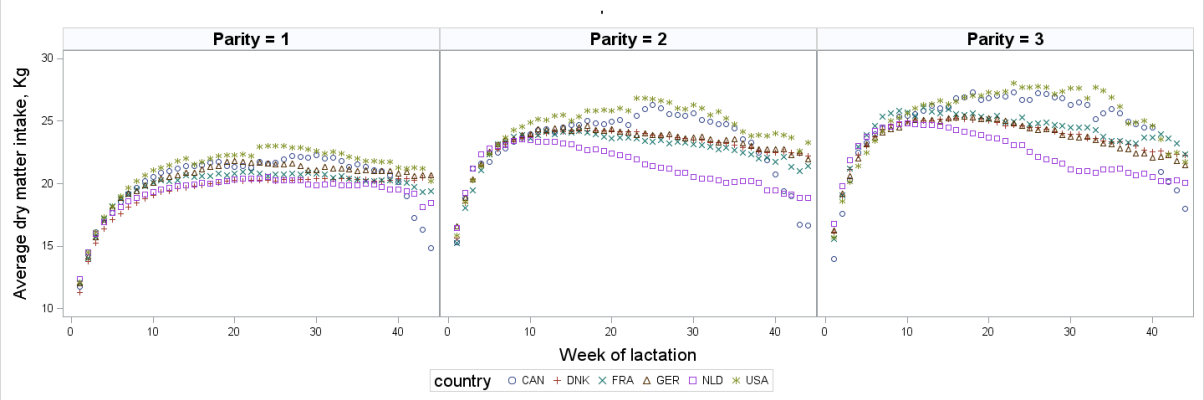
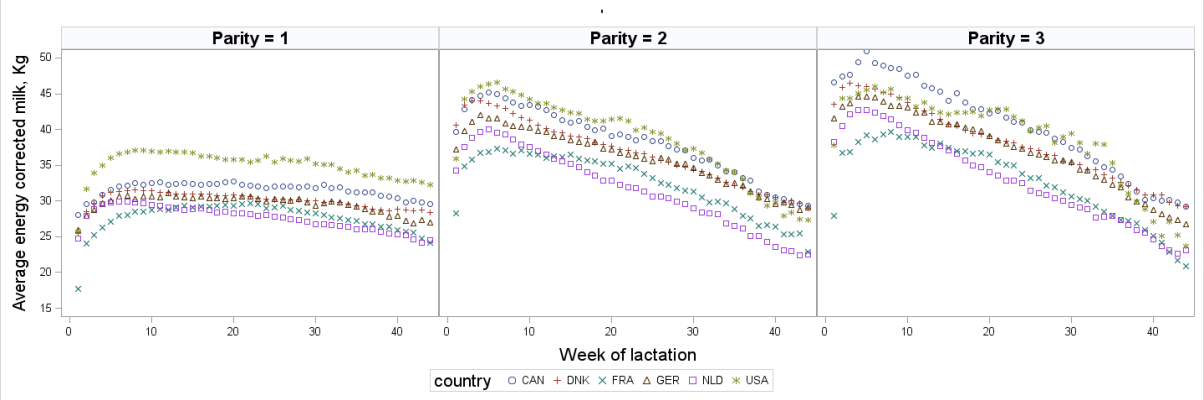
ST1. Approximate standard errors for ECM, BW and ΔBW, presented as 10th, 50th, and 90th quantiles. ECM = Energy Corrected Milk, BW = Body Weight and ΔBW = change in Body Weight.

