

Supplementary Materials

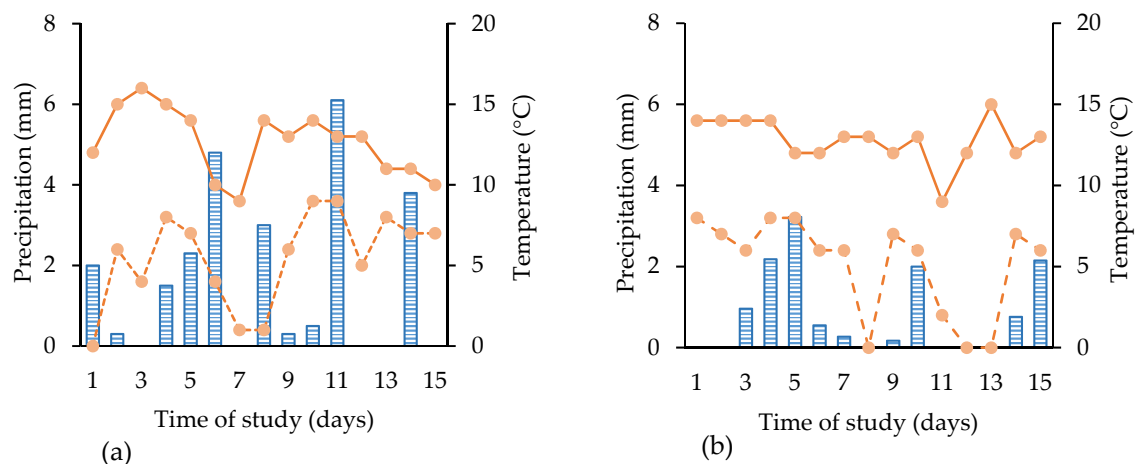


Figure S1. Average daily precipitation (stripped bars) and temperature (solid line: maximum, dashed: minimum) during the calibration stage over the study time for the ewes at approximately 100 days from the midpoint of a 17-day breeding period (a) and 130 days (b).

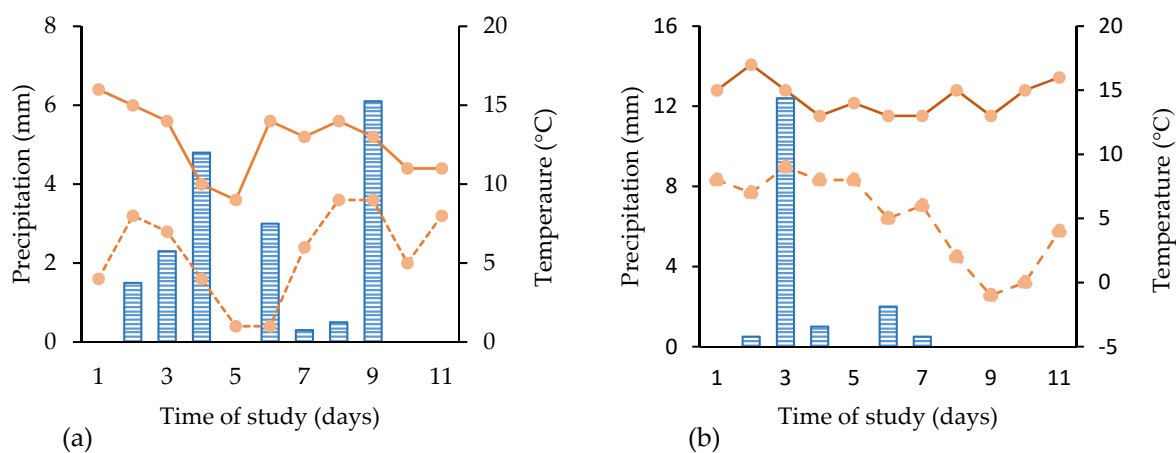
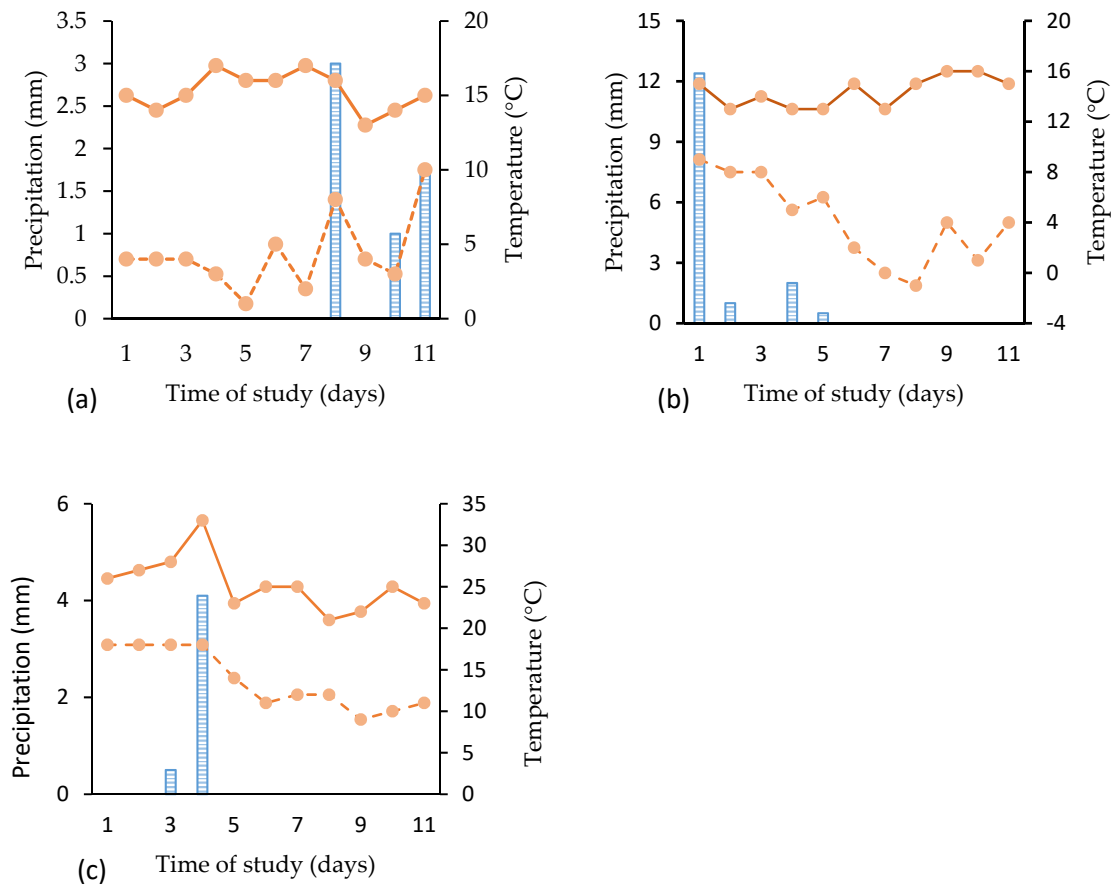


