



The 26+ Club for 2014

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2014 Topigs Norsvin Canada Inc. Customer Appreciation Night

The annual Topigs Norsvin Customer Appreciation Night for Western Canada was held on November 6 in Winnipeg. This year's event saw its largest attendance as more producers are using Topigs Norsvin genetics than ever before. With 2014's continued higher hog prices and lower feed prices, the room had a definite mood of optimism and a positive attitude. The annual event is highlighted by the Production Awards Ceremony and this year included an interesting and informative guest speaker.

The guest speaker at this year's event was Lars Bogevik. Lars is a Senior Genetics Technician for Topigs Norsvin. Lars was born and raised in Norway and has recently moved to Minnesota. In his presentation, Lars highlighted the success of Norway's swine industry, the success of Norsvin genetics, its high health status, and strict bio-security standards. He talked about the recent merger of Topigs Norsvin and its commitment to bringing increased value and accelerated genetic progress to their domestic and international customers through large investments into research and development. Lars also shared details of a newly constructed 1,200 sow Genetic Nucleus in Northern Wisconsin which will produce Norsvin Landrace, Topigs Z-line, and Norsvin Duroc breeding stock for genetic advancement and retail sales.

Cam McGavin, Topigs Norsvin General Manager thanked Lars for his insightful presentation. He also went on to thank the many customers in attendance for their business and dedication to being among the best producers in the world.

Awards were presented to the winners and runners up for the best numbers in various production categories. Participation in the awards competition is optional for customers. Awards are presented based on a one-year period of performance ending June 30, 2014 from herds using Topigs Norsvin genetics.

This year's data from participants included more than 59,740 sows from Canada and Montana with herd sizes averaging 996 sows per farm. All data from participating herds is submitted to SMS Swine Smart System Benchmarking (SMS) in Nebraska for data verification and equal calculations between herds.



A Full House

Top producing Topigs Norsvin customer herds are now achieving more than 30 pigs weaned / mated female / year, more than 14 pigs born alive / litter and weaning over 12 pigs / litter. The average production numbers of the total sows entered were: 88.8% Farrowing Rate; 13.05 Pigs Born Alive / litter; and 27.84 Pigs weaned / mated female / year.

The summary of the 2014 production award winners and runner-up winners listed by category.

Herds of 500 Sows or Less Category:

Farrowing Rate

Winner with 93.5% – Tenth Line Swine of Gorrie, Ontario
Runner-up with 92.5% – HiHoJo Ltd. of Wellandport, Ontario

Born Alive

Winner with 14.11 – A & A Van Ginkel of Leslieville, Alberta
Runner-up with 14.01 – Spring Lake Colony, of Swift Current, Saskatchewan

Pigs Weaned/Mated Female/Year

Winner with 31.25 – Cool Spring Colony of Minnedosa, Manitoba
Runner-up with 30.25 – HiHoJo Ltd. of Wellandport, Ontario

Herds of 501 – 1,200 Sows Category:

Farrowing Rate

Winner with 94.4% – Lakeside Colony of Cranford, Alberta
 Runner-up with 93.0% – Venture View Swine of Seaforth, Ontario

Born Alive

Winner with 13.85 – Venture View Swine of Seaforth, Ontario
 Runner-up with 13.74 – Rhineland Pork Ltd. of Winkler, Manitoba

Pigs Weaned/Mated Female/Year

Winner with 30.52 – Kuijpers Key Farm of Strathroy, Ontario
 Runner-up with 29.61 – Blumengart Colony of Plum Coulee, Manitoba

Herds of 1,200 Sows or More Category:

Farrowing Rate

Winner with 93.5% – Stonywood Farm of Petervale, Ontario
 Runner-up with 93.3% – The Dutch Barn of Cardale, Manitoba

Born Alive

Winner with 13.39 – Blue Ribbon Swine of Grunthal, Manitoba
 Runner-up with 13.23 – Sunnybrook Swine Site 1 of Ste. Agathe, Manitoba

