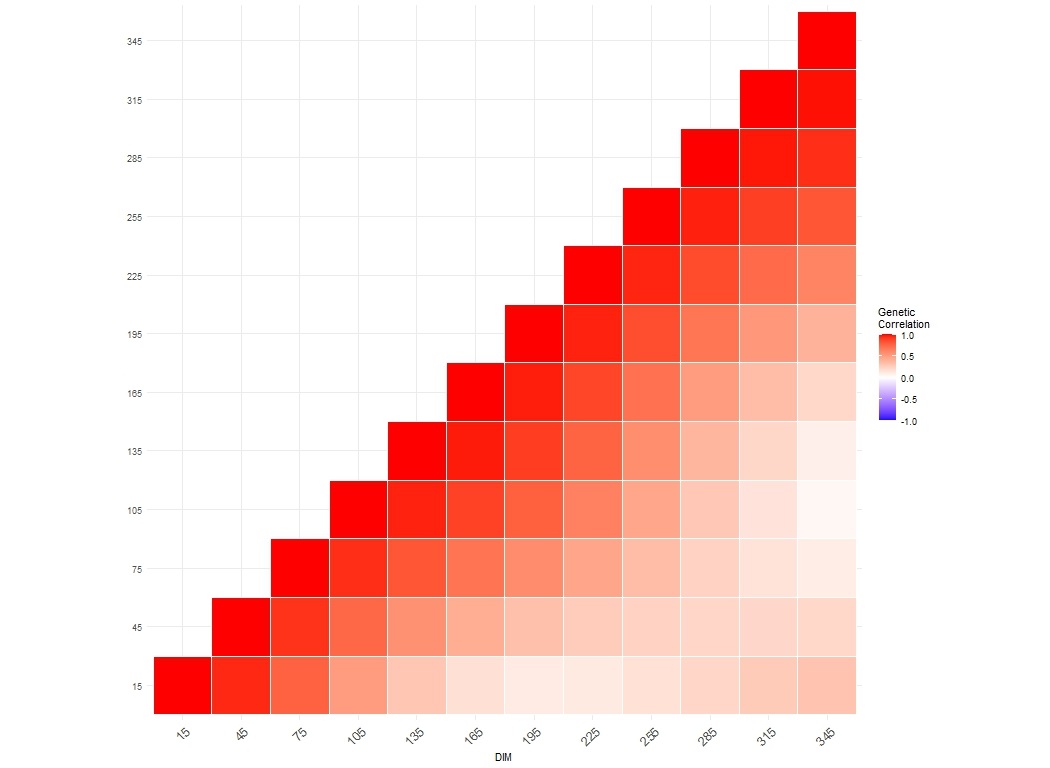


Figure S32. Heatmap of genetic correlation coefficients estimated among selected days in milk (DIM) for long-chain fatty acids (LCFA) in the second parity Dual-Purpose Belgian Blue cows

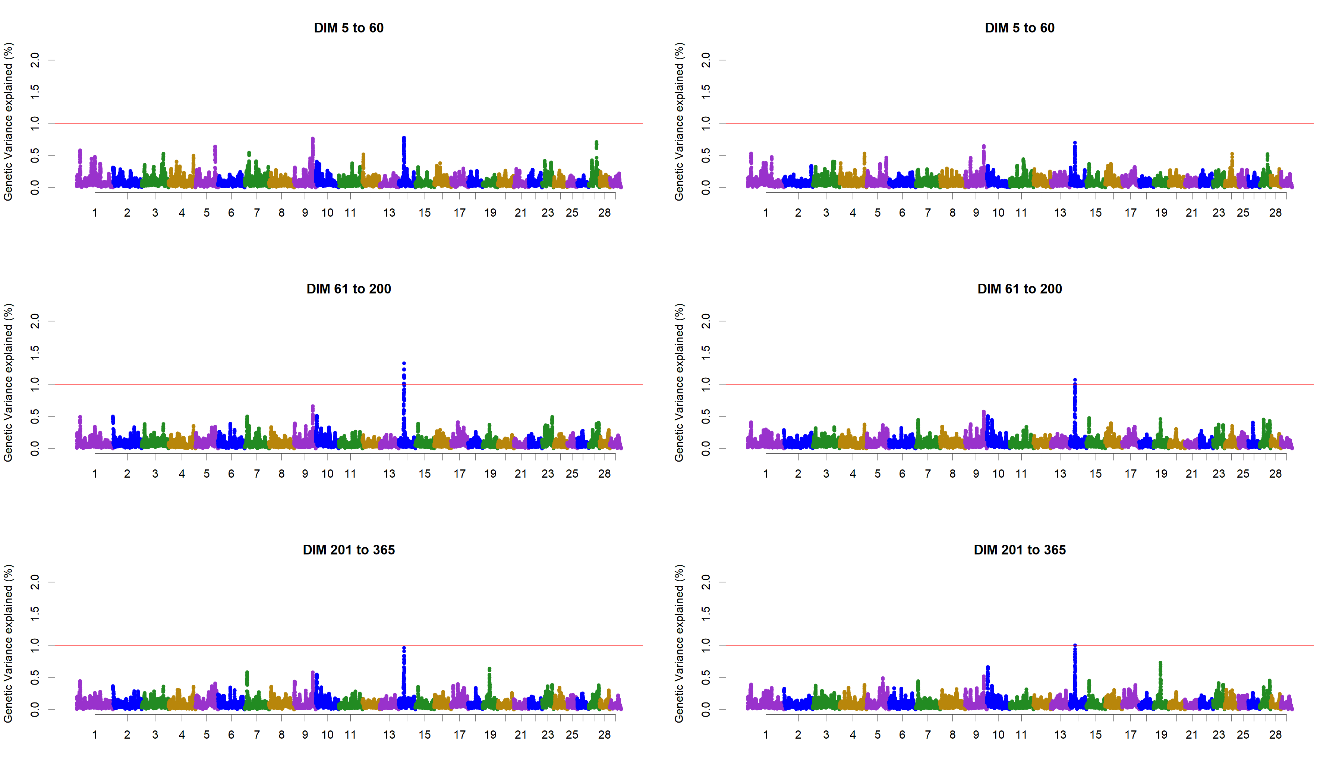


Figure S33. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C4:0 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

