

# Improving piglet performance by optimising weaning weight

by Linda Baarslag and Gerard van de Bruinhorst, Denkavit Nederland BV, Tolnegeweg 65, 3781 PV Voorthuizen, PO Box 5, 3780 BA Voorthuizen, The Netherlands.

Today, litters are becoming larger and as a consequence more piglets with a birth weight of less than 1 kg are born. It is well known that these piglets have more difficulties surviving.

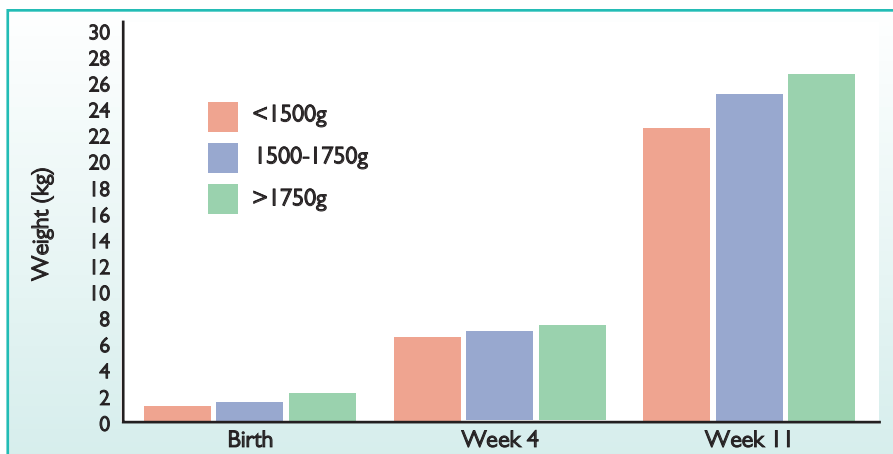
The importance of the piglet's early performance on results in later stages of life is more and more understood. In this article, we will focus on what is known about this and how to optimise early performance and weaning weights of piglets.

## Effect on results

As mentioned above, with increasing litter size a decrease in birth weight is seen. Qiuniou et al. (2002) reported that when litter size increased from  $\leq 11$  to  $\geq 16$  piglets, the percentage of piglets born with a birth weight less than 1 kg increased from 7% to 23%.

Furthermore, this study also showed that every 100g lower birth weight gave 200-400g less weight at weaning. The advantage of a higher birth weight is seen at weaning as well as after 11 weeks (see Fig. 1).

**Fig. 1. Effect of birth weight on weaning weight (four weeks) and weight at 11 weeks of age. All weights in the different age classes were significantly different ( $P < 0.05$ ) (Freitag and Stalljohann, 2007).**



ADG (g) first week post weaning	Weight (kg) post weaning			
	Day 28	Day 56	Day 156	Days to market
$\leq 0$	14.7	30.1	105.4	183.3
0-150	16.0	31.9	108.2	179.2
150-227	16.9	32.5	111.3	175.2
$\geq 227$	18.2	34.8	113.4	173.3

Pigs were weaned at an average age and weight of 21 days and 6.2kg, respectively. Data for day 28 and day 56 are from 1,350 pigs. Day 56 and days to market from 566 pigs.

**Table 1. Influence of weight gain during the first week post weaning on subsequent performance (adapted from Tokach et al. 1992).**

The difference in body weight at birth is about twice as high at weaning and even 3.5-6 times as high at 11 weeks. This effect on weight gain continues during pig growing. Le Dividich et al. (2003) showed that for every 100g lower birth weight, a pig needs 2.3 days more to reach slaughter weight.

Not only is birth weight important, but there is also a clear positive relation between weaning weight of the piglet and weight gain during the weaning, growing and fattening phase.

Tokach et al (1992) showed a major influence of the growth performance of piglets during the first week post weaning on subsequent growth performance and number of days to slaughter (Table 1). It shows that piglets maintaining or losing weight during the first week post weaning require 10 days

more to reach market weight compared to piglets that gain 227g/day in this period.

