

Effect of milk replacer on sow and piglet performance pre and post weaning

by ir Ard van Enckevort,
Technical Manager Denkapig,
Denkavit BV, The Netherlands.

Nowadays many pig farmers and their sows are able to achieve high numbers of live born piglets per litter. However, problems can arise with raising all piglets in a sufficient manner.

Currently piglet mortality before weaning is approximately 10-15%, but in some cases with extreme fertile sows this percentage can increase up to 25%. Birth weight per piglet decreases with more piglets per litter, which can lead to high piglet mortality. Besides this, the amount of colostrum and milk available per piglet will also decrease within big litters.

This can have a large impact on survivability, weight gain and uniformity of piglets at weaning and even growth and health after weaning.

Providing extra milk and/or feed to suckling piglets in early lactation can support the sow to raise piglets with better performance.

Therefore, we studied the effect of providing milk replacer (Denkapig Lactowean) to suckling piglets from day 3-12 of age.

This study was conducted as a master thesis in May 2012 in collaboration with a student of Wageningen University.

The study was performed at the Denkavit Research Centre 'De

Grutto', The Netherlands. Some 32 Topigs 30 sows inseminated with Piétrain semen, were split into two groups based on equal parity.

Piglets were weaned at 26 days of age. Litters in the control and treatment groups received creep feed in a bowl (Denkapig Mini Start) from day five until weaning. Litters in the treatment group received 250g/L of Denkapig Lactowean from day 3-12 of age, provided fresh daily in a separate clean bowl. The control group received no additional piglet milk replacer.

Due to limited nursery capacity, six litters (equal parity in control and treatment group) were excluded from the dataset after weaning, resulting in 26 litters (81%) followed until 14 days after weaning.

Sow performance

Sow performance was slightly influenced by providing piglet milk replacer to suckling piglets (Fig. 1). Sow feed intake, measured from four days before farrowing until weaning, was increased from 5.0 to 5.2kg/day.

In the same period, sow weight losses and back fat losses were 39.1kg and 3.5mm in the control group compared to 32.6kg and 3.9mm in the treatment group.

All these differences between the control and the treatment group

	Control	Lactowean
Number of sows	15	15
Born alive	13.5	12.9
Weaned litter	11.5	11.1
Mortality % until weaning	14.6	11.7
Average birth weight (g)	1,327	1,348
Average wean weight (g)	7,386	8,050
CV% at birth	20.2	20.7
CV % at weaning	19.0	18.6

Table 1. Effect of piglet milk replacer on mortality and uniformity of piglets until weaning.

were, however, not significantly different.

Before weaning

The cumulative creep feed intake was not affected in the treatment group compared to the control group. However, the treatment group also consumed 161g dry matter of piglet milk replacer, resulting in a significant increase ($p < 0.01$) in total dry matter intake of 38% per piglet before weaning.

The total dry matter intake before weaning was 368 and 509g/piglet for the control and the treatment group respectively (Fig. 2).

Average intake of piglet milk

replacer was approximately 75ml per piglet per day in the trial period (day 3-12). Intake increased from 33ml (per piglet per day) at day three to 106ml (per piglet per day) at day 12. Among litters, piglet milk replacer intake per litter varied between 0.5-2.7 litres/day.

Furthermore, litters which consumed more piglet milk replacer also achieved the highest total (milk replacer and creep feed) dry matter intake before weaning, as is shown in Fig. 3.

Piglet mortality before weaning was reduced in the treatment group to 11.7% compared to 14.6% in the control group (Table 1).

Perhaps this can be explained by improved piglet vitality when piglet

Fig. 1. Effect of piglet milk replacer on the sow.

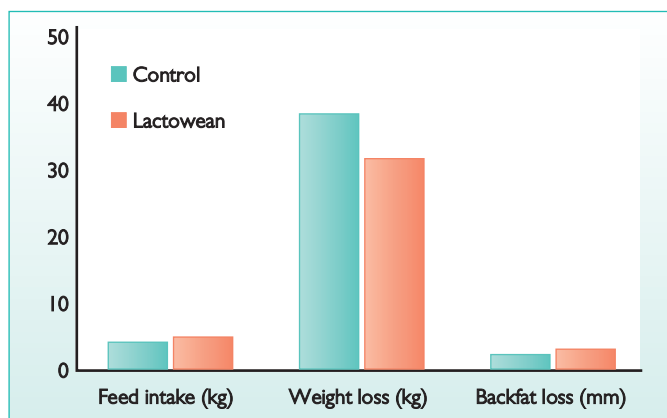
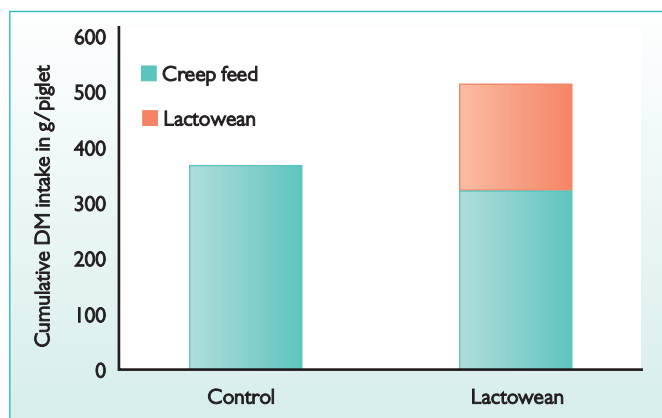


Fig. 2. Effect of Denkapig Lactowean on dry matter intake per piglet before weaning.



