GenOvis Program

Sheep Breeders’ Handbook

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Introduction

Purpose

The purpose of the GenOvis program is to assist Canadian purebred and commercial sheep producers by providing a home test program which will effectively evaluate the genetic merit of potential breeding stock for economically important traits and provide a measure of flock management and productivity.

Organization

The GenOvis program originates from combined efforts of Ontario (Ontario Ministry of Agriculture, Food and Rural Affairs – OMAFRA) and Quebec (Centre d’expertise en production ovine du Québec – CEPOQ). Since summer 2011, the two databases (Ontario database known as SFIP and other provinces database known as GenOvis) were merged and data from all Canadian provinces are now included in a unique database. The program is now administrated by the Ontario Sheep Marketing Agency – OSMA in Ontario and by the CEPOQ for all other provinces.

General Outline of the GenOvis program

The GenOvis program is a home test genetic improvement program designed to assist Canadian purebred and commercial sheep producers in the evaluation of potential breeding stock and to provide a measure of the comparative productivity of ewes in the flock.

The GenOvis program provides information that producers can use to improve the genetic merit of their flock and monitor performance, and maintains a large database of the performance records of tested sheep breeds in Canada.

The performance of an animal that you see and measure is a result of both the genetics of the animal and the animal’s environment. For example, animals with exactly the same genetics will perform differently if they are fed differently and animals that are fed exactly the same will perform differently due to genetics.

The program evaluates the differences between animals that are caused by genetics. Therefore, groups of animals must be treated or managed the same in the same environment to evaluate the differences caused by genetics. This is called a contemporary group or a management group. A management group consists of lambs that are born within 41 days of each other, are located in the same place and receive the same care and management. The lambs’ dam must
also have received the same management from breeding until lambing. This ensures that most of the differences observed between animals are due to genetics.

In order to participate in the program, some basic information must be collected on the animals, i.e., sire, dam, foster ewe and lamb identification, lamb birth date, breed of sire and dam, sex of lamb, born as and raised as. All animals must be individually identified by tag or tattoo. The weight information is optional but very important if the participant wants to receive a complete evaluation of the animals (see page 13). Weights can be collected at birth, 50 days (28-69 days) and 100 days (70-120 days). Lamb reports are issued after the 50 and 100 day weighings if weight information is sent in to the data collection office.

Weights have to be taken by the breeders themselves with an accurate scale suitable for the weighing of sheep.
Flock Testing

Benefits of Using GenOvis

There are a number of benefits to keep basic performance data on your flock.

1. **Average Flock Data** – Basic flock data is summarized to provide baseline flock production data that can be used to monitor the performance of the flock. This is important information when evaluating management changes and decisions. Small changes in average performance of the flock can have a big impact economically. For example, if your mortality increases by 2%, you have lost the potential income from two lambs for every 100 lambs. This is a small increase and may not be noticed if records are not kept.

2. **Breed Data** – Sending your flock records to the central database increases the value of the information that we have on breeds. This average breed data, which is reported in our annual report, is important when choosing breeds of ewes for a flock or for a crossbreeding program.

3. **Individual Lifetime Data** – The program also provides summaries of lifetime data for individual animals. The information can be obtained as an average number for each performance measure or all of the progeny of an individual animal can be printed with their performance information. This information is useful for making culling decisions, selection decisions and to compare flock sires.

4. **Genetic Evaluations** – The program also generates genetic evaluations. These evaluations compare the genetic value of animals for several performance traits. These numbers can be used across flock. As a result, it is easier to purchase an animal that will improve your flock.

Eligibility

All Canadian sheep producers, both purebred and commercial, who maintain adequate records of age, ancestry and identification of lambs produced in their flocks are eligible to apply for enrolment on the program. There is an annual fee to join the program. Contact the GenOvis office to obtain more information.
Enrolment

To enrol into the GenOvis program, please contact the CEPOQ genetic team:

Centre d’expertise en production ovine du Québec
1642, de la Ferme
La Pocatière (Québec)
GOR 1ZO

Phone: 418 856-1200, extension 226
Fax: 418 856-6247
E-mail: genovis@cepoq.com

Unique Animal Identification

In order to do genetic evaluations, it is necessary to have a system of unique identification of animals so that all animals can be evaluated in one large database. For the purposes of the program, all animals must be recorded with a tattoo format identification, which do not necessarily have to be printed in ears of the animals. The tattoo format is made up of flock letters, an animal number and a year letter. Flock letters are assigned for a fee from Canadian Livestock Records Corporation (CLRC) for purebred, hybrids and commercial flocks. If you don’t already have your flock letters, please contact the CLRC located at:

2417 Holly Lane
Ottawa (Ontario)
K1V 0M7
Phone: 613 731-7110 or 1-877-833-7110

An Example of Purebred Tattoo

<table>
<thead>
<tr>
<th>Flock letters</th>
<th>Animal number</th>
<th>Year letter (for 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC</td>
<td>123</td>
<td>X</td>
</tr>
</tbody>
</table>

An Example of Hybrids Tattoo

<table>
<thead>
<tr>
<th>Flock letters</th>
<th>Animal number</th>
<th>Year letter (for 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5AB</td>
<td>123</td>
<td>X</td>
</tr>
</tbody>
</table>
An Example of Commercial Tattoo (crossbred)

SXBC 123 X
Flock letters Animal number Year letter (for 2010)

Commercial flock letters always have a number in front of the letters. Five is the number that signifies Ontario. The animal number is assigned by the producer and the year letter is determined by CLRC for all species (see Appendix II). The year letter allows producers to start numbering their animals at number one each year if desired. For example, ABC1P is different than ABC1W. In this case, both animals are probably tagged with number 1 but the first one is born in 2004 and the second one in 2009.

National ID and Unique Identification in GenOvis program

Electronic national Identification isn’t yet required in Canada except in the province of Quebec. All provinces require animals be tagged with a national identification when leaving the farm. At this time, this number cannot be used to identify sheep on the GenOvis program. The program requires the unique identification to be unique forever and to indicate the flock in which the animal was born. The national identification is a random number, which could potentially be reused in the future. GenOvis does have the capability of storing national identification numbers as well as automatically creating a tattoo format from the last 5 digits of the national Id number (ie. 317 257 586 becomes ABC 57586Y). Once animals are entered in GenOvis, they can be retrieved by national Id number and reports can be generated using and reporting national Id number.

Converting from Tag Numbers in the Barn to Tattoo Numbers in the Records

Producers have developed many methods to make this easier. Some of the methods are more attractive than others, depending on the size of your flock and personal preferences.

1) Use a different colour of tag each year.
2) Use tags that you write your own number and year letter on.
3) Don’t start at number one each year. Keep using consecutive numbers until the oldest ewes have left the flock. This will result in a list of tag numbers for each year. For example:

   Year letter T, 2007 - Tag numbers 1-457
   Year letter U, 2008 - Tag numbers 458-1021

4) You can also use the 3, 4 or 5 last digits of the national ID of your animals to create the tattoo.
General Rules

1) All ewes and rams in the flock must be identified by means of a tattoo or ear tag. In Quebec, animals must have a national ID tags on both ears.

2) Lambs in the flock must be identified by means of an ear tag or tattoo within 10 days of birth.

3) A record shall be maintained by the producer which shall include date of birth and sex of each lamb produced in the flock, and also, the identity of its dam and sire if known.

4) Producers are required to have an accurate scale suitable for weighing sheep. Bathroom scales are not considered suitable for this purpose.

5) Weights have to be taken between 28 and 69 days of age for the 50 day weighing and between 70 and 120 days of age for the 100 day weighing. According to the Canadian Sheep Breeders’ Association rules, purebred, registered animals must be legibly tattooed by 85 days of age.

6) The lambs scanned by ultrasound for loin and fat depth should be measured at the time of the 100 day weighing. However, it is possible to take the ultrasound measurements as late as 135 days of age. In that case, the breeder should make its 100 day weighing in the allowing period (between 70 and 120 day). Consult the site www.genovis.ca to get more details.

7) All lambs in a group are to be raised under similar conditions of feeding and management for the duration of the performance test. The lambs’ dam must also have received the same management from breeding until lambing. Animals fed or managed differently should be recorded in different management groups. The genetic potential of lambs tested within a flock can only be accurately compared if they are raised under similar conditions. Lambs that are bottle fed should be reported as raised as ‘B’ on the lamb input form.

8) If, in the opinion of the Administrators of the program, a producer has violated any rules of the program or has supplied any false or misleading information, the Administrators may suspend the producer from enrolment in the program for such period of time as the Administrators may determine.

9) The producer is responsible for all data sent to the program. The precision of this data will determine the accuracy of the genetic evaluation.
Information Required

Lambing information collected by the producer:

- Sire identification – can be group mated
- Dam identification
- Foster ewe identification
- Lamb identification
- Lamb birth date
- Breed of sire and dam
- Sex of lamb
- Born as
- Raised as

Weighing information that can be collected by the producer:

- Birth weight (taken within 24 hours of birth) (optional)
- 50 day weight and weigh date (taken between 28–69 days of age)
- 100 day weight and weigh date (taken between 70–120 days of age)

Lambing diaries are provided to participants of the program to assist with keeping records on each ewe as she lambs. The diary can then be used to fill out the input forms for the program. There are also barn sheets, available upon request, for taking weight information in the barn.

Realtime Ultrasound Carcass Measurements

Fat depth and loin depth measurements can be taken on live animals with a realtime ultrasound machine by a private contractor. This information is particularly important for producers wanting to improve the muscling on their lambs. This information is collected at the time of the 100 day weighing. This service isn’t yet available in all the provinces. For more information, contact the GenOvis office at 418 856-1200, extension 226 or by e-mail: genovis@cepoq.com.

Management Groups

Lambs born within 41 days of each other, located in the same place, receiving the same feed, care and management are a management group. Lambs of different breeds should be listed in the same management group if they were managed together. The lambs’ dam must also have received the same management on the same production schedule from breeding until lambing. Performance is made up of genetics and management. Management groups of any size can be processed and will receive evaluations. However, the more lambs there are in a management group, the more accurate is the evaluation.
Reports available

One valuable part of the program is the reports containing summary information generated from data submitted by the producer. This summary information is useful in tracking flock performance for a number of traits over time. The producer can then determine progress or lack thereof in meeting breeding and flock performance goals and take corrective action when necessary. This becomes the basis of your decision making process, i.e., selection, culling, breeding and buying decisions.

Lamb Reports

The lamb report is produced after the 50 day weighing and again after the 100 day weighing. This report summarizes the information the producer provided on the lamb input form. When the data is processed, breeds are calculated for lambs, based on the breed information from their parents. If the breeds for the parents aren’t known, the breed of lamb will show as XX or unknown. The management group is sorted and summarized by breed in the report that is returned to the producer.

50 Day Lamb Report

This report calculates adjusted 50 day weights. The 50 day weights are adjusted for age and sex of lamb, age of dam and type of birth and rearing (single, twin, triplet, etc.). All actual weights of lambs are adjusted to a standard age of 50 days and are also adjusted to the equivalent of a ram lamb raised as a single from a mature ewe, four or five years of age. This adjustment means that adjusted weights on all lambs in the management group can be compared directly within the management group.

The adjusted 50 day weight is influenced by the milking ability of the dam and by the genetic gaining ability of the lamb itself.

An EPD is the genetic value that is expected to be passed on to an animal’s progeny. For further information, see Appendix I - Genetic Evaluations. Estimated Progeny Differences (EPDs) are provided on the EPD lamb report (full EPDs) for the following traits: lamb survival direct and maternal, birth weight direct and maternal, 50 day weight direct and maternal, 100 day weight direct, loin depth thickness, fat cover thickness, age at first lambing, number born at first lambing, number weaned at first lambing, lambing interval, number born later lambings and number weaned later lambings.

Genetic indexes are present on both the lamb report (raw data) and the EPD lamb report (full EPDs). The genetic indexes are: the growth index, the growth maternal index, the terminal index and the terminal maternal index.
Also provided at the time of the 50 day lamb report is an inventory of all the breeding animals in the group, their updated summary information and their updated EPDs.

**Using the 50 Day Lamb Report**

The 50 day report should be used for culling ewes, initial selection of replacements and monitoring flock performance. It is important to use the 100 day lamb report to make the final selection. The 100 day weighing increase the accuracy of the EPDs linked with growth and all the genetic indexes.

**Culling Ewes**

The best time for culling ewes is shortly after weaning. Ewes should first be culled for physical soundness, i.e., udders, prolapses, etc. An average cull rate is 15-20% of the flock. The average performance numbers and EPDs on the inventory report can be used for culling ewes that have low production. By culling some of the poor producing ewes there is room in the flock to keep genetically superior replacements and increase the average performance of the flock over time. The inventory will provide information on average lambing interval and average performance of the ewe per lambing and per year.

**Selecting Replacements**

Use the information available from the 50 day lamb report as a first step in identifying potential replacement lambs. The reason for making some preliminary selections is to ensure that prospective replacement lambs are retained if some lambs are marketed prior to the 100 day weighing. In that way, you will avoid marketing the lambs with good genetic value. Also, we recommend, when possible, to weigh as many lambs as possible at 100 day to improve the accuracy of the EPDs and genetic indexes for these lambs.

**Monitoring Flock Management**

The 50 day lamb report can also be used to monitor flock management of the lambing group. Basic data such as average group information for number born, number born alive, % (percent) mummified, % stillborn, % death loss 0-10 days, % death loss 11 days to 50 day weighing, number weaned and average 50 day adjusted weight should be used to evaluate changes in management techniques and ensure that the performance of the flock is being maintained and hopefully improved. If these numbers are not what is expected, this is the time to try and evaluate what the problem(s) may have been so they can be corrected for the next lambing.
100 Day Lamb Report

This report is exactly the same as the 50 day lamb report with 100 day information added. 100 day adjusted weight and average daily gain (ADG) are provided. The 100 day adjusted weight adjusts the actual 100 day weights for the same factors as the 50 day weighing, and as if the lambs were 100 days of age. The adjusted 100 day weight is calculated by adding the weight gain between 50 and 100 days (ADG X 50) and the adjusted 50 day weight. The average daily gain is the real gain from 50 to 100 days. However, the females and wethers ADG is adjusted with a factor of 0.07 to permit to compare with the ADG of the males.