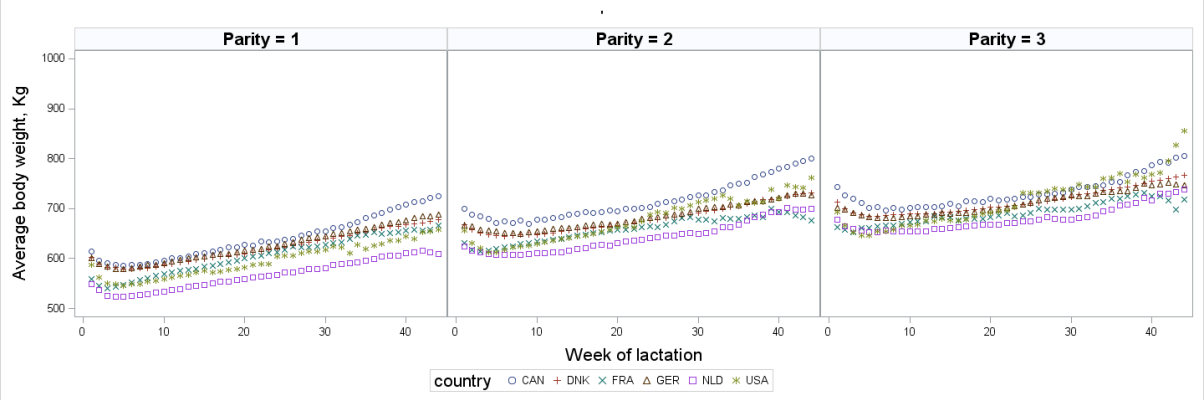
	ECM			BW			ΔBW		
	P10	P50	P90	P10	P50	P90	P10	P50	P90
1st parity	0.02	0.05	0.07	0.02	0.04	0.04	0.003	0.003	0.003
2nd parity	0.03	0.07	0.12	0.02	0.05	0.07	0.003	0.004	0.004
3rd parity	0.04	0.08	0.11	0.01	0.05	0.07	0.004	0.004	0.04



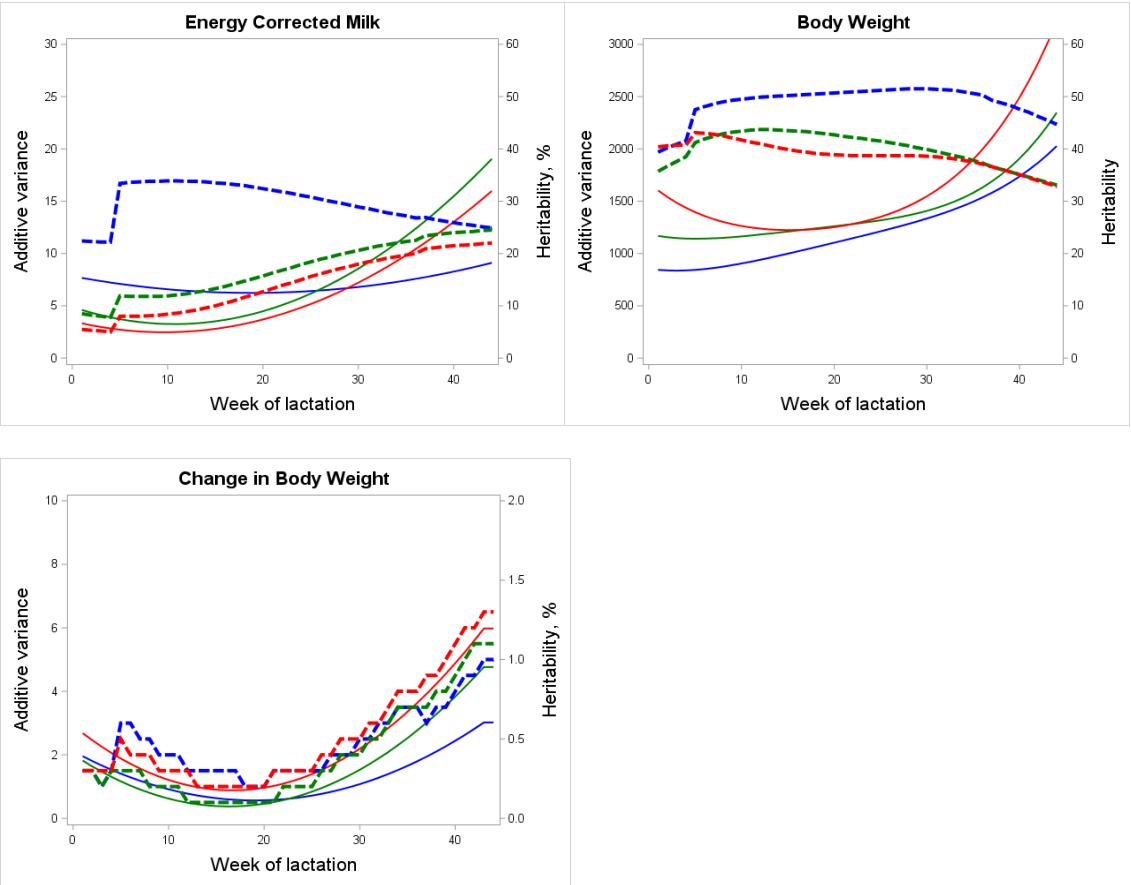
SF1. Scatter plot of average dry matter intake during lactation for the different countries and nested per parity. CAN = Canada, DNK = Denmark, FRA = France, GER = Germany, NLD = the Netherlands, USA = United States of America.



