
***PROGRAM FOR EVALUATION OF PIGS AT THE DESCHAMBAULT TEST STATION
SPECIFIC PROTOCOL FOR NOVEMBER 2008 AND MAY 2009 TRIALS (# 25 and 26)¹***

1. TITLE

Performances of commercial pigs bred from paternal and maternal lines of different genetic types

2. OBJECTIVE

The objective of this project is to measure, in a controlled and non-limiting environment, the growth performances, carcass and meat quality of commercial pigs bred from terminal boars and reproductive sows representative of paternal and maternal lines available in Québec.

3. METHODOLOGY

3.1 Description

Different organizations working in Québec swine production will be able to evaluate simultaneously, at the Deschambault Test Station, the crossbred offspring produced from paternal and maternal lines of their choice. Different variables will be collected within this program: growth performance, individual feed intake, carcass quality, weight of primal cuts, as well as meat quality (see Appendix 1). Some carcass and meat quality data will be compared with the specifications indicated in the document *Quebec Market Reference* (2003) which describes the market needs.

<http://www.cdpqinc.qc.ca/document/rapportréférence-version%20anglaise%20complete.pdf>

The Deschambault Test Station is equipped with an individual feeding system that allows measurement of the feed intake of every pig. It records the hour and an accurate duration of every visit to the feeding trough. Taken on a continuous basis, these data will not only allow an evaluation of the real feed intake of the pigs, but will also study their feeding behaviour.

The commercial pigs will be tested during trials #25 and 26, namely the test taking place from November 2008 to April 2009, and the one from May to October 2009.

Modification to the protocol of trials 25 and 26

In addition to evaluating four (4) paternal pig lines, as in trials 19-20, 21-22 and 23-24, the present protocol (trials 25-26) will evaluate two (2) maternal lines. These maternal lines will be evaluated similarly to the paternal lines, that is, relatively to their zootechnical performances, and carcass and meat quality.

¹ This is a non official version of the trials # 25-26 protocol of Deschambault's test station. Please, note that the French version will be considered as the only official version. We are not responsible for any mistake that may occur with the translation. Note as well that the registration form is only included in the French version at the end of the document.

3.2 Genetic lines evaluated

3.2.1 Paternal lines (terminal boars)

A maximum of four (4) different paternal breeding lines will be evaluated simultaneously at the Deschambault Test Station (Table 1). A breeding line is defined as a group of individuals from the same race or the same genetic scheme, registered by different organizations. The participating organizations will have to detain boars in a Québec accredited artificial insemination centre. These terminal breeding lines will have to be available in a Québec artificial insemination centre at the time of registration. The CDPQ Board of Directors requires that artificial insemination centres not registered at the CDPQ's *Programme de gestion sanitaire des centres d'insemination artificielle* (PGSCIA) comply with minimal standards of PGSCIA.

If more than four (4) lines are to be tested, priority will be given according to the eligibility rules. These are detailed at Section 5 of this document. To carry out the matings, participating organizations will be asked to select **a minimum of fifteen (15) boars per breeding line (a maximum of 20)**. For each boar listed for these matings, the list will have to mention the identifier (that used by the AI Center) and the names of the sire and the dam. No more than two (2) half-sibs per boar's sire and no full-sibs will be accepted in the list of boars of each line being evaluated, in order to ensure a certain representativeness of this line. The Centre de développement du porc du Québec inc. (CDPQ) reserves the right to eliminate certain of the selected boars, if needed, to facilitate the management of the collected semen.

Different boars of the same breeding line will thus be used uniformly, with the goal of obtaining one (1) to two (2) litters – or four (4) to eight (8) piglets – per boar. A maximum of four (4) matings per boar should be performed (this maximum could be lowered if the expected number of services is lower than 180, according to the participating herds).

Table 1: Paternal lines to be tested at the Deschambault Station

Terminal lines	Participating organizations

3.2.2 Maternal lines (breeding females)

A maximum of two (2) different maternal breeding lines will be evaluated simultaneously at the Deschambault Test Station (Table 2). A breeding line is defined as a group of individuals from the same race or the same genetic scheme, registered by different organizations. Participating organizations registering a maternal line will have the responsibility to supply a list of the commercial herds participating, according to the specifications described at section 3.4. If more than two (2) lines are to be tested, priority will be given according to the eligibility rules. These are detailed at Section 5 of this document. A minimum of two (2) different maternal lines must be registered to the station trials. In case only one (1) or no maternal line is registered, the section on maternal line evaluation would be cancelled and the trials would be limited to evaluating the paternal lines.

Table 2 Maternal lines to be tested at the Deschambault Station

Breeding Females	Participating Organizations

3.3 Sows

Breeding females representative of a maternal line being evaluated will be used for these tests. Ideally, use of gilts should be avoided. The producer will have to provide the following data:

- ID number of the sow (ear-tag and/or tattoo);
- Identification of the line of the sow (commercial product);
- All information relative to services: date and time of insemination of every dose, semen ID number, identification of the person that carries out insemination;
- All information relative to the actual farrowing and to the piglet's identification.

3.4 Herds

Organizations that register a maternal line agree to provide a list of the commercial herds that will be necessary to carry out the protocol. A sufficient number of commercial herds are required to carry out a total of around 200 services (100 services per registered maternal line) during a five-day period. To reach this goal, approximately **20 commercial herds** are required for services, namely **ten (10) herds per registered maternal line**. One must make sure, in the case of commercial all-in all-out (batch farrowing) production systems, to attain the required number of herds for every trial, which might require more than ten (10) herds.

