The Insider

Topigs Norsvin Canada & USA | Spring 2016

Topigs Norsvin
PROGRESS IN PIGS

The 35-millionth pig with Topigs Norsvin breeders Mai and Geir Aannerud

In this issue:

35 Million Pigs in the Topigs Norsvin Pigbase

On January 1, 2016, pig number AG00027053 was born on the breeding farm of Mai and Geir Aannerud in Reinsvoll, Norway. Reinsvoll is located about 10 kilometers west of our European office in Hamar, Norway.

This pig is a male from the Norsvin Landrace line. It is also the 35-millionth pig in our breeding database Pigbase. Topigs has been using Pigbase since 2006 which includes Norsvin data since the merger in 2014. Pigbase is the foundation of the Topigs Norsvin breeding and genetic program.

Code-EFABAR for Responsible Animal Breeding

Topigs Norsvin has received the recognition Code-EFABAR for 2014-2016. Code-EFABAR (European Farm Animal Breeding and Reproduction) is a voluntary code of good practice in support of responsible farm animal breeding. Responsible farm animal breeding is important for a sustainable and healthy food supply chain. By following Code-EFABAR, breeding organizations are demonstrating that they are committed to supporting a sustainable future.

Breeding and Sustainability

The production of animal products involves many global sustainability issues: animal health and welfare, environment, use of natural resources, biodiversity, food safety and public health, and production efficiency. Breeders are able to positively contribute to these challenges by including them in their breeding programs. Code-EFABAR has guidelines for breeders to ensure and improve:

CODEEFABAR
the commitment to responsible breeding

Animal health
High standards of animal health are critical to safeguard animal welfare, resource efficiency and secure public health and food safety.

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Topigs Norsvin Forms Nutrition Group for Better Alignment of Feeding and Genetics

Topigs Norsvin forms nutrition group

Topigs Norsvin has formed a special group of nutritionists to better align feeding and genetics. With the rapid genetic improvement of Topigs Norsvin genetics, it is vital that sows and finishers get the right feeding so that their high genetic capabilities result in maximum performance. The newly formed nutrition group has members drawn from several countries and departments of Topigs Norsvin. The team is dedicated to improving total feed efficiency on our clients' farms.

The team of ten specialists combines a unique expertise on pig nutrition. This makes it possible to develop the right nutritional demands for Topigs Norsvin genetics and, just as important, to give advice to feed producers, advisors and farmers about the best feeding in terms of quantity and quality for Topigs Norsvin genetics. The nutrition group is also developing tools like the online Topigs Norsvin feeding monitors. Visit: www.feedmonitor.topigsnorsvin.com

Feeding modern, high-performance pigs is a matter of fine-tuning to their genetics. Due to their high potential, each line has its own specific nutritional needs. These differ per line, but they are also completely different compared with the genetics from just a few years ago, as genetic improvement has made major advances in recent years. The precision feeding of pigs according to their needs, and based on their genetic background, makes is possible to realize higher feeding efficiency and lower production costs.

Microbial Selection

At Topigs Norsvin we are investigating if selection can be performed on the microbial population in the large intestine of pigs. These microbes vary in their ability to ferment fibres, and that influences a pig's ability to utilize dietary nutrients. Improving the microbial population could, therefore, increase the Total Feed Efficiency.

Large nutrient components have to be broken down into smaller molecules by means of enzymatic digestion for nutrients to be absorbed from the diet. The small intestine is the main site for this enzymatic digestion of nutrients. The digestion of starch, proteins, and fats is facilitated by the pig's enzymes.

Fibres, however, cannot be digested by the pig's enzymes and so pigs depend on enzymes produced by microbes to use the energy stored in fibres. This process is called fermentation. Fibre digestion in the small intestine is limited (~20%). The main site for fermentation is the large intestine. Fibre fermentation is important not only for the energy released from the fiber molecules, but also for the digestion of other nutrients. Therefore a microbial population that facilitates proper fermentation enhances feed efficiency by increasing nutrient uptake from the diet.