EPDs (Estimated Progeny Differences)

The report includes updated EPDs for all of the traits provided at 50 days and an EPD for 100 day weight. The 100 day weights on an animal can affect the birth weight direct and maternal EPDs as well as the 50 day weight direct and maternal EPDs. The gain between the 50 and 100 day weighing is based primarily on the animal’s own ability to grow and can change how the direct and maternal components of birth weight and 50 day weight are divided. Genetic indexes are based on a combination of the lamb EPDs. Any change in the value of EPDs included in a genetic index will affect the value of this index. The report includes an update of the EPDs evaluated after the 50 day weighing.

Using the Lamb Report after the 100 Day Weighing

This report is useful to make the final selection of ewe lambs and ram lambs.

Selecting Replacements

The 100 day lamb report is used for final selection of replacement ewe lambs and the selection of flock sires. The lamb report provides the information necessary to easily identify the best gaining animals in the group and the best gaining lambs from multiple births.

The EPDs rank animals using all of the available data for each trait from the animal itself and its relatives. This information can be used to monitor the average flock EPDs for each trait so that when purchasing animals a flock improver is selected. Also, it can be used to select animals based on specific traits, particularly maternal traits, which are difficult to improve unless information on relatives and their groups are used.

Indexes are used to select animals for more than one trait at a time. Four genetic indexes were designed to assist you when selecting animals. These indexes combine different EPDs according to 4 different selection goals.
The growth index (Gx) is an EPD index and is based on EPD values. This index can be used to select animals for all of the growth traits simultaneously. If a producer is interested in improving growth rate, this index will be easier to use than trying to consider EPDs for birth weight, 50 day weight and 100 day weight separately. The growth index will not improve maternal traits. It is used to select terminal ewes and rams.

The terminal index (Tx) is an EPD index based on EPD values. This index can be used to select for growth traits, increased muscle depth and decreased fat depth simultaneously. If a producer is interested in increasing muscling as well as growth rate, this index must be used in order to make progress in both traits. More information on this index is on Appendix I.

The growth maternal index (GxM) is an EPD index based on EPD values. This index can be used to select for growth traits, maternal growth traits, number born later and number weaned later simultaneously. This index puts more emphasis on maternal traits (number born and weaned, 50 day weight maternal contribution) than on growth traits. It is used to select rams to sire maternal ewes and ewes for the flock. For terminal breeds, you should select using the Gx or Tx for both ewes and rams. Perhaps, it may happen that you need to improve maternal traits in your flock. If your flock is experiencing problems with the number of lambs that are being born or kept alive – it is important to select your ewes differently then rams or you won’t have a flock to work with or won’t be able to produce enough lambs to sell enough rams to be profitable.

The terminal maternal index (TxM) is an EPD index based on EPD values. This index can be used to select for growth traits, maternal growth traits, number born later and number weaned later, increased muscle depth and decreased fat depth simultaneously. This index puts more emphasis on maternal traits (number born and weaned, 50 day weight maternal contribution) than on growth traits.

Genetic selection has to be re-evaluated on a regular basis against what is actually happening in your flock. The indexes are useful tools to be used but may not be complete answer for any flock situation.

Always try to select a group of animals, perhaps double the number needed, using the performance information and EPDs on the animals and their parents. Then go to the barn, sort off the group and select from that group based on physical soundness and appearance. This helps to prevent the selection of a large, very good looking single lamb from a mature ewe that only lambs occasionally.

**Monitoring Flock Management**

Most of the numbers needed for monitoring flock management are available on the 50 day report. On this report the only added numbers are average 100 day adjusted weight, average average daily gain for the group and percentage mortality from 50-100 days. These numbers are important for monitoring what is happening after weaning. Mortality should be very low, less
than 1%, and average daily gain should be monitored group to group and year to year to see the effect of changes in feed, weather and other management factors.

Ewe and Ram Inventory Reports

This report lists all of the breeding animals in the flock with their average performance information listed on two lines.

Inventory reports are useful for identifying the best ewes and sires in the flock as well as those ewes that should be culled due to poor performance. It is also a good reference when choosing replacement animals to check age at first lambing, lambing interval and many other productivity traits of breeding ewes. The inventory is produced for a group with each 50 day and/or 100 day lamb report. The inventory can be requested at any time during the year by contacting the GenOvis office. To keep the inventory current, disposal codes should be placed on the inventory beside the animals that are no longer in your flock (see Appendix II). When the inventory is returned with codes, it will be updated and a new copy sent.

Flock Evaluation Report

This report summarizes the average performance of the flock for a year by breed. The current year is broken down by age of ewe, as well as listing a total average for the flock and the average of the previous year. Also, you will find the national annual breed average for each of the traits. This report is generated on a calendar year basis and is sent to each producer once a year. This report can also be requested at any time for any year and time period.

The primary function of this report is to monitor flock performance. Particularly in larger flocks, it is difficult to notice small changes in things like average lambing interval, number of lambs weaned per ewe and percentage of stillborns. This report compares the current year to the previous year so that these changes can be identified.

Animal Performance Certificate

The animal performance certificate provides information on the animal's pedigree and performance data. The pedigree lists parentage for three generations. The performance data recorded on the animal as a lamb and the current EPD values and genetic index are also listed. This report can be used to monitor inbreeding. You can also use the mating planner in the GenOvis program to quickly assess ewes and rams to determine the inbreeding value of potential progeny (pedigrees need to be completed in GenOvis to get an accurate value). The animal performance certificate is also useful to provide buyers with the basic information on an animal.
**Individual Progeny Performance**

This report can be produced for ewes or rams. The report lists each individual progeny of the animal with its basic lamb performance data along with disposal and comment codes. This report can be used to look at the individual performance of each progeny of a parent and to determine how many progeny are parents in the flock.

**Progeny Performance Summary**

This summary shows the average performance of all of the progeny of an animal, along with the average EPDs for those progeny for all traits. The summary also calculates the average productivity of the daughters of the animal. This report can be produced for any parent animal with progeny data. This report can be used to monitor how daughters and all progeny (males and females) kept from a particular ram or ewe are performing on average in the flock. This summary is useful when trying to compare two flock sires. The progeny information will allow the producer to compare the average performance of the progeny of each sire.
Reports on the Website www.genovis.ca

Top Animal EPD Report

The Top Animal EPD Report is a listing of rams and ram lambs with maternal or growth genetic evaluation index into the top 10 percent for the breed. This list includes animals from all participants since it is a condition to their enrolment to the program. These reports can be found on the GenOvis website at www.genovis.ca.

The Top Animal EPD Report is currently available for the breeds where there is a minimum of 3 Canadian breeders who tested a total of more than 100 ewes during the year on the GenOvis program. Each report is listed by relevant indexes for the breed type (Maternal breeds: Growth Maternal Index; Terminal breed: Growth Index and the Terminal Index).

The Growth Maternal index is designed to increase the number of lambs born and weaned as well as increasing growth rate and minimizing the increase in birth weight. The Growth index is designed to increase growth rate and minimize the increase in birth weight. The Terminal index is designed to increase growth rate and muscle depth and decrease fat depth simultaneously. (see Appendix I) For each breed there are two reports as follows:

Top Ram Report
The top ram report lists all animals with genetic evaluation indexes in the top 10% for the breed who respect specific criteria:
- Under 10 years old (disposed or not)
- Must have at least one progeny evaluated.

Top Lamb Report
The top lamb report lists all animals into top 10% for the breed born into the previous 24 months that have completed their test and are not disposed. WARNING: EPDs and indexes of the lambs listed are more prone to change in time because their evaluation is generated from a limited amount of data.

Improver Ram Lists

The Improver Ram List is a listing of young rams and ram lambs with growth maternal index above 75% or more for the breed or a growth index or terminal index of 50% and more for the breed. An improver animal is an animal that performs better than its breed's average. This list includes animals from all participants since it is a condition to their enrolment to the program. A more severe selection on maternal rams is done for two reasons. First, demand for maternal rams is lower than paternal rams. Second, growth traits are more heritable than reproduction traits. These reports can be found on the GenOvis website at www.genovis.ca.
The improver ram list is currently available for the breeds where there is a minimum of 3 Canadian breeders who tested a total of more than 100 ewes during the year on the GenOvis program. Each report is listed by relevant indexes for the breed type (Maternal breeds: Growth Maternal Index; Terminal breed: Growth Index and Terminal Index).

**Improver Lamb List**

The improver lamb list is a listing of rams without progeny that have a growth maternal index of 75% or more for the breed or a growth index or a terminal index of 50% or more for the breed. The ram lambs born in the previous 24 months that have completed their test and are not disposed are included. **WARNING: EPDs and indexes of the lambs listed are more prone to change in time because their evaluation is generated from a limited amount of data.**

**Producer Participation List**

This is a list of all producers participating on the program including their flock letters, farm name, city, province, phone number, e-mail and breeds tested. Producers underlined in blue are sellers of breeding sheep.

**Range in Estimated Progeny Differences (EPD) Values by Trait for Each Breed**

A chart of the range in EPD values for each breed is updated two times a year and is available on the web site. These numbers provide the range of EPD values for each trait for each breed. This is necessary to determine what EPD values are “good”. For example, a polled Dorset in the top 1% of the population for number weaned later will have an EPD of 0.05 or higher (November 2013). So an EPD for number weaned later for Dorset of 0.06 is exceptional. The chart includes the genetic selection indexes as well as the mean EPD for each trait.

This range of values chart is based on all lambs born in the past five years. Contact the GenOvis office for more information about these charts.

Across flock genetic evaluations are only as good as the links between the flocks. If you are not well connected to the population, your animals will rank correctly within the flock but may not rank correctly within the population or across flocks.
How to Complete the GenOvis Program Lamb Input Form

A sample of lamb input form is presented on page 27 and 29. Appendix III contains specific examples that you can use when filling out your data input forms.

A copy of the lamb input form with birthing information can be sent to the office as soon as the management group is complete, usually a 41 day age range of lambs. Sending this information in to the office prior to any weight information will ensure fast turnaround of your report when the weight data is sent in. Birthing information can also be sent after the 50 day weights are taken. Some producers send all of the information after the 100 day weighing.

The GenOvis database is available online through the internet. Producers can enter their data directly into the program. Producers can also choose to enter their data into an electronic copy of the lamb input form and send it to the GenOvis office by email. The office will upload the data into the program.

Please be sure to record all lambings and births, even if the lambs are dead. Even if you are not going to take weight information or you have a ewe lamb outside of the normal group, be sure to record the basic birth information and send it in to the office. This will ensure that the lifetime record for all of your ewes is complete. Otherwise, the summary information on your inventories and flock evaluations will be incorrect and difficult to use with confidence.

Lambs born within 41 days of each other that are being managed the same from ewes that were managed on the same production system from breeding to lambing can be included in the same group.

How to Complete the Form
(see sample on page 27)

The 50 day weighing must be done when the lambs are 28 to 69 days old. You can send the lamb input form or key this information into the online program prior to or after the 50 day weighing.

1. GenOvis #: If you are aware of your number, please fill in this information.

2. Group #: A management group is a group of lambs that are born within 41 days of each other and raised in the same environment under the same care and management. Animals that have been fed or managed differently should be put into a separate management group. The exception to this is bottle fed lambs which can stay in the same group but are recorded with a ‘B’ in the Raised As column.
3. **Animal Identification:** All dams, sires, donors, fosters and lambs must be identified on the lamb input forms using a standard format of flock letters, animal number and year letter (see Unique animal identification on page 10).

**Sire and Dam Identification**

The sire and dam of the lamb should be identified with the flock letters of their birth flock. The flock letters are determined by the flock where the animal is born. The ram and ewe number portion of the identification must be numeric. It is possible to use a maximum of 6 digits on the animal identification (the program can generate tattoo using the last 5 digits). The year letter indicates the birth year of the animal. To update ewe summaries and calculate sire average performance with accuracy, it is important that each animal has a unique identification and that exactly the same identity be used for that animal in the future. This identification method is necessary to avoid confusion between your animals and those of another flock. Also, it is really important to make the correction when you change the identification of an animal in time (tattoo or national ID). (For more information refer to unique animal identification section on page 10)

**Donor / Foster Identification**

This section must be completed when a lamb is fostered by another ewe or comes from embryo transfer. This column on the input sheet is used for both foster situations and for donor ewes in embryo transfer situations.

**For Fosters**

This section is completed when a lamb has been fostered onto another ewe. Complete the sire and dam sections with the identification of the natural parents. Put the identification of the foster ewe in the foster ewe section. The foster ewe will be listed again as a dam with her own lambs. An example of this is ewe ABC25H provided on the sample sheet on Appendix III.

**For Embryo Transfer – Donors and Recipients**

In the case of an embryo transfer, the recipient ewe or birth mother should be listed as the dam and the genetic dam should be listed as the donor. If the lamb is then fostered, a second line should be used to record the foster ewe. See sample lamb entry ABC9L for an example on Appendix III. A comment code of ET should be used in the comment code section. Please notice
that the genetic dam (donor) will appear as the dam on the lamb report and the recipient ewe will be indicated under the Recipient column.

**Unknown Sires**

If you bred your ewes using a group mating or a number of rams, you should use a standard unknown sire tattoo. This tattoo should be made up of the breed code of the ram(s) and the word ram, i.e., use “DPram” for a group of Dorset Polled rams or “SUram” for a group of Suffolk rams. For a sire or groups of sires where the breed is unknown, use XX, i.e., “XXram”.

**Unknown Ewes**

Occasionally there may be a lamb born and the ewe can’t be identified. Use the same format as for unknown rams only use the word ewe instead of ram, i.e., “DPewe” or “SUewe”.

**Lamb Identification**

Generally lambs are listed on the report in order of birth. The identification of an animal must be consistent every time information is reported. If animals kept as replacements are re-tagged, it is very important that the identification used as an adult is the same as the identification used as a lamb. This is the only way that the lamb information can be matched with the adult animal. In the case of purebreds, the actual tattoo on the animal’s ears (or the national ID in Quebec) should be used. In the case of commercials, lambs in the system can be re-named with different numbers if you send in a form listing the lamb numbers and the new re-tagged numbers.