3.4.1 Eligibility conditions for herds

Commercial producers may participate subject to the following conditions:

- They must raise a minimum of 300 productive sows or 200 sows in batch farrowing (all-in, all-out) and accept to deliver the requested number of piglets within the two (2) days of entry at the station;
- They must be able to demonstrate that the inseminated sows come from the registered maternal line;
- They must have adequate herd records in order to provide all information on services and litters of inseminated sows;
- At the time of the registration, the herd must have been followed-up since six (6) months by a veterinarian. The veterinarian responsible for this follow-up will provide information attesting the absence or effective control of the following illnesses :
 - Transmissible Gastroenteritis (TGE)
 - Porcine reproductive and respiratory syndrome (PRRS)
 - Enzootic pneumonia
 - Atrophic rhinitis
 - *Pleuropneumonia*
 - Dysentery
 - Sarcoptic mange

- Exsudative epidermitis
- Glasser's disease
- Any *Streptococcus suis* related pathology (meningitis, etc.).

This information must be provided to a veterinarian from CDPQ. The veterinarian will decide if the herd is accepted or will inform the herd of the reasons for exclusion.

- They must be accredited by the Canadian Quality Assurance (CQA[®]) program.
- Within the two weeks before the beginning of the test, the producer and the veterinarian responsible for the herd follow-up must testify to the absence, in the farrowing and nursery areas, of any clinical signs of detrimental illness, and more particularly of the following:
 - Transmissible Gastroenteritis (TGE)
 - Porcine reproductive and respiratory syndrome (PRRS)
 - Exsudative epidermitis
 - Glasser's disease
 - Any *Streptococcus suis* pathology (meningitis, etc.)
 - Atrophic rhinitis
 - *Pleuropneumonia*

Note: Chosen sow barns will ideally possess facilities, and will be managed with procedures, that allow for the efficient limitation of direct or indirect contact between newborn and older piglets (e.g. partitioned sow barn, all-in all-out production system, early weaning, etc.).

3.5 Services

In each of the 20 herds, services are under the responsibility of their respective producers. In every herd, services will be carried out with the semen of all paternal lines tested, in order not to confound the boar effect with the sow's herd of origin effect. While about ten (10) sows will be mated per herd, the same terminal line will be used more than once in the same herd (Table 2). So as to ensure that all piglets enter the station within a short period, services must be performed within a five (5) days interval. Doses will be provided for free by the participating organizations and three (3) doses will be provided per sow.

In order to preserve anonymity of origin of the boars used for insemination, the CDPQ will assign a particular identification code to each boar. The corresponding list of identifications will be forwarded to artificial insemination centres (AIC). No semen will be coloured. However, on every semen tube, a coloured label with the unique identification code will be affixed so that producers clearly differentiate the doses to be used. Doses inseminated to each female will be **homospermatic**, that is, containing semen from only one boar.

Participating producers will be responsible for ordering the semen from AIC for the services carried out between July 14 and 18, 2008, and between January 12 and 16, 2009, inclusively, for both (2) station entries (see Appendix 2).

So as to insure the best supplying of piglets in quality and number, twice as many services than litters required will be performed (Table 2).

Table 3 Distribution of litters within herds and piglets sampling for station evaluation

Terminal boars	Sows	Average number of services per herd*	Total number of services **	Number of litters tested in station	Number of selected piglets / litter	Number of piglets entering the station
Line 1	48	2.5	48	20	4	80
Line 2	48	2.5	48	20	4	80
Line 3	48	2.5	48	20	4	80
Line 4	48	2.5	48	20	4	80
Total	192	10	192	80	16	320

*: Considering eight (10) serviced sows per herd

** : Considering that services are carried out in 20 herds

3.6 Piglets

3.6.1 Piglet selection

The producer or any person authorized within the same organization will carry out the final selection of piglets. However, this final piglet selection can only be done from the piglets pre-selected by CDPQ staff. Four (4) piglets will be selected per litter, namely **two (2) castrates and two (2) females**. Selected piglets must ideally be between 11 and 15 days old when entering the station (farrowing day being day 0) and weight a minimum of 3 kg. The piglets must not show any clinical sign of contagious illness, nor have any problems related to legs (arthritis) or hernia, and their castrating and tail cutting wounds must be properly healed.

3.6.2 Piglet identification

All piglets from selected litters must be identified at birth with tags provided by the CDPQ. Hence, the CDPQ commits itself to supply identified tags for every litter. The participating producers will be put in touch with CDPQ staff one week after farrowing, namely when piglets are between three (3) and nine (9) days old, in order to perform piglet pre-selection and to check the accuracy of the information provided. Farm visit schedules have to respect withdrawal periods set by the producers and the herd's veterinarian.

3.6.3 Piglet transportation

All piglets will enter the station within one (1) to two (2) consecutive days, namely on Thursday or Friday of the same week. The producers must only transport the selected piglets from their farm to the pick-up point, using previously cleaned and disinfected vehicles of their choosing. Transportation of piglets from the pick-up point to the Deschambault Station will be carried out by the CDPQ, using allocated trucks for this specific purpose.

3.7 Allotment

3.7.1 Pre-test period (nursery)

As soon as they enter the station, all the piglets are individually weighed. Their allotment is based on their weight and health conditions. Forty eight (48) pens are available, each receiving 7 or 8 piglets (4.6 to 4 sq.f / pig). This period usually lasts about 50 days.

3.7.2 Testing period (finishing)

After being transferred to the finishing area, the pigs are allocated to twenty eight (28) pens, each having a capacity of 13 animals (10.5 sqf / pig). Allotment of pigs to a given pen is based on terminal line, sex, present weight and expected slaughtering weight. In the same pen, several terminal lines can be mixed, but sexes are separated and the weight is as homogenous as possible. Pigs with obvious anomalies are excluded from the test. The testing period starts when the average weight of all animals reaches about 30 kg. The targeted live weight at the end of the test is **120 kg**.

3.8 Identification of animals

3.8.1 Pre-test period (nursery)

During this period, a tag bearing a unique, permanent number is fixed on the ears of the piglets, to remain there until they are slaughtered. This permanent number is linked to:

- the original number given on farm
- the electronic ID number for the test period
- the tattooed number applied when the pig is sent for slaughter.

3.8.2 Testing period (finishing)

When the animals are transferred to the finishing unit, their ears are implanted with an electronic ID (transponder chip) in order to monitor their individual feed intake using an Insentec feeding system.