Pigs Weaned/Mated Female/Year

Winner with 30.44 – Sunnybrook Swine Site 1 of Ste. Agathe, Manitoba
 Runner-up with 29.73 – Adare Pork of Lucan, Ontario

At this year's banquet, a record number of award plaques were handed out to the winners of the Topigs Norsvin 26+ Club award. This year the 26+ Club Award was presented to 52 farms! This award is presented to the herds producing greater than 26.0 pigs weaned / mated female / year. The average result from the winners in this year's 26+ Club was 28.1 pigs weaned / mated female / year. The award recognizes the hard work of customers in attaining these numbers and demonstrates the genetic potential of Topigs Norsvin breeding stock. The winners were presented with an award plaque.

The award for Best New Start-Up Herd in 2014 was awarded to Arie and Linda VandeBruinhorst of Clinton, Ontario. This award is presented to a new herd of any size that has not yet reached an average parity herd and was recently populated with Topigs Norsvin females. In the start-up phase of this 600 sow unit, this farm had outstanding results in its first 11 months of production. At an average parity of 1.73, the gilts weaned 11.98 pigs / litter resulting in 28.1 pigs weaned / sow / year!

Thank-you to all who attended and helped to make the evening a great success! We look forward to more great results in 2015.



Blue Ribbon Swine - 13.39 Pigs Born Alive



Blumengart Colony - 29.61 PSY



Sunnybrook Swine Site 1 - 30.44 PSY



Cool Spring Colony - 31.25 PSY



Lars Bogevik - Guest Speaker



Rhineland Pork Ltd. - 13.74 Pigs Born Alive

Norsvin Landrace

Background of Norsvin Landrace

The Norwegian Pig Breeders' Association, later named Norsvin, was established as a cooperative organization in 1958. At that time, Norwegian Landrace was the main breed in Norway. Norsvin has been the only pig-breeding company in Norway in the post-war period, and has had control of the breeding program and the population since it was established.

The Norsvin Landrace has a long selection history, and the non-traditional development of the breeding program has been essential for the genetic product we have today. In contrast to other commercial dam lines, this breed has a history of selection for finishing efficiency in the 1960s, 70s and 80s. It wasn't until the 1990s that breeding goals changed more in the direction of maternal productivity. This background has made the Norsvin Landrace efficient, both as a component of the commercial sow and as a slaughter pig component.

Based on US Power House customer feedback, no other maternal breed provides more pigs and heavier weaning weights, along with an enormous contribution to its offspring's feed efficiency, lean growth potential and carcass quality.

The development of a breeding goal

Compared with many other countries, feed costs have always been high in Norway. For this reason, FCR was the most important trait in the breeding program for Norsvin Landrace from 1958 to 1992. For a long time, this improvement of finishing efficiency had a positive effect on sow fertility and production. However, in the early 1990s, new traits in the breeding goal for sow production were desired. From 1993, the BLUP method becomes the standard methodology for the estimation of breeding values in Norsvin.

Selection for feed efficiency and growth

In 1993, a change in the feeding regime from restrictive to ad libitum was made and FIRE platforms were implemented. In 2012, the boar testing period was extended from 220 to 265 lbs (100 kg to 120 kg), and in 2013, new traits for ADG, FCR and feed intake for different periods of the testing period were developed.



Selection for exterior traits

Norsvin's exterior evaluation platform was developed in 1995, but even earlier, the exterior was a popular selection criterion. In 1999, a



total exterior score with data from boars and sows was included in the breeding value. On-going research is now aiming to conduct thorough investigations of these properties in view of functional traits and life-time production for sows. A good and functional exterior is essential for sow production and welfare.

The large diversity in traits in the breeding goal for Norsvin Landrace has made the breeding robust and sustainable, which is of vital importance for future pig production.

Selection for teat quality

Number of teats is a heritable trait, and after some years of selection, teat number has increased in the Norsvin Landrace. It has always been a requirement for sows to have 14 functional teats, but we did not see much genetic development before this trait was included in the breeding value in 2001.