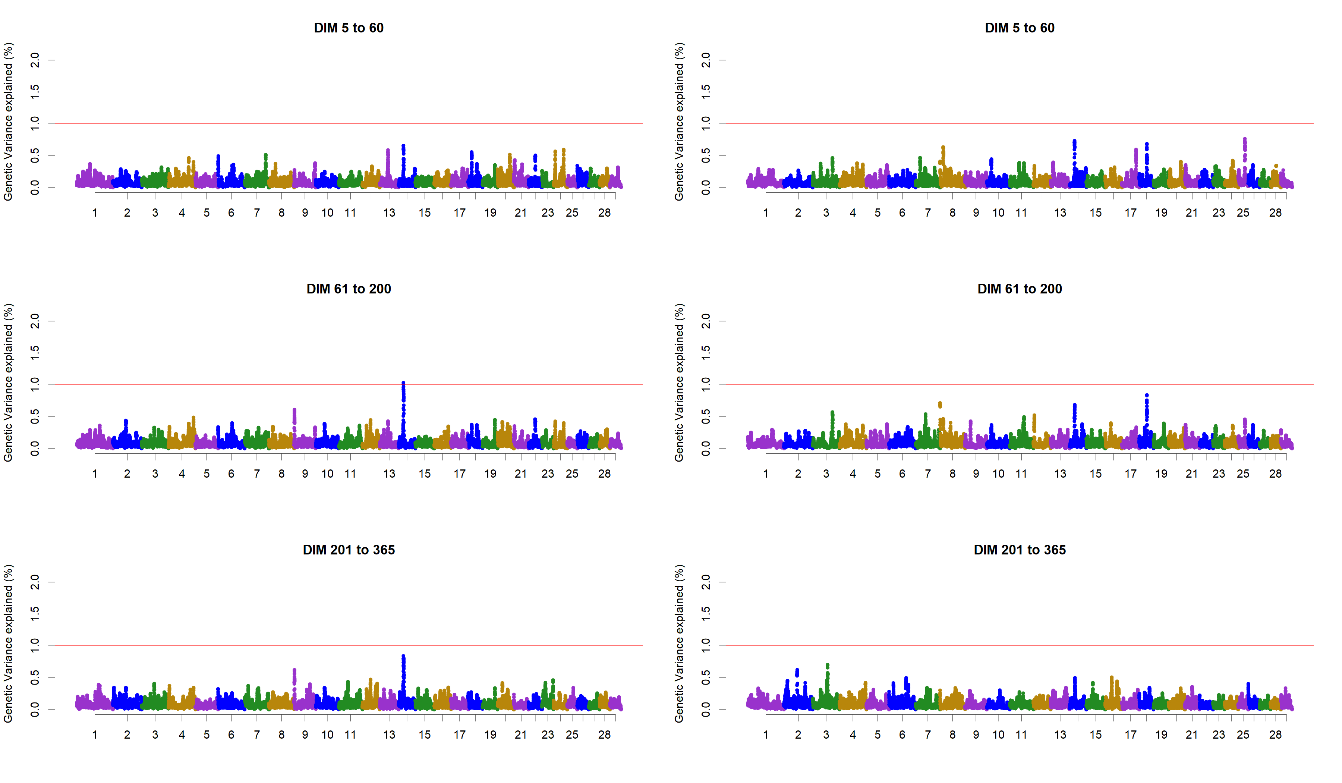


Figure S34. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C6:0 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

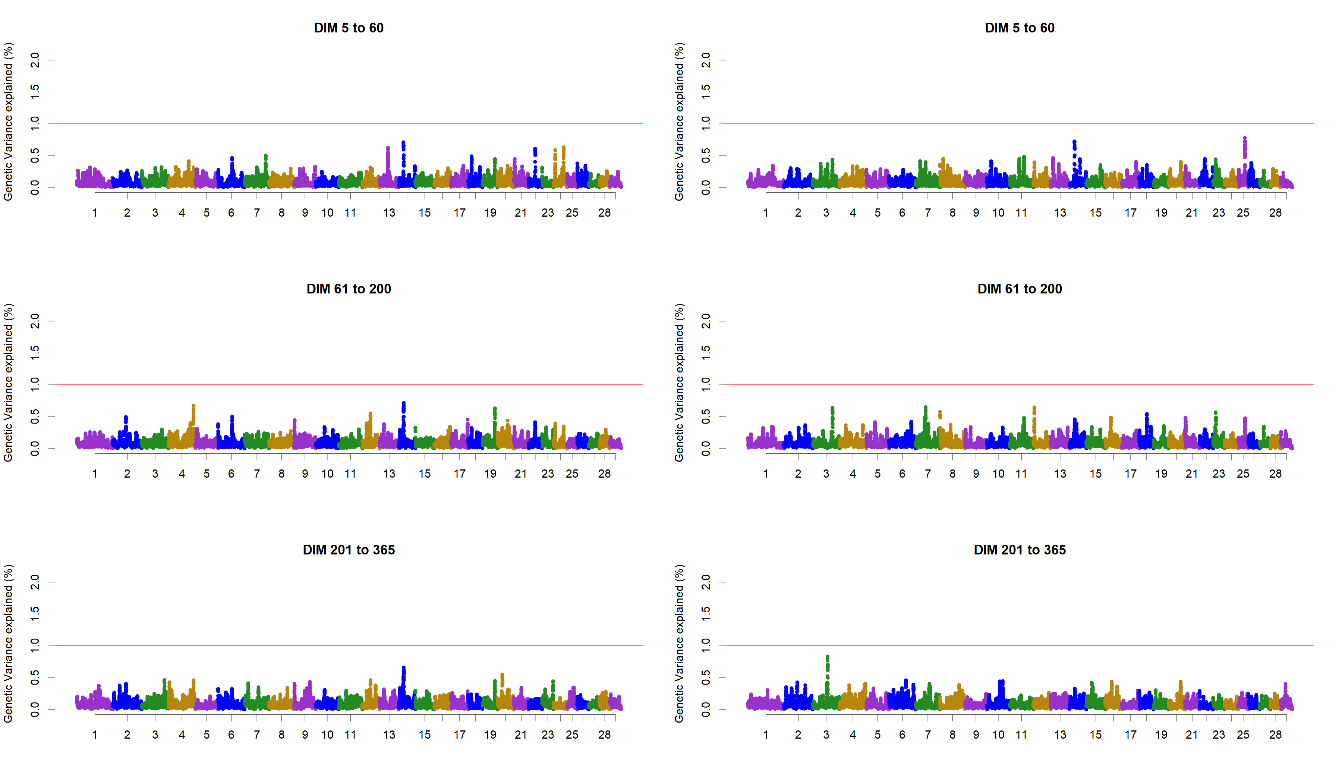


Figure S35. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C8:0 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