3.9 Feeding

3.9.1 Pre-test period (nursery)

Four (4) feeding periods are scheduled during the adaptation period, using feed pellets (Appendix 3 and 4). The feed will be purchased under contract from a company selected through a tender process. The feed used in the first 3 periods will be defined by the supplier while the fourth will have to match the nutritional requirements defined by the CDPQ. The company will be asked to provide a precise feeding program, including:

- the different phases
- the instructions on the distribution of feed for each phase and the changeover procedures
- any required medications (these medications must be administered according to CDPQ specifications).

Feed intake measurements during the pre-test period will be calculated globally and not individually. Leftover feed will be evaluated, and the number of dead animals will be taken into account in the calculation of feed intake.

3.9.2 Testing period (finishing)

Pigs will be transferred to the finishing unit about one week before the test starts, to ensure their adaptation to their new environment and to the individual feeding system. After their transfer, pigs will be fed with the 4th feed used in the nursery for 2 or 3 days, then with the 1st feed of the test period, until the official starting of the test. Three (3) feeding phases are scheduled for the test period, using feed pellets. The feeding program and the feed formulation are defined by the CDPQ. Samples of feed taken from each delivery will be sent to a laboratory for analysis. For every animal, the amount of feed intake is recorded at each visit during the testing period.

The feeding program and feed formulation are defined by the CPDQ's Nutrition Feeding Committee (*le Comité sur la nutrition-alimentation*). This Committee is composed of a number of specialists from the university community and the swine sector. The nutritional objectives of the tests #25 and 26 aim to:

- Allow the full genetic potential expression of the best performing pigs;
- Insure the continuity of diet formulations from one test to the other, in order to allow comparison between tests.

3.10 Sanitary management

3.10.1 Pre-test period (nursery)

Before piglets enter the nursery, a cleanout of approximately two (2) weeks will be conducted, during which the whole station will be thoroughly cleaned and disinfected, following an all in/all out policy. During the adaptation period, pigs will receive drugs required, in order to prevent various bacterial or parasitic infections. They will all be vaccinated against *Mycoplasma hyopneumoniae* and vaccinated to prevent illnesses or diseases associated with the porcine circovirus.

3.10.2 Testing period (finishing)

The veterinarian in charge of the sanitary follow-up of the station will make regular visits according to a predefined schedule, in order to evaluate health conditions and ensure the exclusion from the test of any individual showing major anomalies. No specific treatment will be applied in the finishing pens except for particular cases during the finishing period. Furthermore, no antimicrobial agent will be used, either to prevent diseases or either as growth factors.

In case of mortality, post-mortems will be conducted on each individual by the veterinarian of the CDPQ or by the laboratory of animal pathology of the MAPAQ. Serological tests may be conducted during the test period.

3.11 Fasting period

The day before slaughtering, all selected animals will be weighed and the feed dispensers will be closed. The fasting period, including a minimum of three hours at the slaughterhouse, will last from 16 to 20 hours. Pigs will be shipped to the slaughterhouse once a week and the slaughtering will take place over a period of 6 weeks.

3.12 Control line

In each test, 30 pig's places will be used to evaluate a control line. The control line will allow to get a same genetic type in all the tests and to create a historic data bank on performances. These data will be used as a reference to validate and comment global results (zootechnical performances, quality carcass and meat). To share the results with participating organizations and other partners of the industry, no comparison will be made between breeding line and the control line.

4. PARTICIPATION FEES

For both tests, the registration costs \$14,000 (non-refundable) per paternal line, and \$4,000 (non-refundable) per maternal line. This fee must be paid upon registration for these two tests. The CDPQ will pay back the cost of piglets to the participating commercial producers at the best market price.

5. DEFINITION OF ELIGIBILITY RULES

Rule number 1: Market share

The market share is defined as the number of semen doses or breeding sows, from a terminal line of particular genetic scheme, sold to commercial breeders, during the last twelve months, relative to all of the doses and sows sold in Québec.

The participating organizations will have to indicate the number of semen doses or breeding sows that were sold during the last twelve months, for every line to be registered for the tests.

This information will be confidentially passed on to the genetic sector specialist at the CDPQ. The latter will draw up, from this information, a list of the different terminal lines ranked according to the sales of semen (in volume) or breeding sows (in numbers), relatively to the total volume or number in Québec. The information forwarded to the genetic sector specialist will remain strictly confidential. If necessary, the genetic sector specialist will unveil the name of the four (4) paternal lines and two (2) maternal lines to be tested, namely the lines most sold on the market.

Rule number 2: Registration of new terminal lines

Registration of breeding lines non-previously tested in station (tests #23-24) will be encouraged. This rule allows, as much as possible, to evaluate genetic lines that never had the opportunity to participate in testing. On the other hand, this rule only applies to the registration of paternal lines, since these tests only allow registration of maternal lines for the first time.

6. PUBLICATION OF RESULTS

6.1 Analysis of results

The data will be analysed only when the tests are finished. Statistical analysis will be carried out in order to compare animal results bred from the four (4) paternal lines and the two (2) maternal lines. The significance level will be 0.05. The model chosen for the analysis is the following:

$$Y_{ijklmnopq} = Cov + r_i + S_j + G_k + M_l + S_j G_k + S_j M_l + G_k M_l + S_j G_k M_l + t_{ilm} + b_{ijn} + p_{ko} + l_{iklmo} + e_{ijklmnopq}$$

where:

$Y_{ijklmnopq}$ is the datum for pig q (q = 1, 2) from the litter p, the sire o, in the pen n and the herd m, from the dam line l and the sire line k, of the sex j and from trial i.

