



**Supplementary material to: Association between timing of hoof trimming in primiparous cows and hoof health and survival in second lactation, *Journal of Dairy Science*, 2025**

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**Supplemental materials to:** Association between timing of hoof trimming in primiparous cows and hoof health and survival in second lactation, *Journal of Dairy Science*, 2025

**Table S1.** Results of the L1 model of the association between timing of trimmings in first lactation and having claw lesions or not at the first trimming in second lactation (n=10,349 cows in 185 dairy herds). Timing of first and second trimming were each categorized into three periods: “early first trim” <61 days after first calving, “mid first trim” 61-120 days after first calving, and “late first trim” >120 days after first calving; and “early second trim” >120 days before second calving, “mid second trim” 120-61 days before second calving, and “late second trim” <61 days before second calving, respectively.

	Coefficient	SE	OR	95% CI	P-value
Combination of two trimming periods in first lactation					
Early first trim + late second trim	-0.86	0.26	0.42	0.25; 0.71	0.001
Early first trim + mid second trim	-0.90	0.13	0.40	0.31; 0.52	<0.001
Early first trim + early second trim	-0.93	0.11	0.40	0.32; 0.49	<0.001
Mid first trim + late second trim	-0.43	0.18	0.65	0.45; 0.94	0.02
Mid first trim + mid second trim	-0.86	0.11	0.42	0.34; 0.53	<0.001
Mid first trim + early second trim	-0.74	0.12	0.48	0.38; 0.60	<0.001
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.42	0.11	0.66	0.53; 0.81	<0.001
Late first trim + early second trim	-0.53	0.14	0.59	0.44; 0.78	<0.001
Months between first and second trimming in first lactation:					

<4	0.25	0.09	1.29	1.08; 1.54	0.005
4	Referent	-	-	-	-
5	0.27	0.09	1.31	1.11; 1.55	0.002
6	0.27	0.09	1.30	1.09; 1.56	0.004
>6	0.34	0.10	1.41	1.15; 1.73	0.001
Breed <sup>1</sup>					
SH	Referent	-	-	-	-
SR	-0.13	0.06	0.87	0.77; 0.99	0.04
SR*SH	-0.10	0.10	0.91	0.75; 1.10	0.32
Other	-0.31	0.18	0.73	0.51; 1.04	0.09
Intercept	-0.19	0.15			0.20

<sup>1</sup>SH = Swedish Holstein, SR = Swedish Red.

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**Table S2.** Results of the ML 1 model of associations between timing of trimming in first lactation and claw health at first trimming in the second lactation (n=10,349 cows in 185 dairy herds)<sup>1</sup>. Timing of first and second trimming were each categorized into three periods: “early first trim” <61 days after first calving, “mid first trim” 61-120 days after first calving, and “late first trim” >120 days after first calving; and “early second trim” >120 days before second calving, “mid second trim” 120-61 days before second calving, and “late second trim” <61 days before second calving, respectively.

	Coefficient	SE	RRR	95% CI	P-value
No claw lesion	Base	-	-	-	-
	outcome				
Mild infectious lesions					
Combination of two trimming periods in first lactation					
Early first trim + late second trim	-0.58	0.36	0.56	0.28; 1.12	0.10
Early first trim + mid second trim	-0.39	0.25	0.68	0.42; 1.11	0.12
Early first trim + early second trim	-0.37	0.24	0.69	0.43; 1.10	0.12
Mid first trim + Late second trim	0.06	0.23	1.06	0.56; 2.04	0.85
Mid first trim + mid second trim	-0.50	0.23	0.61	0.39; 0.95	0.03
Mid first trim + early second trim	-0.38	0.25	0.69	0.42; 1.11	0.13
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.07	0.21	0.93	0.61; 1.41	0.74
Late first trim + early second trim	-0.32	0.25	0.73	0.55; 1.19	0.20