Breeding microbes

Research has shown that pigs largely have the same microbial populations, but that several distinct groups of microbes are breed specific. Based on this information, we are investigating the microbial population variation within breeds to see if there is a relationship between nutrient digestibility of certain genotypes and microbial composition in the large intestine. If we can find a relationship, we might be able to breed pigs with an improved fiber digestion. This is important because it is expected that the trend for more fibrous diets will increase due to higher feed ingredient costs.

Selection for Social Genetic Effects

At the 2016 annual meeting of the AASV (American Association of Swine Veterinarians) in New Orleans, Topigs Norsvin presented a poster by Drs. Naomi Duijvesteijn and John Eggert entitled "The prospects of selection for social genetic effects to improve welfare and productivity in pigs."

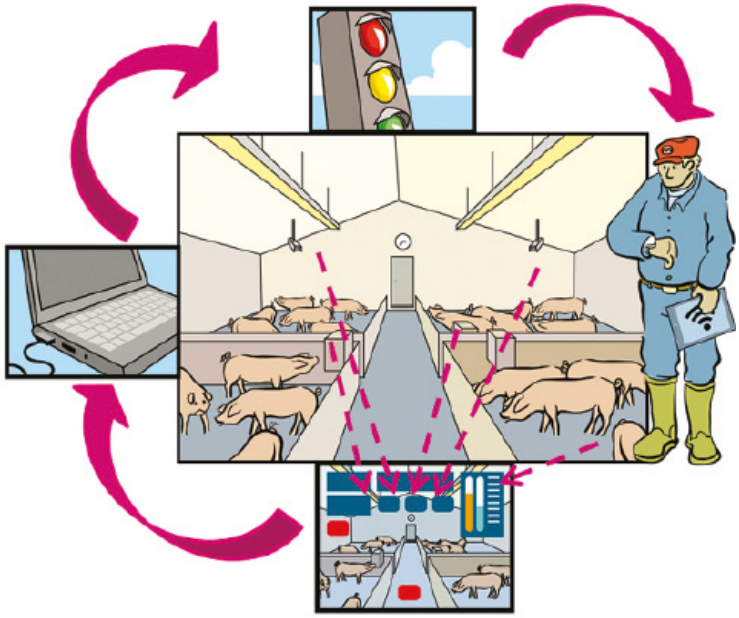
Introduction
Breeding organizations are continuously adapting their breeding goals to support the needs of farmers and society. There is a world-wide demand for better feed efficiency due to the competition for land between food and feed production, but there is also more attention on some of the undesirable correlated responses such as increase in disease susceptibility, and more observed mal-behaviour such as aggression and tail biting.

Social Genetic Effects (SGE)
A very promising selection method with the potential to improve both animal welfare and economic output is the use of social genetic effects (SGEs) in breeding programs. A social genetic effect is a heritable effect of one individual on the trait value of another individual. The breeding approach using SGEs incorporates both the direct genetic effect due to the focal individual, and the genetic effect an animal has on its pen mates into the trait value of the focal individual. Since group housing is standard practice in finishing pigs, the pen is the production unit and the pen is of great importance for the production, welfare and health of the pig.

Breeding for improved behaviour
A one generation selection experiment where pigs (gilts and barrows) were grouped based on a high or low SGE for growth was conducted. High SGE pigs showed systematically less biting behaviour and had a better tail score (less damage) compared to low SGE pigs. No difference in growth performance was observed, but this may have been due to the amount of distraction material provided (thereby suppressing expression of SGEs on growth). Further research under commercial circumstances is warranted.

Conclusions
While traditional methods focused on individual performance only, the SGE strategy could improve growth in pigs, as well as the behaviour of pigs which are housed in groups. Social genetic effects offer the opportunity to breed for improved behaviour while maintaining performance.

Further reading
Duijvesteijn, N. Sociable swine; prospects of indirect genetic effects for the improvement of productivity, welfare and quality. Thesis. 2014. Additional references are available upon request.