- Cov** is the fixed effect of a covariable
- r_i is the random effect of the trial i (i = 1,2)
- S_j is the fixed effect of sex j (j = 1,2)
- G_k is the fixed effect of the sire line k (k = 1, 2, 3 and 4)
- M_l is the fixed effect of the dam line l (l = 1, 2)
- $S_j G_k$ is the fixed effect of the interaction between sex and the sire line
- $S_j M_l$ is the fixed effect of the interaction between sex and the dam line
- $G_k M_l$ is the fixed effect of the interaction between the sire line and the dam line
- $S_j G_k M_l$ is the fixed effect of the interaction between sex, the sire line and the dam line
- t_{ilm} is the random effect of the herd m (m = 1, 2, ... 10) within a trial and a dam line

- b_{ijn}** is the random effect of the pen n (n = 1, 2, ... 19) within sex and trial
- p_{ko}** is the random effect of the sire o (o = 1, 2,... 12) within the sire line k and the trial i
- l_{iklmo}** is the random effect of the litter p (p = 1,...N) (N ranging from 2 to 4) within the sire o, the herd m, the dam line l, the sire line k and the trial i
- e_{ijklmnopq}** is the residual effect on the datum of the pig q (q = 1, 2) from litter p, sire o, pen n, herd m, dam line l, sire line k, sex j and trial i

The covariables that can be included in the model, if they are a significant fixed effect, are the weight at the start and at the end of the test, when analyzing growth performance, and the weight at the end of test for the analysis of carcass and meat quality. The interaction effects between these covariables and the sex, the sire line or the dam line will be included in the model, if significant. The random interaction effects of the trial and the fixed effects will also be included, if significant. Slaughter day will be included in the model as a fixed effect for the analysis of meat quality, except for marbling

The effects of terminal line and sex on the proportion of the carcass that meets the market specifications will be analyzed with logistic regressions. In order to take into account the correlation between these data, we will use an approach using generalized estimation equations (GEE) and robust estimation of the variance of the estimators.

Certain data will have to be eliminated from the analysis. Several reasons justify data elimination, death of animal and poor health being the main causes. In these cases, data elimination allows to demonstrate the real genetic potential of the animals and to compare them on a similar basis.

Through its expertise, the CDPQ will make sure the testing conditions are ideal, so as to fully express the genetic potential of the pigs evaluated.

6.2 Report

A preliminary report will be given to participating organizations before publishing the final report. The final report will be descriptive and analytical; data will be presented in such a way as to make the information public. Results obtained from the trials will be presented as weighted averages for each of the terminal lines tested, with every statistical difference being indicated. The report will indicate the results concerning all variables listed in Appendix 1. Any publication from the participants should be issued after the publication of the final report from CDPQ. No statistical analysis will be carried out on the data obtained in the nursery (adaptation period). These will be presented as a combination of results from all the animals. This final report will be available to participating organizations and will be made public. The CDPQ reserves the right to use the data of these trials for development purposes without making a distinction between the terminal lines, unless they were anonymously identified. No intermediate report or data will be divulged after the first of the two tests.

The participating organizations will receive a file containing the individual raw data from the progeny of their paternal and/or maternal line, without identification of the parents or the farm of origin.

If the mortality rate of a test is too high and/or if the animal performances are affected in such a way as to prevent any conclusion according to experts, the CDPQ could cancel this trial upon recommendation from the Station Sheering Committee. In such a case, 50% of the participation fees will be reimbursed. Also, participants will be able to get the raw individual data of their paternal and/or maternal line, but no results will be published.

All the participating commercial producers will be able to receive a document comparing the results of their animals with the average of all of the animals tested (without distinction of the terminal line). No statistical analysis will be performed on these comparisons.

7. R&D CONNECTED TO TESTS

In order to lead the development of measurements of zootechnical performances and carcass and meat quality, the CDPQ might have to take others measurements and samples. Therefore, the participants have to authorize other measurements and samples than the ones specified in appendix 1. However, these specific measurements and samples will not be linked with any animal. They will stay unidentified. The participants will be informed of any additional measurement or sample taken as well as the aim related to it.

8. APPLICATION FOR PARTICIPATION

All the participants of these tests will have to sign an official application form that confirms their agreement with the proposed protocol and their commitment with regard to the testing of their paternal and maternal breeding lines whose station entry are expected in November 2008 and May 2009 (please find enclosed the forms 1, 2, 3 and 4). Moreover, at the time of registration, participants will have to be members of the CDPQ in order to be eligible for participating in these trials.

2008-01-14

APPENDIX 1 : DEFINITION OF VARIABLES

Variables	Abbreviations (Units)	Description
<i>Nursery - Growth performances</i>		
Age	Age (day)	Age at the beginning and the end of the period. For all the period and each feeding periods.
Duration	Duration (day)	Date of the beginning and the end of the period. For all the period and each feeding periods.
Weight	Weight (kg)	Weight at the beginning and the end of the period. For all the period and each feeding periods.
Average daily gain	ADG (g/day)	(Weight at the end – weight at the beginning)/duration. For all the period and each feeding periods.
Total feed intake	Feed (kg)	Total feed intake of the piglets during the period. For all the period and each feeding periods.
Daily feed intake *	Feed intake/day (kg/day)	Piglets total feed intake per day. For all the period and each feeding periods.
Piglets feed intake *	Feed intake/piglets (kg/piglets)	Total feed intake per piglet For all the period and each feeding periods.
Feed conversion on live weight gain *	F.C. live weight gain	Total feed intake for all pens / live weight gain of all piglets For all the period and each feeding periods
<i>Trial - Growth performances</i>		
Off-test age	Off-test (day)	Age on the transportation day to the slaughterhouse before feed withdrawal.
Duration	Duration (day)	Date at the end of the test – date at the beginning.
On-test weight	On-test weight (kg)	Weight at the beginning of the trial.
Off-test weight	Off-test weight (kg)	Weight on transportation day to the slaughterhouse before feed withdrawal.
Average daily gain	ADG (g/day)	(Weight at the end – weight at the beginning)/duration. For all the trial period and each feeding periods
Backfat thickness	Fat (mm)	Measure on live animal (50-75 et 120 kg), of backfat thickness between the 3 rd and 4 th before last ribs with ultrasound technology (mode B).
Muscle depth	Muscle (mm)	Measure on live animal (50-75 et 120 kg), of muscle thickness between the 3 rd and 4 th before last ribs with ultrasound technology (mode B).
<i>Feed intake performances</i>		
Total feed intake	Feed intake (kg)	Total feed intake during the trial
Daily feed intake	Feed intake/day (kg/day)	Hog total feed intake/ duration For all the trial period and each feeding periods
Feed conversion on live weight gain	Feed intake live weight gain	Hog feed intake/live weight gain For all the trial period and each feeding periods
<i>Carcass yield</i>		
Hot carcass weight	Hot weight (kg)	Weight of hot carcass after bloodletting and evisceration with head, tongue, leaf fat, kidneys, jowl, feet and no trimming.
Carcass yield	Carcass yield (%)	(Weight of hot carcass/off-test weight) x 100.
Backfat thickness	Destron fat (mm)	Measure of backfat thickness between the 3 rd and 4 th before last ribs on the carcass with Destron probe.
Muscle depth	Destron Muscle (mm)	Measure of muscle thickness between the 3 rd and 4 th before last ribs with on the carcass with Destron probe.
Lean yield	Lean yield (%)	Carcass lean yield estimated from backfat and muscle thickness measured with a Destron probe (prediction equation from Agriculture Canada).
Index (Quebec slaughter grid) (inside the most valuable stratum)	Average index	Average index obtained by the Quebec carcass grid for a specific carcass interval weight (inside the most valuable stratum) .