Selection for maternal traits

In 2004, litter weight at three week's age was included in the breeding goal. From 2004 to 2012, the selection for this trait has given a fantastic increase in sow milking ability, and piglets are on average 700 g larger at 21 days of age (Figure 1). After 2010, piglet survival became the next new maternal trait in the breeding goal.

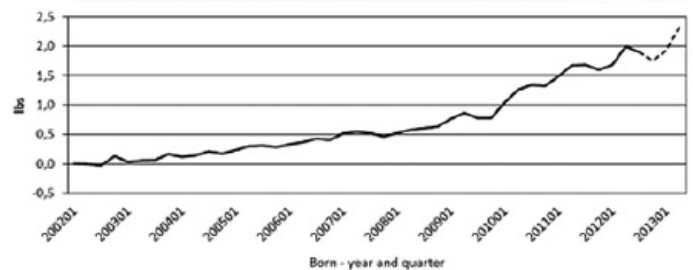


Figure 1: Genetic trend of individual piglet weight at 3 weeks (lbs).

For every purebred Landrace litter born in nucleus and multiplier herds in Norway and for several herds overseas, a thorough job is conducted of data capture on individual piglets. For more than 10,000 litters annually, all piglets are weighed at 21 days, and this

trait is used both as a maternal trait and a direct trait in the breeding goal. Norsvin's system of tracking piglet survival between birth and 21 days of age, in addition to data on cross fostering and defects, is better than selecting solely for the number of live piglets at a given age.



From 1999, the Norsvin Landrace has been bred as a maternal line, with increased emphasis on reproductive and maternal traits.

Selection for carcass and meat quality

In 2008, Computed tomography (CT) scanning of boars became a part of the test program at the boar test stations. The use of CT makes it possible to obtain accurate carcass composition from live pigs. This new technology allows accurate prediction of breeding values for new traits such as body composition and size, weight, density of carcass and internal organs and leg quality (osteocondrosis).

Today's breeding goal

The Norsvin Landrace breeding goal consists of a wide range of traits, from maternal traits, litter size and robustness of pigs to production, carcass quality and meat quality. Norsvin estimates breeding values for 40 different traits daily. In this way, Norsvin genetics provides profit in all steps from AI, to piglet and slaughter pig production, slaughter and the processing industry.

Traits used in breeding value estimation for Norsvin Landrace are presented in Figure 4. Some traits have direct economic weight, while other traits affect the EBV through genetic correlations to other traits.

The purebred Norsvin Landrace has an annual genetic improvement of approximately 4 USD per market hog.

Genetic trends for the Norsvin Landrace

Growth and feed efficiency has strengthened and for the maternal lines, number of weaned pigs is increasing as a result of progress in stillbirth and piglet mortality. Production, maternal ability, litter size, reproduction, carcass quality and robustness all show positive genetic trends (Figure 3). Since Norsvin Landrace is among the most efficient pig breeds worldwide, both in production of weaned pigs and as finisher, we need to find the optimum production levels for these traits.

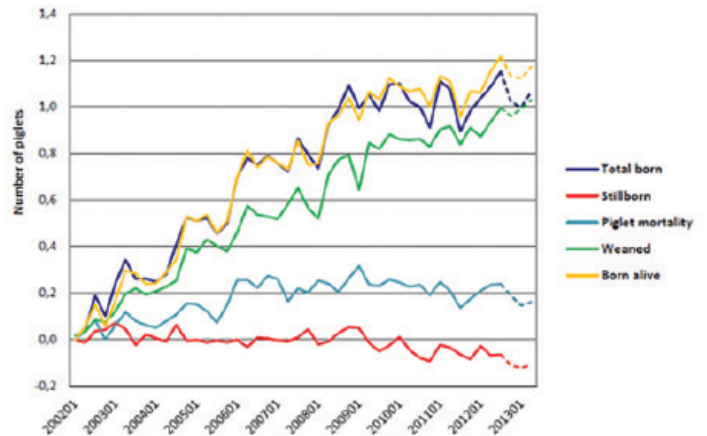


Figure 3: Genetic trends for litter size and maternal ability. The unit is the number of piglets.