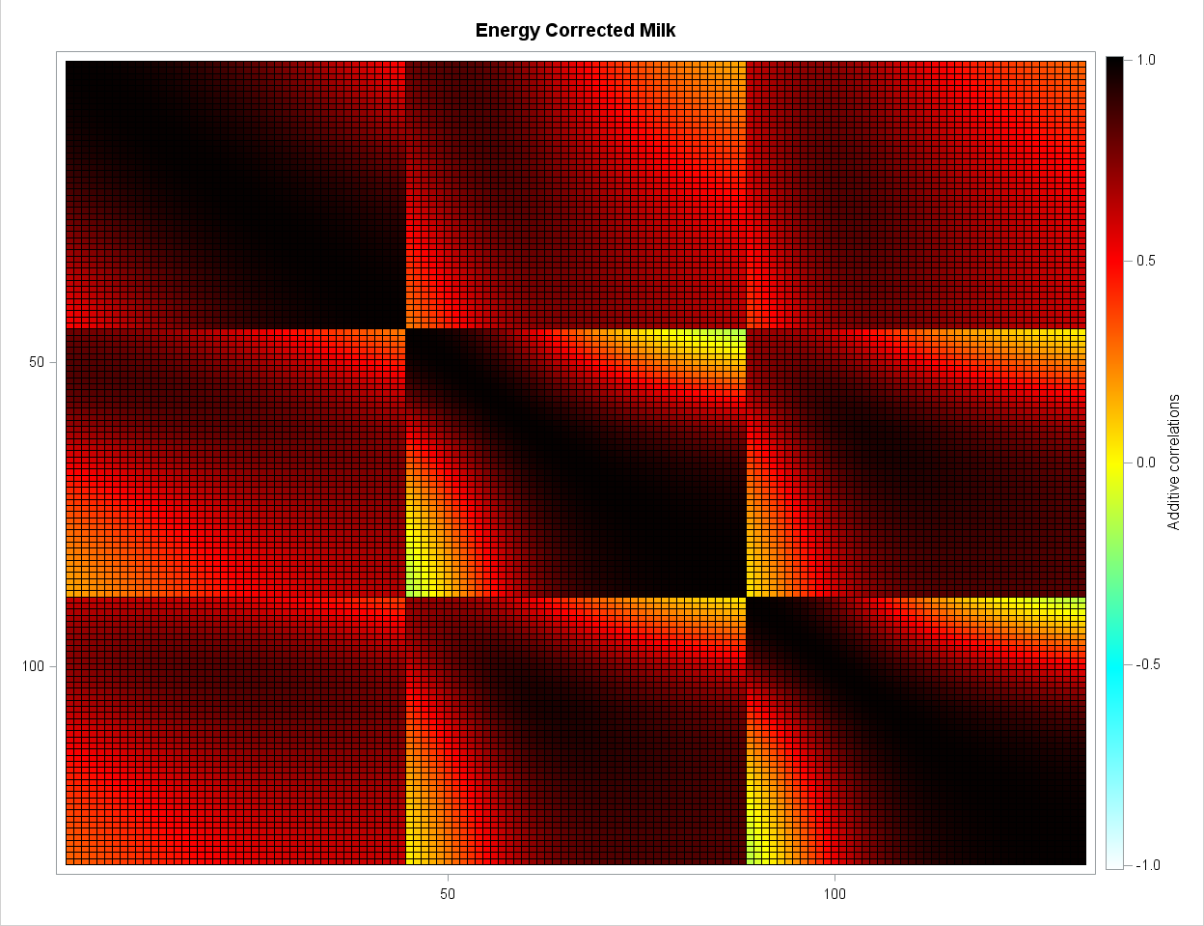
SF2. Scatter plot of average energy corrected milk production during lactation for the different countries and nested per parity. CAN = Canada, DNK = Denmark, FRA = France, GER = Germany, NLD = the Netherlands, USA = United States of America.