All lambs that a ewe gives birth to should be recorded, including the dead and mummified, and coded with disposal codes appropriately. Obviously, the dead lambs will usually not have tags so numbers can be made up. Some producers use a zero in front of the numbers of siblings. For example, triplets with one dead may be: 24, 25 and 025. Others use large numbers that they wouldn’t normally use. For example: 90001 or 9001. The animal number cannot have more than 6 digits.

4. **Lamb Identification**: Your own flock letters should be used as the flock letters for the lamb. The animal number can have as many as 6 digits, but it must consist only of numbers. The year letter space should be filled in with the appropriate year letter. For 2013, the letter is “A” and for 2014, the letter is “B”. See **Appendix II** for the complete year letter chart.

5. **Birth date of Lamb**: The day should be entered first, followed by the month number and then the year.
6. Sex of Lamb: This must be filled in using “M” for rams, “F” for ewes and “W” for wethers. If this is not filled in, “F” will be used. To get more accurate evaluation, it is always better to indicate the sex of the lamb. Hermaphrodites can be filled in as F or M but should be identified with the comment code “3W”.

7. Born As: Enter the number of lambs born by the natural dam including those born dead or mummified.

8. Raised As: This is the number of lambs weaned or the number raised to the 50 day weighing. Therefore, if the lamb has been raised on a ewe along with one other lamb, you would place a “2” in this column (lamb fosters by a dam that raises her own lamb). This is regardless of how many lambs were born by the ewe; she could have only had a single but raised twins. If the lamb has been bottle fed, a “B” is placed in this column. A dead lamb is always raised as “0” if it is 5A, 5B or 5C. If a lamb dies between 10 days and the 50 day weighing, 5D, consider the lamb raised if it reaches 21 days of age or more. Before 21 days of age, the raised as should be zero. A bottle fed lamb that dies should be raised as “0” with 3U comment code.

9. Birthweight: The completion of this section is optional, but if used, the weights should be recorded in kilograms to one decimal place. Birth weights should be taken in the first 24 hours of life.

10. Disposal Code: If the lamb is no longer in the flock, or was born dead, mummified or as part of an abortion, the appropriate code should be entered here. A list of codes is on Appendix II. Notes: Stillborn 5B is used when the lamb didn’t breathe, 5C, died 0 to 10 days, is used when the lamb did breathe but subsequently died. It is important to use these codes or your summary numbers for mortality will not be calculated correctly on your summary for the lambing group or your flock evaluation report. Mummified and stillborn information is important for monitoring in the flock and can be early indicators of nutrition problems.

11. Disposal Date: The date or approximate date of death or disposal should be listed here. For 5A mummified or 5B stillborn, the birth date of the lamb will be used automatically.

12. Comment Codes: These codes will help you keep track of particular situations or conditions of your animals. Up to three comment codes can be used. If any of the ewe, lambing or lamb codes applies at this time, they should be entered. A list of codes is printed on Appendix II in this handbook.

13. Breed of New Animals (Not Previously Reported): This section is used to record the breed of any animal that is new to the GenOvis system. For example, if a new Suffolk ram was purchased and is now the sire of the lambs that are being recorded, an SU would be recorded under Breed of New Animals – in the “Sire” column for his lambs. A new dam in your flock that is ½ Dorset Polled and ½ North Country Cheviot would be recorded as DP/NC. For a new crossbred flock on the program, the breed should be estimated. For example, you
can probably guess that a ewe is ½ Suffolk or ½ Dorset Polled by appearance, so these ewes could be recorded as SU/XX or DP/XX with the XX being unknown.

14. Page Number: Please complete this if there is more than one page for the management group.

The 50 day weights should be taken when the group of lambs is between 28 and 69 days of age but the closer the range is to 35 to 65 days the better.

15. 50 Day Weigh Date: Please record the date (dd-MM-yyyy) of the 50 day weighing for the group in the top centre of the form.

16. 50 Day Weight: This column should be filled in with the actual weight in kilograms to one decimal point.
<table>
<thead>
<tr>
<th>Site ID</th>
<th>Dam ID</th>
<th>Donor / Foster ID</th>
<th>Lamb ID</th>
<th>50 day weighing date</th>
<th>100 day weighing date</th>
<th>Site #</th>
<th>GenOvis Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEPO697N</td>
<td>CEPO20N</td>
<td>CEPO259U</td>
<td>3 3 8</td>
<td>M 2 2</td>
<td>6.1</td>
<td>24.1</td>
<td></td>
</tr>
<tr>
<td>CEPO697N</td>
<td>CEPO20N</td>
<td>CEPO260U</td>
<td>3 3 8</td>
<td>F 2 2</td>
<td>6.4</td>
<td>32.2</td>
<td></td>
</tr>
<tr>
<td>CEPO20P</td>
<td>CEPO347N</td>
<td>CEPO261U</td>
<td>5 3 8</td>
<td>M 1 1</td>
<td>7.1</td>
<td>38.6</td>
<td></td>
</tr>
<tr>
<td>CEPO4N</td>
<td>CEPO14P</td>
<td>CEPO262U</td>
<td>10 3 8</td>
<td>M 1 1</td>
<td>6.1</td>
<td>33.4</td>
<td></td>
</tr>
<tr>
<td>CEPO4N</td>
<td>CEPO154NC</td>
<td>CEPO263U</td>
<td>12 3 8</td>
<td>F 2 2</td>
<td>3.0</td>
<td>19.9</td>
<td></td>
</tr>
<tr>
<td>CEPO4N</td>
<td>CEPO154NC</td>
<td>CEPO264U</td>
<td>12 3 8</td>
<td>M 2 2</td>
<td>3.0</td>
<td>30</td>
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</tr>
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<td>CEPO20PC</td>
<td>CEPO90MC</td>
<td>CEPO265U</td>
<td>12 3 8</td>
<td>M 1 1</td>
<td>6.4</td>
<td>33.4</td>
<td></td>
</tr>
</tbody>
</table>

Breeder’s signature: ___________________________ Date: ___________________________

The Breeder is responsible for the accuracy of this report and the use of generated genetic evaluations.
How to Complete the GenOvis Lamb Input Form for the 100 Day Weighing
*(see sample on page 29)*

The 100 day weights should be taken when the group of lambs is between 70 and 120 days of age but the closer the range is to 85 to 115 days the better. You can send your input form when the 100 day weighing is completed.

17. 100 Day Weigh Date: Please record the date (dd-MM-yyyy) of the 100 day weighing in the top centre of the report.

18. 100 Day Weight: This column should be filled in with the actual weight in kilograms to one decimal place.

◆ Disp Code and Date: (#10 & #11 on samples) If any lambs are not weighed at 100 days, an appropriate disposal code and date should be entered. The codes are on Appendix II.

◆ Comment Codes: (#12 on samples) These codes help you keep track of particular situations or conditions in your animals. Up to three comment codes can be used. If any of the ewe, lambing or lamb codes applies at this time, they should be entered. The codes are on Appendix II.

The form is now complete for the 100 day weighing and your lamb input form can be forward to the GenOvis office for entry to receive your 100 day report. Please keep a copy until you receive your completed 100 day report back from the office. If a shipping problem occurs, a copy could be resent or faxed to the office so that the reports could still be generated. (see coordinates on page 10). You can also enter this information directly into the GenOvis online program.
Reports

Privacy

Summary reports only include information from your flock. Progeny reports and average inventory information will only include the information for the animals in your flock. Therefore, total number of progeny listed for a ram will be the total number sired in your flock even if the ram has sired hundreds of progeny in other flocks.

Lamb Report (raw data)

(See sample on page 31)

The input sheet that was filled out grouped all animals born in a 41 days range and managed the same. The lamb report for this management group will group those animals by breed. This is called a contemporary group. Crossbreds are grouped as XB for crossbred and by crosses for F1 hybrids (i.e. RV/DP).

1) This is the producer name and address.

2) This is the GenOvis program number (GenOvis #) that is assigned to you upon enrolment.

3) This is the management group number for this group of lambs.

4) This is the breed code of the contemporary group within the management group.

5) Weighing – 50 Day – This field shows the date that the group was weighed at the 50 days weighing. If there is more than one 50 day weigh date for the management group, the weigh date of the last lamb weighed on the report will be the one that is listed.

6) Weighing – 100 Day – This field shows the date that the group was weighed at the 100 days weighing. If there is more than one 100 day weigh date for the management group, the weigh date of the last lamb weighed on the report will be the one that is listed.

7) Lamb – This is the tattoo, the national ID (if entered into the program) and the breed for the lambs that are in the management group.

8) Sire – This is the tattoo, the national ID (if entered into the program) and the breed for the sire of the lamb. This tattoo will be made up of the flock letters of the flock that the ram was born in, an animal number and the year letter that corresponds to the ram’s birth date.
Lamb Report for Group 43224*2011*3
C.E.P.O.Q. | Sylvain Blanchette(43224)
1642 rue de la Femme / LA POCAITIERE QC G0R1Z0

<table>
<thead>
<tr>
<th>Tattoo</th>
<th>Gire</th>
<th>Dam</th>
<th>Foster</th>
<th>Birth Date</th>
<th>Birth Wt</th>
<th>50 Act</th>
<th>100 Act</th>
<th>50 Act</th>
<th>100 Act</th>
<th>50 Act</th>
<th>100 Act</th>
<th>50 Act</th>
<th>100 Act</th>
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<tbody>
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<td>CEPO081885</td>
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<td>27.4</td>
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<td>313682003</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tattoo</th>
<th>Gire</th>
<th>Dam</th>
<th>Foster</th>
<th>Birth Date</th>
<th>Birth Wt</th>
<th>50 Act</th>
<th>100 Act</th>
<th>50 Act</th>
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<th>100 Act</th>
<th>50 Act</th>
<th>100 Act</th>
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</thead>
<tbody>
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<td>CEPO080488X</td>
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<td>4.12(97)</td>
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<td></td>
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<tr>
<td>313682005</td>
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</tr>
<tr>
<td>DP1</td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

The accuracy of the epds and reports computed by the C-SGES system is dependent on accurate input data. The breeder is responsible for the accuracy of the data.
Lamb Report for Group 43224*2011*3
C.E.P.O.O | Sylvain Blanchet (43224)
1642 rue de la Ferme / LA POCATIÈRE QC G0R1Z0

<table>
<thead>
<tr>
<th>Tattoo</th>
<th>Sire National ID</th>
<th>Dam National ID</th>
<th>Foster National ID</th>
<th>Birth Date</th>
<th>Sex</th>
<th>50 Act</th>
<th>D Date</th>
<th>Gx(%)</th>
<th>U. Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td></td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>DP</th>
<th>Ultrasound summary</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>s</td>
<td>Av. weight # lambs</td>
<td>t</td>
</tr>
<tr>
<td></td>
<td>Av. Loin Min. Max.</td>
<td>u</td>
</tr>
<tr>
<td></td>
<td>Av. Adj. Loin Min. Max</td>
<td>v</td>
</tr>
<tr>
<td></td>
<td>Av. Fat Min. Max.</td>
<td>w</td>
</tr>
<tr>
<td></td>
<td>Av. Adj. Fat Min. Max</td>
<td></td>
</tr>
</tbody>
</table>

2013-11-19 2 1 2 E.P.D. Run Date 2013-11-16

The accuracy of the data and reports generated by the CSGES system is dependent on accurate input data. The breeder is responsible for the accuracy of the data.
9) Dam – This is the tattoo, the national ID (if entered into the program) and the breed of the ewe that gave birth to the lamb. This tattoo will be made up of the flock letters of the flock that the dam was born in, an animal number and the year letter that corresponds to the dam’s birth date.

10) Foster – This is the tattoo and the national ID (if entered into the program) of the ewe that did not gave birth to the lamb but raised the lamb. This tattoo will be made up of the flock letters of the flock that the ewe was born in, an animal number and the year letter that corresponds to the ewe’s birth date.

11) Recipient – This field is only used if the lamb was a result of an embryo transfer process. This is the tattoo and the national ID (if entered into the program) of the recipient dam of the lamb (the ewe that gave birth to the lamb). The genetic dam (or the ewe that donated her eggs for the development) of the lamb will be indicated as the dam of the lamb. This tattoo will be made up of the flock letters of the flock that the ewe was born in, an animal number and the year letter that corresponds to the ewe’s birth date.

12) Birth Date – This is the birth date of the lamb.

13) Birth Wt. – This is the actual birth weight of the lamb recorded in kilograms.

14) Sex – This is the sex of the lambs. M = male, F = female and W = wether.

15) Born – This is the total number of lambs that the dam gave birth to when this lamb was born.

16) Raised – This is the total numbers of lambs that this lamb was raised with.

17) 50 Act – This is the actual weight of the lamb on the date of the 50 day weighing in kilograms.

18) Adj – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 50 days of age, male, born and raised as a single to a four year old ewe. **Warning: if the lamb wasn’t between 28 and 69 days of age on the 50 day weighing date, its weight won’t be adjusted.**

19) Adg – This is the average of daily gain of the lamb between the birth and the 50 day weighing, adjusted for sex of the lamb.

20) 100 Act – This is the actual weight of the lamb on the date of the 100 day weighing in kilograms.
21) Adj – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 100 days of age, male, born and raised as a single to a four year old ewe. **Warning:** if the lamb wasn’t between 70 and 120 days of age on the 100 day weighing date or doesn’t have a 50 day adjusted weight, its weight won’t be adjusted.

22) Adg – This is the average of daily gain of the lamb between the 50 and the 100 day weighings, adjusted for sex of the lamb.

23) DDate – This is the date the lamb was disposed or died (if disposed).

24) DCode – This is the disposal code for any dead or disposed of lambs. They are recorded as raised as « 0 », if they died prior to the 50 day weighing and before 21 days of age.

25) CC – These are any comment codes that were recorded for the lamb on the input form.

26) Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. By balancing traits into indexes, it is possible to select for a number of important traits with one number: the genetic selection index. (see Appendix I for more details)

27) Percentile – This number reflects the position, in terms of percentile rank, that this EPD is in for the animal’s breed.

28) Gx – This is the growth index (Gx).

29) Tx – This is the terminal index (Tx).

30) GxM – This is the growth maternal index (GxM).

31) TxM – This is the maternal terminal index (TxM).

32) U. Date – This is the date that the group was measured for ultrasound for fat and muscle depth.

33) Wt. – This is the actual weight of the lamb on the date of the ultrasound measurement in kilograms.