Efficiency

Norsvin Landrace is well-known as a lean and efficient dam line. High-quality phenotypes from our test station reveal that there are highly negative genetic correlations between growth and leanness. The easiest way of growing fast, especially in the late finishing period, is by growing fat. When taking this into consideration, as well as the fact that small fat reserves of the sow also have a negative impact on mother ability, the breeding goal of Norsvin Landrace no longer aims at a leaner slaughter pig, but instead at an increased growth rate and feed efficiency of the pig with only minor changes in leanness.

Piglet mortality

In 2010, we included piglet mortality as an additional trait in the breeding goal. This trait is highly genetically correlated to the weight at three weeks. At the same time we also split the live born trait into total born and stillborn. This was done to increase focus on the quality of our piglets. The most important issue is no longer to increase number of piglets born, but the number and quality of piglets weaned.

The sow's body condition

Large litters with heavy weaning weights are very demanding for the sow. In April 2012, we therefore also included the sow's body condition score at weaning in the breeding goal. This is to ensure that we breed for a highly efficient sow with sufficient feed intake capacity.

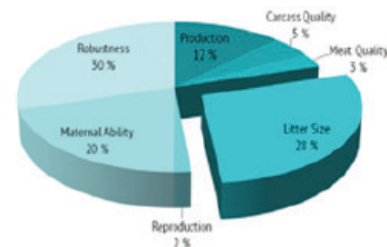


Figure 4: Weight of breeding goal for Norsvin Landrace anno 28th of January 2014.

The US Norsvin Landrace nucleus herd

In the Norsvin Landrace nucleus population, approximately 50 elite AI boars are annually offered to 2000 Landrace sows. They produce approximately 4,400 litters per year. The proportion of first parity litters is 62 percent and boars are used in AI for elite semen production during a period of up to 12 weeks. This makes an average generation interval of only 1.15 years in this breeding population.

There are 28 nucleus herds in Norway running Norsvin Landrace. In addition, there are Norsvin Landrace nucleus herds in Sweden, Lithuania and the US which are directly linked to the Norwegian herds.

All Landrace AI boars used in Norway are tested at Norsvin Delta. Approximately 50 young boars are selected out of the 1,700 boars tested.

The US Norsvin Landrace nucleus herd is operated with the same routines for testing of pigs as the Norwegian Norsvin Landrace nucleus herds. This US herd is called Cheyenne.

Norsvin strives to keep genetic lag to a minimum between the core development and R&D in Norway, and commercial production. Genetic linkage through Elite semen from Norsvin's AI Center in Norway is an important driver, keeping genetic lag to a minimum. The Norsvin nucleus herd in the US receives semen from the best donor boars available in Norway every 28 days, which provides a system with practically no genetic lag (Figure 5).

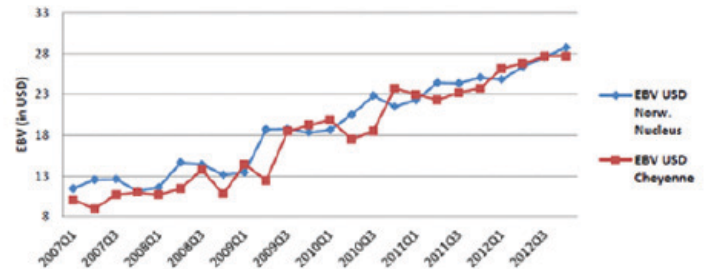


Figure 5: Genetic lag for Cheyenne nucleus herd compared to Norwegian nucleus herds.

EuroTier 2014

EuroTier is the world's leading all species animal agricultural expo. Held every two years in Hanover, Germany this is one of the largest shows in the world related to livestock and related industries. This year the four-day show ran from November 11 to 15. The 2,360 exhibitors and 156,000 visitors including some 30,000 international visitors from abroad made the show a success.

