Translation of Swedish article in the magazine Grisföretagaren:

Rearing Pigs Using DanBred Duroc As Terminal Line

How to Succeed Under Swedish Conditions

During a three-year project, experience in rearing pigs using DanBred Duroc as terminal line was gathered from two different Swedish farms. The results show that the performance capacity is high so long as the pigs are ensured the right conditions.

CAMILLA HALLGREN AND INGVAR ERIKSSON

As of 1 November 2018, dam line from DanBred has been available for Swedish pig producers; there is also access to DanBred Duroc as terminal line, as well as DanBred hybrids.

During earlier introductions of new genetics in Sweden, the experience has been that the more knowledge one has about the breed, the greater the chances of getting those genetics to perform well under Swedish conditions.

Consequently, in 2017, the Swedish meat trade organisation Svenska Köttföretagen applied for project funding from the industry development funds Branschutvecklingspengen to conduct a study. The aim of the study was to discover the optimal conditions for the new genetics with DanBred Duroc as terminal line in the Swedish production environment. Based on the study, a report and a guide based on the report have been compiled. The hope is that the guide will reduce the time it takes to learn how to utilise the breed's genetic capacity.

PROJECT SETUP

To best research the breeding stock, we wanted to follow up on the results at three farms with production of finishers. By testing the recommendations available from DanBred and Danish advisors at select Swedish farms, it was possible to evaluate and, if necessary, adjust the recommendations based on Swedish conditions.

One of the potential project farms dropped out early on. Before the project got underway, they had already begun to try out the Danish recommendations. This led to such improvements in the production results of their current genetics that they were not motivated to change breeding material. Therefore, the study was conducted at two farms over three years. The farms used maternal lines from Topigs Norsvin.

During the course of the project, the production results in the finisher production were carefully followed up with the help of WinPig. The production traits recorded were:

- slaughter weight
- classification (meat percentage)
- mortality
- daily growth
- feed efficiency (MJ NE per kg growth)

Health status was followed up on using statistics on inspection findings at slaughter. Moreover, the herd owners responded to surveys with questions about e.g. production, management, feed, development in results, and their general experience with the new sire breed.

Finishers today have the genetic capacity to perform at high levels, if they are healthy and get feed that matches their capacity in terms of feed conversion and growth. It is important to keep track of results with production follow-ups to be able to continuously evaluate different efforts.

PHOTO: MOSTPHOTOS

The farms' feed advisors were also asked about feed recipes and their feeding recommendations.

HOW THE PIGS WERE FED

At the farms we followed for three years, Danish standards have been applied since DanBred Duroc was introduced as terminal line. Danish standards for amino acids are based on the feed efficiency of the herd and there are different standards for single-phase and multi-phase feeding. For those interested, details about the Danish standards are available on SEGES' website https://svineproduktion.dk/Viden/I-stalden/Foder/Indhold_foder/Naeringsstoffer.

To achieve the best results, DanBred recommends five or three daily feedings:

Five feedings per day for pigs that have just been transferred to the finisher unit:

- Increases feed intake
- Increases meat deposition
- The pigs will be more content
- Balanced fat growth

Three feedings per day for pigs that have reached maximum feed allowance:

The recommendation is also that the pigs' feed allowance up to 60 kg should be so high that around 30 per cent of the valves/crates should have their feed allowance reduced.

As regards the number of feedings, both project farms feed four times a day. The feed curves differ somewhat from Danish recommendations (Figure 1) with a maximum feed allowance of 31.5 MJ NE (farm A) and 30 MJ NE (farm B). Our maximum feed allowance in Sweden is higher, mainly due to the fact that our pigs are heavier at slaughter than what is typical in Denmark.