34) Ln Act – This is the actual loin depth of the lamb (in mm) when the ultrasound measurement was taken.

35) Ln Adj – This is the ultrasound adjusted loin depth of the lamb (in mm).

36) Ft Act – This is the actual back fat depth of the lamb (in mm) when the ultrasound measurement was taken.
37) **Ft Adj** – This is the ultrasound adjusted back fat depth of the lamb (in mm).

### Contemporary Group Summary

37) This is the summary of the animals in the same management group of the same breed.

a) **# Sires** – This is the total number of sires used in the contemporary group.

b) **# Dams** – This is the total number of dams used in the contemporary group.

c) **# Lambs** – This is the total number of lambs born in the contemporary group.

d) **# Born Alive** – This is the number of lambs born alive or those lambs that did not have a 5A or 5B disposal code listed.

e) **Single %** – The percentage of lambs born that were born as singles.

f) **Twin %** – The percentage of lambs born that were born as twins.

g) **Trip %** – The percentage of lambs born that were born as triplets.

h) **4 +%** – The percentage of lambs born that were born as quadruplets or more.

i) **# Born per Lambing** – The average number of lambs born per lambing in the contemporary group.

j) **# Alive per Lambing** – The average number of lambs born alive per lambing in the contemporary group. This number includes all lambs except those with a 5A or 5B disposal code.

k) **# Weaned per Lambing** – The average number of lambs raised per lambing in the contemporary group.

l) **% Death loss** – The percentage of lambs in the group that are reported as died, broken down by the disposal code that was used.

<table>
<thead>
<tr>
<th>Disposal Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5A</td>
<td>Mummified</td>
</tr>
<tr>
<td>5B</td>
<td>Stillborn</td>
</tr>
<tr>
<td>5C</td>
<td>0-10 days</td>
</tr>
<tr>
<td>5D</td>
<td>11-50 days</td>
</tr>
<tr>
<td>5E</td>
<td>51-100 days</td>
</tr>
<tr>
<td>Total</td>
<td>Total mortality at 50 days</td>
</tr>
</tbody>
</table>
m) % Lambs Raised by – This is the percentage of the lambs that were raised in each of the following categories: by the Dam, by a Foster or Bottle raised.

n) # of Lambs – This is the number of lambs that were weighed in the following two categories: at 50 days and at 100 days.

o) Av. actual weight – This is the average of actual weight of the lambs on the weigh date in the contemporary group for the following weights: birth weight, 50 day weight, and 100 day weight.

p) Av. adjusted weight – This is the average adjusted weight of the lambs in the contemporary group for the following weights: 50 day weight and 100 day weight.

q) Ave. ADG – This is the average, average daily gain between the 50 and 100 day weighings for all of the lambs in the contemporary group.

r) Age Spread – This is the number of days between the birth date of the oldest lamb in the contemporary group and the birth date of the youngest lamb in the contemporary group.

**Ultrasound Summary**

s) Av. weight - # lambs – Average of the actual weight of the lambs on the ultrasound measurement day and number of lambs weighed.

t) Av. Loin - Min. - Max. – Average of the actual loin depth of the lamb (in mm) measured on the ultrasound measurement day. Below, there are the minimum and maximum values for the loin depth for that contemporary group.

u) Av. Adj. Loin - Min - Max – Average of the adjusted loin depth of the lamb (in mm) measured on the ultrasound measurement day. Below, there are the minimum and maximum values for the adjusted loin depth for that contemporary group.

v) Av. Fat - Min. - Max – Average of the actual back fat depth of the lamb (in mm) measured on the ultrasound measurement day. Below, there are the minimum and maximum values for the back fat depth for that contemporary group.

w) Av. Adj. Fat - Min. - Max. – Average of the adjusted back fat depth of the lamb (in mm) measured on the ultrasound measurement day. Below, there are the minimum and maximum values for the adjusted back fat depth for that contemporary group.

38) Printing date.

39) EPDs Run Date.
Compact Lamb Report

(See sample on page 38)

The input sheet that was filled out grouped all animals born in a 41 days range and managed the same. The lamb report for this management group will group those animals by breed. This is called a contemporary group. Crossbreds are grouped as XB for crossbred and by crosses for F1 hybrids (i.e. RV/DP).

1) This is the producer name and address.

2) This is the GenOvis program number (GenOvis #) that is assigned to you upon enrolment.

3) This is the management group number for this group of lambs.

4) This is the breed code of the contemporary group within the management group.

5) Weighing – 50 Day – This field shows the date that the group was weighed at the 50 days weighing. If there is more than one 50 day weigh date for the management group, the weigh date of the last lamb weighed on the report will be the one that is listed.

6) Weighing – 100 Day – This field shows the date that the group was weighed at the 100 days weighing. If there is more than one 100 day weigh date for the management group, the weigh date of the last lamb weighed on the report will be the one that is listed.

7) Lamb – This is the tattoo and the national ID (if entered into the program) for the lambs that are in the management group.

8) Sire – This is the tattoo and the national ID (if entered into the program) for the sire of the lamb. This tattoo will be made up of the flock letters of the flock that the ram was born in, an animal number and the year letter that corresponds to the ram’s birth date.

9) Dam – This is the tattoo and the national ID (if entered into the program) of the ewe that gave birth to the lamb. This tattoo will be made up of the flock letters of the flock that the dam was born in, an animal number and the year letter that corresponds to the dam’s birth date.

10) Sire Breed/Dam – This is the breed of the sire and the dam of the lamb.

11) Foster – This is the tattoo and the national ID (if entered into the program) of the ewe that did not gave birth to the lamb but raised the lamb. This tattoo will be made up of the flock letters of the flock that the ewe was born in, an animal number and the year letter that corresponds to the ewe’s birth date.
12) **Recipient** – This field is only used if the lamb was a result of an embryo transfer process. This is the tattoo and the national ID (if entered into the program) of the recipient dam of the lamb (the ewe that gave birth to the lamb). The genetic dam (or the ewe that donated her eggs for the development) of the lamb will be indicated as the dam of the lamb. This tattoo will be made up of the flock letters of the flock that the ewe was born in, an animal number and the year letter that corresponds to the ewe’s birth date.

13) **Birth Date** – This is the birth date of the lamb.

14) **Sex** – This is the sex of the lambs. M = male, F = female and W = wether.

15) **B** – This is the total number of lambs that the dam gave birth to when this lamb was born.

16) **R** – This is the total number of lambs that this lamb was raised with. (under the number born)

17) **AD** – This is the age of the lamb at the time of the disposal.

18) **DC** – This is the disposal code for any dead or disposed of lambs. They are recorded as raised as « 0 », if they died prior to the 50 day weighing and before 21 days of age.

19) **BW** – This is the actual birth weight of the lamb recorded in kilograms.

20) **W50** – This is the actual weight of the lamb on the date of the 50 day weighing in kilograms.

21) **Adj.** – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 50 days of age, male, born and raised as a single to a four year old ewe. **Warning:** if the lamb wasn’t between 28 and 69 days of age on the 50 day weighing date, its weight won’t be adjusted.

22) **W100** – This is the actual weight of the lamb on the date of the 100 day weighing in kilograms.

23) **Adj.** – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 100 days of age, male, born and raised as a single to a four year old ewe. **Warning:** if the lamb wasn’t between 70 and 120 days of age on the 100 day weighing date or doesn’t have a 50 day adjusted weight, its weight won’t be adjusted.

24) **ADG** – This is the average of daily gain of the lamb between the 50 and the 100 day weighings, adjusted for sex of the lamb.
25) UW – This is the actual weight of the lamb on the date of the ultrasound measurement in kilograms.

26) Age – This is the age of the lamb at the time of the ultrasound measurement.

27) UL – This is the actual loin depth of the lamb (in mm) when the ultrasound measurement was taken.

28) UF – This is the actual back fat depth of the lamb (in mm) when the ultrasound measurement was taken.

29) ULA – This is the ultrasound adjusted loin depth of the lamb (in mm).

30) UFA – This is the ultrasound adjusted back fat depth of the lamb (in mm).

**EPDs Section**

In this section, each EPD is shown with its accuracy and percentile.

**EPD (Estimated Progeny Difference)** – This section groups all the genetic evaluation values of lambs for all the traits evaluated. The EPDs are expressed in the same units as the traits.

Ac. – Accuracy is a number that indicates how close the EPD is to the true genetic value of the animal. The greater the amount of performance data that is available, the higher the accuracy for that EPD will be and the less likely it is to change once more performance data is added to the evaluation. The information used is the performance of the animal itself, the performance of its progeny and the performance of its relatives.

(%) – This number reflects the position, in terms of percentile rank, that this EPD is in for the animal’s breed. (see Appendix I for more details)

31) LINT – EPD of the lambing interval – This EPD identifies ewes which will take less time between subsequent lambings. Ewes that have a more negative EPD for this trait will have a shorter lambing interval.

32) LS-D – EPD for lamb survival Direct – This EPD identifies ewes which will produce lambs that have a better ability to survive to weaning due to the lamb’s own genetics.

33) LS-M – EPD for lamb survival Maternal – This EPD identifies ewes which are better at helping their progeny to survive to weaning.

34) #BL – EPD of the number of lambs born at later lambings – This EPD identifies ewes which will produce daughters that give birth to more progeny at later lambings. It indicates how
many more lambs the progeny of an animal will have at later lambing compared to an animal with an EPD of 0.

35) #WL – EPD of the number of lambs wean at later lambings – This EPD identifies ewes which will produce daughters that wean more progeny at later lambings. It indicates how many more lambs the progeny of an animal will wean at later lambings compared to an animal with an EPD of 0. This is the number of lambs weaned and it is not related with the survival rate. Some lambs survive and are fostered or raised by bottle, but they will not be considered as weaned.

36) 50M – EPD of 50 day weight Maternal – This EPD identifies ewes which will produce lambs that are heavier in live weight at 50 days of age by having a greater potential for milk production and mothering ability.

37) 50D – EPD of 50 day weight Direct – This EPD identifies animals which will produce lambs that are heavier in live weight at 50 days of age due to the lamb’s own genetics.

38) 100D – EPD of 100 day weight direct – This EPD identifies animals which will produce lambs that are heavier at 100 days of age due to the lamb’s own genetics.

39) LOIN – EPD of loin depth – This EPD identifies animals which will produce lambs that contribute to higher lean meat yield. This value estimates the difference between animals in loin eye depth.

40) FAT – EPD of back fat depth – This EPD identifies animals that will produce lambs that are leaner. The more negative the value for this EPD, the leaner the progeny will be. This value estimates the difference between animals in back fat depth.

**Genetic Indexes Section**

Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. By balancing traits into indexes, it is possible to select for a number of important traits with one number: the genetic selection index. (See Appendix I for more details)

Percentile (%) – This number reflects the position, in terms of percentile rank, that this EPD is in for the animal’s breed.

41) Gx – This is the growth index (Gx).

42) Mx – This is the growth maternal index (GxM).
43) Tx – This is the terminal index (Tx).

44) TxM – This is the terminal maternal index (TxM).

**Contemporary Group Summary**

45) This is the average value of the EPDs and indexes for this group of lambs.

46) This is the average value of the EPDs and indexes of the ewes on current inventory in flock. This is recorded here so the group can easily be compared to the existing ewe flock.

47) This is the summary of the animals in the same management group of the same breed.

   a) # Sires – This is the total number of sires used in the contemporary group.

   b) # Dams – This is the total number of dams used in the contemporary group.

   c) # Lambs – This is the total number of lambs born in the contemporary group.

   d) # Born Alive – This is the number of lambs born alive or those lambs that did not have a 5A or 5B disposal code listed.

   e) Single % – The percentage of lambs born that were born as singles.

   f) Twin % – The percentage of lambs born that were born as twins.

   g) Trip % – The percentage of lambs born that were born as triplets.

   h) 4 +% – The percentage of lambs born that were born as quadruplets or more.

   i) # Born per Lambing – The average number of lambs born per lambing in the contemporary group.

   j) # Alive per Lambing – The average number of lambs born alive per lambing in the contemporary group. This number includes all lambs except those with a 5A or 5B disposal code.

   k) # Weaned per Lambing – The average number of lambs raised per lambing in the contemporary group.

   l) % Death loss – The percentage of lambs in the group that are reported as died, broken down by the disposal code that was used.
5A – Mummified          5D – 11-50 days
5B – Stillborn          5E – 51-100 days
5C – 0-10 days          Total at 50 days – Total mortality at 50 days

m) % Lambs Raised by – This is the percentage of the lambs that were raised in each of the following categories: by the Dam, by a Foster or Bottle raised.

n) # of Lambs – This is the number of lambs that were weighed in the following two categories: at 50 days and at 100 days.

o) Av. actual weight – This is the average of actual weight of the lambs on the weigh date in the contemporary group for the following weights: birth weight, 50 day weight, and 100 day weight.

p) Av. adjusted weight – This is the average adjusted weight of the lambs in the contemporary group for the following weights: 50 day weight and 100 day weight.

q) Ave. ADG – This is the average, average daily gain between the 50 and 100 day weighings for all of the lambs in the contemporary group.

r) Age Spread – This is the number of days between the birth date of the oldest lamb in the contemporary group and the birth date of the youngest lamb in the contemporary group.

Ultrasound Summary

s) Av. weight - # lambs – Average of the actual weight of the lambs on the ultrasound measurement day and number of lambs weighed.

t) Av. Loin - Min. - Max. – Average of the actual loin depth of the lamb (in mm) measured on the ultrasound measurement day. Below, there are the minimum and maximum values for the loin depth for that contemporary group.

u) Av. Adj. Loin - Min - Max – Average of the adjusted loin depth of the lamb (in mm) measured on the ultrasound measurement day. Below, there are the minimum and maximum values for the adjusted loin depth for that contemporary group.

v) Av. Fat - Min. - Max – Average of the actual back fat depth of the lamb (in mm) measured on the ultrasound measurement day. Below, there are the minimum and maximum values for the back fat depth for that contemporary group.
w) Av. Adj. Fat - Min. - Max. – Average of the adjusted back fat depth of the lamb (in mm) measured on the ultrasound measurement day. Below, there are the minimum and maximum values for the adjusted back fat depth for that contemporary group.

48) Printing date.