* : The feed intake at the nursery will be calculated from all piglets feed intake and not from an individual feed intake basis

DEFINITION OF VARIABLES (continued)

Variables	Abbreviations (units)	Description
<i>Coupe primaire</i>		
Reconstituted half. carc.	Half carcass recons. (kg)	Half carcass weight reconstituted from the 4 following primal cuts : leg (ham), loin, shoulder, and belly
Half carcass length	Length (cm)	Measure taken from the first rib (cranial side) to the internal edge of the pubic bone (Foster rule).
Loin eye area	Loin eye area (cm ²)	Loin eye area measured from a planimeter
Leg weight	Leg weight (kg)	Perpendicular cut at the lower part of leg. Cutting up line at 4,5 cm (1¾ inch) from internal tip of pubic bone. Without back foot and tail.
Loin weight	Loin weight (kg)	Loin is cut off from belly at the end of the shoulder, starts at 4,5 cm (1¾ inch) from the basis of ribs, widen at 10 cm (4 inches) at the center of loin and finishes at the end of the leg running along the tenderloin at 2 cm (¾ inch).
Shoulder weight	Shoulder weight (kg)	See the loin weight description.
Belly weight	Belly weight (kg)	See the loin weight description.
Leg yield	Leg yield (%)	(Leg weight/reconstituted half carcass weight) x 100
Loin yield	Loin yield (%)	(Loin weight/reconstituted half carcass weight) x 100
Shoulder yield	Shoulder yield (%)	(Shoulder weight/reconstituted half carcass weight) x 100
Belly yield	Belly yield (%)	(Belly weight/reconstituted half carcass weight) x 100
<i>Quebec Market Reference</i>		
Quebec Market Reference	Targeted interval	Specification of the desired range given by the 'Quebec Market Reference 2003' (minimum and maximum).
Quebec Market Reference	% desired in the interval	Percent of carcass within the desired range specified by the 'Quebec Market Reference 2003'

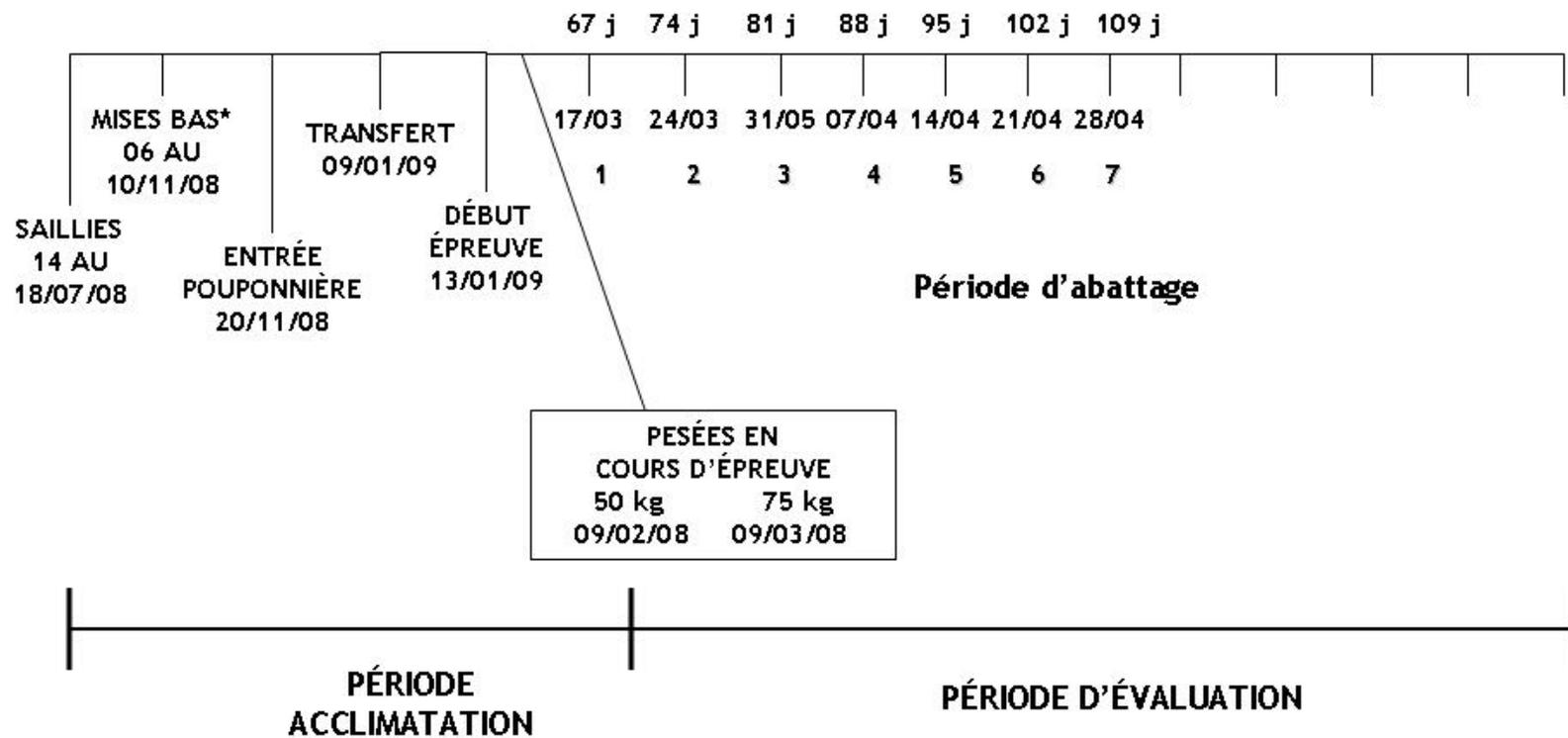
DEFINITION OF VARIABLES (continued)