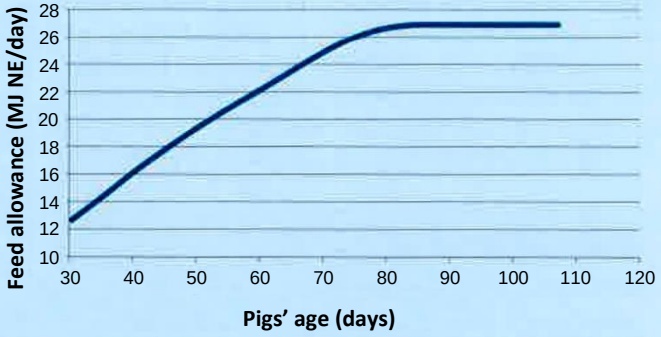
Feed follow-ups and any necessary adjustments are performed daily. The pigs should climb the feed curve quickly. If you want to know more about the farms' feeding standards, read the report "How to Successfully Rear DanBred Duroc Under Swedish Conditions".

MANAGEMENT

To ensure the best possible conditions for high productivity in the production of finishers, it is necessary to give the pigs a good start when they are transferred to the finisher unit. The test farms now have routines for weighing the pigs at transfer. If you know the pig's weight, it is easier to quickly get to the right point on the feed curve. Weighing also makes it easier to get more even pigs within the crate, which leads to competition on equal terms from the start. Farm A assigns the pigs to finisher pens by litter but sorts out the largest and smallest pigs to get the right number per crate.

Regarding slaughter, this takes place over a four-week period at farm A. At farm B, it takes place over a period of four to five weeks. Both farms have a well-thought-out strategy for the first delivery. Depending on the weight at transfer, it takes place eight to ten weeks after transfer, and about ten per cent of the pigs are delivered. The feed allowance is never raised before the first delivery is completed and never more than ten per cent at most.

Figure 1: DanBred Feeding Curve



HEALTH IS IMPORTANT

Even before the introduction of the new genetics, both farms had problems with APP, which they now vaccinate for.

Since we were already following the farms and keeping up with their results before the switch to DanBred, we were able to see a clear reduction in tail injuries. Whether this was connected to genetics is difficult to determine.

Table 1: Test Farms' Average Production Results (retrieved from WinPig Slakt)

Average slaughter weight (kg)	93
Growth (g/day, adjusted)	990-1,010
Meat percentage	59
Feed efficiency (MJ NE/kg growth, adjusted)	22-23

Table 2: Difference in Feed Price per MJ NE and per Pig at Various Lysine Levels

SID lysine gram per MJ NE	Feed price SEK per MJ NE	SEK per pig
0.80	0.224	545
0.85	0.231	561
0.90	0.238	578
0.95	0.244	595
1.0	0.252	614

One explanation may be that the farms switched to Danish feeding standards in connection with the change of sire breed. As regards other slaughter observations, the proportion of observations of abscesses and joints is lower than the slaughterhouse average. The proportion of umbilical hernias is unchanged.

Health status is extremely important in order to utilise a pig's genetic potential correctly, regardless of the breed. A healthy pig is a good feed converter. If 50 per cent rather than 36 per cent of the feed goes to maintenance (see Figure 2), this is a very serious blow to finishing pig calculations, for which feed is the second largest specific cost after piglet procurement. It accounts for around 35 per cent of total specific costs.

On the test farms, we have also seen that, when health-promoting measures have been taken, there has been a positive effect on production results.

COMPENSATING FOR AMINO ACID LOSSES

As regards possible losses of amino acids in wet feed, primarily lysine, it is standard procedure for Danish producers to always compensate for this. How large the compensation will be is farm-specific and depends on what the feeding facility is like, the length of the pipes, pipe diameter, leftover quantities and so on.

At our project farms, losses of amino acids are compensated for during optimisation at farm A, whereas farm B does not do so, as the units are close to the mixing tank and the feed pipes are short. However, farm B checked the weight of the pigs for the first four weeks to rule out any loss of amino acids in the feed pipes.

Fermentation losses in wet feed are costly. There are measures that can be taken to reduce the loss of expensive synthetic amino acids, as well as to counteract inferior taste in the wet feed and reduced nutrient uptake.

Mixing in broad-spectrum acids costs around SEK 28 per finisher pig, whereas mixing in formic acid costs around SEK 17 per finisher pig. Table 2 shows a difference in feed costs per pig of SEK 16 – 19 between the various levels of grams of lysine per MJ. It is necessary to weigh up the cost of possible overcompensation with synthetic amino acids against the cost of, for instance, acid treatment of wet feed.