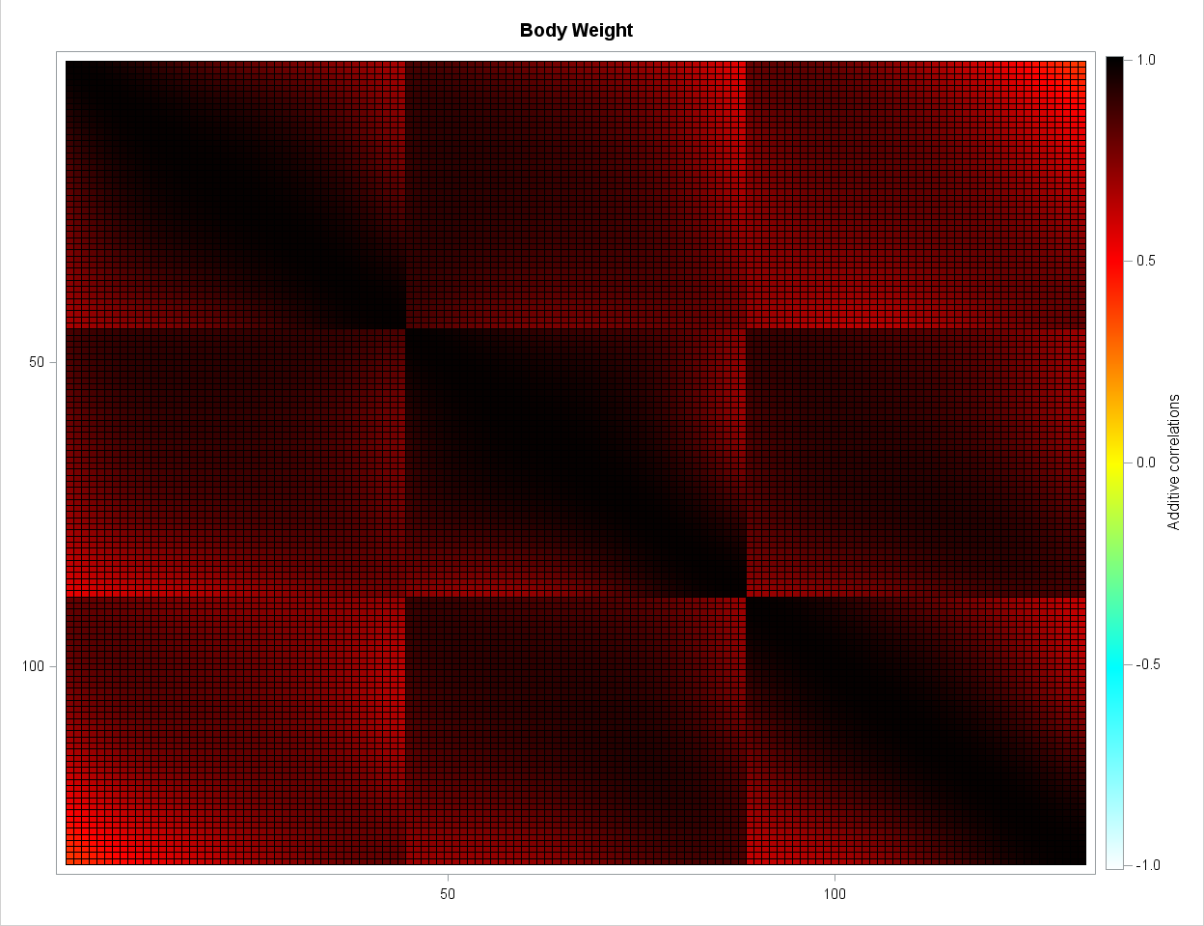
SF3. Scatter plot of average body weight during lactation for the different countries and nested per parity. CAN = Canada, DNK = Denmark, FRA = France, GER = Germany, NLD = the Netherlands, USA = United States of America.