Figure S2. Average precipitation (stripped bars) and temperature (solid line: maximum, dashed: minimum) during the validation period of ewes at approximately 100 days of pregnancy from the midpoint of a 17-day breeding period at Keeble farm (a) and Tuapaka farm (b).



s

Figure S3. Average precipitation (stripped bars) and temperature (solid line: maximum, dashed: minimum) during the validation period of ewes at approximately 130 days of pregnancy from the midpoint of a 17-day breeding period at Keeble farm (a), Tuapaka farm (b) and Riverside farm (c).

Table S1. Estimated least squares mean herbage mass (kg DM/ha) and proportion of live/green matter (%) of Low and High herbage levels offered to ewes by stage of pregnancy (P100, P130) and weighing day (days on which weighing was conducted: 7, 12, 14) during the calibration study.

†Pregnancy stage	Herbage availability	Herbage mass (kg DM/ha)				Proportion of live dry matter (%)
		Weighing day ¹	Weighing day ²	Weighing day ³	Overall	
P100	Low	1025.5	986.8	1037.5	1016.6	80.8
	High	1758.8	1823.5	1602.3	1728.2	75.0
P130	Low	1057.0	1083.5	1076.1	1072.2	84.6
	High	1891.4	1839.7	1737.2	1822.8	91.4
		SE			25.9	7.8
Model effects and comparisons						
		Herbage availability (High vs Low)			***	ns
		Stage of pregnancy (P100 vs P130)			ns	ns

*** indicates $p < 0.001$, respectively. ns: indicates not significant ($p > 0.05$). P100: approximately 100 days of pregnancy from the midpoint of a 17-day breeding period, P130: approximately 130 days. Herbage availability levels (Low herbage target range: 900–1100 kg DM/ha, High: ≥ 1400 kg DM/ha). †(Pregnancy stage indicates stage of study in terms of days not the physiological state per se).

Table S2. Herbage quality parameters (means with their standard errors in parenthesis) for grab samples of the Low and High herbage levels offered to ewes (Least square means) by stage of pregnancy (P100 and P130), during calibration.