AIM Worldwide Launches New Website

AIM Worldwide stands for Artificial Insemination Management Worldwide, an international organization focused on semen production to optimize reproduction and gene transport in the swine industry. AIM Worldwide specializes in services and management support for AI and AI stations throughout the world and provides a valuable knowledge base for AI stations to access. AIM Worldwide is a sister company of Topigs Norsvin.

The mission of AIM Worldwide is to improve swine reproduction and efficient boar use. They are directly involved in the annual production and sales of over 9 million doses of semen and are connected to almost 11 million doses in total, all produced according to the AIM Worldwide quality standards and procedures.

Specialists for semen processing and reproduction guide AIM's partners through their chain of knowledge that leads to improvements in the quality and efficiency of all AI aspects. *This results in a higher number of live-born piglets and a higher farrowing rate*. AIM Worldwide's leading R&D position in this field is due to their high standards in reproduction and AI that are driven by the application of economic and quality improving measures.

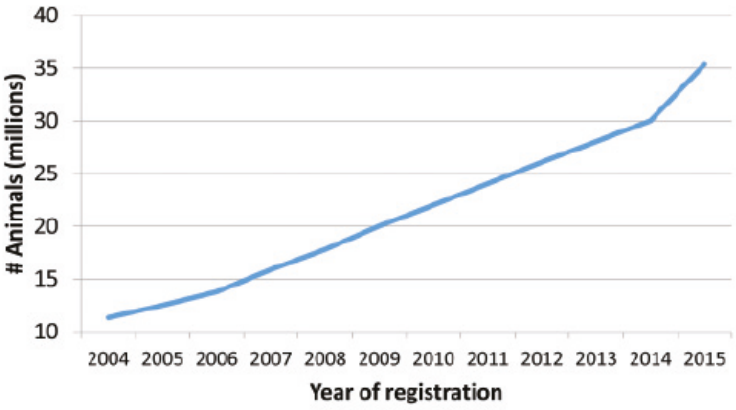
The AIM Worldwide research program focuses on:
- Boar and Sow Fertility Characteristics
- Semen Quality Parameters
- Extender
- Insemination Techniques
- Biosecurity

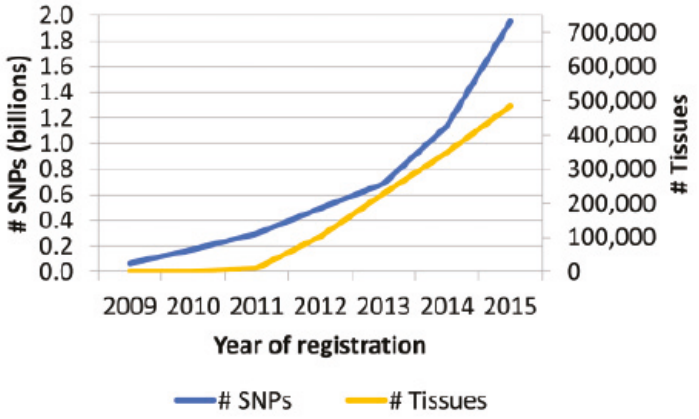
AIM Worldwide

Support
AIM Worldwide provides support to their partners with the latest insights into setting up and running an AI station including:
- Specialist visits providing direct advice and online support
- Training of staff
- Boar stud AI management software
- PigSis software to achieve the best moment for insemination
- Insight into the latest research and development results via an annual seminar with a group of leading managers of AI stations from around the world
- Quality control via a newly designed audit system
- Solusem extender for maximum on-farm fertility results

For more information on the products and services of AIM Worldwide, please visit: www.aimworldwide.nl

300 Million Breeding Values per Day





During the last 40 years, Topigs Norsvin has moved from writing performance information in a physical book, to storing all data in large databases. Information Technology (IT) has evolved from simply providing data storage to becoming an internal partner in the collection and storage of data, and delivering information at the right moment.