Topigs Norsvin was well represented by a full team of company experts from around the world. With the high level of interest in the Topigs Norsvin products worldwide producers were able to have any product or technical related questions answered. The stand was busy during the show with steady traffic from producers all four days.

The merger of Topigs and Norsvin in June has been accepted very well in all of our markets. Producers and customers welcome the choice of products available for their market. This demand solidifies the continued growth experienced over the past years as individual companies.



Topigs Norsvin at EuroTier



A busy stand

Season's Greetings from the Topigs Norsvin Team

As you read this, the end of 2014 is fast approaching. It has been a good year in the pork industry but certainly not without challenges. Hog prices that set all-time record highs along with low feed prices have generated good profits for producers. At Topigs Norsvin we continue with strong growth and great support from our growing customer base.

On behalf of the Topigs Norsvin team, we want to thank you for your confidence in our program and wish you and your family all the best during this Christmas season.

Cam McGavin, General Manager – Topigs Norsvin Canada
 Mike Terrill, President & CEO – Topigs Norsvin USA

Norsvin Duroc

Background

The Norsvin Duroc herd was established in 1986 and the population was increased to 700 sows by 2006. The Norsvin Duroc has been bred as a sire line for its entire selection history in Norsvin. The first Duroc pigs imported to Norway were rather fat, but a well-organized selection has changed the population. The current Norsvin Duroc population is now efficient with respect to lean meat growth. The traits of pH and IMF were assigned high economic values in the breeding goal and meat quality has been maintained at its original level for these traits.

Boar station testing

In the Norsvin Duroc nucleus population, approximately 50 elite AI boars are annually offered to 700 Duroc sows. They produce approximately 1450 litters per year. The proportion of first parity litters is 64 percent (in 2013) and boars are used in AI for elite semen production during a period of up to 12 weeks. This makes an average generation interval of only 1.15 years in this breeding population.

Only 50 elite AI boars are selected out of the 1700 boars tested

There are eight nucleus herds in Norway running Norsvin Duroc. In addition, there are Norsvin Duroc nucleus herds in Sweden, Lithuania and the US which are directly linked to the Norwegian herds. Gilts have been exported and are supplied regularly with semen from the same AI elite boars as used for nucleus herds in Norway.

Approximately 1700 Duroc boars tested annually produce individual records on growth rate, feed intake, carcass and exterior score. Out of these, nearly 700 boars are slaughtered and supply data on meat and fat quality. The station test design has groups of 12 boars of the same breed penned together and fed ad libitum. Feed consumption is electronically recorded in FIRE feeding stations equipped with weight platforms, providing individual growth and feed intake curves for each boar.

FIRE platform, with modern phenotyping, was established in 1993. In 2008, Computed tomography (CT) scanning of boars became a part of the test program at the boar test stations. The use of CT makes it possible to obtain accurate carcass composition from live pigs. CT scanning of boars is part of a test program that includes 3000 to 3500 Landrace and Duroc boars every year (Figure 1).



Figure 1 – Norsvin Delta boar test station. (1) the FIRE platform. (2) The CT machine. (3) Spiral scan of a boar, 1100 slices. Photos: (1-2) Wold, 2013, (3) Kongsro, 2009.



In 2010, the breeding goals were restructured to include several new traits. Norsvin has reduced the emphasis on traditional breeding traits in favor of a greater focus on quality traits like functional traits and meat quality. In 2012, the boar testing period was extended from 220 to 265 lbs (100 kg to 120 kg), and in 2014, new traits for ADG, FCR and feed intake for different periods of the testing period were developed.

Breeding goal

The Norsvin Duroc breeding goal consists of a wide range of traits, from maternal traits, and robustness of pigs to production, carcass quality and meat quality. Norsvin's breeding goal is long-term focused and takes future needs into consideration. The breeding goal is revised in step with developments in the industry, changes in the market and scientific advancements.