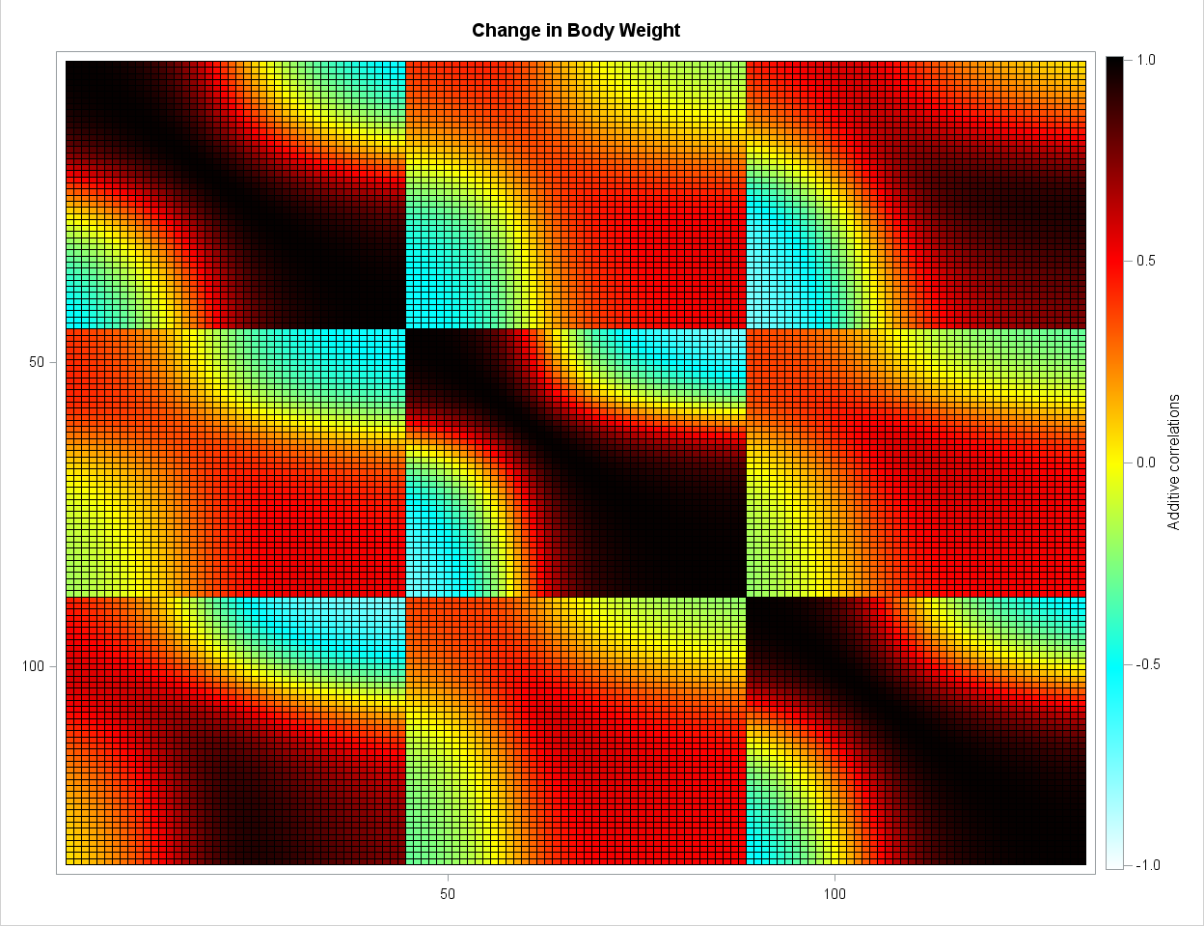
SF4. Plot showing additive variance (left Y-axis), heritability (right Y-axis), and week of lactation (X-axis) for energy corrected milk, body weight and change in body weight. Solid line = additive variance, dashed line = heritability, Blue = first parity, Green = Second parity, Red = third parity.



SF5. Genetic correlations across lactation for ECM in the first, second, and third parity. First, second, and third parity are shown in the upper left box, middle box, and lower right box, respectively. The genetic correlation between parities is presented in the off-diagonal boxes. Each pixel represents one week of lactation (132 weeks of lactation in total, when combining all three parities). ECM = Energy Corrected Milk.



SF6. Genetic correlations across lactation for BW in the first, second, and third parity. First, second, and third parity are shown in the upper left box, middle box, and lower right box, respectively. The genetic correlation between parities is presented in the off-diagonal boxes. Each pixel represents one week of lactation (132 weeks of lactation in total, when combining all three parities). BW = Body Weight.



SF7. Genetic correlations across lactation for ΔBW in the first, second, and third parity. First, second, and third parity are shown in the upper left box, middle box, and lower right box, respectively. The genetic correlation between parities is presented in the off-diagonal boxes. Each pixel represents one week of lactation (132 weeks of lactation in total, when combining all three parities). ΔBW = Change in Body Weight.