49) EPDs Run Date.
Lamb Report (Full EPDs)

(See sample on page 46)

The input sheet that was filled out grouped all animals born in a 41 days range and managed the same. The lamb report for this management group will group those animals by breed. This is called a contemporary group. Crossbreds are grouped as XB for crossbred and by crosses for F1 hybrids (i.e. RV/DP).

1) This is the producer name and address.

2) This is the GenOvis program number (GenOvis #) that is assigned to you upon enrolment.

3) This is the management group number for this group of lambs and is assigned by the GenOvis office.

4) Lamb – Tattoo of all the lambs of the contemporary group. Will be the national ID if the box Use Nat is checked.

5) Sex – Sex of the lamb, M = male, F = female W= wether.

Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. By balancing traits into indexes, it is possible to select for a number of important traits with one number: the genetic selection index. (see Appendix I for more details)

Percentile (%) – This number reflects the position, in terms of percentile rank, that this EPD is in for the animal’s breed.

6) **Gx** – This is the growth index.

7) **Tx** – This is the terminal index.

8) **GxM** – This is the growth maternal index.

9) **TxM** – This is the terminal maternal index.

10) Breed code of the lambs of the contemporary group.

11) Sire – This is the tattoo for the sire of the lamb. This tattoo will be made up of the flock letters of the flock that the ram was born in, an animal number and the year letter that corresponds to the ram’s birth date. If the box Use Nat is checked, it is the sire's national ID that will be shown.
Lamb Proof Report for Management Group 43224*2011*3 (All Traits)

Sylvain Blanchette
1642 rue de la Ferme
LAPOCATIERE QC G0R1Z0

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<td>-0.99 (50)</td>
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<tr>
<td>0.72 (74)</td>
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</table>

| EPD Run Date | 2011-12-11 |

The accuracy of the epds and reports computed by the CSGES system is dependent on accurate input data. The breeder is responsible for the accuracy of the data.
12) Dam – This is the tattoo of the ewe that gave birth to the lamb. This tattoo will be made up of the flock letters of the flock that the dam was born in, an animal number and the year letter that corresponds to the dam’s birth date. If the box Use Nat is checked, it is the dam’s national ID that will be shown.

13) Inbreeding – This is the inbreeding percentage of the animal itself. It is useful to know the inbreeding level of the flock.

14) Birth Date – This is the birth date of the lamb.

15) # Born – This is the total number of lambs that the dam gave birth to when this lamb was born.

16) # Raised – This is the total number of lambs that this lamb was raised with.

17) Birth Wt – This is the actual birth weight of the lamb recorded in kilograms.

18) 50 Adj – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 50 days of age, male, born and raised as a single to a four year old ewe. **Warning: if the lamb wasn’t between 28 and 69 days of age on the 50 day weighing date, its weight won’t be adjusted.**

19) 100 Adj – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 100 days of age, male, born and raised as a single to a four year old ewe. **Warning: if the lamb wasn’t between 70 and 120 days of age on the 100 day weighing date or doesn’t have a 50 day adjusted weight, its weight won’t be adjusted.**

20) ADG – This is the average of daily gain of the lamb between the 50 and the 100 day weighing, adjusted for the sex of the lamb.

21) Adj Loin – This is the realtime adjusted loin depth of the lamb (in mm).

22) Adj Fat – This is the realtime adjusted back fat depth of the lamb (in mm).

23) EPD (Estimated Progeny Difference) – This section groups all the genetic evaluation values of lambs for all the traits evaluated. The EPDs are expressed in the same units as the traits.

24) Acc – Accuracy is a number that indicates how close the EPD is to the true genetic value of the animal. The greater the amount of performance data that is available, the higher the accuracy for that EPD will be and the less likely it is to change once more performance data is added to the evaluation.
25) Percentile (%) – This number reflects the position, in terms of percentile rank, that this EPD is in for the animal’s breed.

26) Lamb Survival – EPD for lamb survival. Direct – This EPD identifies ewes which will produce lambs that have a better ability to survive to weaning due to the lamb’s own genetics. Maternal – This EPD identifies ewes which are better at helping their progeny to survive to weaning.

27) Birth Weight – EPD for birth weight. Direct – This EPD identifies animals which will produce lambs that are heavier in live weight at birth due to the lamb’s own genetics. Maternal – This EPD identifies ewes which will produce lambs that are heavier in live weight at birth due to the ewe’s larger womb and her ability to provide nutrients to the fetus.

28) Ad. 50 Wt. – EPD of 50 day weight. Direct – This EPD identifies animals which will produce lambs that are heavier in live weight at 50 days of age due to the lamb’s own genetics. Maternal – This EPD identifies ewes which will produce lambs that are heavier in live weight at 50 days of age by having a greater potential for milk production and mothering ability.

29) 100-day Wt. – EPD of 100 day weight direct – This EPD identifies animals which will produce lambs that are heavier at 100 days of age due to the lamb’s own genetics.

30) Ultra Loin – EPD of loin depth – This EPD identifies animals which will produce lambs that contribute to higher lean meat yield. This value estimates the difference between animals in loin eye depth.

31) Ultra Fat – EPD of back fat depth – This EPD identifies animals that will produce lambs that are leaner. The more negative the value for this EPD, the leaner the progeny will be. This value estimates the difference between animals in back fat depth.

32) Age First Lamb – EPD of the age at first lambing – This EPD identifies ewes which will give birth to daughters that will produce progeny earlier. The ewes with a more negative EPD for this trait will have progeny that will give birth earlier.

33) # Born First – EPD of number of lambs born at first lambing – This EPD identifies ewes which will produce daughters that give birth to more progeny during their first lambing. It indicates how many more lambs the progeny of an animal will have at first lambing compared to an animal with an EPD of 0.

34) # Weaned First – EPD of number of lambs weaned at first lambing – This EPD identifies ewes which will produce daughters that wean more progeny during their first lambing. It indicates how many more lambs the progeny of an animal will wean at first lambing compared to an animal with an EPD of 0. This is the number of lambs weaned and it is
not related with the survival rate. Some lambs survive and are fostered or raised by bottle, but they will not be considered as weaned.

35) Lambing Interval – EPD of the lambing interval – This EPD identifies ewes which will take less time between subsequent lambings. Ewes that have a more negative EPD for this trait will have a shorter lambing interval.

36) # Born Later – EPD of the number of lambs born at later lambings – This EPD identifies ewes which will produce daughters that give birth to more progeny at later lambings. It indicates how many more lambs the progeny of an animal will have at later lambing compared to an animal with an EPD of 0.

37) # Wean Later – EPD of the number of lambs wean at later lambings – This EPD identifies ewes which will produce daughters that wean more progeny at later lambings. It indicates how many more lambs the progeny of an animal will wean at later lambings compared to an animal with an EPD of 0. This is the number of lambs weaned and it is not related with the survival rate. Some lambs survive and are fostered or raised by bottle, but they will not be considered as weaned.

**Contemporary Group Summary**

38) Breed average – In this section, the averages of all lambs EPDs for each trait and genetic index are presented.

a) Number of lambs in the contemporary group.

b) Number of males / females / wethers.

c) Average of Growth Index \((Gx)\) for the group.

d) Average of Terminal Index \((Tx)\) for the group.

e) Average of Growth Maternal Index \((GxM)\) for the group.

f) Average of Terminal Maternal Index \((TxM)\) for the group.

g) Average of EPDs for the group for each trait.

39) Printing date.

40) EPD run date.
Ewe Inventory Report

(see sample on page 51)

1) This is the producer name and address.

2) Ewe – Tattoo and national ID (if entered in the program) of the active ewes with progeny and ewe lambs having retained for breeding code (RB).

3) Breed of the ewe.

4) Sire – Tattoo and national ID (if entered in the program) of the sire of the ewe.

5) Dam – Tattoo and national ID (if entered in the program) of the genetic dam of the ewe. If this dam isn’t the one that gave birth to the ewe, in case of embryo transfer, the ewe that gave birth will be written in the column Recipient.

6) Recipient – Tattoo and national ID (if entered in the program) of the ewe that gave birth to the ewe in case of embryo transfer.

7) Breed of the sire.

8) Breed of the dam.

9) Birth Date – This is the date that the ewe was born. If the ewe’s birth date was not entered in the system, please provide the GenOvis office with the correct information if you have it.

10) Last Lamb – The last time the ewe lambed and was recorded in the GenOvis system.

11) # Prog. – The total number of lambs the ewe has given birth to.

12) # Lambings – The number of times the ewe has lambed as recorded in the system.

13) Age 1st – The ewe’s age in months, the first time she had a lambing recorded in the system for your flock.

14) Av. L.Interval – This is the average lambing interval. The average number of days between the ewe’s lambings.

15) Av. # Born – The average number of lambs born each time the ewe lambed.

16) Av. # Weaned – The average number of lambs weaned by the ewe each time she lambed. This includes all lambs she has weaned even if she raised another ewe’s lamb.

17) Av. # Born/Yr. – The average number of lambs born per year since the ewe’s first lambing.
## Ewe inventory report for management group 43224*20112

**Sylvain Blanchette**  
1642 rue de la Ferme / LAPOCATIERE QC C0G 1R0

| Breed | DP | Recipient | Sire | Dam | Birth Date | Last Lamb | # Prog. | # Lambs | Age | Av. Litteral | Av. #Born | Av. #Weaned | Av. #Bred/Yr | Av. #Weaned | Tot. #Weaned | Av. #Weaned | MDA | Gc | Gc-M | TDM |
|-------|----|-----------|------|-----|------------|-----------|--------|--------|-----|--------------|----------|-------------|--------------|-------------|--------|------|------|------|------|
| CEP00124FDC | DP | CEP00109FC | CEP00109BC | 04/24/2011 | 23.0 | 2004-04-24 | 6 | 21 | 100 | 1.40 | 2.00 | 3.98 | 0.32 | 3.24 | 0.32 | 0.73 (35) | 4.04 (36) | 1.33 (36) |
| CEP00583FC | DP | CEP00583RC | CEP00583FC | 03/29/2011 | 7.0 | 2005-03-30 | 11 | 20 | 193 | 2.09 | 1.97 | 0.20 | 3.09 | 0.22 | 0.65 (97) | 4.05 (97) | 0.75 (97) |
| CEP00750FC | DP | CEP00750FC | CEP00750FC | 03/10/2011 | 2.0 | 2007-04-20 | 3 | 23 | 100 | 1.00 | 0.88 | 0.70 | 0.49 | 0.72 (10) | 3.82 (12) | 0.33 (12) |
| CEP00607TC | DP | CEP00607TC | CEP00607TC | 03/19/2011 | 1.0 | 2007-07-21 | 1 | 43 | 100 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.17 (89) | 0.61 (89) | 0.00 (100) |
| CEP00675UC | DP | CEP00675UC | CEP00675UC | 03/02/2011 | 2.0 | 2008-03-02 | 2 | 22 | 100 | 1.11 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 (80) | 2.00 (80) | 2.00 (80) |
| CEP00689UC | DP | CEP00689UC | CEP00689UC | 03/02/2011 | 2.0 | 2008-03-11 | 2 | 23 | 100 | 1.13 | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 (80) | 3.00 (80) | 3.00 (80) |
| CEP00723UC | DP | CEP00723UC | CEP00723UC | 03/10/2011 | 2.0 | 2009-03-10 | 2 | 22 | 100 | 1.19 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 (80) | 4.00 (80) | 4.00 (80) |
| CEP00759UC | DP | CEP00759UC | CEP00759UC | 03/02/2011 | 2.0 | 2009-03-11 | 2 | 23 | 100 | 1.19 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 (80) | 5.00 (80) | 5.00 (80) |
| CEP00829UC | DP | CEP00829UC | CEP00829UC | 03/02/2011 | 2.0 | 2009-03-11 | 2 | 23 | 100 | 1.19 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 (80) | 6.00 (80) | 6.00 (80) |
| CEP00915UC | DP | CEP00915UC | CEP00915UC | 03/02/2011 | 2.0 | 2009-03-11 | 2 | 23 | 100 | 1.19 | 0.00 | 0.00 | 0.00 | 0.00 | 7.00 (80) | 7.00 (80) | 7.00 (80) |

**GenOvis**

2011-12-12

Use the accuracy of the data. The foreperson is responsible for the accuracy of the data.
18) Av. # Weaned/Yr. – The average number of lambs the ewe weaned per year since the ewe’s first lambing.

19) Tot. Wt. Weaned – Total of weights weaned by the ewe during its life. It is the total, in kilograms, of the all the 50 day adjusted weights of the lambs weaned by this ewe during its life. Only the lambs that have a 50 day adjusted weight are included in the calculation.

20) Av. Wt. Weaned/ Yr. – This is the average, in kilograms, of 50 day adjusted weights of all lambs weaned per the ewe per year. Only the lambs that have a 50 day adjusted weight are included in the calculation.

21) MADG – This is the average, average daily gain between the 50 and the 100 day weighings and adjusted for sex of the lambs, weighed at both 50 and 100 days, for the ewe.

22) Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. By balancing traits into indexes, it is possible to select for a number of important traits with one number: the genetic selection index. (see Appendix I for more details)

Percentile (%) – This number reflects the position, in terms of percentile rank, that this EPD is in for the animal’s breed.

23) Gx – This is the growth index.

24) Tx – This is the terminal index.

25) GxM – This is the growth maternal index.

26) TxF – This is the terminal maternal index.

27) This is the total number of ewes listed for the breed.

28) Averages – This is the average performance of the ewes listed on the inventory by breed.

29) Printing date.

30) EPD run date.
Ram Inventory Report

*(see sample on page 54)*

1) This is the producer name and address.

2) Ram – Tattoo and national ID (if entered in the program) of the active rams with progeny and ram lambs having the retained for breeding code (RB).

3) Breed of the ram.

4) Sire – Tattoo and national ID (if entered in the program) of the sire of the ram.

5) Dam – Tattoo and national ID (if entered in the program) of the genetic dam of the ram. If this dam isn’t the one that gave birth to the ram, in case of embryo transfer, the ewe that gave birth will be written in the column Recipient.

6) Recipient – Tattoo and national ID (if entered in the program) of the ewe that gave birth to the ram in case of embryo transfer.

7) Breed of the sire.

8) Breed of the dam.