†Pregnancy stage	Herbage availability	Chemical composition				
		DM %	CP %	NDF %	ADF %	ME MJ/kg
P100	Low	19.6	24.0	48.3	23.8	10.3
	High	15.7	24.4	39.1	19.7	10.5
P130	Low	18.8	21.2	41.7	20.0	10.9
	High	15.9	24.1	38.7	18.2	11.7
	SE	0.57	0.81	1.7	1.1	0.24
Model effect comparisons						
Herbage availability (High vs Low)		*	ns	*	*	*
Stage of pregnancy (P100 vs P130)		ns	ns	ns	ns	ns

DM: dry matter, neutral detergent fibre (NDF), ADF: acid detergent fibre (ADF), CP: crude protein, ME: metabolizable energy. Herbage availability levels (Low herbage target range: 900–1100 kg DM/ha, High: ≥ 1400 kg DM/ha). P100: approximately 100 days of pregnancy from the midpoint of a 17-day breeding period, P130: approximately 130 days. Herbage availability levels (Low herbage target range: 900–1100 kg DM/ha, High: ≥ 1400 kg DM/ha). *, **, *** indicate $p < 0.05$, $p < 0.01$ and $p < 0.001$, respectively. ns: indicates not significant ($p > 0.05$). Means comparisons were based on Sidak's adjustment method. †(Pregnancy stage indicates stage of study in terms of days not the physiological state per se).

Table S3. Mean initial and final delayed weight and prediction parameters with standard errors in parentheses, coefficient of variation (CV) and adjusted R^2 for ewe liveweight loss (kg) based on herbage availability level s (Low, High) offered to ewes at two stage of pregnancy (P100, P130) and pregnancy ranks (S: single-bearing, T: twin-bearing) during eight hours of fasting at calibration stage. Adjusted R^2 is the goodness-of-fit of the model.

Stage of Pregnancy	Pregnancy-rank	Herbage availability	Initial liveweight (kg)	Final liveweight (kg)	Intercept	Time	Time ²	CV	Adjusted R ²
P100	Single	Low	64.1(0.79)	60.8(0.81)	-0.68(0.089)	0.65 ^{ab} (0.015)	-0.030 ^a (0.002)	0.23	0.72
		High	69.7(0.85)	64.7(0.81)	-0.69(0.089)	0.78 ^c (0.015)	-0.031 ^a (0.002)	0.30	0.67
	Twin	Low	69.2(0.90)	66.1(0.81)	-0.694(0.089)	0.64 ^{ab} (0.016)	-0.030 ^a (0.002)	0.24	0.75
		High	73.8(1.09)	69.0(1.81)	-0.77(0.090)	0.77 ^c (0.015)	-0.032 ^a (0.002)	0.31	0.67
P130	Single	Low	69.9(0.88)	67.1(0.87)	-0.73(0.090)	0.59 ^a (0.015)	-0.030 ^a (0.002)	0.32	0.72
		High	72.5(0.91)	69.0(0.86)	-0.71(0.089)	0.70 ^b (0.015)	-0.030 ^a (0.002)	0.31	0.72
	Twin	Low	72.9(0.69)	70.0(0.65)	-0.70(0.089)	0.61 ^a (0.015)	-0.030 ^a (0.002)	0.29	0.63
		High	76.4(0.87)	72.9(0.82)	-0.65(0.090)	0.70 ^b (0.016)	-0.031 ^a (0.002)	0.28	0.77
Combined (overall)									
(ST)P100		Low	66.4(0.64)	63.2(0.62)	0.11(0.064)	0.64 ^{ab} (0.027)	-0.025 ^a (0.003)	0.23	0.73
(ST)P100		High	71.7(0.71)	66.8(0.69)	-0.06(0.068)	0.81 ^d (0.030)	-0.037 ^a (0.004)	0.30	0.81
(ST)P130		Low	71.4(0.57)	68.5(0.55)	0.06(0.055)	0.56 ^a (0.023)	-0.027 ^a (0.002)	0.30	0.68
(ST)P130		High	74.5(0.65)	70.9(0.62)	-0.04(0.060)	0.71 ^b (0.019)	-0.039 ^{ab} (0.002)	0.29	0.75

^{abcd}: different superscripts denote significant difference at $p < 0.05$ in a column per physiological state. Herbage availability (Low target range herbage: 900–1100 kg DM/ha, High: ≥ 1400 kg DM/ha;). Pregnancy-rank (S: single-bearing, T: twin-bearing; ST: Combination of single- and twin-bearing ewes). Stages of pregnancy (P100: 100 days of pregnancy from the midpoint of a 17-day breeding period, P130: 130 days). The best model has the highest R^2 and the lowest RMSE. Time and Time² are the linear and quadratic effects of fasting time. Model for liveweight loss prediction (E.g. liveweight loss of ewes at 100 days of pregnancy offered the low herbage level = $-0.68 + 0.65\text{Time} - 0.03\text{Time}^2$, $R^2 = 0.72$)

Table S4. Estimated herbage mass (least squares means) and proportion of live and dead matter of Low and High herbage levels (kg DM/ha) offered to ewe by stage of pregnancy and day of ewe weighing at different farms (Keeble, Tuapaka, Riverside) during the validation of liveweight correction models.