In summary, birth weight, weaning weight and weight gain during the first week post weaning have a substantial impact on the subsequent performance of piglets. These data underline the importance of higher and more uniform birth weights of piglets.

Furthermore, this also emphasises the importance of helping (light) piglets to reach higher weaning weights and to overcome the period directly after weaning.

## Optimising performance

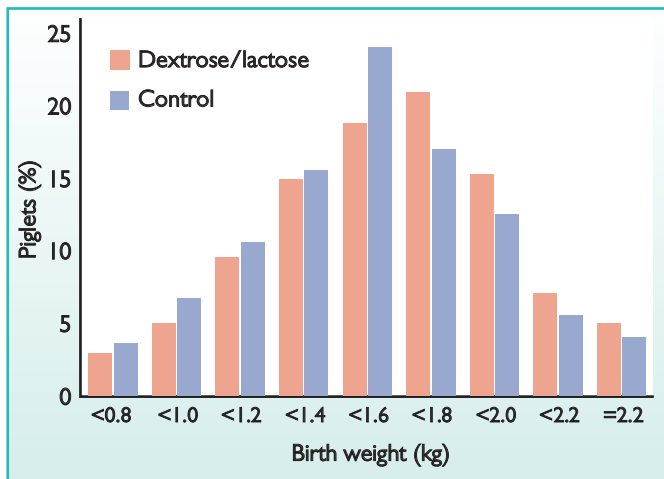
There are at least two possible ways to optimise early performance and subsequent weaning weights of piglets. First of all, by improving the birth weight of piglets. Birth weight is already determined during follicle development, which starts 1-2 weeks before weaning in the previous lactation. Follicular growth and development is under the influence of different hormones, of which LH and FSH are important.

The release of LH and FSH is stimulated by insulin. In order to improve follicle development, it is important to have high insulin levels during this period. Insulin levels in blood are known to be influenced by sugars.

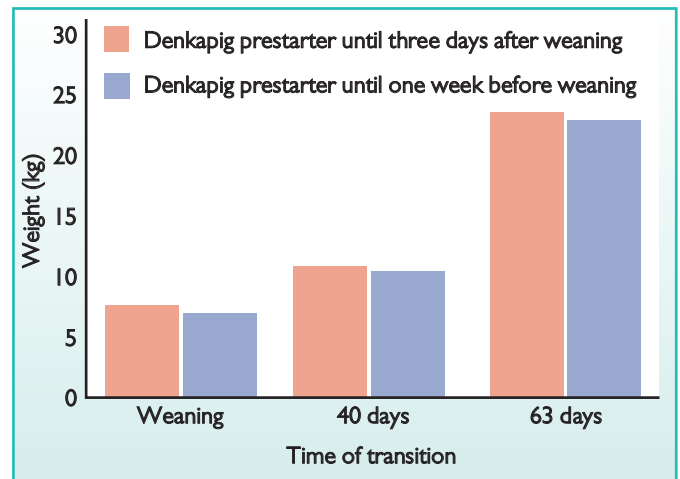
Therefore, the question arises as to what extent the addition of sugars to the diet of the sow would have an effect on the piglets born in the subsequent litter.

In cooperation with Wageningen University, Denkavit started an experiment to investigate the effect of feeding sugars to (lactating) sows on birth weight and unifor-

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**Fig. 2. Effect of feeding dextrose and lactose to sows on birth weight and uniformity of subsequent litter.**



**Fig. 3. Effect of moment of transition to weaner diet on weight gain per piglet.**

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 mity of piglets in the subsequent litter. The first part of this study was published in International Pig Topics Volume 22 Number 7. It showed that feeding sows dextrose (75g twice a day) from weaning to insemination appeared to improve uniformity of the piglets born in the subsequent litter, since less piglets with birth weight <1,000g were born.