Months between trimmings					
<4	-0.10	0.22	0.90	0.59; 1.39	0.64
4	Referent	-	-	-	-
5	0.09	0.23	1.09	0.70; 1.70	0.70
6	-0.17	0.23	0.85	0.54; 1.32	0.46
>6	0.19	0.25	1.21	0.74; 2.00	0.45
Breed					
SH	Referent	-	-	-	-
SR	0.38	0.15	1.47	1.10; 1.97	0.01
SR*SH	0.27	0.19	1.31	0.91; 1.89	0.15
Other	-0.23	0.33	0.79	0.41; 1.53	0.49
Intercept	-1.61	0.25			<0.001
Mild claw horn lesions					
Combination of two trimming periods in first lactation					
Early first trim + late second trim	-0.46	0.34	0.63	0.32; 1.22	0.17
Early first trim + mid second trim	-0.70	0.20	0.50	0.33; 0.73	<0.001
Early first trim + early second trim	-0.69	0.20	0.50	0.34; 0.75	0.001
Mid first trim + Late second trim	-0.49	0.32	0.61	0.33; 1.13	0.12
Mid first trim + mid second trim	-0.64	0.18	0.53	0.37; 0.75	<0.001
Mid first trim + early second trim	-0.36	0.20	0.70	0.47; 1.04	0.08
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.26	0.16	0.77	0.56; 1.06	0.12
Late first trim + early second trim	-0.44	0.25	0.64	0.39; 1.06	0.08
Months between trimmings					

<4	-0.19	0.21	0.83	0.55; 1.24	0.36
4	Ref.	-	-	-	-
5	-0.08	0.17	0.92	0.66; 1.28	0.61
6	0.09	0.19	1.10	0.75; 1.60	0.63
>6	0.02	0.19	1.02	0.70; 1.48	0.92
Breed					
SH	Referent	-	-	-	-
SR	-0.08	0.14	0.92	0.69; 1.22	0.57
SR*SH	-0.26	0.17	0.77	0.54; 1.08	0.13
Other	0.32	0.42	1.38	0.60; 3.18	0.45
Intercept	-1.54	0.22			<0.001
Mild infectious claw lesions and mild claw horn lesions					
Combination of two trimming periods in first lactation					
Early first trim + late second trim	-1.39	0.54	0.25	0.09; 0.72	0.01
Early first trim + mid second trim	-0.07	0.34	0.34	0.18; 0.67	0.002
Early first trim + early second trim	-0.84	0.37	0.43	0.21; 0.90	0.03
Mid first trim + Late second trim	-1.35	0.46	0.26	0.10; 0.64	0.003
Mid first trim + mid second trim	-1.24	0.34	0.29	0.15; 0.56	<0.001
Mid first trim + early second trim	-0.76	0.33	0.47	0.24; 0.89	0.02
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.24	0.23	0.78	0.50; 1.23	0.30
Late first trim + early second trim	-0.16	0.33	0.85	0.44; 1.64	0.64
Months between trimmings					

<4	-0.16	0.31	0.85	0.46; 1.55	0.59
4	Referent	-	-	-	-
5	0.21	0.32	1.24	0.66; 2.32	0.50
6	-0.01	0.30	0.99	0.55; 1.77	0.96
>6	0.38	0.29	1.46	0.82; 2.59	0.20
Breed					
SH	Referent	-	-	-	-
SR	0.17	0.23	1.19	0.75; 1.88	0.46
SR*SH	-0.08	0.27	0.93	0.55; 1.56	0.78
Other	-2.33	1.04	0.10	0.01; 0.75	0.03
Intercept	-1.83	0.35			<0.001
Severe infectious claw lesions					
Combination of two trimming periods in first lactation					
Early first trim + late second trim	-0.81	0.51	0.44	0.16; 1.20	0.11
Early first trim + mid second trim	-0.29	0.21	0.75	0.49; 1.14	0.17
Early first trim + early second trim	-0.24	0.22	0.78	0.51; 1.21	0.27
Mid first trim + Late second trim	-0.18	0.27	0.84	0.49; 1.43	0.52
Mid first trim + mid second trim	-0.70	0.21	0.49	0.33; 0.75	0.001
Mid first trim + early second trim	-0.54	0.24	0.58	0.36; 0.93	0.02
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.05	0.16	0.95	0.70; 1.30	0.77
Late first trim + early second trim	-0.32	0.26	0.72	0.43; 1.21	0.22
Months between trimmings					
<4	-0.12	0.20	0.89	0.60; 1.31	0.56