†Pregnancy stage	Farm	Herbage availability	Herbage mass (kg DM/ha)		Overall	Live matter (%)
			*Weighing day one	**Weighing day two		
<i>P100</i>	Keeble	Low	1017.5	930	973.75	72.3
		High	2141	2026.9	2083.95	96.2
	Tuapaka	Low	986.8	967.9	977.35	82.7
		High	1923.5	1711.9	1817.7	88.3
		<i>SEM</i> ¹			94.4	
<i>P130</i>	Keeble	Low	1105.9	990	1047.95	84.6
		High	1892.9	1815.1	1854	91.4
	Tuapaka	Low	1040	1030.4	1035.2	75.4
		High	2169.5	1727.3	1948.4	84.9
	Riverside	Low	1081.6	990	1035.8	78.8
		High	1681.5	1564.1	1622.8	81.4
		<i>SEM</i> ²			(59.4, 72.3)	
Model effect comparisons						
Herbage availability (High vs Low)					**	*
Pregnancy stage (P100 vs P130)					ns	ns
Farm					*	ns
Farm x Herbage availability						
P100					**	ns
P130					ns	ns

Herbage availability (Low herbage target range: 900–1100 kg DM/ha, High: ≥ 1400). Stage of pregnancy (P100: 100 days of pregnancy from the midpoint of a 17-day breeding period, P130: 130 days). *,** indicate significant at $p < 0.05$, $p < 0.01$ and $p < 0.001$, respectively. ns indicates not significant. SEM (1: two-way herbage x farm; 2: no interaction two factors (herbage availability = 59.4, farm = 72.3)). †(Pregnancy stage indicates stage of study in terms of days not the physiological state per se).

Table S5. Herbage quality parameters for hand-plucked samples of the Low and High herbage levels by farm (Keeble, Tuapaka and Riverside), and stage of pregnancy (P100, P130) offered to ewes pre-fasting during validation.

†Pregnancy stage	Farm	Herbage availability	DM %	CP %	NDF %	ADF %	ME %	
P100	Keeble	Low	19.8	20.0	51.8	30.6	9.4	
		High	16.0	24.4	37.6	20.6	11.0	
	High	13.4	27.5	38.9	20.0	12.2		
	SEM	0.68	1.82	2.20	1.60	0.41		
	P130	Keeble	Low	20.9	24.0	39.5	19.9	11.5
High			14.4	29.9	41.8	20.2	11.7	
High		12.7	29.6	37.8	18.2	12.0		
High		18.8	18.9	48.4	27.4	9.7		
SEM		0.80	1.70	2.16	1.56	0.33		
Model effects and comparisons								
Herbage availability (High vs Low)			**	ns	*	*	ns	
Pregnancy stage (P100 vs P130)			**	ns	ns	ns	ns	
Farm			*	ns	*	*	ns	
Farm x Herbage availability			*	ns	*	*	ns	

DM: Dry matter, CP: Crude protein, NDF: Neutral detergent fibre, ADF: acid detergent fibre, ME: metabolizable energy. Herbage availability (Low target range herbage: 900–1100 kg DM/ha, High (H): ≥ 1400). P100: approximately 100 days of pregnancy from the midpoint of a 17-day breeding period, P130: approximately 130 days. Herbage availability levels (Low herbage target range: 900–1100 kg DM/ha, High: ≥ 1400 kg DM/ha). *, ** indicate $p < 0.05$, $p < 0.01$, respectively. †(Pregnancy stage indicates stage of study in terms of days not the physiological state per se).

Table S6. Mean initial (without delay) and final weight and prediction parameters with standard errors in parentheses, of P100 ewe liveweight loss (kg) during a six-hour fasting periods, by herbage availability level (Low, High), farm (Keeble, Riverside) and pregnancy-rank (single, twin-bearing). CV is the coefficient of variation and adjusted R^2 is a measure of goodness of fitness of the model. All models were significant at $p < 0.01$.