Variables	Abbreviations (units)	Description
<i>Meat quality</i>		
<i>a. Loin : measure taken on longissimus dorsi between the 3rd and 4th before last ribs, 24 hours after slaughtering</i>		
pH 24 hour	pH	pH measurement in two sites in the loin muscle with a pH-meter.
Minolta (L*a*b)	Luminosity	Measurements of the L*a*b in two sites of the loin muscle with a Minolta machine.
Color	Color	Assessment with colour scores of the Japanese scale graded from 1 to 6 (1 : pale; 6 : dark).
Marbling	Marbling NPPC	Measurement of marbling score according to NPPC scale, graded from 1 to 10 (1 : lightly marbled; 10 : strongly marbled).
Firmness	Firmness (%)	Subjective measurement taken from meat handling from a 1 to 3 scale (1:firm; 2:medium; 3:soft)
Drip loss (loin)	(%)	Measurement from a muscle sample taken in the loin front part, which has been dripping for 24 to 48 hours. (Muscle water loss/ weight of fresh muscle) x 100
<i>b. Leg : measure taken on different muscles, 24 hours after slaughtering</i>		
pH 24 hour	pH	Measurement at the level of <i>gluteus medius</i> muscle.
Minolta (L*a*b)	Luminosity	Measurements of the L*a*b at the level of the <i>gluteus medius</i> muscle with a Minolta machine.
Color	Color	Assessment with colour scores of the Japanese scale graded from 1 to 6 (1 : pale; 6 : dark). The assessment is done with <i>gluteus superficialis</i> muscle.
Bicoloration	Bicoloration	Color difference between the <i>gluteus medius</i> and the <i>gluteus profundus</i> from the Japanese scale.
Ham technological yield	Tech. yield (%)	Estimation from a prediction equation that consider the color and luminosity (L*a*b). The assessment is done with <i>gluteus medius</i> and <i>gluteus profundus</i> muscle.
<i>c. Belly : measure taken on different muscles, 24 hours after slaughtering</i>		
Firmness	Firmness (mm)	Measurement taken from the belly, boneless draping over a metallic rod for a period of 2 minutes (belly bend method)



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STATION D'ÉVALUATION DES PORCS DE DESCHAMBAULT ÉPREUVE 25 - NOVEMBRE 2008 - CALENDRIER



Note :

- Transfert : 1e date entrée + 50 jours
- * Basé sur une durée de gestation de 115

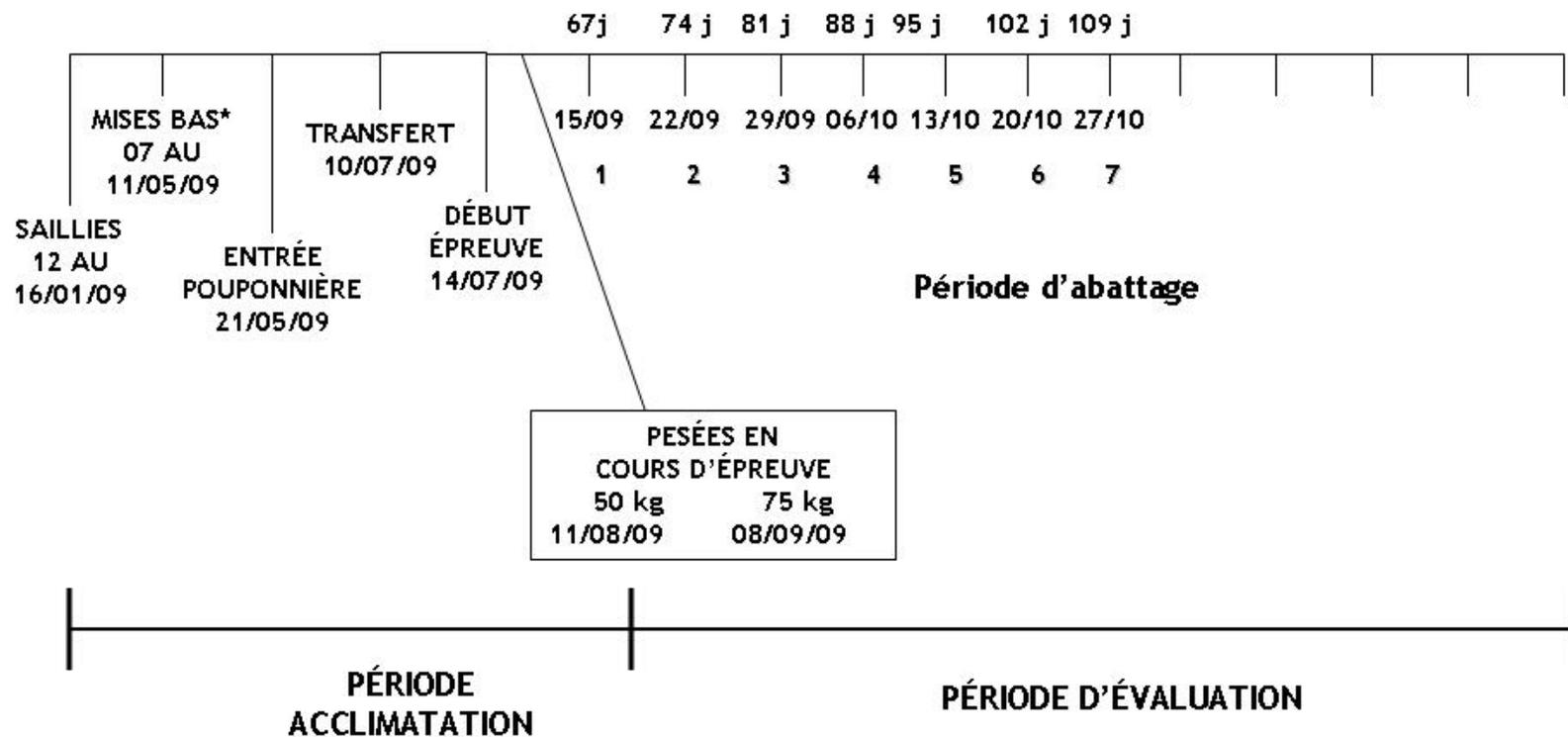
- Début engraissement : 1e date entrée + 54 jours
- Pesée 50 kg : début test + 27 jours
- Pesée 75 kg : début test + 55 jours