In the following study, feeding extra sugars had already started before weaning. The main goal was to increase insulin levels more and for a longer period after feeding.

Therefore, next to dextrose, lactose was fed, because lactose is mainly fermented by the sow and therefore increases blood insulin at a later stage. This combination of dextrose and lactose was fed from one week before farrowing until insemination.

A trend of higher birth weights was seen in the dextrose/lactose group: 1,483g in the control group vs. 1,569g in the treatment group. Furthermore, a trend of lower coefficient of variation was also observed: 22.6% in the control group vs. 19.9% in the treatment group. This indicates a more uniform litter in sows in the treatment group. This can also be seen in Fig. 2. From this research it can be concluded that feeding a combination of lactose and dextrose to sows from one week before farrowing until insemination gives higher and more uniform birth weights in the subsequent litter.

As a consequence of this, there will be less

mortality before weaning, higher weaning weights and more benefits during pig growing and fattening.

To optimise early performance and weaning weights of larger litters, it is also important to help (light) piglets survive the lactation period and overcome the period directly after weaning. The importance of creep feed on piglet performance is well known. Besides feeding piglets creep feed during lactation, the moment of switching from creep feed to a weaner feed may also be of importance.

### Moment of transition

To observe this effect, Denkavit performed a trial at their research farm 'De Grutto'.

In this study, the transition moment from a Denkapi prestarter to a weaner feed one week before weaning was compared to switching three days after weaning. The effect of this transition on weaning weight, growth performance after weaning, feed intake and feed conversion ratio was observed. In total 1,354 piglets were used in this trial, weaned on average at 26 days of age. The prestarter used (2mm pellet; 15.5 MJ ME) is an easily digestible tasty feed, with high levels of dairy products. The weaner feed is a 3.6mm pellet with 18% crude protein and 13.6 MJ ME. Two weeks after weaning, both treatments switched from the weaner to a starter feed (3.6mm pellet; 18%

crude protein; 13.0 MJ ME). The results of this study are given in Table 2. and Fig. 3.

First of all, it clearly shows that switching to a weaner feed one week before weaning decreased the feed intake before weaning by almost 45%. Weaning weights were on average 0.24kg higher in piglets fed Denkapi prestarter until three days after weaning. After weaning feed intakes were more or less equal, with a small advantage for the piglets switched before weaning.

However, this difference in feed intake after weaning is not seen in growth performance of the piglets. Piglets switched after weaning had a higher body weight during the entire trial than piglets switched one week before weaning.

The difference in body weight increased almost two times at 40 days and almost four times at 63 days of age.

This study is also economically evaluated. The total feed costs per piglet of 23kg were €0.15-0.30 lower (depending on raw material prices) when this transition moment was three days after weaning instead of one week before weaning. It can be concluded, therefore, that a small investment of feeding a highly digestible prestarter and switching a couple of days after weaning to a weaner diet finally repays during the weaner and starter phase, by a higher weaning weight and a better feed conversion ratio.

Moreover, this will also have beneficial effects during growing and fattening of pigs.

### Conclusion

Early performance and subsequent weaning weights of piglets are the basic principle for (growth) development after weaning and during pig growing and fattening. Improving weaning weights is achieved by giving the piglets a good start at birth. Recent research shows that optimising the performance and weaning weights of piglets can be achieved via piglet feed as well as sow feed. ■

References are available from the authors upon request

**Table 2. Effect of moment of transition to weaner diet on feed intake and FCR.**

	Denkapi prestarter until three days after weaning	Denkapi prestarter until one week before weaning
Feed intake (kg) until weaning	0.317	0.178
Feed intake (kg) 26-40 days	4.47	4.65
Feed intake (kg) 40-63 days	19.38	19.91
Total period after weaning (26-63 days)	23.85	24.55
FCR 26-40 days	1.34	1.49
FCR 40-63 days	1.44	1.53
Total period after weaning (26-63 days)	1.42	1.52