Farm	TRT	PD	Liveweight (kg)		Predictor			CV	Adjusted R^2
			Initial	Final	Intercept	Time	Time2		
*Riverside	Low	Single	64.8(0.65)	62.1(0.61)	−1.1 ^{ab} (0.2)	0.86 ^{abc} (0.063)	−0.066 ^{ab} (0.009)	0.33	0.73
		Twin	70.0(0.76)	67.3(0.75)	−1.1 ^{ab} (0.22)	0.84 ^{abc} (0.068)	−0.064 ^{ab} (0.010)	0.29	0.77
	High	Single	69.7(0.69)	66.3(0.69)	−1.1 ^{ab} (0.21)	0.98 ^{bc} (0.063)	−0.067 ^{ab} (0.010)	0.34	0.72
		Twin	73.9(0.88)	70.6(0.87)	−0.9 ^{ab} (0.21)	0.90 ^b (0.063)	−0.055 ^b (0.010)	0.37	0.74
†Keeble	Low	Single	65.4(0.92)	63.6(0.88)	−1.0 ^{ab} (0.27)	0.67 ^{ab} (0.083)	−0.060 ^{ab} (0.013)	0.59	0.46
		Twin	68.6(1.02)	66.8(1.00)	−1.1 ^{ab} (0.27)	0.69 ^{ab} (0.082)	−0.060 ^{ab} (0.013)	0.57	0.51
	High	Single	70.9(1.08)	67.3(1.06)	−1.6 ^a (0.27)	1.18 ^c (0.084)	−0.093 ^a (0.013)	0.36	0.72
		Twin	72.4(0.87)	69.1(0.86)	−1.5 ^a (0.27)	1.12 ^c (0.084)	−0.090 ^a (0.013)	0.35	0.70
†Tuapaka	Low	Single	62.1(0.72)	59.1(0.67)	−0.3 ^b (0.26)	0.58 ^a (0.08)	−0.022 ^c (0.012)	0.48	0.58
		Twin	67.6(0.63)	64.6(0.64)	−0.5 ^{ab} (0.26)	0.66 ^{ab} (0.08)	−0.034 ^{bc} (0.012)	0.43	0.61
	High	Single	67.3(1.09)	63.2(1.06)	−1.0 ^{ab} (0.27)	1.01 ^{bc} (0.081)	−0.068 ^{abc} (0.012)	0.33	0.72
		Twin	69.1(0.83)	65.2(0.78)	−1.0 ^{ab} (0.26)	0.99 ^{bc} (0.08)	−0.066 ^{abc} (0.012)	0.33	0.72

Liveweight (Initial: liveweight without delay, Final: Liveweight after eight hours of fasting). Asterisks *,† attached to farm name indicate the study stage dataset used for the analysis (*: calibration dataset, †: validation dataset). ^{abc}: different superscripts denote significant difference at $p < 0.05$ within each column of predictors. Availability level (Low herbage target range: 900–1100 kg DM/ha, High: ≥ 1400). Model goodness of fit: the higher R^2 the better. All contrasts based on Sidak's multiple-comparisons tests.

Table S7. Mean initial (without delay) and final weight and prediction parameters with standard errors in parentheses, of P130 ewe liveweight loss (kg) during a six-hour fasting periods, by herbage availability (Low, High), farm (Keeble, Riverside) and pregnancy-rank (PR: single, twin-bearing). CV is the coefficient of variation and adjusted R² is a measure of goodness of fitness of the model. All models were significant at $p < 0.01$.