01/11/2007



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STATION D'ÉVALUATION DES PORCS DE DESCHAMBAULT ÉPREUVE 26 - MAI 2009 - CALENDRIER



Note :

- Transfert : 1e date entrée + 50 jours
- * Basé sur une durée de gestation de 115

- Début engraissement : 1e date entrée + 54 jours
- Pesée 50 kg : début test + 27 jours
- Pesée 75 kg : début test + 55 jours

01/11/2007

**Garanties d'analyses nutritionnelles
des trois (3) premiers aliments servis durant la période d'acclimatation**

Analyse typique		1^{er} aliment	2^e aliment	3^e aliment
Protéine brute (minimum)	%	20,5	19,0	19,0
Fibre brute (maximum)	%	1,6	3,0	3,0
Fibre ADF	%	3,1	3,8	3,8
Gras (minimum)	%	8,0	5,0	5,0
Calcium	%	1,1	1,0	1,0
Phosphore total	%	0,8	0,8	0,8
Sodium	%	0,2	0,2	0,2
Cuivre ajouté	mg/kg	125	125	125
Zinc ajouté	mg/kg	500	500	500
Sélénium ajouté	mg/kg	0,3	0,3	0,3
Vitamine A ajoutée	UI/kg	18 000	10 000	10 000
Vitamine D ajoutée	UI/kg	1 800	1 000	1 000
Vitamine E ajoutée	UI/kg	50	46	46

*Des changements sont possibles selon le fournisseur.

**Formulation et spécifications nutritionnelles des aliments
(4^e aliment en période d'acclimatation et aliments d'évaluation)**

	Aliments				
	Période d'acclimatation	Période d'évaluation			
		4 ^e aliment	Début ~ 25 à 50 kg	Croissance 50 à 75 kg	Finition 75 à 115 kg
Ingrédients par 1 000 kg					
Maïs	kg	478,88	522,32	598,19	628,90
Tourteau de soya (48,0 %)	kg	293,00	255,00	213,00	191,00
Blé	kg	150,00	150,00	150,00	150,00
Graisse (animale)	kg	37,00	35,00	5,00	-----
Pierre à chaux fine	kg	16,20	15,20	15,20	13,90
Phos. monodicalcique (équival.19,0/16,8)	kg	9,40	7,30	4,90	3,70
Sulfate de cuivre 25 %	kg	0,25	0,25	0,25	0,25
Sel	kg	4,50	4,50	4,50	4,50
Lysine (L lysine Hcl)	kg	3,50	3,50	3,20	2,60
DL méthionine	kg	1,55	1,25	0,75	0,30
L-thréonine	kg	1,20	1,15	0,60	0,60
L-tryptophane	kg	0,07	0,08	0,06	-----
Concentré d'oligo-éléments et vitamines	kg	3,00	3,00	3,00	3,00
Chlorure de choline sec 60 %	kg	0,95	0,95	0,95	0,95
Phytase (500 UP/1000)	kg	0,50	0,50	-----	-----
Phytase (400 UP/1000)	kg	-----	-----	0,40	-----
Phytase (300 UP/1000)	kg	-----	-----	-----	0,30
Total		1 000	1 000	1 000	1 000
Valeurs nutritives prévues (telles que servies)					
Matière sèche	%	88,63	88,59	88,24	88,16
Protéine brute	%	20,65	19,22	17,80	16,94
Énergie dig. Porc*	kcal/kg	3 467	3 461	3 324	3 304
Fibre brute	%	3,07	3,04	3,06	3,05
Gras (extractif à l'éther)	%	6,08	5,99	3,25	2,84
Calcium	%	0,89	0,80	0,75	0,68
Cuivre total	mg/kg	93,53	92,71	91,83	91,34
Phosphore total	%	0,57	0,51	0,45	0,42
Sodium total	%	0,19	0,18	0,18	0,18
Sélénium ajouté	mg/kg	0,30	0,30	0,30	0,30
Lysine totale	%	1,30	1,20	1,08	0,97
Meth. + cys. totale	%	0,82	0,75	0,68	0,61
Méthionine totale	%	0,46	0,42	0,35	0,30
Thréonine totale	%	0,87	0,81	0,71	0,68
Tryptophane total	%	0,24	0,22	0,20	0,18
Meth. / Lysine totale		0,35	0,35	0,32	0,31
Méth.+Cyst. / lysine totale		0,63	0,63	0,63	0,63
Thré. / lysine totale		0,67	0,68	0,66	0,70
Tryp. / lysine totale		0,18	0,18	0,19	0,19

* : Les valeurs de l'énergie digestible ont été calculées à partir des tables CDPQ-MAPAQ.