	Part of udder			P-value	
	Front	Middle	Back	Treatment	Place
Birth weight (g)					
Control	1451	1323	1371	0.77	0.37
Lactowean	1383	1422	1305		
Average	1417	1373	1338		
Weaning weight (g)					
Control	7588	74170	7078	<0.01	0.05
Lactowean	8128	8233	7400		
Average	7858	7825	7239		

Table 2. Effect of piglet milk replacer and sucking place at the udder on weight development.

milk replacer is consumed. Although birth weight was similar in both groups, intake of Denkapig Lactowean significantly ($p<0.01$) improved weaning weight from 7.4 to 8.0kg. Because all piglets were weighed individually at birth and weaning, the uniformity (expressed as coefficient of variation, CV) was calculated. Uniformity was improved from birth to weaning in both groups (Table 1).

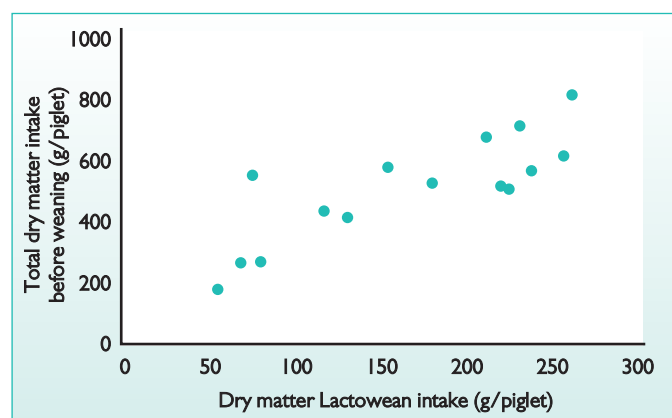
In this study we also determined at which part of the udder piglets sucked, determined at day seven and day 11 of lactation. These data were correlated to the weight gain of the piglets. Weaning weight was significantly ($p<0.05$) affected by the place a piglet was sucking the udder (Table 2).

Piglets which consumed Denkapig Lactowean from day 3-12 had increased weight gain compared to the control group. An increase in weight gain of 9.9%, 11.8% and 6.8% was measured when piglets sucked at the front, middle and back part of the udder, respectively. In general, providing piglet milk replacer increased weaning weight of piglets suckling at all three positions.

After weaning

All piglets were weighed frequently before and after weaning (Table 3).

Fig. 3. Relation between dry matter Lactowean intake and total dry matter intake before weaning.



Days of age	Piglet weight (g)		p-value
	Control	Lactowean	
0	1327	1344	0.83
3	1818	18315	0.93
5	21281	2136	0.96
12	3572	3898	0.64
21	5642	6109	0.09
26 (weaning)	7386	8050	<0.01
33	8126	8814	<0.01
40	10353	11390	<0.01

Table 3. Effect of Lactowean (day 3-12) on weight development until 14 days after weaning.

	Control	Lacto-wean	Pooled SEM	p-value treatment
Number of pigs	21	22		
Daily feed intake (g/day)				
0-14 days after weaning	305	319	8	0.08
0-5 days after weaning	164	170	4	0.03
5-14 days after weaning	332	366	8	0.01
Daily weight gain				
0-14 days after weaning	215	224	8	0.19
0-5 days after weaning	101	105	18	0.25
5-14 days after weaning	295	302	14	0.88

Table 4. Effect of Lactowean (day 3-12) on performance after weaning.

Piglets which received Denkapig Lactowean already had 8-10% higher weight at day 12 (end of period in which Denkapig Lactowean was provided) compared to the control group. This advantage persisted until weaning and even slightly enlarged in the 14 days after weaning (Fig. 4).

This resulted into a weight of 10.3kg and 11.4kg at day 40 for the control and treatment group, respectively. Also daily feed intake (g/day) after weaning was significantly increased in piglets which received Denkapig Lactowean during day 3-12 of lactation (Table 4).

This increase is presumably the result of the habituation of the piglets to higher intake and digestion

of dry matter before weaning. This made it possible for the piglets in the Denkapig Lactowean group to maintain and even slightly increase their weight after weaning compared to the control group.

Economic evaluation

Piglets in the Denkapig Lactowean group consumed less creep feed (-€0.02/piglet), but consumed Denkapig Lactowean (+€0.37/piglet). The total extra feed costs in the treatment group were €0.35 per piglet until weaning.

Mortality was reduced with 2.9%, saving €0.87 per piglet (€0.30 per %

mortality, WUR 2012). Calculating economic results after weaning is quite difficult, but normally the advantage of 1kg weight, observed at day 40, should be maintained until 25kg, saving probably €0.80 per piglet (FCR 1.80 x €0.45/kg feed), assuming that FCR is not influenced by treatment.

Total investment costs are only €0.35 per piglet and return is €1.67 per piglet (ratio 1:5). When having 26 reared pigs per sow per year, the profit per sow is €34.32. For a farm with 500 sows this is a profit of €17,160 per year (figures based on numbers of 2012).

Conclusion

Providing piglet milk replacer Denkapig Lactowean from day three until day 12 to suckling piglets significantly improves dry matter intake of the piglets before weaning.

This results in increased feed intake and higher weaning weight and weight 14 days after weaning. The economic benefit on an average farm with 500 sows is estimated to be more than €17,000 a year.

In addition to this interesting economic advantage, a better health status and less use of antibiotics after weaning can also be achieved due to a better prepared piglet at weaning. ■

Fig. 4. Effect of Lactowean (day 3-12) on weight development until 14 days after weaning.