Farm	TRT	PR	Liveweight (kg)		Predictor			CV	Adjusted R ²
			Initial	Final	Intercept	Time	Time ²		
*Keeble	Low	Single	69.9(0.88)	67.6(0.86)	-0.2 ^a (0.21)	0.50 ^a (0.068)	0.026 ^a (0.011)	0.38	0.67
		Twin	72.9(0.69)	70.5(0.66)	-0.3 ^a (0.21)	0.53 ^a (0.068)	0.032 ^{ab} (0.011)	0.37	0.67
	High	Single	72.5(0.91)	69.6(0.88)	0.1 ^a (0.21)	0.66 ^{ab} (0.067)	0.014 ^a (0.01)	0.37	0.70
		Twin	76.4(0.87)	73.4(0.83)	-0.6 ^a (0.2)	0.82 ^{bc} (0.066)	0.052 ^{ab} (0.01)	0.35	0.70
†Keeble	Low	Single	69.8(0.93)	68.0(0.91)	-0.6 ^a (0.19)	0.66 ^{ab} (0.061)	0.047 ^{ab} (0.009)	0.54	0.60
		Twin	75.8(1.11)	74.1(1.10)	-0.7 ^a (0.19)	0.70 ^{ab} (0.061)	0.052 ^{ab} (0.009)	0.57	0.47
	High	Single	72.2(0.96)	68.8(0.88)	-0.8 ^a (0.2)	0.78 ^{bc} (0.063)	0.06 ^{ab} (0.010)	0.41	0.65
		Twin	77.7(1.01)	75.4(1.00)	-0.8 ^a (0.2)	0.81 ^{bc} (0.064)	0.065 ^{ab} (0.01)	0.39	0.64
†Riverside	Low	Single	69.1(0.89)	66.7(0.84)	-0.4 ^a (0.22)	0.63 ^{ab} (0.07)	0.039 ^{ab} (0.011)	0.45	0.65
		Twin	74.7(0.87)	72.4(0.85)	-0.7 ^a (0.22)	0.74 ^b (0.071)	0.056 ^{ab} (0.011)	0.41	0.68
	High	Single	73.2(0.88)	70.3(0.87)	-0.8 ^a (0.23)	0.97 ^c (0.075)	0.084 ^b (0.013)	0.32	0.78
		Twin	78.1(1.15)	75.4(1.13)	-0.8 ^a (0.23)	0.86 ^{bc} (0.074)	0.069 ^{ab} (0.012)	0.32	0.77
†Tuapaka	Low	Single	70.0(1.03)	67.2(1.00)	-0.5 ^a (0.21)	0.64 ^{ab} (0.068)	0.043 ^{ab} (0.011)	0.35	0.71
		Twin	75.5(0.83)	72.7(0.81)	-0.5 ^a (0.22)	0.61 ^{ab} (0.072)	0.04 ^{ab} (0.012)	0.35	0.70
	High	Single	73.2(0.97)	69.5(0.94)	-0.5 ^a (0.22)	0.67 ^{ab} (0.07)	0.04 ^{ab} (0.011)	0.33	0.78
		Twin	76.7(0.87)	73.3(0.83)	-0.3 ^a (0.21)	0.58 ^{ab} (0.069)	0.027 ^{ab} (0.011)	0.36	0.74

Liveweight (Initial: liveweight without delay, Final: Liveweight after eight hours of fasting). Asterisks *,† attached to farm name indicate the study-stage dataset used for the analysis (*: calibration dataset, †: validation dataset). ^{abc}: different superscripts denote significant difference at $p < 0.05$ within each column of predictors. Availability level (Low herbage target range: 900–1100 kg DM/ha, High: ≥1400). Model goodness of fit: the higher R² the better. All contrasts based on Sidak's multiple-comparisons tests.

Table S8. Measures of goodness of fit and accuracy (Bias, RMSE, RPE, RPD, RPIQ, r^2 , CCC) of liveweight (without delay) prediction models (None: no model applied, separate: a separate/specific model applied, combined: pooled model where results were not significantly different and mistaken: model not developed for that availability level was applied) of ewes offered the Low, and High levels by pregnancy-rank (PR: single, twin-bearing) at 100 days of pregnancy (from the midpoint of a 17-day breeding period) and during six hours of fasting tested on independent datasets (validation dataset) from Keeble farm and Riverside farm collected in 2020. The range of values reflects the results of 30 random iterations of the models. Liveweight means with their standard errors in parenthesis.