4	Referent	-	-	-	-
5	-0.05	0.19	0.95	0.66; 1.38	0.81
6	-0.07	0.19	0.93	0.64; 1.35	0.71
>6	0.08	0.21	1.08	0.71; 1.64	0.72
Breed					
SH	Referent	-	-	-	-
SR	-0.11	0.19	0.89	0.61; 1.29	0.55
SR*SH	0.19	0.17	1.21	0.87; 1.69	0.25
Other	0.10	0.36	1.10	0.55; 2.22	0.78
Intercept	-1.38	0.27			<0.001
Severe claw horn lesions					
Combination of two trimming periods					
in first lactation					
Early first trim + late second trim	-0.70	0.72	0.50	0.12; 2.06	0.34
Early first trim + mid second trim	-0.77	0.35	0.46	0.23; 0.92	0.03
Early first trim + early second trim	-0.89	0.30	0.41	0.23; 0.74	0.003
Mid first trim + Late second trim	-0.99	0.63	0.37	0.11; 1.29	0.12
Mid first trim + mid second trim	-0.90	0.29	0.41	0.23; 0.72	0.002
Mid first trim + early second trim	-1.30	0.40	0.27	0.12; 0.59	0.001
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.68	0.29	0.51	0.29; 0.89	0.02
Late first trim + early second trim	-0.65	0.44	0.52	0.22; 1.22	0.14
Months between trimmings					
<4	0.19	0.23	1.20	0.76; 1.90	0.43
4	Referent	-	-	-	-



5	-0.08	0.22	0.92	0.59; 1.42	0.71
6	-0.32	0.27	0.73	0.43; 1.23	0.24
>6	-0.10	0.33	0.91	0.47; 1.74	0.77
Breed					
SH	Referent	-	-	-	-
SR	-0.26	0.17	0.77	0.55; 1.09	0.14
SR*SH	-0.26	0.28	0.77	0.44; 1.34	0.36
Other	-1.71	0.91	0.18	0.03; 1.07	0.06
Intercept	-2.24	0.34			<0.001
Severe infectious claw lesions and severe claw horn lesions					
Combination of two trimming periods in first lactation					
Early first trim + late second trim	n.a.				
Early first trim + mid second trim	-0.87	0.76	0.42	0.09; 1.87	0.25
Early first trim + early second trim	-1.16	0.55	0.31	0.11; 0.92	0.03
Mid first trim + Late second trim	-0.77	1.14	0.46	0.05; 4.36	0.50
Mid first trim + mid second trim	-1.07	0.72	0.34	0.08; 1.40	0.14
Mid first trim + early second trim	-1.04	0.66	0.35	0.10; 1.30	0.12
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.37	0.61	0.69	0.21; 2.29	0.54
Late first trim + early second trim	-0.07	0.61	0.93	0.28; 3.05	0.90
Months between trimmings					
<4	-0.35	0.48	0.70	0.27; 1.81	0.47
4	Referent	-	-	-	-

5	-0.22	0.61	0.80	0.24; 2.66	0.72
6	-0.76	0.65	0.47	0.13; 1.67	0.24
>6	-0.002	0.71	1.00	0.25; 3.99	1.00
Breed					
SH	Referent	-	-	-	-
SR	-0.02	0.35	0.98	0.49; 1.94	0.95
SR*SH	-1.25	1.00	0.29	0.04; 2.04	0.21
Other	0.86	0.75	2.37	0.54; 10.3	0.25
Intercept	-3.90	0.52			<0.001
Other types of lesions					
Combination of two trimming periods					
in first lactation					
Early first trim + late second trim	n.a.				
Early first trim + mid second trim	-0.64	0.68	0.53	0.15; 1.83	0.32
Early first trim + early second trim	-0.40	0.59	0.67	0.21; 2.11	0.49
Mid first trim + Late second trim	-1.63	1.17	0.20	0.02; 1.94	0.16
Mid first trim + mid second trim	-0.82	0.52	0.44	0.16; 1.23	0.12
Mid first trim + early second trim	-0.53	0.58	0.59	0.19; 1.84	0.36
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.30	0.37	0.74	0.36; 1.53	0.42
Late first trim + early second trim	-0.28	0.61	0.76	0.23; 2.50	0.65
Months between trimmings					
<4	-0.26	0.34	0.77	0.40; 1.49	0.43
4	Referent	-	-	-	-
5	-0.34	0.46	0.71	0.29; 1.75	0.46

6	-0.98	0.38	0.37	0.18; 0.79	0.01
>6	-0.22	0.47	0.80	0.32; 2.02	0.64
Breed					
SH	Referent	-	-	-	-
SR	0.61	0.25	1.84	1.13; 2.99	0.01
SR*SH	0.39	0.36	1.48	0.72; 3.02	0.28
Other	0.16	0.57	1.18	0.38; 3.62	0.78
Intercept	-3.05	0.52			<0.001

<sup>1</sup>Standard error (SE) was adjusted for repeated measurements within herd

<sup>2</sup>SH = Swedish Holstein; SR = Swedish Red.