Since the introduction of the breeding database, Pigbase, in 2004, the number of animals with phenotypic measures registered in Pigbase has increased rapidly to over 35 million pigs. And for several years now, genomics data (the DNA information needed for breeding value estimation), has been stored in Pigbase as well. The merger of Topigs and Norsvin has strengthened our team, and we are working to integrate our IT systems and tools to combine the best from both worlds.

Phenotypic and genomics data are provided to our genetic nucleus group for breeding value estimation on a daily basis. Over 300 million breeding values are used daily to calculate the Total Index for all animals. Relevant changes in Total Indexes are provided to our customers daily via different channels. To date, Topigs Norsvin has collected over 72 million individual finishing measures (weight, backfat, muscle, etc.) and data from over 14 million sow reproduction cycles.

For DNA data, in the last three years alone, the number of SNP results collected and stored total almost two billion. Besides DNA data, the use of processed computer data like feeders, sorters, camera images, and CT scan data, further increases the amount and size of measurement data. The data processing speed needed for research and development is provided via the High-Performance Computing (HPC) of Breed4Food.

...continued from page 1.

Animal welfare
Welfare encompasses the animal's general physical condition, its mental state, its biological fitness, and its ability to cope with adverse environmental conditions.

Environment
Animal production involves emissions to the environment. Breeders are responsible for reducing the environmental impact of their business, and may select animals capable of reducing the environmental footprint and improving the ecological efficiency of farm animal production.

Use of natural resources
The input of natural resources for animal production is one of the main aspects causing environmental pressure. Balancing efficiency criteria in breeding forms an integral part of sustainability.

Biodiversity
Breeders carefully monitor and maintain the genetic diversity in their breeding populations, and work to minimize inbreeding.

Food safety and public health
Food safety and public health are important aspects to secure the supply of safe and healthy food. Farm animal breeders work to minimize these risks and to improve animals' natural genetic resistance to diseases, thereby reducing the need for veterinary medication and decreasing the risk of developing antimicrobial resistance.

Read more at www.responsiblebreeding.eu

Topigs Norsvin
PROGRESS IN PIGS

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Total Swine Genetics Inc.
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Sharon, WI
Keith & Marie Rithamel
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Ai Partners-Skylab
Morris, MN
Bruce Zierke
(320) 760-3504

Whole Hog AI
Hartington, NE
Ron Brodersen
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Topigs Norsvin Insider Quiz

How to Play
Please answer the questions in our Insider Quiz. All the answers are in this newsletter. Then fax, mail or email your answers, along with your name, address, and phone number to: Fax: 204-489-3152
Email: info@topigsnorsvin.ca

Entries are to be received by APRIL 30, 2016. The *first 10 entries drawn with the correct answers* will receive a $20.00 Walmart gift card. The Topigs Norsvin rep in your area will deliver the prize. Employees of Topigs Norsvin and their subsidiaries are not eligible.

Name one of the sustainable items or goals in Code-EFABAR. _____

How many specialists make up the newly formed Nutrition Group? _____

How many doses of semen does AIM Worldwide produce and sell? _____

What breed/line is the 35-millionth pig in the Topigs Norsvin Pigbase database? _____

Name: _____

Farm Name: _____

Address: _____

Phone #: _____ Fax #: _____ Email: _____

Topigs Norsvin INSIDER Quiz Winners
Here are the winners from the last issue: Gilbert Kleinsasser, Huron Colony, MB; Leonard Decker, Rustic Acres, SD; Mike Waldner, Thunderbird Colony, SD; Ray Wollman, New Haven Farms, MB; Rebecca Hofer, James Valley Colony, MB; Luke Waldner, Platte Colony, SD; Mike R. Mandel, Britestone Farming Co., AB; Joel Waldner, Cool Spring Colony, MB; John Paul Hofer, Hillcrest Colony, MT; Samuel L. Wurz, Three Hills Colony, AB

Each winner receives a $20.00 Walmart Gift Certificate. The Topigs Norsvin rep in your area will deliver your prize. Congratulations!

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