By raising, for instance, lysine levels per MJ NE from 0.85 g to 1.0 g on average, total feed costs per pig would increase by SEK 53 if feed consumption (MJ NE per kg growth) were to remain at the same level. In this example, 25.8 MJ NE, which corresponds to the WinPig 2019 average.

If feed efficiency increases from the average level of 25.8 MJ NE to what corresponds to the best 25 per cent of the herds in Sweden, which is 23.2 MJ NE/kg growth, feed costs per pig would decrease from SEK 614 to SEK 535, a cost reduction of SEK 79. That alone would cover the higher feed cost of SEK 53. In addition, it must not be forgotten that the pigs reach a higher slaughter weight in the same rearing time due to increased daily growth.

Summary

During the three years of the study, we have seen that the Danish standards and recommendations also work well under Swedish conditions. The study showed the following important things to bear in mind:

Feeding according to a higher standard than what has previously been done in Swedish pig production costs more but can generate even more value in the form of higher feed efficiency, increased daily growth and higher slaughter weight.

We need to have a higher maximum feed allowance in Sweden than the Danish recommendations, since we slaughter pigs at higher weights in Sweden.

A good health status is critical. A healthy pig has a good appetite and is an efficient feed converter.

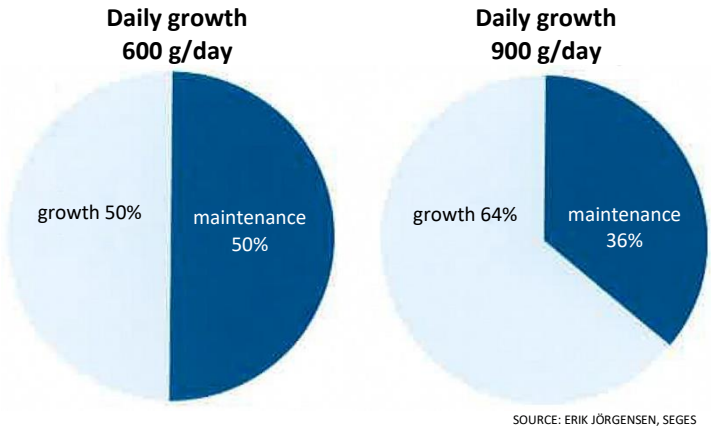
Measuring and weighing are more important than ever. To help pigs with DanBred genetics perform at the highest level and to get the optimal financial production result, you must:

- weigh the pig at introduction and follow up on its growth by weighing pigs in a reference box.
- keep track of the feed! Analyse incoming raw goods and perform regular gradation test!
- keep daily track of feeding and adjust allowances often and aggressively!
- perform production follow-ups and look at production reports on an ongoing basis.

Who Worked on the DanBred Project

The Swedish meat trade organisation Svenska Köttföretagen was the project owner, initially with Linda Lundberg as the project manager. When Linda left her position, Åsa Bönnestig took over as project manager. In addition, Lotta Henrysson from Svenska Köttföretagen, along with Camilla Hallgren and Ingvar Eriksson from Gård & Djurhälsan were part of the project group. The practical work in the project was performed by Camilla and Ingvar, and they also wrote the report and the guide.

Figure 2. Relationship Between the Proportion of Feed Spent on Maintenance vs. Growth at Various Growth Rates



SOURCE: ERIK JÖRGENSEN, SEGES

If slaughter weight can increase by six kg, at a quote of SEK 18/kg meat, that corresponds to marginal revenues of SEK 40 per pig.

We want to give a big thanks to the farms that participated in the project for sharing their experiences and results and to the feed firms who were an important sounding board.

The full report "How to Successfully Rear DanBred Duroc Under Swedish Conditions" is available (in Swedish) on the websites of Gård & Djurhälsan and Svenska Köttföretagen. You can also find the guide based on the report there.

Feed conversion, daily growth and meat percentage are the three traits that weigh most in DanBred Duroc's breeding goal.

PHOTO: BO JOHANSSON