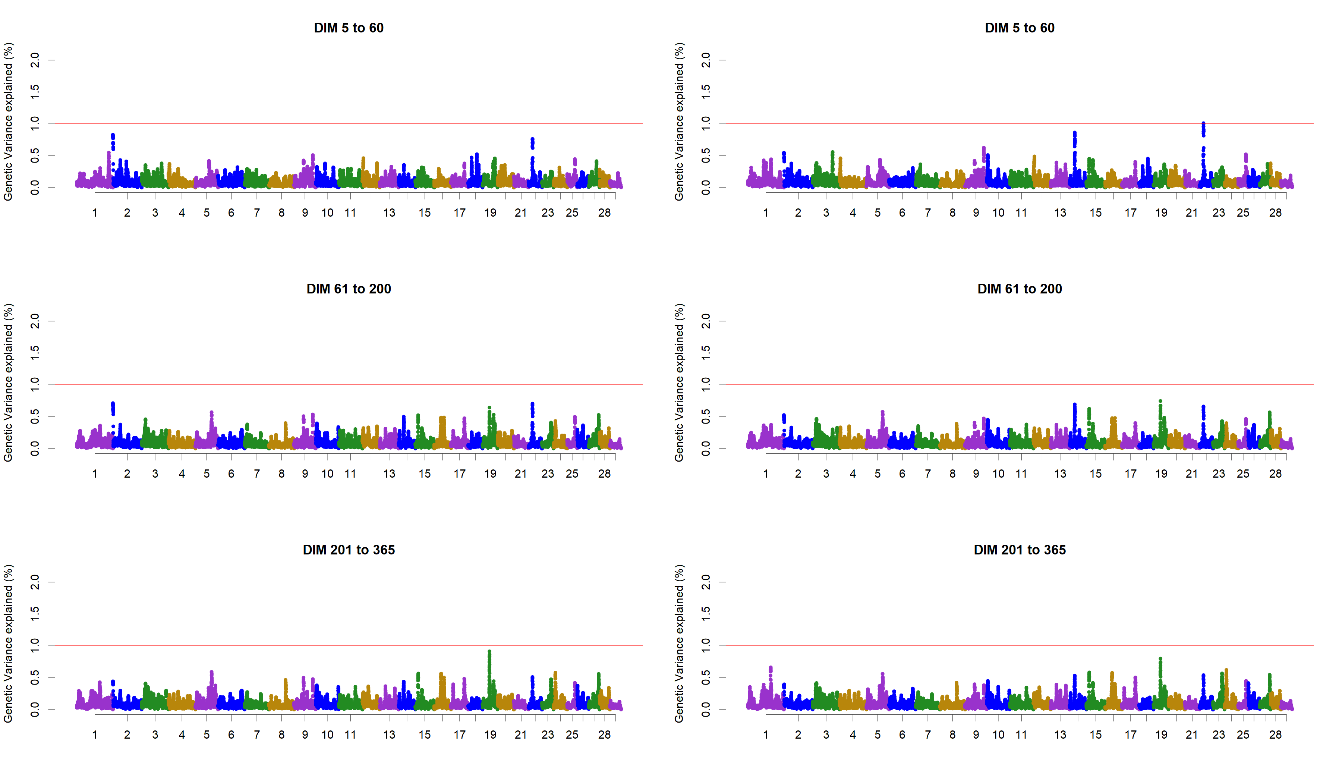


Figure S36. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C10:0 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

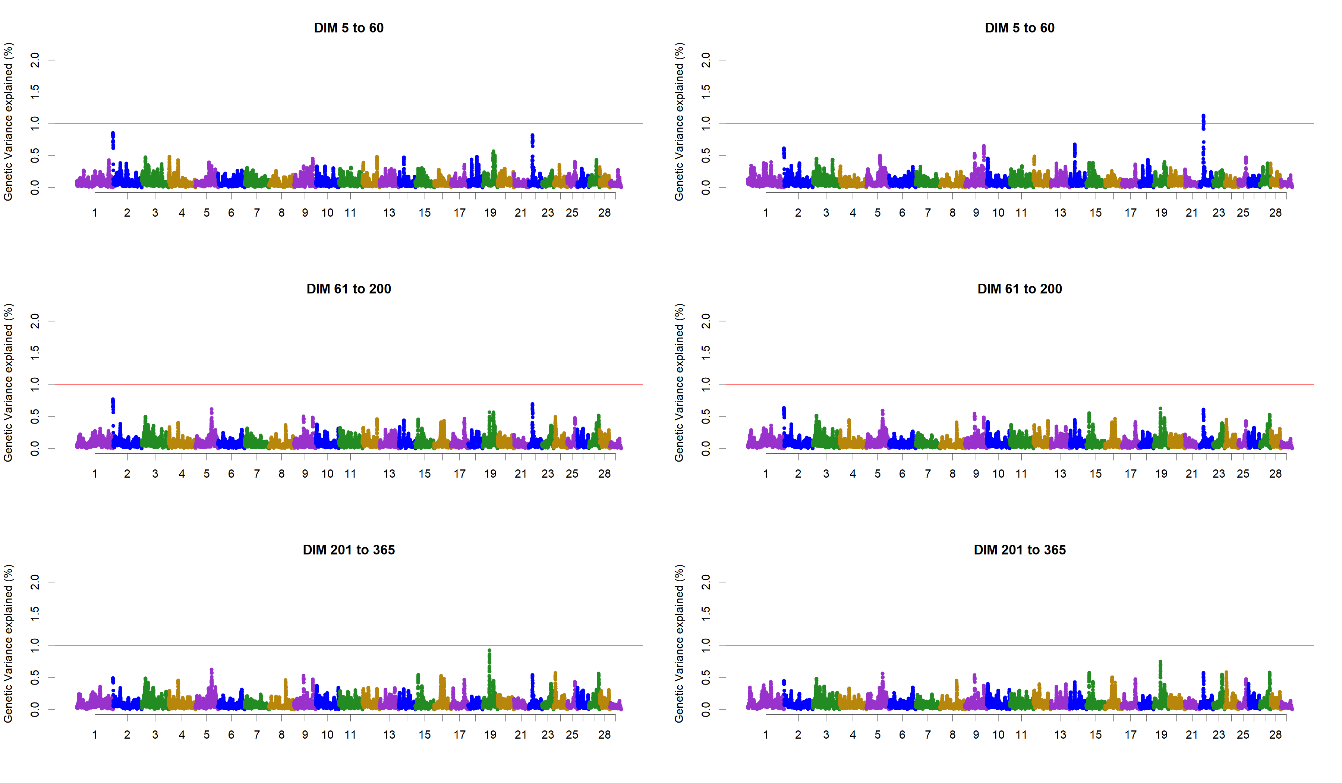


Figure S37 Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C12:0 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