Important economic and performance traits are used in breeding value estimation (EBV) for the Norsvin Duroc. Production parameters such as Average Daily Gain and Feed Conversion Ratio make up 29% of the total EBV. Another 28% of the total EBV is related to Carcass Quality while 20% and 22% are for Meat Quality and Robustness respectively. Some traits have direct economic weight, while other traits affect the EBV through genetic correlations to other traits. See Figure 5.

In the period 2008 to 2012, selection for slaughter quality is based on data from CT technology. For this period of four years, we have achieved a genetic increase of 4 units LMP for the Duroc elite boars in Norsvin (Figure 3). Norsvin Duroc are close to achieve an optimal level for LMP, and in combination with high accuracy from LMP, weight of LMP in breeding goal is in January 2014 only 18%.

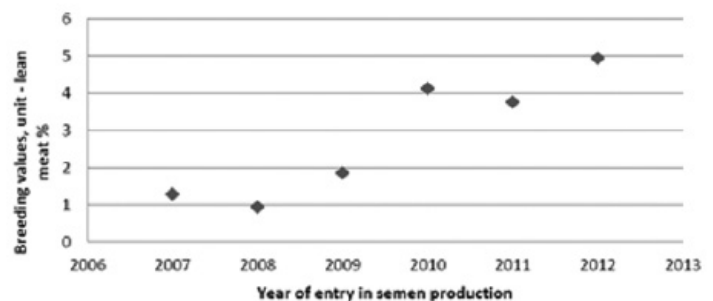


Figure 3 – Genetic trend of lean meat % for Duroc AI boars.

For FCR, Norsvin Duroc has had an improvement of 22 lbs (10 kg) dry feed with 9.56 MJ net energy in period from 2008 to 2012 (Figure 4). There is a small reduction in the weight for FCR in the last breeding goal update in 2012, but due to genetic correlations to other traits, the weight of 10% will give almost the same genetic gain in the future for FCR as we saw in the period from 2008 to 2012.

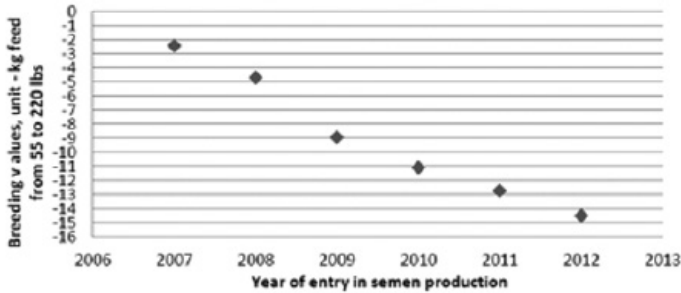


Figure 4 – Genetic trend of feed efficiency, feed consumed from 55 to 22 lbs (25-100 kg) live weight for Duroc AI boars.

For ADG, genetic improvement over four years is approximately 2 days shorter period for ADG from birth to 56 lbs kg and 4 days shorter period for ADG from 55 to 220 lbs. For new weights in the breeding goal anno 2014, ADG has 20% weight. This is expected to give a faster improvement of genetic gain for ADG in both ADG-periods. From March 2012, Norsvin Duroc also has extended testing period to 265 lbs, and use of more information from the whole growth curve will increase accuracy for growth in testing station after the update of breeding goal in 2014.

For all traits in breeding goal, the genetic improvement is \$4.00 - \$5.00 US per slaughter pig per year for Norsvin Duroc for the period 2008 to 2012.

Fourteen per cent of the breeding goal in 2012 is devoted to health traits, and from 2014 the weightings are increased to 22% (Figure 5). We expect this to give more robust animals with less scrotal hernia, umbilical hernia, cryptorchidism and arthritis, and important exterior traits will be included in the breeding goal in such a way that we expect a positive annual response. In addition, we have increased the relative weight against OCD (scored by the CT scanning of boars).