Farm	Herbage availability	PR	Model	Liveweight (kg)			Bias	RMSE	RPE%	RPD	RPIQ	r^2 %
				Actual Initial	Actual Final	Predicted Final						
Keeble	Low	Single	None				-1.47	1.74	2.67	3.69	5.75	98.3
			Separate			65.2(1.53)	0.45	1.10	1.68	5.83	9.09	98.3
			Combined	65.4(1.47)	63.6(1.45)	65.0(1.53)	0.32	1.18	1.81	5.44	8.47	98.3
			Mistaken			66.1(1.53)	0.94	1.51	2.30	4.28	6.67	98.3
		Twin	None				-1.28	1.56	2.27	4.55	7.50	98.9
			Separate			69.6(2.1)	0.56	0.95	1.38	7.56	12.32	98.9
			Combined	68.6(1.87)	66.8(2.0)	69.5(2.1)	0.51	0.92	1.34	7.81	12.72	98.9
			Mistaken			70.6(2.1)	1.13	1.44	2.10	4.99	8.13	98.9
	High	Single	None				-2.62	2.97	4.19	2.57	2.79	97.8
			Separate			71.0(1.06)	-0.19	1.10	1.55	6.94	7.55	97.8
			Combined	70.9(1.01)	67.3(0.93)	71.1(1.06)	-0.14	1.11	1.55	6.94	7.55	97.8
			Mistaken			70.0(1.06)	-0.78	1.34	1.89	5.70	6.19	97.8
		Twin	None				-2.67	2.76	3.81	2.19	3.53	97.6
			Separate			72.5(2.84)	-0.39	1.08	1.49	5.6	8.94	97.6
			Combined	72.4(2.76)	69.1(2.82)	72.9(2.84)	-0.19	1.02	1.41	5.93	9.46	97.6
			Mistaken			71.7(2.84)	-0.83	1.22	1.68	4.96	7.91	97.6
Tuapaka	Low	Single	None				-1.92	2.25	3.60	2.26	2.71	96.4
			Separate			62.0(1.67)	0.08	1.00	1.57	5.10	6.11	96.4
			Combined	62.1(1.54)	59.1(1.60)	61.8(1.67)	-0.05	1.00	1.60	5.11	6.12	96.4
			Mistaken			63.0(1.67)	0.60	1.20	1.90	4.24	5.08	96.4
		Twin	None				-1.97	2.50	3.72	1.97	2.48	91.7
			Separate			67.7(2.7)	-0.05	1.38	2.01	3.56	4.52	91.7
			Combined	67.6(2.61)	64.6(2.70)	67.6(2.7)	-0.1	1.39	2.03	3.55	4.52	91.7
			Mistaken			68.8(2.7)	0.55	1.51	2.21	3.26	4.13	91.7
	High	Single	None				-2.83	3.33	4.94	2.28	2.9	96.1
			Separate			66.8(1.04)	-0.37	1.56	2.26	4.86	6.18	96.1
			Combined	67.3(1.01)	63.2(1.04)	67.0(1.04)	-0.32	1.55	2.31	4.89	6.22	96.1
			Mistaken			65.8(1.04)	-0.96	1.81	2.70	4.19	5.33	96.1
		Twin	None				-2.64	2.91	4.18	2.02	2.32	97.8
			Separate			68.6(2.78)	-0.33	0.97	1.36	6.03	6.93	97.8
			Combined	69.1(2.76)	65.2(2.74)	69.0(2.78)	-0.13	0.94	1.38	6.28	7.22	97.8
			Mistaken			67.9(2.78)	-0.77	1.21	1.69	4.85	5.57	97.8

Herbage availability (Low target range herbage: 900–1100 kg DM/ha, High: ≥ 1400 kg DM/ha). Interpretation of measures: The best model has the highest r^2 , RPD, and RPIQ, and the lowest RMSE. Ranges for values: r^2 (0: indicates that the model explains none of the variability of the response data around its mean, 1.0 indicates that the model explains all the variability). RPD (< 1.4: weak, 1.4 < RPD < 2.0: reasonable, > 2.0: excellent). RPIQ (< 1.4: very poor, 1.4 < RPIQ < 1.7: fair, 1.7 < RPIQ < 2.0: good, 2.0 < RPIQ < 2.5: very good, > 2.5: excellent).

Table S9. Measures of goodness of fit and accuracy (Bias, RMSE, RPE, RPD, RPIQ, r^2 , CCC) of liveweight (without delay) prediction models (None: no model applied, separate: a separate/specific model applied, combined: pooled model where results were not significantly different and mistaken: model not developed for that availability level was applied) of ewes offered the Low, and High herbage levels by pregnancy-rank (PR: single, twin-bearing) at 130 days of pregnancy and during six hours of fasting tested on independent datasets (validation dataset) from Keeble farm, Tuapaka farm and Riverside farm collected in 2020. Liveweight means with their standard errors (kg).