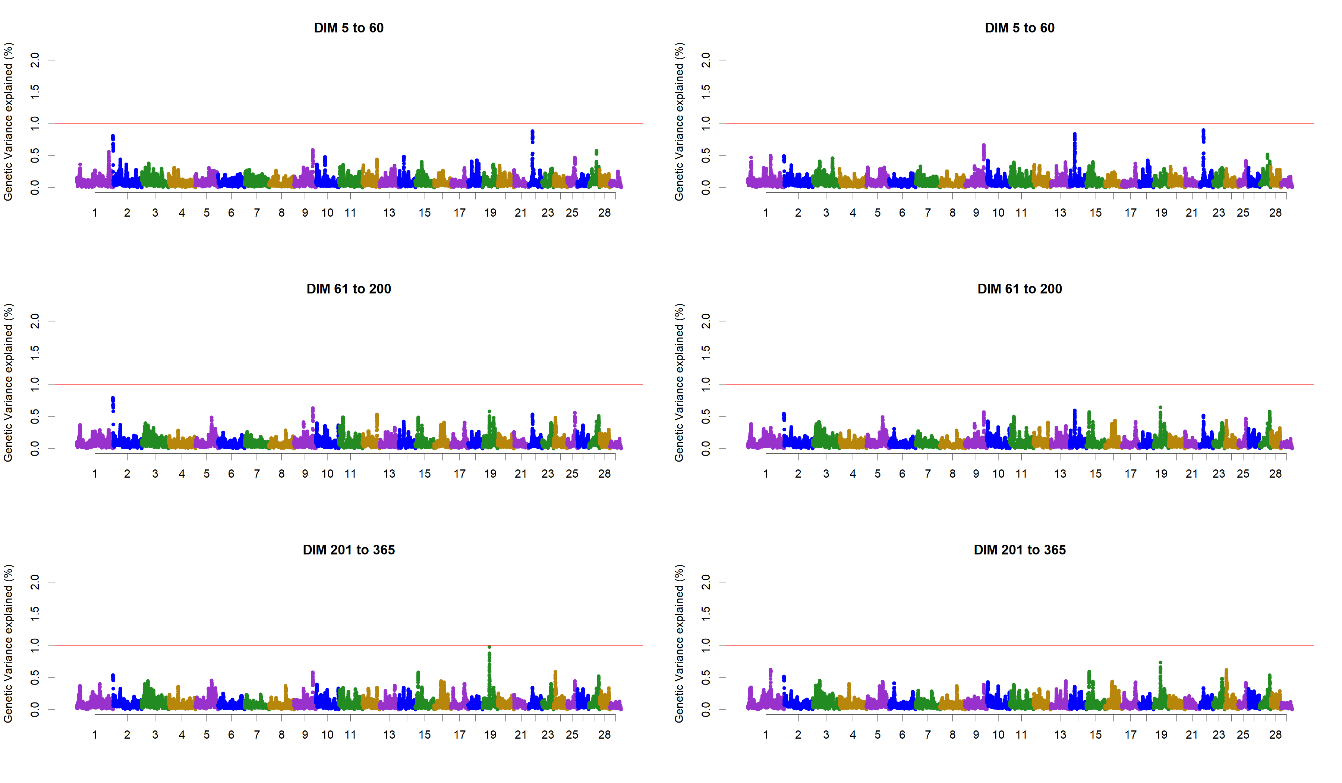


Figure S38. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C14:0 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

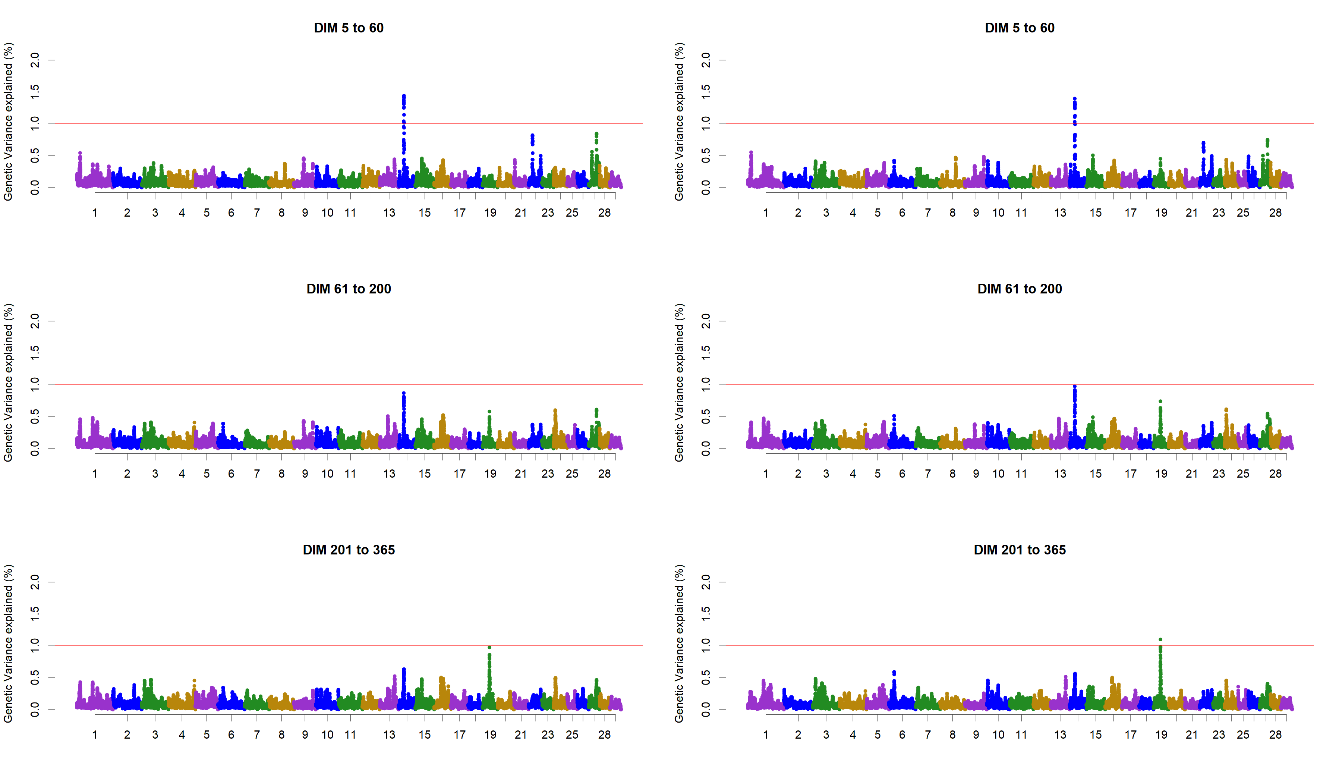


Figure S39. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C16:0 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

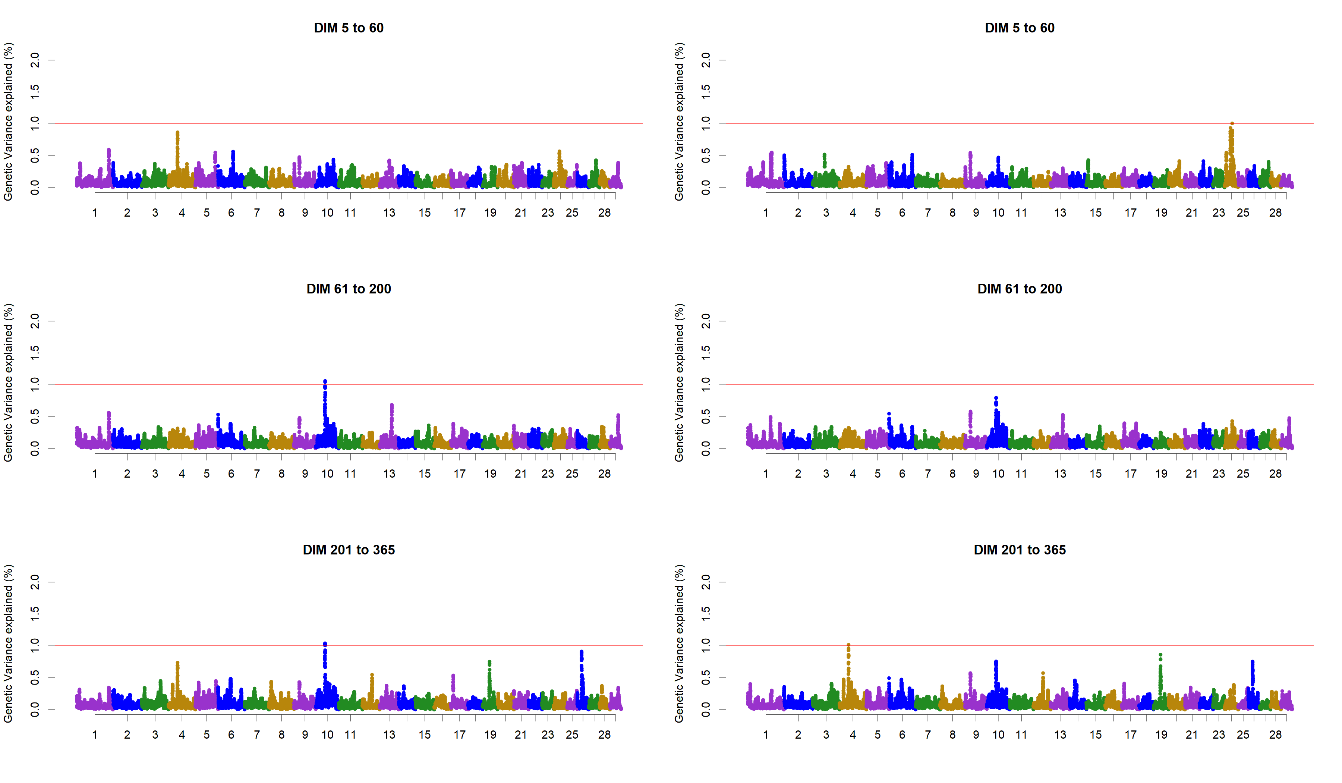


Figure S40. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C18:0 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

