

# 30 Pigs per Sow per Year – Are we there yet?

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## ■ Introduction

Christiansminde Multisite is an 1150 sow unit which sells approximately 34,000, 30kg weaners each year and is located on two sites. The breeding unit, situated close to the town of Aalborg, in Northern Jutland, was developed from an existing farrow-to-finish unit in 1999. A second site, 10km away, has a nursery barn and a gilt development barn. I manage the unit on a day-to-day basis and am a part owner along with two other investors. The herd health status is “high health” but Mycoplasma is present. A liquid feed system is used in the breeding unit, whereas the nursery uses dry feed.

The unit has achieved very high performance since it was started and has consistently achieved more than 30 pigs/sow over the last few years. This can only be done where there is the genetic potential for very high litter size. Gilts brought into the unit are purchased from a multiplier operating within the Danbred breeding program, which is run by the National Committee for Pig Production, part of the industry organization Danske Slagterier or the Danish Bacon and Meat Council. Over the 10 years to 2004, litter size in female nucleus herds (Landrace and Large White), within the Danish breeding program, has increased by 3.5 total born/litter with Landrace herds now averaging over 15 pigs per litter.

In addition to this genetic potential for litter size, there are a number of important management practices that are essential to getting the required result. It is these that will be described in detail in this paper.

## ■ Current Performance Data

The following tables show the breeding herd performance for the 3 months and 12 months to September 2005.

**Table 1. Breeding Herd Results to end September 2005, Christiansminde Multisite, Aalborg, Denmark**

	3 months	12 months
Average # sows & bred gilts	1218	1218
Average # pigs born alive/litter	14.6	14.4
Average # pigs born dead/litter	1.8	1.7
Pre-wean mortality (%)	10.6	10.8
Average # pigs weaned/litter	13.1	12.9
Percent return services	6.4	6.0
Non Productive Days per litter	11.0	12.0
Average lactation length (days)	24	25
Farrowing percentage	90.8	89.3
Litters/sow/year	2.43	2.39
<b>Pigs weaned/sow/year</b>	<b>31.7</b>	<b>30.8</b>

**Table 2. Litter size by parity, 9 months to October 1<sup>st</sup>, 2005**

Parity	Born Alive	Born Dead	Total Born
Gilt	13.9	1.2	15.2
2	15.2	1.3	16.6
3	15.3	1.8	17.1
4	14.8	2.1	16.9
5	14.4	2.5	16.9
6	13.7	2.4	16.1
7	13.6	2.1	15.8
8	13.0	2.5	15.5

## ■ Management Techniques

### Gilt Management

Gilts are purchased from the same multiplier and delivered every 9 weeks. They spend 8 weeks in a quarantine area on the nursery site, and are then placed in stalls in the gilt barn and heat checked daily. There is no boar presence at this time. As gilts come on heat, they are marked with a weekly breeding colour – red, green or blue and then moved to the breeding area on the sow farm 7 days prior to their next heat, with the numbers required adjusted to meet the weekly breeding target.

Gilt age and weight at breeding have a huge influence, not only on gilt litter size but also on subsequent reproductive performance. At Christiansminde, gilts are bred at 9 months old and 160kg+. The advantages of starting with older, heavier gilts is that they are stronger and more durable, have high numbers born in their first litter (around 15 total born), have greater longevity and, as a consequence, higher lifetime performance.

When gilts move into the breeding area they are housed in stalls. The layout has two rows of stalls facing each other, with a 1.8m wide fully slatted area in between, which has a gate across it every 6 stalls. This alleyway has a feeder and drinker for a boar so that he can be left in contact with sows or gilts for long periods.

Gilts have continuous boar contact from entry into the breeding area until the day the first gilt in the group is due to show estrus. After this time, the boar is removed for about 2 hours prior to heat checking. When he is re-introduced at the time of heat checking and breeding, the sudden intense contact – we call it the “Surprise Effect” – gives a much better response to the boar and a faster insemination time, which we believe results in a better farrowing rate and higher litter size.

*The “Surprise Effect” –  
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### Sow and Gilt Management at Weaning and Breeding

Piglets are removed from the sow while she is eating her feed on Wednesday morning. Sows are left in the crate and receive their midday feed. They are moved to the breeding area on Thursday morning but are not given any feed until midday on Friday, when they receive 8kg. On Saturday, they are given 5-6kg, then on Sunday fed to appetite. Continuous boar contact is provided from Thursday midday until Sunday afternoon.

A crucial part of feeding sows and gilts prior to breeding is the use of a fishmeal based, high protein/energy supplement with added vitamins and minerals. Sows are given 0.5-0.8kg of this from Friday to Sunday inclusive and gilts receive the top dressing from entry into the breeding area up to the day of breeding.

At peak times for breeding, which is Monday and Tuesday, all the staff carry out inseminations together. A boar is placed between 12 sows (6 facing each way) to provide stimulation. Inseminations are carried out 12 hours apart, but sows that don't stand well or where back flow occurs are inseminated again 8-12 hours later and then after another 8-12 hours.

After insemination, the catheter is left in the sow and a new boar placed in front of the sows or gilts while the next group of females is being inseminated.

## **Management in Gestation**

After insemination, sows remain in the breeding area and are heat checked every day and then scanned at 28-35 days to confirm pregnancy. The majority of sows are placed in group pens with individual feeders, 36 to a group. These sows are the ones that are in "average" or "correct" body condition. Sows that are thin or over-conditioned are placed in gestation stalls where their feed intake can be more closely controlled. During gestation, the key objective is to minimize non-productive days (NPDs) by rapid identification of sows that return to estrus or are not in pig. Achieving low NPDs maximizes litters/sow/year, which is an important component of pigs/sow/year.