**PROGRAMME D'ÉVALUATION DES PORCS EN STATION (PEPS)
ÉPREUVES DE NOVEMBRE 2008 ET MAI 2009 (N^{OS} 25 ET 26)
VOLET PORCS COMMERCIAUX**

DEMANDE DE PARTICIPATION

(Organisation participante - diffuseur de génétique)

Nous avons pris connaissance du protocole fourni par le CDPQ. Nous acceptons toutes les conditions énumérées, y compris la clause au point 6 : « Publication des résultats » et acceptons de participer aux épreuves d'évaluation de lignées mâles terminales.

Nous nous engageons comme diffuseur à respecter notre engagement dans la mise en place des épreuves d'évaluation de lignées génétiques dont l'entrée des porcelets est prévue en novembre 2008 et mai 2009.

Signature : _____

Nom du responsable : _____

Nom de l'organisation : _____

Nom de la ou des lignée(s) paternelle(s): 1-_____ 2-_____

Nom de la ou des lignée(s) maternelle(s): 1-_____ 2-_____

Adresse : _____

Téléphone : _____

Retourner à : Frédéric Fortin

Centre de développement du porc du Québec inc.
2795, boul. Laurier, bureau 340
Québec (Québec) G1V 4M7
Tél. : (418) 650-2440 p. 110 – Téléc. : (418) 650-1626
Courrier électronique : ffortin@cdpqinc.qc.ca



**PROGRAMME D'ÉVALUATION DES PORCS EN STATION (PEPS)
ÉPREUVES DE NOVEMBRE 2008 ET MAI 2009 (N^{OS} 25 ET 26)
VOLET PORCS COMMERCIAUX**

DEMANDE DE PARTICIPATION

(Producteur participant)

J'ai pris connaissance du protocole fourni par le CDPQ. J'accepte toutes les conditions énumérées et je demande qu'on m'inscrive aux épreuves d'évaluation de lignées génétiques de novembre 2008 et mai 2009.

Signature : _____

Nom du responsable : _____

Nom de la ferme : _____

Adresse d'expédition du courrier : _____

Ville : _____ Code postal : _____

Téléphone : _____ Télécopieur : _____ Cell. : _____

Adresse de la maternité (si différente de l'adresse d'expédition) : _____

Téléphone : _____ Télécopieur : _____

Nom du vétérinaire : _____

Participation au programme AQC^{MD} (Assurance Qualité Canadienne) :

Oui : _____ Non : _____

À retourner à :

Richard Mailhot

Centre de développement du porc du Québec inc.

2795, boul. Laurier, bureau 340

Québec (Québec) G1V 4M7

Tél. : (418) 650-2440 p. 130 – Téléc. : (418) 650-1626

Courrier électronique : rmailhot@cdpqinc.qc.ca

N.B. : Les porcelets seront achetés au prix du marché, pour le porcelet sevré
hâtivement en vigueur la semaine de l'entrée. Le CDPQ effectuera le paiement.

Les doses de semences seront fournies aux producteurs participants.



**PROGRAMME D'ÉVALUATION DES PORCS EN STATION (PEPS)
ÉPREUVES DE NOVEMBRE 2008 ET MAI 2009 (N^{OS} 25 ET 26)
VOLET PORCS COMMERCIAUX**

DEMANDE DE PARTICIPATION

(Centre d'insémination)

J'ai pris connaissance du protocole fourni par le CDPQ inc. J'accepte toutes les conditions énumérées et j'accepte de fournir et de distribuer gratuitement la semence des verrats identifiés pour les épreuves d'évaluation de lignées génétiques de novembre 2008 et mai 2009.

Signature : _____

Centre d'insémination : _____

Adresse : _____

Téléphone : _____

À retourner à :

Frédéric Fortin

Centre de développement du porc du Québec inc.

2795, boul. Laurier, bureau 340

Québec (Québec) G1V 4M7

Tél. : (418) 650-2440 p. 110 – Téléc. : (418) 650-1626

Courrier électronique : ffortin@cdpqinc.qc.ca

2008-01-14

FORMULAIRE 4



**PROGRAMME D'ÉVALUATION DES PORCS EN STATION (PEPS)
ÉPREUVES DE NOVEMBRE 2008 ET MAI 2009 (N^{OS} 25 ET 26)
VOLET PORCS COMMERCIAUX**

AUTORISATION DE L'UTILISATION DE LA SEMENCE PROVENANT DES DIFFÉRENTS GROUPES

Par la présente, _____ autorise les CIA ci-après mentionnés :
_____, _____, _____ à
distribuer de la semence des verrats en consignment aux producteurs commerciaux qui ont
accepté de participer aux épreuves d'évaluation de lignées génétiques de novembre 2008 et mai
2009 à la station d'évaluation des porcs de Deschambault.

Il est entendu que _____ fournira aux CIA et au CDPQ la liste des
verrats devant être utilisés dans le cadre de ces épreuves et que les CIA devront fournir la
preuve que seuls ces verrats ont été utilisés et uniquement distribués dans le cadre de ces
épreuves pour les producteurs commerciaux participants.

Le CDPQ remettra aux CIA la liste des éleveurs participants dès qu'elle sera définitive.

Note : La distribution de la semence n'est autorisée que dans la période de saillies
pour l'épreuve en question, soit du 14 au 18 juillet 2008 (épreuve 25) et du
12 au 16 janvier 2009 (épreuve 26).

Signature

Date

Lieu

c.c. : Frédéric Fortin

2008-01-14