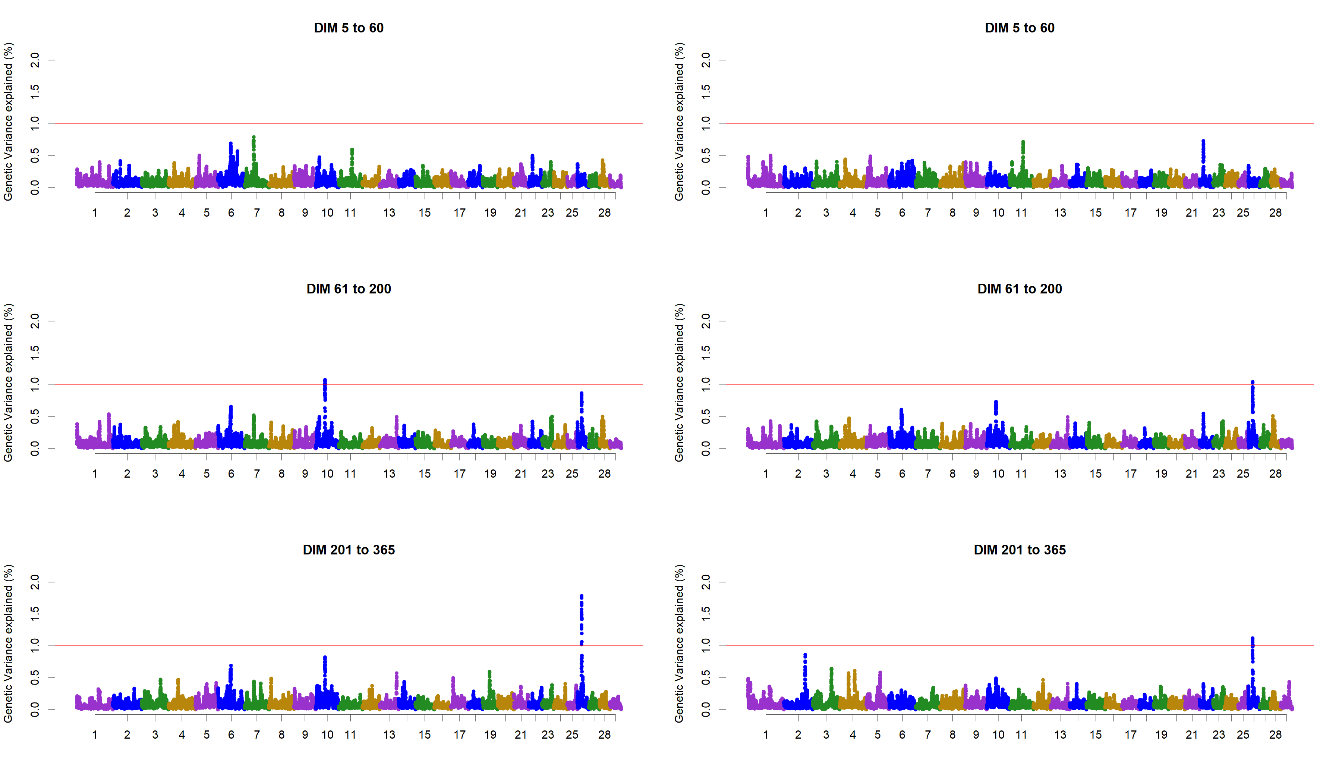


Figure S41. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C18:1 *trans* in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

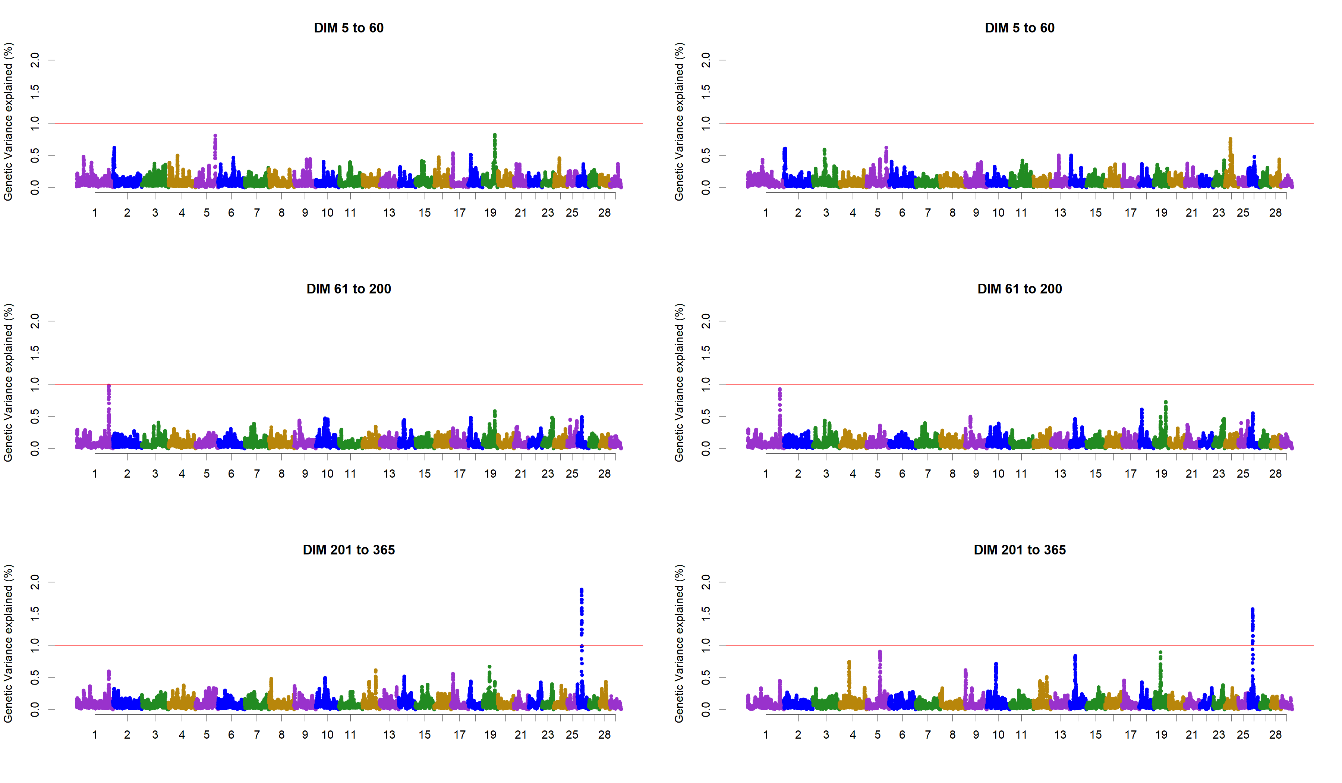


Figure S42. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for C18:1 *cis*-9 in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