Feeding scales used in gestation differ widely from conventional recommendations. For the first 28 days after breeding, sows and gilts are fed 3kg/day, then the amount is reduced considerably during the middle part of gestation – 29 to 89 days. "Fit" sows receive as little as 1.5kg, "good" sows are fed 1.8-2.0kg and thinner sows get 2.2-2.5kg. From day 90 to 110, all sows are fed 3.0kg/day.

## **Farrowing Management**

Sows are brought into the farrowing rooms one week prior to their due date. Farrowing is not induced but is closely monitored and assistance provided as necessary in order to minimize stillbirths. Once farrowing is completed, the whole litter is enclosed in the creep for one hour. The ten smallest piglets are placed on the sow, after their teeth have been clipped, and the sow is given 2ml of oxytocin to stimulate milk let-down. After an hour the remaining, larger, piglets are placed on the sow. One or two more shots of oxytocin may be given as required. This process is aimed at ensuring all piglets receive sufficient colostrum despite the extremely high litter size.

Piglets are provided with milk powder in trays from 3-10 days of age and have access to an iron solution given via an automatic system, which dispenses it into small stainless steel cups in the pen. Creep feed is given from 10 days up to weaning.

Sow feed intake in lactation is a critical area in achieving 30 pigs/sow. High feed intake results in minimal loss of body weight, a shorter wean-estrus interval and higher subsequent litter size. At Christiansminde, a high density diet is used which has 6% added fat and 0.85% digestible lysine. Sows receive 1.8-2.0kg/day for 3 days prior to farrowing, then on the day after farrowing given 3kg, with daily increases up to 6.0kg by day 7. Feeding takes place three times daily. From day 8 onwards the amount is increased by 0.3kg/day but will vary depending on the sow's appetite. Feed levels are adjusted twice daily to follow each sow's individual appetite.

An important technique, which is widely used in Denmark, is to use gilts as foster mothers to extend their lactation length to 30-35 days. At the initial fostering, soon after farrowing, gilts are left with 13 large piglets. These are weaned at about 20 days and a whole litter, of large piglets for their age, is fostered on to the gilt from a sow that has suckled for 5-7 days. This sow is then used to suckle surplus newborn piglets. These foster sows are normally parities 2 or 3 and their lactation length will also be extended, by 4-5 days. When gilts are first weaned at 20 days and have smaller piglets placed on them, they continue to eat large amounts of feed. This allows the gilt's body reserves to be replenished. The longer lactation also allows a better recovery of the uterus prior to the next pregnancy. Overall, the technique results in higher litter size in second and subsequent parities. I believe that it is an essential technique in achieving 30 p/s/y.

***Use gilts as foster  
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Fostering takes place every day according to the number of "surplus" piglets that are born. Piglets weaned from gilts are moved to a nursery room in the sow barn (part of the old 250 sow unit) and stay there until they are moved to the main nursery site. This nursery room also holds piglets from cull sows, which are weaned and removed on a Monday. At the main weaning on Wednesday, the smallest piglets are placed in the nursery in the sow barn where they can be given special attention, which includes feeding five times per day. Thus, this nursery is used as a "buffer" to keep the number of pigs transferred to the main nursery each week constant and to ensure that the quality of pigs moved to the main nursery is consistently good.

## ■ Managing for 30 pigs/sow

In order to achieve such high levels of breeding herd performance, management of the production system and the unit staff has to be exceptional. The key requirements are as follows:

- Clearly defined management routines for the key tasks
- Extensive and accurate systems of recording and pig identification
- Clear targets that are regularly compared with actual performance
- Well trained and technically proficient staff
- A manager or owner who is a good leader and motivator
- A team that is 100% committed to the goals of the business

At Christiansminde, we use a Weekly Jobs Board, which lists each task that has to be carried out on each day of the week. As each member of staff completes tasks they are checked off on the board so everyone in the team can see what has been done. Staff review progress informally and discuss what needs to be done by the end of the day. If there is likely to be some spare time available they decide which non-essential jobs, such as maintenance, they will carry out that day.

In order for all staff to know what is going on, clear systems of identification and communication are required. An example of this is fostering piglets. Staff identify piglets every day that require fostering and place a clothes peg on the sow card for each piglet that needs removing. This simple routine ensures everyone knows what is going on.

Another important tool in unit management is the Farm Focus Board, which shows all the key breeding herd performance parameters on a weekly basis and compared to the unit targets. These targets are determined by the staff and each Tuesday, they carry out a review to compare actual figures against targets. If targets have not been met, staff decide on a plan of action which will get them back on target.

Staff are rewarded for meeting and exceeding targets. Each quarter, if targets are met, they carry out an activity together, which has ranged from scuba diving to rappelling down the highest building in Aalborg. Staff write their suggestions for these activities on a sheet in the staff room.

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## ■ **Summary of Important Aspects of Management for 30 Pigs/Sow/Year**

### **Gilts, Breeding and Gestation**

- Purchase gilts and sows that are genetically capable of high litter size
- Breed gilts older and heavier – 9months, 160kg
- Provide controlled boar exposure and the “Surprise Effect” at insemination
- Carry out “Team Breeding” – to allow all sows in a group to be inseminated within 15 minutes
- Give close attention to identifying returns and non-pregnant sows
- Feed sows at a high level for days 1-28 and 90-100 of gestation

### **Farrowing**

- Monitor farrowing closely and assist where necessary to reduce stillbirths
- Carry out split suckling to ensure all piglets receive sufficient colostrum
- Extend the lactation length for gilts to 30-35 days
- Carry out extensive fostering to minimize pre-weaning mortality
- Achieve high sow feed intake during lactation