9) Birth Date – This is the date that the ram was born. If the ram’s birth date was not entered in the system, please provide the GenOvis office with the correct information if you have it.

10) Last Lamb – This is the last date that a lamb was born with this sire.

11) # Prog. – The total number of progeny that the ram has in the producer’s flock. The ram may have many other progeny in other flocks. This inventory only summarizes the information for lambs born in the flock listed at the top of the inventory.

12) # Lambings – The number of times the ram bred a ewe and the breeding resulted in lamb being born in the flock.

13) Av. #Born – This is the average number of lambs born per lambing from the ewes that the ram bred and who lambed.

14) Av. #Weaned – This is the average number of lambs weaned per lambing from the ewes that the ram bred and who lambed.
# Ram Inventory Report for Management Group 43224*2011*4

**C.E.P.O.G. (43224)**

Sylvain Blanchette
1642 rue de la Ferme / LA POCATIERE QC G0R1Z0

<table>
<thead>
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<th>Breed</th>
<th>DP</th>
<th>Sire Breed</th>
<th>Dam Breed</th>
<th>Recipient Breed</th>
<th>Birth Date</th>
<th>Last Lamb</th>
<th># Prog.</th>
<th># Lamblings</th>
<th>Av. # Born</th>
<th>Av. # Weaned</th>
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<th>MA50</th>
<th>MA100</th>
<th>MA40</th>
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**Breed DP**

- 54
- 55

**EPD Run Date 2011-12-11**

The accuracy of the epds and reports computed by the CSSES system is dependent on accurate input data. The breeder is responsible for the accuracy of the data.
15) MBWT – This is the average birth weight of the lambs sired by this ram in this flock.

16) MA50 – This is the average 50 day adjusted weight of the lambs sired by this ram in this flock.

17) MA100 – This is the average 100 day adjusted weight of the lambs sired by this ram in this flock.

18) MADG – This is the average, average daily gain between the 50 and the 100 day weighings and adjusted for sex of the lambs, weighted at both 50 and 100 days, sired by the ram in this flock.

19) Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. By balancing traits into indexes, it is possible to select for a number of important traits with one number: the genetic selection index. (see Appendix I for more details)

Percentile (%) – This number reflects the position, in terms of percentile rank, that this EPD is in for the animal’s breed.

20) Gx – This is the growth index.

21) Tx – This is the terminal index.

22) GxM – This is the growth maternal index.

23) TxM – This is the terminal maternal index.

24) This is the total number of rams listed for the breed.

25) Averages – This is the average performance of the rams listed on the inventory by breed.

26) Printing date.

27) EPD run date.
Animal Performance Certificate
(see sample on page 57)

1) Tattoo and national ID (if entered into the program) of the animal.

2) Actual owner and breeder of the animal.

3) Breed of the animal.

4) Sex of the animal.

5) Birth date of the animal.

6) Inbreeding of the animal itself. (shown as a percentage)

7) This is a three generations pedigree for the animal.

Performance Data

This is the animal own performance as lamb.

8) Management Group – This is the management group number from the animal’s lambing sheet.

9) Born – This is the total number of lambs that the dam gave birth to when this lamb was born.
   Raised – This is the total number of lambs that this animal was raised with.

10) Birth Wt. – This is the actual birth weight of the lamb recorded in kilograms if the lamb was weighed at birth.

11) 50 Wt – This is the actual weight of the lamb on the 50 day weigh date (in kilograms).
   50 Adj – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 50 days of age, male, born and raised as a single to a four year old ewe. Warning: if the lamb wasn’t between 28 and 69 days of age on the 50 day weighing date, its weight won’t be adjusted.
   ADG – This is the average daily gain from birth to 50 day weight, adjusted for the sex (in kilograms)

12) 100 Wt. – This is the actual weight of the lamb on the 100 day weight (in kilograms).
   100 Adj – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 100 days of age, male, born and raised as a single to a four year old ewe. Warning: if the
Performance Certificate - CEPO8787R / 312008787

Owner 43224 C.E.P.O.Q.
Breeder 43224 C.E.P.O.Q.

Breed DP1
Sex M
Birth Date 2005-10-11
Inbreeding 0.42%

Pedigree

Sire CEPO1631M
SD CEPO62K
DS CEPO77K
DD CEPO68K

Dam CEPO821P

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<td>-</td>
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<td>-</td>
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Growth Trait EPDs

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<th>Percentile</th>
<th>Maternal EPD</th>
<th>Accuracy</th>
<th>Percentile</th>
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<tr>
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Ewe Productivity Trait EPDs

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<th>Percentile</th>
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<tr>
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<td>Weaned 1st lambing</td>
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<tr>
<td>Born Later</td>
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<td>60</td>
</tr>
<tr>
<td>Weaned Later</td>
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<td>19</td>
<td>75</td>
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</table>

Date 2013-11-19
Run Date 2013-11-16

The accuracy of the epds and reports computed by the CSGES system is dependent on accurate input data. The breeder is responsible for the accuracy of the data.
lamb wasn’t between 70 and 120 days of age on the 100 day weighing date or doesn’t have a 50 day adjusted weight, its weight won’t be adjusted.
ADG – This is the average daily gain from the 50 to 100 day weight, adjusted for the sex (in kilograms)

13) U Wt. – This is the actual weight of the lamb on the date of the ultrasound measurement in kilograms.
Loin – This is the actual loin depth of the lamb (in mm) on the ultrasound measurement day.
Fat – This is the actual back fat depth of the lamb (in mm) on the ultrasound measurement day.

Genetic indexes
Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. By balancing traits into indexes, it is possible to select for a number of important traits with one number: the genetic selection index. (see Appendix I for more details)

Percentile – This number reflects the position, in terms of percentile rank, that this EPD is in for the animal’s breed.

14) Gx – This is the growth index.
15) Tx – This is the terminal index.
16) GxM – This is the growth maternal index.
17) TxM – This is the terminal maternal index.

Growth Trait EPDs
This section contains the EPDs that will help to improve growth and meat quality of an animal.

18) Lamb Survival – EPD for lamb survival. Direct – This EPD identifies ewes which will produce lambs that have a better ability to survive to weaning due to the lamb’s own genetics. Maternal – This EPD identifies ewes which are better at helping their progeny to survive to weaning.

19) Birth Weight – EPD for birth weight. Direct – This EPD identifies animals which will produce lambs that are heavier in live weight at birth due to the lamb’s own genetics. Maternal – This EPD identifies ewes which will produce lambs that are heavier in live weight at birth due to the ewe’s larger womb and her ability to provide nutrients to the fetus.
20) 50-day Wt. – EPD of 50 day weight. Direct – This EPD identifies animals which will produce lambs that are heavier in live weight at 50 days of age due to the lamb’s own genetics. Maternal – This EPD identifies ewes which will produce lambs that are heavier in live weight at 50 days of age by having a greater potential for milk production and mothering ability.

21) 100-day Wt. – EPD of 100 day weight direct – This EPD identifies animals which will produce lambs that are heavier at 100 days of age due to the lamb’s own genetics.

22) Ultra Loin – EPD of loin depth – This EPD identifies animals which will produce lambs that contribute to higher lean meat yield. This value estimates the difference between animals in loin eye depth.

23) Ultra Fat – EPD of back fat depth – This EPD identifies animals that will produce lambs that are leaner. The more negative the value for this EPD, the leaner the progeny will be. This value estimates the difference between animals in back fat depth.

**Ewe Productivity Trait EPDs**

This section contains new EPDs that will help to increase ewes productivity.

24) Age 1st Lambing – EPD of the age at first lambing – This EPD identifies ewes which will give birth to daughters that will produce progeny earlier. The ewes with a more negative EPD for this trait will have progeny that will give birth earlier.

25) #Born 1st Lambing – EPD of number of lambs born at first lambing – This EPD identifies ewes which will produce daughters that give birth to more progeny during their first lambing. It indicates how many more lambs the progeny of an animal will have at first lambing compared to an animal with an EPD of 0.

26) #Weaned 1st Lambing – EPD of number of lambs weaned at first lambing – This EPD identifies ewes which will produce daughters that wean more progeny during their first lambing. It indicates how many more lambs the progeny of an animal will wean at first lambing compared to an animal with an EPD of 0. This is the number of lambs weaned and it is not related with the survival rate. Some lambs survive and are fostered or raised by bottle, but they will not be considered as weaned.

27) Lambing Interval – EPD of the lambing interval – This EPD identifies ewes which will take less time between subsequent lambings. Ewes that have a more negative EPD for this trait will have a shorter lambing interval.

28) #Born Later – EPD of the number of lambs born at later lambings – This EPD identifies ewes which will produce daughters that give birth to more progeny at later lambings. It indicates how many more lambs the progeny of an animal will have at later lambing compared to an animal with an EPD of 0.
29) #Wean Later – EPD of the number of lambs wean at later lambings – This EPD identifies ewes which will produce daughters that wean more progeny at later lambings. It indicates how many more lambs the progeny of an animal will wean at later lambings compared to an animal with an EPD of 0. This is the number of lambs weaned and it is not related with the survival rate. Some lambs survive and are fostered or raised by bottle, but they will not be considered as weaned.

30) Printing date.

31) EPD run date.
Individual Progeny Performance

*(see sample on page 62)*

1) Producer name and address.

2) Tattoo – This is the identification of the animal that the rest of the information on the report is based upon. The breed of the animal is also listed.

3) Age at Lambing (m) – Age at Lambing (months) – This is the animal’s age in months when the progeny were born. There is no age at lambing listed for lambs that are from the animal’s donated embryos but were not actually born to the ewe.

4) Lamb – This is the identification of each lamb sired or born to the animal.

5) Dam – When the report is for a ram, this column will read dam. This is the identification of the dam of the progeny. When the report is for a ewe, this column will read sire. This is the identification of the sire of the lamb.

6) Sex – This is the sex of the lamb.

7) Born – This is the number born as listed for the lamb on its original lamb report.

8) Raised – This is the number raised for the lamb as listed on the original lamb report.

9) Birthdate – This is the birth date of the lamb.

10) BirthWt. – This is the actual birth weight of the lamb recorded in kilograms if the lamb was weighed at birth.

11) Adj.Wt. 50 – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 50 days of age, male, born and raised as a single to a four year old ewe. **Warning:** if the lamb wasn’t between 28 and 69 days of age on the 50 day weighing date, its weight won’t be adjusted.

12) Adj.Wt. 100 – This is the adjusted weight of the lamb in kilograms, adjusted as if the lamb was 100 days of age, male, born and raised as a single to a four year old ewe. **Warning:** if the lamb wasn’t between 70 and 120 days of age on the 100 day weighing date or doesn’t have a 50 day adjusted weight, its weight won’t be adjusted.

13) ADG – This is the average daily gain from the 50 to 100 day weight, adjusted for the sex (in kilograms)
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<td>0.50</td>
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<td>3.37</td>
<td>2.10</td>
<td>7</td>
<td>7.4</td>
<td>26.7</td>
<td>48.1</td>
<td>0.407</td>
<td>4.11</td>
</tr>
<tr>
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<td>CEPO9172UC 313217323</td>
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<td>48.1</td>
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<td>4.11</td>
</tr>
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</table>

The accuracy of the epds and reports computed by the CGES System is dependent on accurate input data. The breeder is responsible for the accuracy of the data.
14) DispDate/Code – Date of the death of disposal of the lamb (if disposed) and the disposal code for any dead or disposed lambs.

15) Comment Codes – These are any comment codes that were recorded for the lamb on the input form.

16) # Lambs – This column refers to progeny of the lambs; for example, if this column contained a number “8”, this means that the lamb has eight progeny of its own born into the flock.

Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. By balancing traits into indexes, it is possible to select for a number of important traits with one number: the genetic selection index. (see Appendix I for more details)

17) Growth – This is the growth index (Gx).

18) Terminal – This is the terminal index (Tx).

19) Mat. – This is the maternal index (GxM).

20) Mat.-Term. – This is the terminal maternal index (TxM).

21) # Lambs – This is the number of progeny on the report.

22) # Lambing – This is the total number of lambings that the ewe had on the report. For rams, this is the total number of lambings that the progeny came from.

23) #Lambs/Lambing – This is the average number of lambs born per lambing.

24) Average of the progeny performances of this animal for the following traits: birth weight, 50 day adjusted weight, 100 day adjusted weight, ADG and the different genetic indexes.

25) Printing date.

26) EPD run date.
Progeny Performance Summary

(see sample on page 65)

1) Producer name and address.

2) Tattoo – This is the identification of the animal that the rest of the information on the report is based upon. The breed of the animal is also listed.

Av. Progeny Performance – This is the average performance for all genetic progeny of the animal.

3) # Prog. – This is the number of genetic progeny.

4) BirthWt – This is the average birth weight of the progeny that were weighed.

5) Wt. 50 – This is the average 50 day adjusted weight of the progeny that were weighed.

6) Wt. 100 – This is the average 100 day adjusted weight of the progeny that were weighed.

7) ADG – This is the average of the average daily gains of all of the progeny that were weighed.

Av. Progeny EPDs – These are the EPDs for each of the progeny averaged together.
(see Appendix I for more details)

8) LS – EPD Lamb Survival direct – EPD of lambs that will survive to weaning. This EPD identifies ewes which will produce lambs that have a better ability to survive to weaning due to the lamb’s own genetics.

9) LSM – EPD Lamb Survival maternal – EPD of lambs that will survive to weaning. This EPD identifies ewes which are better at helping their progeny to survive to weaning.

10) AF – EPD Age 1st Lambing – EPD of the age at first lambing – This EPD identifies ewes which will give birth to daughters that will produce progeny earlier. The ewes with a more negative EPD for this trait will have progeny that will give birth earlier.

11) BW – EPD birth weight. Direct – This EPD identifies animals which will produce lambs that are heavier in live weight at birth due to the lamb’s own genetics.