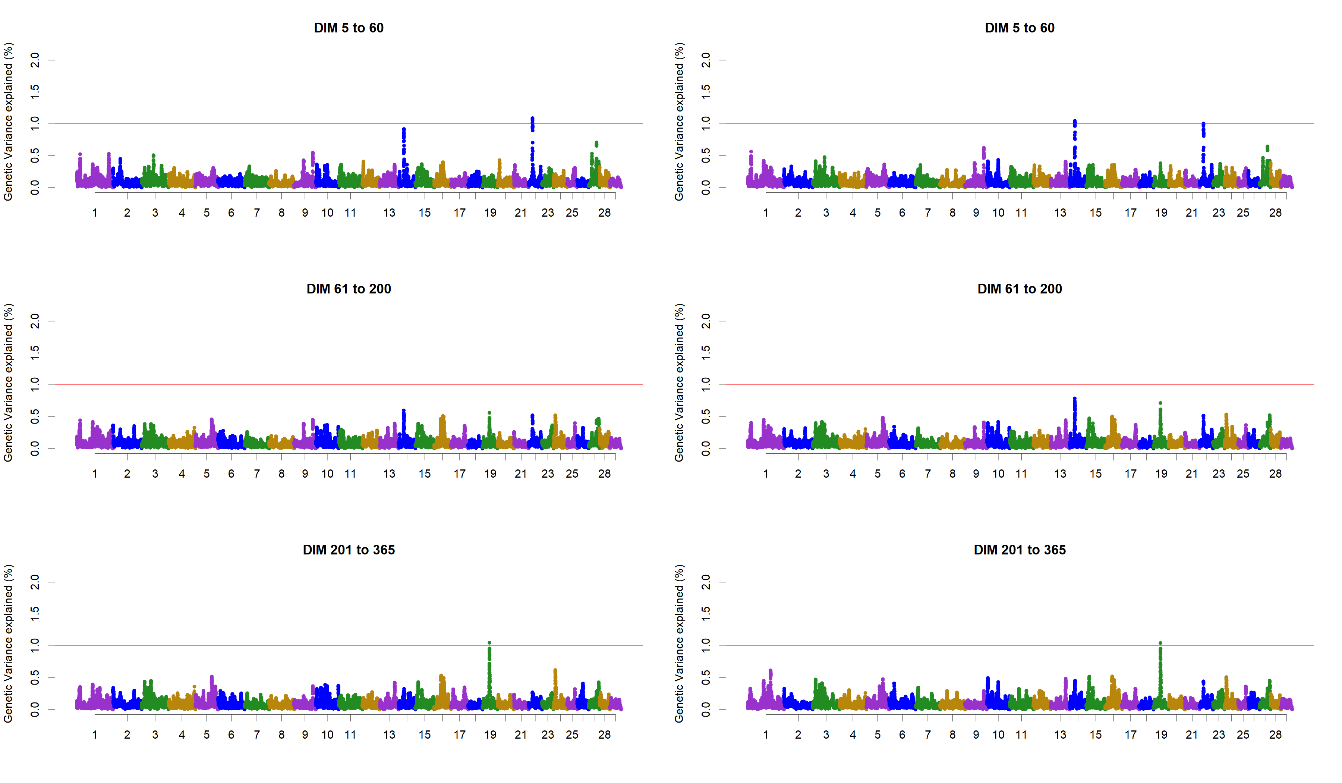


Figure S43. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for saturated fatty acids (SFA) in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

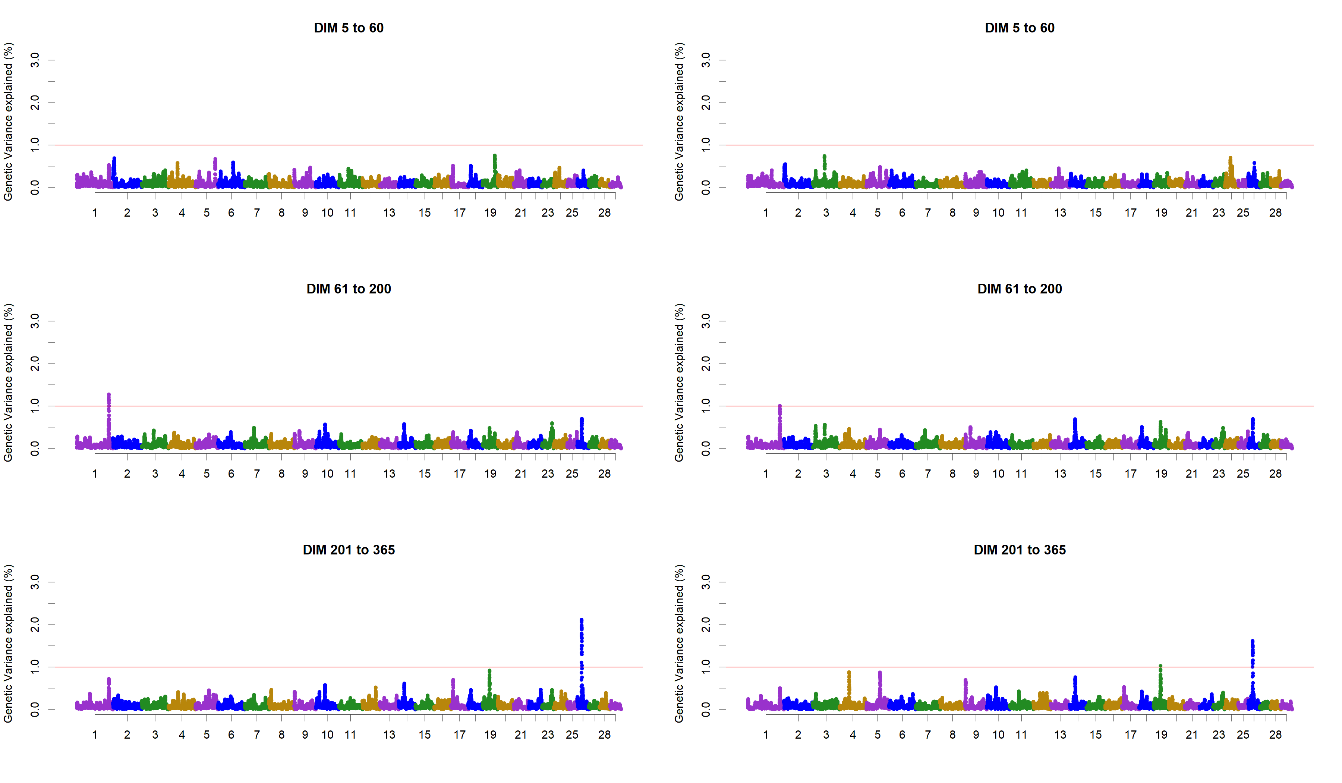


Figure S44. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for monounsaturated fatty acids (MUFA) in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