**Supplemental materials to:** Association between timing of hoof trimming in primiparous cows and hoof health and survival in second lactation, *Journal of Dairy Science*, 2025

**Table S3.** Results of the L2 model of the association between timing of trimming in first lactation, claw health remarks at first trimming in second lactation, breed of cow, and culling in the second lactation (n=10,349 cows in 185 dairy herds). Timing of first and second trimming were each categorized into three periods: “early first trim” <61 days after first calving, “mid first trim” 61-120 days after first calving, and “late first trim” >120 days after first calving; and “early second trim” >120 days before second calving, “mid second trim” 120-61 days before second calving, and “late second trim” <61 days before second calving, respectively.

Item	Coefficient	SE	OR	95% CI	P-value
Days from first calving to first trimming and days from second trimming to second calving					
Early first trim + late second trim	-0.05	0.28	0.95	0.55; 1.66	0.86
Early first trim + mid second trim	-0.46	0.14	0.63	0.48; 0.83	0.001
Early first trim + early second trim	-0.36	0.12	0.70	0.55; 0.88	0.003
Mid first trim + Late second trim	-0.19	0.21	0.82	0.54; 1.26	0.37
Mid first trim + mid second trim	-0.37	0.13	0.69	0.54; 0.89	0.004
Mid first trim + early second trim	-0.41	0.13	0.66	0.51; 0.85	0.001
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.22	0.12	0.95	0.75; 1.20	0.68
Late first trim + early second trim	-0.05	0.15	0.96	0.71; 1.30	0.81

Claw lesions at first trimming in second lactation						
No	Referent	-	-	-	-	
Yes	0.35	0.06	1.42	1.26; 1.60	<0.001	
Breed <sup>1</sup>						
SH	Referent	-	-	-	-	
SR	0.27	0.07	1.31	1.14; 1.51	<0.001	
SR*SH	-0.11	0.12	0.89	0.71; 1.12	0.33	
Other	-0.05	0.22	0.95	0.61; 1.48	0.84	
Intercept	-1.73	0.12			<0.001	

<sup>1</sup> SH = Swedish Holstein, SR = Swedish Red

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**Table S4.** Results of the ML2 model of associations between timing of trimming in first lactation, claw health remarks at first trimming in second lactation, breed of cow, and culling in the second lactation (n=10,349 cows in 185 dairy herds)<sup>1</sup>. Timing of first and second trimming were each categorized into three periods: “early first trim” <61 days after first calving, “mid first trim” 61-120 days after first calving, and “late first trim” >120 days after first calving; and “early second trim” >120 days before second calving, “mid second trim” 120-61 days before second calving and “late second trim” <61 days before second calving, respectively.

Item	Coefficient	SE	RRR	95% CI	P-value
Not culled	Base	-	-	-	-
	outcome				
Mortality (dead or euthanized on-farm)					
Days from first calving to first trimming and days from second trimming to second calving					
Early first trim + late second trim	0.29	0.49	1.34	0.51; 3.52	0.55
Early first trim + mid second trim	-0.34	0.29	0.71	0.40; 1.25	0.23
Early first trim + early second trim	-0.14	0.24	0.87	0.54; 1.40	0.57
Mid first trim + Late second trim	0.06	0.40	1.06	0.48; 2.34	0.89
Mid first trim + mid second trim	-0.17	0.25	0.84	0.51; 1.38	0.50
Mid first trim + early second trim	-0.24	0.24	0.78	0.49; 1.25	0.31

Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	-0.13	0.25	0.88	0.54; 1.44	0.60
Late first trim + early second trim	-0.19	0.33	0.82	0.43; 1.59	0.56
Claw lesions at first trimming in second lactation					
No	Referent	-	-	-	-
Yes	0.36	0.12	1.43	1.12; 1.83	0.004
Breed <sup>2</sup>					
SH	Referent	-	-	-	-
SR	-0.39	0.16	0.67	0.49; 0.92	0.02
SR*SH	-0.53	0.31	0.59	0.32; 1.07	0.08
Other	-1.10	0.67	0.33	0.09; 1.23	0.10
Intercept	-3.34	0.23			<0.001
Slaughter with primary reason claw and leg disorders					
Days from first calving to first trimming and days from second trimming to second calving					
Early first trim + late second trim	0.22	0.51	1.25	0.46; 3.40	0.67
Early first trim + mid second trim	-1.53	0.54	0.22	0.07; 0.62	0.005
Early first trim + early second trim	-1.29	0.25	0.27	0.17; 0.45	<0.001
Mid first trim + Late second trim	-0.64	0.52	0.52	0.19; 1.46	0.22
Mid first trim + mid second trim	-1.76	0.39	0.17	0.08; 0.37	<0.001
Mid first trim + early second trim	-1.24	0.31	0.29	0.15; 0.53	<0.001
Late first trim + late second trim	Referent	-	-	-	-