12) BWM – EPD Birth Weight maternal – EPD of birth weight. – This EPD identifies ewes which will produce lambs that are heavier in live weight at birth due to the ewe’s larger womb and her ability to provide nutrients to the fetus.
# Ram Progeny Performance Summary

Sylvain Blanchette (43224)
1642 rue de la Ferme
LA POCATIERE QC G0R1Z0

<table>
<thead>
<tr>
<th>Age</th>
<th>#Ewes</th>
<th>#Progeny</th>
<th>#Born</th>
<th>#Weaned</th>
<th>#Weaned/yr</th>
<th>L.Inf.</th>
<th>BirthWt.</th>
<th>50Adj.Wt.</th>
<th>100Adj.Wt.</th>
<th>ADG</th>
<th>GIM</th>
<th>GIM TIM</th>
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Summary: 60 ewes, 238 progeny, 15,619 weaned, 11,745 weaned/yr, 1,171 L.Inf., 254,430 lb BirthWt., 130,000 lb 50Adj.Wt., 105,000 lb 100Adj.Wt., 3,080 lb ADG, 0.75 GIM, 2.18 GIM TIM

## Average Daughter Productivity

<table>
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<tr>
<th>Age</th>
<th>#Ewes</th>
<th>#Progeny</th>
<th>#Born</th>
<th>#Weaned</th>
<th>#Weaned/yr</th>
<th>L.Inf.</th>
<th>BirthWt.</th>
<th>50Adj.Wt.</th>
<th>100Adj.Wt.</th>
<th>ADG</th>
<th>GIM</th>
<th>GIM TIM</th>
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<tbody>
<tr>
<td>18</td>
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<tr>
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<td>25.3</td>
<td>45.7</td>
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</table>

Summary: 60 ewes, 238 progeny, 15,619 weaned, 11,745 weaned/yr, 1,171 L.Inf., 254,430 lb BirthWt., 130,000 lb 50Adj.Wt., 105,000 lb 100Adj.Wt., 3,080 lb ADG, 0.75 GIM, 2.18 GIM TIM

The accuracy of the epds and reports computed by the CSGES system is dependent on accurate input data. The breeder is responsible for the accuracy of the data.
13) NBF – EPD #Born 1st Lambing – EPD of number of lambs born at first lambing – This EPD identifies ewes which will produce daughters that give birth to more progeny during their first lambing. It indicates how many more lambs the progeny of an animal will have at first lambing compared to an animal with an EPD of 0.

14) W50 – EPD 50-day Wt. direct – This EPD identifies animals which will produce lambs that are heavier in live weight at 50 days of age due to the lamb’s own genetics.

15) W50M – EPD 50-day Wt. maternal – EPD of 50 day weight – This EPD identifies ewes which will produce lambs that are heavier in live weight at 50 days of age by having a greater potential for milk production and mothering ability.

16) NWF – EPD #Weaned 1st Lambing – EPD of number of lambs weaned at first lambing – This EPD identifies ewes which will produce daughters that wean more progeny during their first lambing. It indicates how many more lambs the progeny of an animal will wean at first lambing compared to an animal with an EPD of 0. This is the number of lambs weaned and it is not related with the survival rate. Some lambs survive and are fostered or raised by bottle, but they will not be considered as weaned.

17) W100 – EPD 100-day Wt. – EPD of 100 day weight direct – This EPD identifies animals which will produce lambs that are heavier at 100 days of age due to the lamb’s own genetics.

18) LI – EPD Lambing Interval – EPD of the lambing interval – This EPD identifies ewes which will take less time between subsequent lambings. Ewes that have a more negative EPD for this trait will have a shorter lambing interval.

19) UL – EPD Ultra Loin – EPD of loin depth – This EPD identifies animals which will produce lambs that contribute to higher lean meat yield. This value estimates the difference between animals in loin eye depth.

20) NBL – EPD #Born Later – EPD of the number of lambs born at later lambings – This EPD identifies ewes which will produce daughters that give birth to more progeny at later lambings. It indicates how many more lambs the progeny of an animal will have at later lambing compared to an animal with an EPD of 0.

21) UF – EPD Ultra Fat – EPD of back fat depth – This EPD identifies animals that will produce lambs that are leaner. The more negative the value for this EPD, the leaner the progeny will be. This value estimates the difference between animals in back fat depth.

22) NWL – EPD #Wean Later – EPD of the number of lambs wean at later lambings – This EPD identifies ewes which will produce daughters that wean more progeny at later lambings. It indicates how many more lambs the progeny of an animal will wean at later lambings.
compared to an animal with an EPD of 0. This is the number of lambs weaned and it is not related with the survival rate. Some lambs survive and are fostered or raised by bottle, but they will not be considered as weaned.

23) GI – This is the average of the Growth Indexes from all the progeny of the daughter by each age group.

24) TI – This is the average of the Terminal Indexes from all the progeny of the daughter by each age group.

25) GIM – This is the average of the Growth Maternal Indexes from all the progeny of the daughter by each age group.

26) TIM – This is the average of the Terminal Maternal Indexes from all the progeny of the daughter by each age group.

**Average Daughter Productivity**

This includes all genetic daughters lambing in the flock. This means that daughters from donated embryos are included for the genetic dam but not for the recipient dam.

27) Age – This is the age of the daughter in the flock at the time of last lambing.

28) #Ewes – This is the number of daughters in the flock that were in that age group at the time of their last lambing.

29) #Progeny – This is the number of progeny born to the daughters in the group during their lifetime to date.

30) #Born – This is the average of the average number of lambs born per lambing to the daughters.

31) #Weaned – This is the average of the average number of lambs raised per lambing to the daughters.

32) #Born/yr – This is the average of the average number of lambs born per year to the daughters.

33) #Weaned/yr – This is the average of the average number of lambs raised per year to the daughters.
34) L.Int. – This is the average lambing interval of the daughters of their lifetime lambings up until their last lambing.

35) BirthWt. – This is the average birth weight of all lambs born to the daughters to date, that were weighed at birth.

36) 50Adj.Wt. – This is the average of the 50 day adjusted weights of all lambs born to the daughters to date that were weighed at 50 days.

37) 100Adj.Wt. – This is the average of the 100 day adjusted weights of all lambs born to the daughters to date that were weighed at 100 days.

38) ADG – This is the average of the average daily gains of all lambs born to the daughters to date that were weighed at 100 days.

**Genetic indexes average of daughter progeny by age group**

39) GI – This is the growth index (Gx).

40) TI – This is the terminal index (Tx).

41) GIM – This is the growth maternal index (GxM).

42) TIM – This is the terminal maternal index (TxM)

43) Summary – These are the summary numbers for all of the progeny of the daughters for each trait and genetic index.

44) Printing date.

45) EPD run date.
Flock Evaluation Report

(see sample on page 70)

1) Producer name.

2) Period Evaluated: This period is one year in length and can end on any date that is requested. The report includes the information on all animals born in this period.

3) Breed of lambs – There is a separate page for each breed represented in your flock. Hybrids or F1 crosses, which are the first cross of two different straight breeds, are grouped by crosses and all other crossbreds are grouped as XB.

4) No. of ewes lambing during the last 12 months – This is the number of ewes that lambed during the period of the report.

5) No. of rams during the last 12 months – This is the total number of different rams that sired lambs during the period of the report.

6) Date of last 50 or 100 day weight included – This shows the last weights that are included for the lambs born in the period. The weigh dates may be later than the period evaluated since a lamb born at the end of the period will be included along with all of the available performance information on that lamb regardless of when it was taken.

7) Distribution of Lambings – This shows the number of ewes that lambed (No. of Lambings) and the number of lambs that were born each month during the period (No. of Lambs Born). It also gives the total for the 12 month period (Total).

8) Productivity Summary – This summary box shows the average performance of the ewes in the flock during the last 12 months by age of ewe at the time of lambing. A ewe is considered to be a year of age at 365 days of age, so ewes that lamb before this will be listed without an age beside them. A ewe will show up in the two year old category if her lambing occurred after she turned two years old otherwise it will be in the one year old category. An individual ewe may be included in more than one category if the flock is on an accelerated lambing program.

   a) # Ewes – The total number of ewes lambing during the period of the report that were for example, between 365 and 729 days of age for the one year old category at the time of lambing.

   b) # Lambings and # Lambs Born – The total number of lambings and lambs born during the period by ewes of each age.
## Flock Evaluation Report

**C.E.P.O.Q. (43224)** Silvan Blanchette

### Breed Information

- **No. of ewes lambing during the last 12 months**: 235
- **No. of lambs during the last 12 months**: 11
- **Due off at 60 days, included**: 2018-01-29
- **Due off at 100 days, included**: 2019-03-12

### Distribution of Lambs

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<th>03</th>
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<td>49</td>
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<td>% of Lambs born</td>
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<td>158</td>
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<td>2</td>
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<td>30</td>
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### Productivity Summary

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<th>Ave. Weaned / Lambing</th>
<th>% of Lambs</th>
<th>% of Born to 10 d.</th>
<th>% of Born to 20 d.</th>
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<th>% of Born to 50 d.</th>
<th>% of Born to 60 d.</th>
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</table>

### Yearly Ewe Production

- **Avg. Ewe Weaned Per Year**: 31.9
- **Avg. Lambs Raised to 50d**: 31.9
- **Avg. Lambs Raised to 60d**: 31.9
- **Avg. Lambs Raised to 100d**: 31.9
- **Avg. Lambs Raised to 120d**: 31.9

---

**Ontario Sheep**

**C.G.M.**

**GenOvis**

**CEPOQ**
c) Ave Lambing Int. – The average lambing interval of all ewes lambing in the age group since their last lambing.

d) Ave #Born/Lambing – The average number of lambs born to each ewe in the age group.

e) Ave #Born Alive/Lambing – The average number of lambs born alive to each ewe in the age group. This number will only be correct if disposal codes were entered properly for each lamb that died and if mummified and stillborn lambs were recorded.

f) Birth type – This is the percentage of lambs that are born as singles, twins, triplets, or quadruplets or more.

g) % Lamb Death – This will only be correct if all lamb deaths were recorded with disposal codes. The percentage of mummified, stillborn, death from birth to 10 days, death from 11 days to the 50 day weighing and death between the 50 day weighing and the 100 day weighing compared to the number of lambs born is calculated.

h) Ave #Weaned/Lambing – This is the average number of lambs weaned per lambing in the age group.

i) Rearing – This shows the percentage of lambs that were raised by their dam or by foster dam or by bottle feeding. These percentages will only be correct if foster dams and bottle feeding is correctly recorded on the lamb input sheets.

j) # Bir. Wts.: Number of lambs weighed at birth.

k) Avg Bir. Wt.: Average, in kilograms, of all the lambs weighed at birth.

l) # 50d Wts. – This is the number of lambs that were weighed at the 50 day weighing. It does not include weights on animals that were rejected as being outside of the acceptable age range.

m) Avg 50d. Wt. – This is the average 50 day adjusted weight in kilograms of all of the lambs weighed.

n) # 100d Wts. – This is the number of animals that were weighed at the 100 day weighing. It does not include weights on animals that were rejected as being outside of the acceptable age range.

o) Avg 100d. Wt. – This is the average 100 day adjusted weight in kilograms of all of the lambs weighed.

p) Avg ADJ – This is the average of the average daily gain in kilograms of all of the lambs weighed at both 50 and 100 days.
q) Avg Kg Lambs Raised to 50 d. – This is the average total 50 day adjusted weight per lambing. For example, a ewe with twins would have a total 50 day adjusted weight for her lambing of the 50 day adjusted weights of the two lambs added together. If some lambs are not weighed, this number will be lower than if all live lambs were weighed.

r) Yearly Ewe Production – This area will only provide added information for producers using an accelerated lambing system where an average ewe in the flock has an average lambing interval that is less than 365 days.

s) #Lambings per Ewe – This is the average number of lambings that an individual ewe in the flock has per year.

t) #Lambs Wea. per Ewe – This is the average number of lambs weaned per ewe per year.

u) KG Lamb Raised to 50 d. – This is the average total 50 day adjusted weight per ewe per year.

9) Last 12 Mo. – Summary of average performance of all the ewes that lambed in the flock in the past 12 months.

10) Previous 12 Mo. – Summary of average performance of all the ewes that lambed in the flock in the previous 12 months.

11) Breed Averages – Summary of average performance of the ewes that lambed in the year for that breed in the database.

12) Printing date.
Appendix I - Genetic Evaluations (EPD)

What is an EPD?
An EPD (estimated progeny Difference) is an estimation of the genetic value that an animal will pass on to its progeny. An EPD uses all performance information on the relatives of the animal as well as the animal’s own performance. Animals with the best EPDs for a trait have the highest probability of producing exceptional progeny for that trait.

How are EPDs Expressed?
EPDs are expressed in the same units in which the trait is measured. For example, number born is measured in lambs, so number born EPDs are also expressed in lambs. It is important to remember that EPDs are expressed as a genetic difference from the average animal of the breed for that trait. Therefore, a ram “A” with a number born EPD of +0.10 means that the progeny of ram “A”, on average, will have 0.10 more lambs than a ram “B” with an EPD of 0. This is not the performance. If the daughters of ram “B” have 1.9 lambs per lambing in your flock then the daughters of ram “A” would have 2.0 lambs per lambing in your flock. These sound like very small numbers, but, they represent the genetic differences between animals. Also, flock calculations show that these small numbers can be deceiving. For example, a flock with 200 ewes lambing will have 20 additional lambs from the +0.10 animals which translates to $2,000 at $100 lambs with very little additional cost. However, it is important to note that when buying a ram, maternal traits take a generation longer to be expressed than growth traits. For example, if you buy a ram which will improve numbers born, the ewes that he bred to will not have more lambs. It is the daughters that you keep back in your flock that will have more lambs.

What is the Accuracy of an EPD?
Accuracy is an indication of how much information was available to evaluate the trait for an animal. Accuracy ranges from 1% to 99%. As the accuracy improves the EPD value becomes more stable. A value with an accuracy of 90% is not expected to change very much even as new information is added to the evaluation. But an EPD with an accuracy of 30% can change considerably.
What Traits are Evaluated?

**Birth Weight – direct**
This is the lamb’s own ability to grow in the womb.

**Birth Weight – maternal**
This is the maternal effect on birth weight, i.e., physical size of the womb or body cavity in which to carry the lambs and ability to provide nutrients to the fetus.

**50 Day Weight – direct**
This is the lamb’s own ability to grow from 0 to 50 days and the total weight at 50 days.

**50 Day Weight – maternal**
This is the effect of the ewe on the lambs’ growth to 50 days, i.e., amount of milk available and mothering ability.