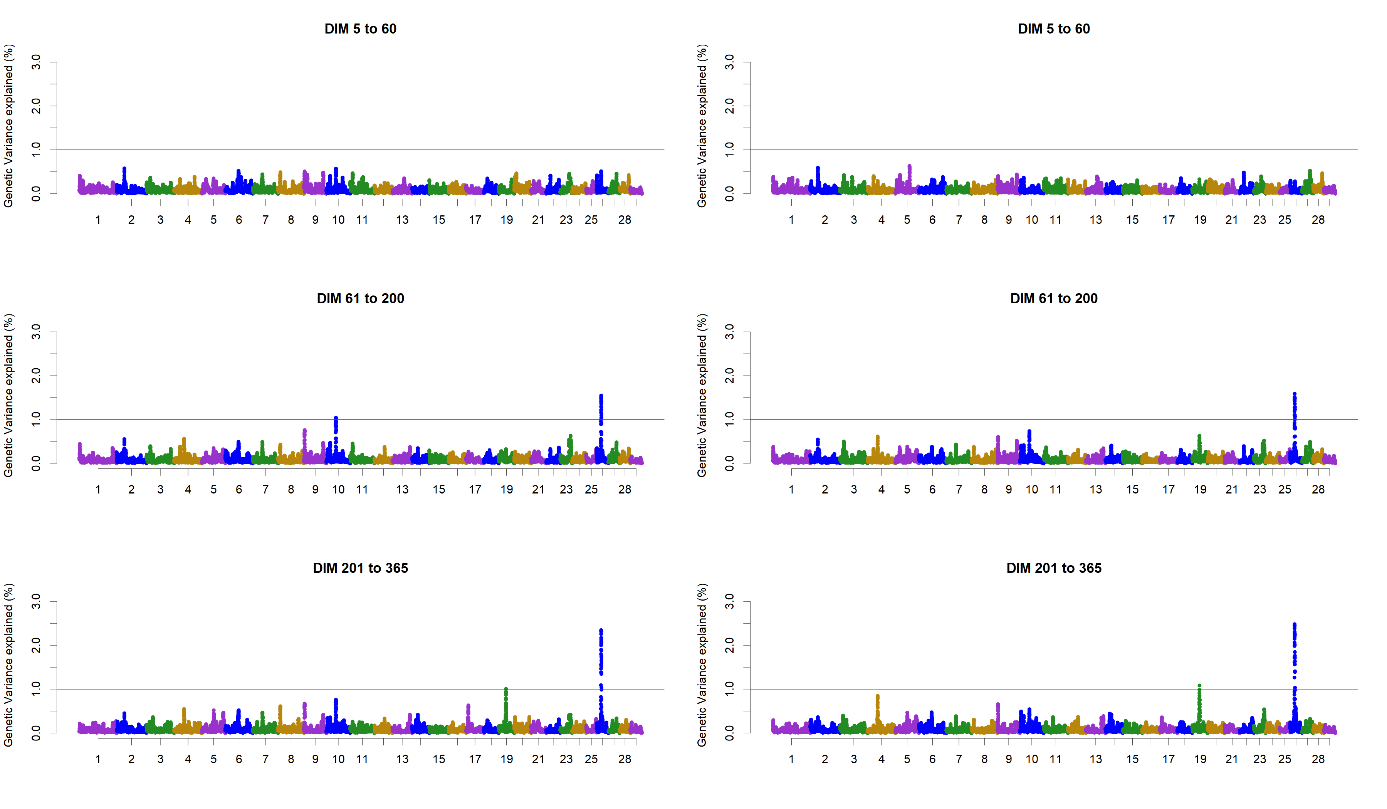


Figure S45. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for polyunsaturated fatty acids (PUFA) in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

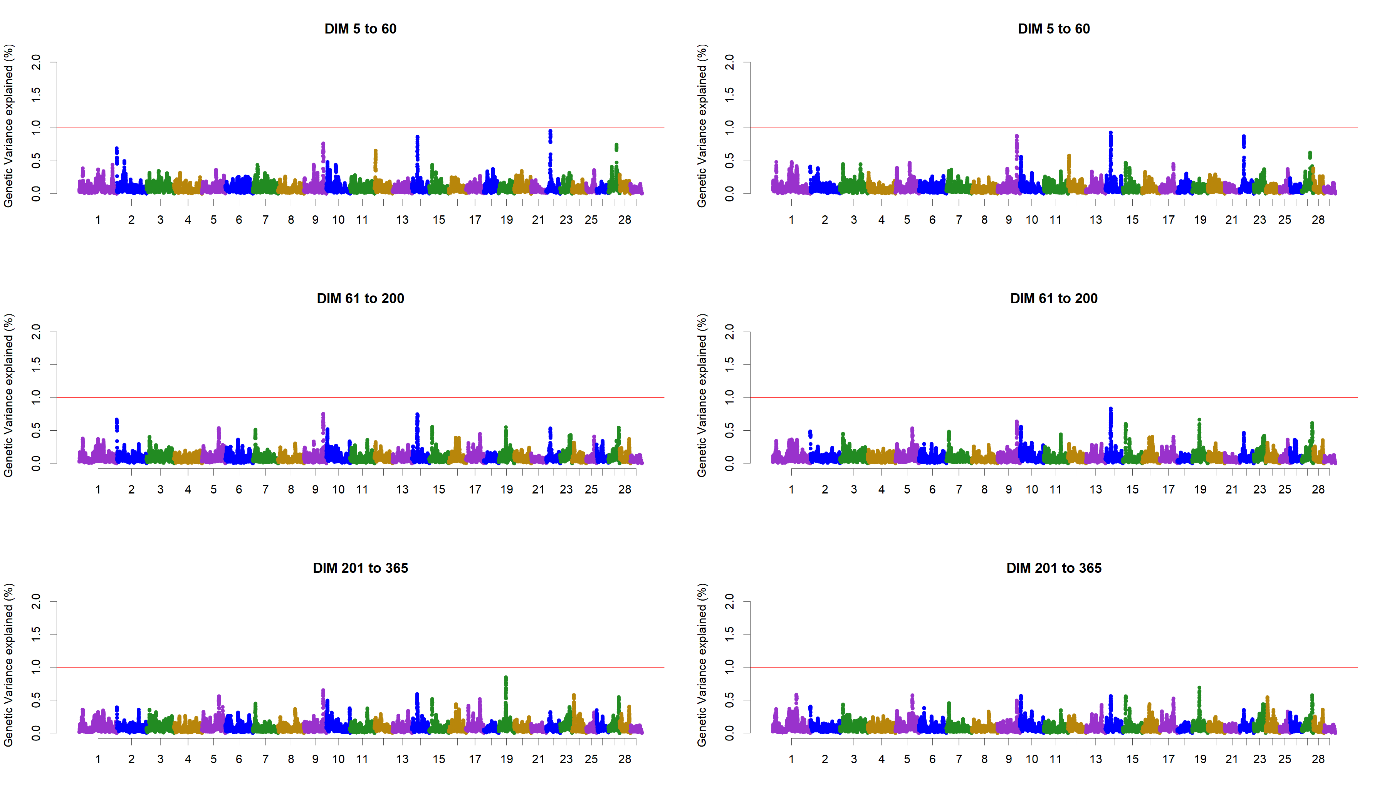


Figure S46. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for short-chain fatty acids (SCFA) in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