Late first trim + mid second trim	-0.37	0.23	0.69	0.44; 1.09	0.11
Late first trim + early second trim	-0.63	0.48	0.53	0.21; 1.37	0.19
Claw lesions at first trimming in second lactation					
No	Referent	-	-	-	-
Yes	0.76	0.22	2.13	1.38; 3.29	0.001
Breed					
SH	Referent	-	-	-	-
SR	0.29	0.23	1.34	0.86; 2.08	0.20
SR*SH	0.12	0.35	1.12	0.57; 2.22	0.73
Other	n.a.	-	-	-	-
Intercept	-3.61	0.26			<0.001
Culled due to other reasons					
Days from first calving to first trimming and days from second trimming to second calving					
No remarks					
Early first trim + late second trim	-0.21	0.36	0.81	0.40; 1.64	0.56
Early first trim + mid second trim	-0.34	0.17	0.71	0.51; 1.00	0.048
Early first trim + early second trim	-0.34	0.15	0.71	0.53; 0.96	0.03
Mid first trim + Late second trim	-0.23	0.25	0.79	0.48; 1.30	0.36
Mid first trim + mid second trim	-0.29	0.15	0.74	0.55; 1.00	0.05
Mid first trim + early second trim	-0.33	0.16	0.72	0.52; 0.99	0.045
Late first trim + late second trim	Referent	-	-	-	-
Late first trim + mid second trim	0.09	0.13	1.10	0.84; 1.42	0.49

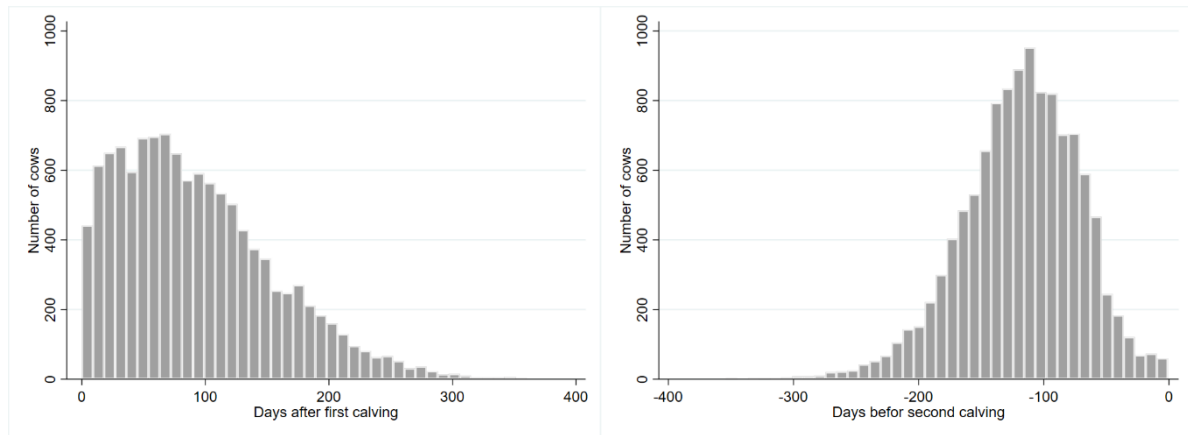


Late first trim + early second trim	0.18	0.15	1.19	0.88; 1.62	0.25
Claw lesions at first trimming in second lactation					
No	Referent	-	-	-	-
Yes	0.22	0.08	1.25	1.06; 1.47	0.008
Breed					
SH	Referent	-	-	-	-
SR	0.23	0.09	1.26	1.05; 1.51	0.01
SR*SH	-0.08	0.17	0.92	0.67; 1.28	0.63
Other	0.14	0.24	1.16	0.72; 1.84	0.54
Intercept	-1.93	0.13			<0.001

<sup>1</sup>Standard error (SE) was adjusted for repeated measurements within herd

<sup>2</sup>SH = Swedish Holstein; SR = Swedish Red.

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**Figure S1.** Histograms of days from first calving to first claw trimming and days before second calving to second trimming in first lactation (n=10,349 cows in 185 dairy herds).