Table 1. Effects of different feeding management during lactation on gilts and sows reproductive and litter performance.[1]

Item	Lactation Feeding Regimen				SEM	Probability, *P*=
	AdLib	3dStep-Up	5dStep-Up	7dStep-Up		
Number of females per treatment	101	101	101	101		
Body weight, kg						
D 112	260.5	260.2	263	261.2	3.84	0.704
Estimated 48hrs post-farrow	236.5	236.7	238.4	237.1	3.75	0.874
Weaning	230.5	224.7	226.4	225.4	4.18	0.477
Change in lactation	-5.8	-12.1	-7.7	-7.5	2.91	0.327
Caliper, units						
D 112	16.8	16.6	16.8	16.6	0.14	0.834
Weaning	14.5	14.5	14.3	14	0.22	0.269
Change in lactation	-2.3	-2.4	-2.3	-2.6	0.2	0.466
Lactation Feed Intake						
Cumulative first 7d post-farrow, kg/sow	32.94^{a}	28.28^{b}	26.46^{c}	22.54^{d}	0.47	<0.001
Average daily feed intake, kg/d	7.05^{a}	6.84^{a}	6.79^{ab}	6.54^{b}	0.15	<0.001
Litter and piglet performance						
Initial litter count, n	15.1	15.1	14.88	15.02	0.137	0.609
Proportion of pigs weaned, %	83.69	81.86	83.25	82.01	0.643	
Initial litter body weight, kg	21.09	21.38	21.3	21.16	0.437	0.958
Weaning litter body weight, kg	84.61	81.16	82.85	81.32	1.895	0.432
Litter average daily gain, kg/d	2.66	2.53	2.57	2.52	0.075	0.367
Piglet average daily gain, kg/d	0.23	0.22	0.22	0.22	0.005	0.327
Lactation length, d	24.31	24.49	24.76	24.46	1.298	0.385

[1] All females were fed 2.0 kg/d of a common lactation diet containing 3.335 Mcal of metabolizable energy/kg and 1.05% standardized ileal digestible lysine from loading into the farrowing room until the day of farrowing. After farrowing, the daily amount of feed provided to each female was individually adjusted according to the treatment. Treatments consisted of: *ad libitum* feed allowance from d1 post-farrow to weaning (AdLib) or step up feed allowance in small increments for the first 3 days post-farrow (3dStep-Up), for the first 5 days post-farrow (5dStep-Up) or for the first 7 days post-farrow (7dStep-Up) followed by *ad libitum* feed allowance until weaning.

Abstract citation ID: skaf102.119

75 Kinetics of bone mineralization in sows and their litters as a function of dietary phosphorus and calcium during lactation.

Julien Heurtault[1], Marie-Pierre Létourneau Montminy[1], Patrick Schlegel[2], [1]*Laval University,* [2]*Agroscope*

Abstract: Phosphorus (P) and calcium (Ca) are stored in bone, a tissue that can be mobilized when mineral requirements are high, as during lactation. While this flow has been quantified in primiparous sows, it has not been assessed in multiparous sows. The objectives of this study are to validate this flux in primiparous sows and to quantify it in multiparous sows based on phosphocalcic intake and to study bone mineralization in suckling piglets. Bone mineral content (BMC; g) of the whole body of 24 primiparous and 24 multiparous sows (parity 3 or 4) and their piglets was measured by X-ray absorptiometry at farrowing (d2) and weaning (d26). Four lactation feeds were formulated to achieve different nutritional intakes: Lact100 (9.0 g Ca; 3.0 g digestible P/kg), Lact50 (4.5 g Ca; 1.5 g digestible P/kg), and these same treatments supplemented with 750 FTU/kg exogenous phytase (Lact100+FTU and Lact50+FTU). Sow BMC were influenced by dietary treatments ($P < 0.05$). At d26, the BMC of Lact50 sows was lower ($P < 0.05$) than that of Lact100 and Lact100+FTU sows, which had similar BMC and Lact50+FTU was intermediated. Therefore, only Lact50 sows demineralized during lactation due to a lack of Ca and P. Primiparous sows had a lower BMC than multiparous sows, but the kinetics of BMC between farrowing and weaning were independent of parity. Dietary treatments had no impact on piglet mineral concentration (g BMC/kg PV). The results of this study confirm the ability of sows to mobilize their bone reserves during lactation. The intensity of this demineralization is mainly determined by the dietary P content, independently of the parity of the sows. This ability to draw on bone mineral reserves allows to maintain P and Ca concentrations in milk, even when the intake of digestible P and Ca is reduced to 50% of the requirements. These data will be used to develop a model for predicting the use and retention of P and Ca in lactating sows, with the aim of defining the requirement more precisely.

Keywords: calcium, lactating sow, phosphorus