Farm	Herbage availability	PR	Model	Liveweight (kg)			Bias	RMSE	RPE %	RPD	RPIQ	r ² %	
				Actual Initial	Actual Final	Predicted Final							
Keeble	Low	Single	None	69.8(0.93)	68.0(0.91)		-1.29	1.57	2.24	4.18	6.07	98.6	
			Separate			70.5(0.91)	0.36	0.89	1.27	7.37	10.69	95.0	
			Combined			70.5(0.91)	0.41	0.91	1.31	7.17	10.40	98.6	
			Mistaken			71.1(0.91)	0.74	1.14	1.64	5.74	8.33	98.6	
		Twin	None	75.8(1.11)	74.1(1.1)		-1.34	1.66	2.19	4.74	8.06	98.6	
			Separate			76.7(1.1)	0.42	1.05	1.38	7.51	12.76	82.6	
			Combined			76.6(1.1)	0.36	1.02	1.35	7.70	13.08	98.6	
			Mistaken			77.2(1.1)	0.69	1.22	1.61	6.45	10.97	98.6	
			Keeble	High	Single	None	72.2(1.36)	68.8(1.25)		-1.88	2.09	2.90	3.24
Separate						72.0(1.25)	0.25	0.83	1.15	8.14	11.73	98.8	
Combined						72.0(1.25)	0.26	0.84	1.16	8.11	11.66	98.8	
Mistaken						71.4(1.25)	-0.09	0.78	1.08	8.72	12.55	98.8	
Twin	None	77.7(1.02)			75.4(1.02)		-1.96	2.27	2.92	3.15	4.82	97.7	
	Separate					77.0(1.86)	0.26	1.13	1.46	6.30	9.66	83.9	
	Combined					78.5(1.01)	0.21	1.12	1.44	6.38	9.79	97.8	
	Mistaken					77.9(1.01)	-0.15	1.08	1.39	6.60	10.13	97.8	
	Tuapaka	Low			Single	None	70.0(1.02)	67.2(1.00)		-1.77	2.09	2.98	3.48
Separate						69.7(1.00)	-0.05	0.92	1.31	7.89	6.47	98.4	
Combined						69.8(1.00)	0.03	0.92	1.00	1.31	7.92	98.4	
Mistaken						70.3(1.03)	0.35	0.97	1.13	1.39	7.44	98.4	
Twin			None	75.5(0.83)	72.7(0.81)		-2.14	2.12	2.81	2.77	3.23	97.8	
			Separate			75.3(0.81)	-0.32	0.88	1.16	6.71	7.82	79.7	
			Combined			75.2(0.82)	-0.38	0.88	0.90	1.17	6.65	79.7	
			Mistaken			75.9(0.82)	-0.03	0.90	0.94	1.20	6.51	79.6	
			Tuapaka	High	Single	None	73.2(0.96)	69.5(0.94)		-2.53	2.79	3.82	2.39
Separate						72.7(0.93)	-0.43	1.07	1.46	6.25	8.17	97.8	
Combined						72.7(0.94)	-0.42	1.07	1.06	1.46	6.27	97.8	
Mistaken						72.1(0.94)	-0.77	1.26	1.31	1.72	5.30	97.8	
Twin	None	76.7(0.87)			73.3(0.82)		-2.58	2.53	3.30	2.37	2.63	97.4	
	Separate					76.5(0.83)	-0.44	0.99	1.29	6.05	6.71	78.7	
	Combined					76.4(0.83)	-0.49	1.00	0.94	1.31	5.99	78.9	
	Mistaken					75.9(0.84)	-0.83	1.04	1.09	1.36	5.76	78.7	
	Riverside	Low			Single	None	69.1(0.89)	66.7(0.84)		-1.69	1.90	2.47	2.75
Separate						69.1(0.84)	-0.06	0.65	0.69	0.94	9.86	99.2	
Combined						69.2(0.84)	-0.01	0.65	0.68	0.94	9.86	99.2	
Mistaken						69.7(0.84)	0.32	0.74	0.80	1.07	8.66	99.2	
Twin			None	74.7(0.87)	72.4(0.85)		-1.61	1.79	2.16	2.40	3.31	99.2	
			Separate			75.0(0.85)	0.13	0.57	0.60	0.76	10.4	99.2	
			Combined			74.9(0.85)	0.08	0.56	0.59	0.75	10.59	99.2	
			Mistaken			75.5(0.85)	0.41	0.71	0.76	0.95	8.35	99.2	
			High	Single	None	73.2(0.88)	70.3(0.87)		-1.85	2.10	2.54	2.87	3.01
Separate							73.3(0.87)	0.21	0.65	0.70	0.89	9.72	99.0
Combined							73.4(0.87)	0.22	0.66	0.71	0.90	9.58	99.0
Mistaken							72.8(0.87)	-0.12	0.65	0.67	0.89	9.72	99.0
Twin				None	78.1(1.14)	75.4(1.12)		-1.69	1.93	2.18	2.47	4.28	99.5
				Separate			78.5(1.13)	0.42	0.72	0.78	0.92	11.49	99.5
			Combined			78.4(1.13)	0.37	0.69	0.75	0.88	11.99	99.5	
	Mistaken			77.9(1.13)	0.03	0.60	0.61	0.77	13.78	99.5			

Availability level (Low target range herbage availability: 900–1100 kg DM/ha, High: ≥ 1400 kg DM/ha). Interpretation of measures: The best model has the highest r^2 , RPD, and RPIQ, and the lowest RMSE. Ranges for values: r^2 (0: indicates that the model accounts for none of the variability of the response data around its mean, 1.0 indicates that the model accounts for all the variability). RPD (< 1.4 : weak, $1.4 < \text{RPD} < 2.0$: reasonable, > 2.0 : excellent). RPIQ (< 1.4 : very poor, $1.4 < \text{RPIQ} < 1.7$: fair, $1.7 < \text{RPIQ} < 2.0$: good, $2.0 < \text{RPIQ} < 2.5$: very good, > 2.5 : excellent).