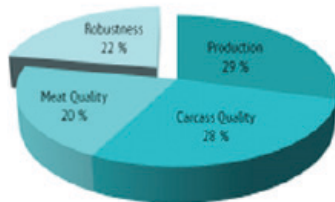


Figure 5: Weight of breeding goal for Norsvin Duroc anno 28th of January 2014.

Meat quality traits are also unfavorably correlated genetically to several traits in the breeding goal. A weight of 21% in 2012 and 20% in 2014 is also necessary to prevent a decline for traits like IMF and WHC.

The US Norsvin Duroc nucleus herd

Norsvin and its partners strive to keep the genetic lag to a minimum between the core development and R&D in Norway, and commercial production. In addition, low genetic lag supplies commercial data back to Norway and affects selection decisions made at the core. Genetic linkage through Elite semen from Norsvin’s AI Center in Norway is an important driver, keeping genetic lag to a minimum.

The Norsvin nucleus herd in the US receives semen from the best donor boars available in Norway every 28 days.

The US Norsvin Duroc nucleus herd is operated with the same routines for testing of pigs as the Norwegian Norsvin Duroc nucleus herds. This US farm is named Cheyenne. Development of backfat thickness (Figure 6) and weight at 150 days (Figure 7) are presented below.

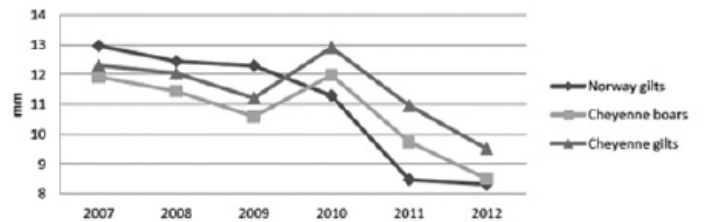


Figure 6: Phenotypic development in backfat thickness (mm) in Norsvin Duroc. Pigs from Cheyenne make up US Norsvin Duroc population.

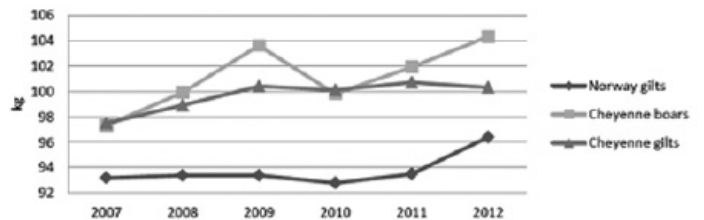


Figure 7: Phenotypic development in weight (kgs) at 150 days in Norsvin Duroc. Pigs from Cheyenne make up US Norsvin Duroc population.



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Carlo Genetics Inc.

Ste. Anne, MB
George Goossen
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Total Swine Genetics Inc.

Tillsonburg, ON
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C & M Genetics

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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. Entries are to be received by January 31, 2015. Winners will receive a \$20.00 Walmart Gift Certificate and the Topigs Norsvin rep in your area will deliver the prize. Employees of Topigs Norsvin and their subsidiaries are not eligible.

What was the average pigs weaned / mated female / year in this year's 26+ Club? _____

How many Elite Norsvin Duroc boars are selected annually for the breeding program? _____

How many different traits are used daily to estimate breeding values for the Norsvin Landrace? _____

What was the most important trait in the breeding program for the Norsvin Landrace from 1958 to 1992? _____

Name: _____

Farm Name: _____

Address: _____

Phone #: _____ Email: _____

Topigs Norsvin INSIDER Quiz Winners

Here are the winners from the last issue: Joe Wurz, Glacier Colony, MT; Johnny Maendel, Delta Colony, MB; Peter Waldner, Greenwood Colony, AB; Jacob Maendel, Sturgeon Creek Colony, MB; Shawn Waldner, Rock Lake Colony, MB; Matthew Wurtz, Jamesville Colony, SD; Stella Kehler, Porcherie Gauthier 1A, MB; Joel Mandel, Shamrock Farming Co. Ltd., AB; John Wipf, Gold Spring Farming Co., AB; Edward Kleinsasser, Westview Colony, MB

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

Printed in Canada