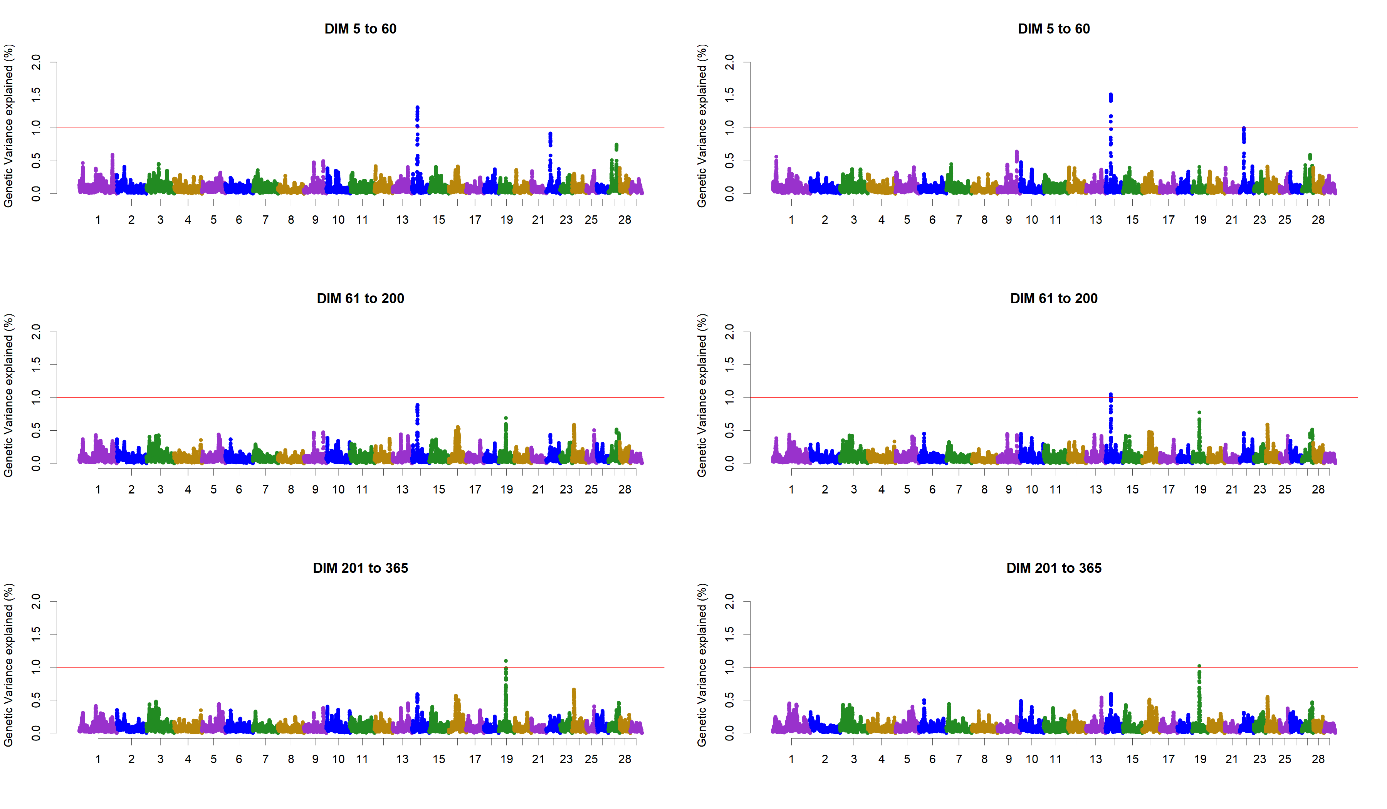


Figure S47. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for medium-chain fatty acids (MCFA) in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows

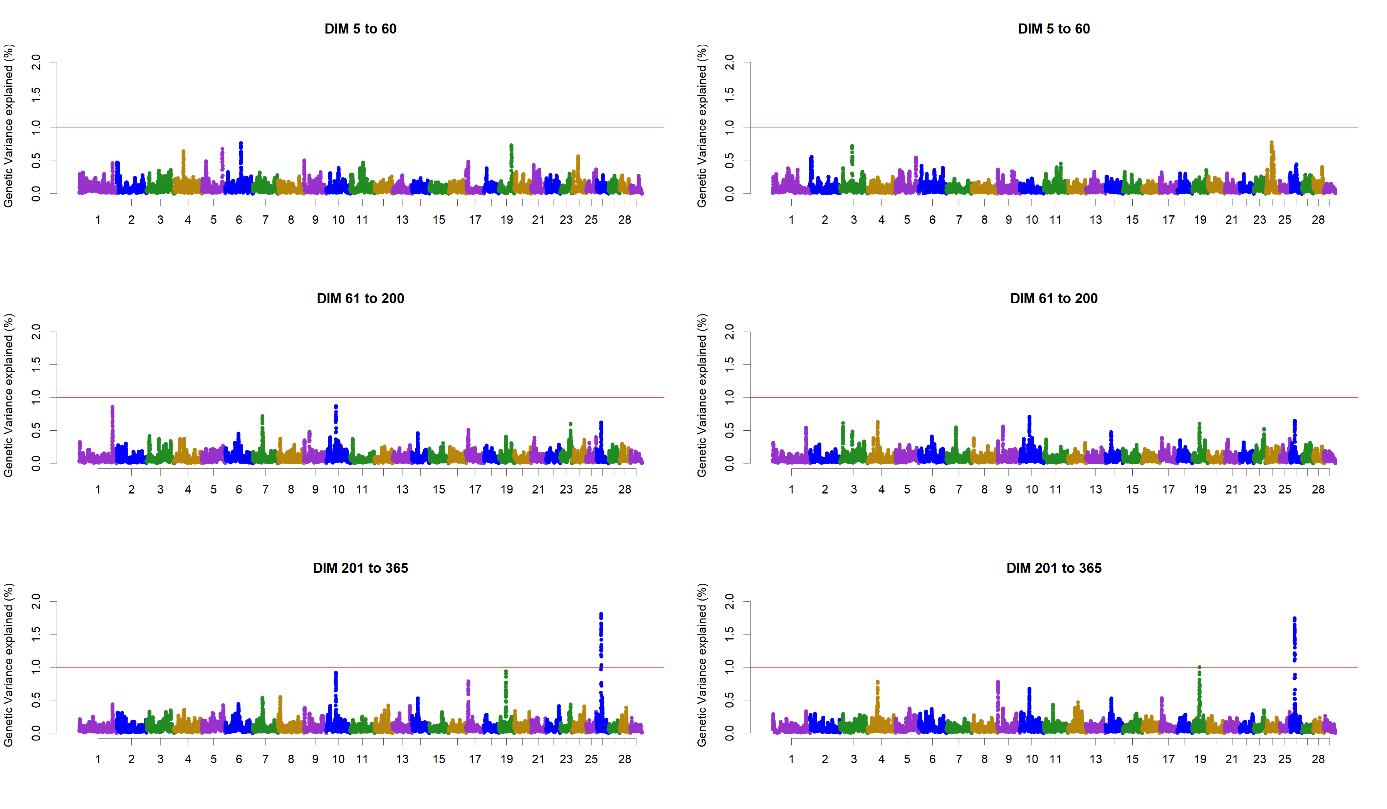


Figure S48. Additive genetic variance explained by windows of 25 adjacent SNPs across chromosomes for long-chain fatty acids (LCFA) in different stages of lactation in the first (left) and second parity (right) Dual-Purpose Belgian Blue cows.