**100 Day Weight - direct**
This is the lamb’s own ability to grow from 50 to 100 days and the total weight at 100 days.

**Lamb survival – direct**
This is an estimate of the number of lambs that will survive to weaning. This EPD identifies ewes which will produce lambs that have a better ability to survive to weaning due to the lamb’s own genetics.

**Lamb survival – maternal**
This is an estimate of the number of lambs that will survive to weaning. This EPD identifies ewes which are better at helping their progeny to survive to weaning.

**Loin Depth (thickness)**
This is an estimate of the ability of the lamb to produce lean meat. This EPD identifies animals which will produce lambs that contribute to higher lean meat yield. This value estimates the difference between animals in loin eye depth.
Fat Cover (thickness)
This is an estimate of the ability of the lamb to be leaner. This EPD identifies animals that will produce lambs that are leaner. The more negative the value of this EPD, the leaner the progeny will be. This value estimates the difference between animals in back fat depth.

Age First Lambing
This is an estimate of the ability of the lamb to give birth to daughters that will produce progeny earlier. The ewes with a more negative EPD for this trait will have progeny that will give birth earlier.

Number Born First Lambing
This is an estimate of the ability of the lamb to produce daughters that give birth to more progeny during their first lambing. It indicates how many more lambs the progeny of an animal will have at first lambing compared to an animal with an EPD of 0.

Number Weaned at First Lambing
This is an estimate of the ability of the lamb to produce daughters that wean more progeny during their first lambing. It indicates how many more lambs the progeny of an animal will wean at first lambing compared to an animal with an EPD of 0. This is the number of lambs weaned and it is not related with the survival rate. Few lambs can have survived and been fostered or raised by bottle, but they will not be considered as weaned.

Lambing Interval
This is an estimate of the ability of the lamb to take less time between subsequent lambings. Ewes that have a more negative EPD for this trait will have a shorter lambing interval.

Number Born Later
This is an estimate of the ability of the lamb to produce daughters that give birth to more progeny at later lambings. It indicates how many more lambs the progeny of an animal will have at later lambing compared to an animal with an EPD of 0.

Number Weaned Later
This is an estimate of the ability of the lamb to produce daughters that wean more progeny at later lambings. It indicates how many more lambs the progeny of an animal will wean at later lambing compared to an animal with an EPD of 0. This is the number of lambs weaned and it is no
related with the survival rate. Some lambs survive and are fostered or raised by bottle, but they will not be considered as weaned.

The number born and weaned and the maternal growth traits will not be expressed until the lamb is a mother or sires lambs that become ewes.

**What do You Need to Know to Use the EPD Values?**

To use EPDs effectively, you must know what you want to change in your flock and what you want to keep the same. For example, do you want the lambs to be born bigger or smaller, gain faster, have more muscle or have triplets instead of twins? It is important to spend some time thinking about your ideal animal; for example, if you could purchase a ram to increase the number of lambs born and just buy the animal with the highest EPD for number born. An exaggerated result may be that every ewe lamb kept sired by that ram had four lambs in their first lambing, were very small, had a high stillborn rate and the ewes did not have enough milk. What this means is that you don’t want to simply buy a ram with the highest EPD you can find. You need to decide what traits you want to change and how much you want the traits to change. As an initial step to changing number born you might try a ram which will improve your number born by 0.1 lambs. So, if your flock average EPD for number born = -0.05, you would look to buy a ram with an EPD for number born of +0.05 lambs.

EPDs are a useful tool to change specific traits. It is difficult and usually impossible to find animals which are exceptional for all traits. Tables are available listing the range of EPD values for each trait and breed. These tables give you the information needed to determine whether the animal is in the top 25% for the trait for the breed or the top 1%. The EPDs cannot be used across breed since each breed has a different average for the trait.

EPDs are useful for the selection of animals at home or when purchasing breeding stock. If you keep GenOvis records at home you will have average EPDs for your breeding flock. Then, when purchasing animal or selecting replacement animals in your flock, you can choose animals above your flock average for the traits that you want to change.

It is also important to know that an EPD is a reflection of the average performance of progeny. The individual performance of progeny will vary significantly, but on average you can expect the estimated performance.

**Lamb EPDs**

You will receive EPDs for all traits at the 50 day weighing. At the 100 day weighing, you will receive updated values for the same EPDs. All traits may change between the 50 and 100 day weighings due to the addition of new information from other groups or correlated information on the same animals.
Genetic Selection Indexes

Genetic selection indexes are used to select for several traits at once. Each index is formulated to provide an average rate of progress that has been set for each trait. As great as it would be to increase a trait such as number born up to 5 lambs per lambing, what would be the point if only 1 of those lambs survives? By balancing traits into indexes, it is possible to select for a number of important traits with one number.

Actually, there are four indexes for use by sheep breeders: Growth index (Gx), Growth Maternal index (GxM), Terminal index (Tx), and Terminal Maternal index (TxM).

Commercial producers should look for terminal traits (terminal index) in rams used to sire market lambs and maternal traits (growth maternal index) in rams used to sire replacement ewe lambs.

Terminal Index (Tx)

The terminal index selects animals that have more muscling, less fat and that grow faster. There is a tendency for animals that grow faster to have higher birth weights and less muscling. This index balances the traits so that improvement can be made in both muscling and growth while limiting the increase in birth weight. The producers who take real-time ultrasound measurements for fat and muscle depth in order can use this index. For the others, this index is calculated using the data of the relatives or the low average of the breed. It can be used only if the accuracy is enough high. Used mainly by terminal breed producers who take ultrasound measurements, this index can also be used by commercial producers who are interested in terminal rams that will transmit their good growth potential and carcass quality to produce high quality market lambs.

The chart below shows the changes that would occur in one generation if only rams with terminal indexes in the top 5% were used to sire the next generation of lambs. Please note the different units used on the graph. Kilograms are used for the growth traits and millimeters are used for the fat and muscle depth. The change in growth traits appears to be larger than the changes in muscle and fat.
This is partly because the weight of an animal is generally a bigger number than the numbers used to express muscle or fat depth. For example, it would not be unreasonable to see a 50-day weight of 26 kg but it would be very difficult, if not impossible, to find 26 mm of fat on a 100 day-old lamb. The depth for fat cover on lambs ultrasounded at 100 days usually ranges from 2–6 mm.

**Growth Index (Gx)**

The growth index is for producers who do not take real-time ultrasound measurements for fat and muscle depth. This index has been designed to increase growth and minimize the loss in muscling as much as possible. There is a tendency for muscle depth to decrease when rate of growth increases, it is impossible to make an improvement in muscling without taking some sort of muscling measurement. The growth index has been designed to increase growth and minimize the loss in muscling as much as possible without actually taking any measurements. Using this growth index should result in lambs that grow faster than if only one growth trait was used for selection. It identifies easily the animals which progeny will grow faster from birth to slaughter. We recommend the use of this index with terminal breeds. The growth index is used by paternal breed producers when the terminal index isn’t available or the accuracy too low.

In the chart below you can see that growth is increasing but the changes in fat and muscling are close to zero.

These genetic indexes will give producers a better tool to improve growth and muscling in their flocks. Commercial producers should look for terminal traits in rams that will be siring their market lambs and maternal traits in rams that will be siring their replacement ewe lambs. A growth maternal index is available as well to assist producers in the selection of maternal traits.
Growth Maternal Index (GxM)

The maternal index attempts to increase the number born and weaned, and to keep birth weight constant while increasing weight weaned. It identifies the animals that female progeny will produce more lambs per lambing and wean heavier lambs. This is a complete genetic index that includes both maternal traits and growth. We recommend the use of this index for maternal and prolific breeds.

The chart below shows the changes that would occur to all traits in one generation if only rams with maternal index values in the top 5 or 6% of the population were used as sires.

The traits in the chart are graphed in the units of the individual trait. For example, weights are in kilograms and lambs born are in lambs. The index attempts to keep birth weight constant while increasing weight weaned and increasing number born and weaned. There is more emphasis put on number of lambs weaned than on born. As with the growth and terminal indexes, some of the traits are negatively correlated so an index allows us to select for all of the traits at the same time successfully.
Terminal Maternal Index (TzM)

This maternal index has been formulated to have the same function as the maternal index above but it also includes the loin depth and fat depth measurements. This index identifies animals whose female progeny will produce more lambs per lambing and wean heavier lambs that will have a good growth and carcass quality. This index allows for the selection of both maternal and carcass quality traits. The producers who take real-time ultrasound measurements for fat and muscle depth in order can use this index. For the others, this index is calculated using the data of the relatives or the low average of the breed. It can be used only if the accuracy is enough high. Used mainly by maternal and prolific breed producers, it also can be used by commercial producers who are interested in maternal rams that will transmit their good growth potential and carcass quality, but also their number born and weaned qualities to their ewe-lambs.
Adjustment Factors and Methods of Calculating Sheep Information Contained in Reports

Adjusted 50 Day Weights

Table 1 on the following page, contains the adjustment factors used to adjust 50 day weights of large breeds and crosses of these large breeds with large or medium breeds for age of dam, sex and type of rearing.

Table 2, on page 82, contains the adjustment factors used for medium and small breeds and their crosses with other small or medium breeds.

See codes on Appendix IV for list of breeds and their size.

The following is the method used to calculate the adjusted 50 day weight of each lamb.

\[ \text{Adj. 50 day wt. } = X + (50 - \text{actual age}) \times \text{A.D.G. (0 – 50)} \]

Where \( X = \text{Actual lamb wt. at 50 day weighing} \times \text{adjustment factor in Table 1 or Table 2} \)

\[ \text{A.D.G. (0 – 50)} = \frac{X - 2.5}{\text{Actual age at 50 day weighing}} \]
Table 1

50 Day Adjustment Factors
For Large Breeds (based upon Suffolk data)

Raised As Single Lambs

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Raised As Twin Lambs

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Raised As Three or More Lambs

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Table 2

50 Day Adjustment Factors
For Medium and Small Breeds (based upon Dorset data)

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Raised As Three or More Lambs

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EXAMPLE
A Suffolk ewe lamb 41L raised as a twin from a ewe four years of age weighs 20.0 kg at 60 days of age.

\[ X = 20.0 \times 1.25 = 25.0 \text{ kg} \]

A.D.G. \((0 - 50) = \frac{25.0 - 2.5}{60} = 0.375 \text{ kg}\)

Adj. 50 day wt. \(= 25.0 + (50 - 60) \times 0.375\)
\(= 25.0 + (-10 \times 0.375)\)
\(= 25.0 - 3.75 \text{ kg}\)
\(= 21.25 \text{ kg}\)

**Average Daily Gain (A.D.G.)**

\[ \text{A.D.G.} = \frac{\text{Wt. at 100 day weighing} - \text{Wt. at 50 day weighing}}{\text{Actual age at 100 day weighing} - \text{actual age at 50 day weighing}} \times 1.07 \text{ if a ewe or wether} \]

EXAMPLE
The ewe lamb 41L in the previous example which weighed 20.0 kg at the 50 day weighing weighed 39.8 kg at the 100 day weighing which was 53 days after the 50 day weighing (at 113 day of age).

\[ \text{A.D.G.} = \frac{39.8 - 20.0}{113 - 60} \times 1.07 \]
\(= \frac{19.8}{53} \times 1.07 \]
\(= 0.37 \times 1.07 \]
\(= 0.40 \text{ kg per day} \)

**Adjusted 100 Day Weights**

\[ \text{Adjusted 100 day wt.} = (\text{A.D.G.} \times 50) + \text{Adj. 50 day wt.} \]

EXAMPLE
The adjusted 100 day weight for the ewe lamb 41L in the previous example is as follows:

\[ \text{Adj. 100 day wt.} = (0.40 \times 50) + 21.25 \]
\(= 20.0 + 21.25 \]
\(= 41.25 \text{ kg} \)
# Appendix II

## GenOvis Codes

### Lamb Disposal Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
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<td>5A</td>
<td>Mummified fetus</td>
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<tr>
<td>5B</td>
<td>Stillborn</td>
</tr>
<tr>
<td>5C</td>
<td>Died within the 10 days of life</td>
</tr>
<tr>
<td>5D</td>
<td>Died from 11 days of age to 50 day weighing</td>
</tr>
<tr>
<td>5E</td>
<td>Died after 50 day weighing</td>
</tr>
<tr>
<td>5F</td>
<td>Gave lamb away</td>
</tr>
<tr>
<td>5G</td>
<td>Sold for slaughter, stockyard</td>
</tr>
<tr>
<td>5H</td>
<td>Sold for slaughter, plant</td>
</tr>
<tr>
<td>5I</td>
<td>Sold for slaughter, local auction</td>
</tr>
<tr>
<td>5J</td>
<td>Sold for slaughter, farm gate</td>
</tr>
<tr>
<td>5K</td>
<td>Sold for breeding</td>
</tr>
<tr>
<td>5M</td>
<td>Abortion</td>
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<tr>
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<td>Disposal unknown reason</td>
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### Lamb Comment Codes

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<tr>
<td>3B</td>
<td>Turned in eyelids</td>
</tr>
<tr>
<td>3C</td>
<td>Underdeveloped testes or cryptorchid</td>
</tr>
<tr>
<td>3D</td>
<td>Bloat</td>
</tr>
<tr>
<td>3E</td>
<td>Colored or black</td>
</tr>
<tr>
<td>3F</td>
<td>Scurs</td>
</tr>
<tr>
<td>3G</td>
<td>Suffered from starvation</td>
</tr>
<tr>
<td>3H</td>
<td>Suffered from pneumonia</td>
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<tr>
<td>3I</td>
<td>Suffered from urinary calculi</td>
</tr>
<tr>
<td>3J</td>
<td>Suffered from rectal prolapse</td>
</tr>
<tr>
<td>3K</td>
<td>Suffered from predator attack</td>
</tr>
<tr>
<td>3L</td>
<td>Suffered from pulpy-kidney (overeating disease)</td>
</tr>
<tr>
<td>3M</td>
<td>Suffered from white muscle disease (stiff lamb)</td>
</tr>
<tr>
<td>3N</td>
<td>Suffered from poisoning (excess copper, poisonous plant, etc.)</td>
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<tr>
<td>3P</td>
<td>Deformed or crippled at birth</td>
</tr>
<tr>
<td>3Q</td>
<td>Suffered from hypothermia</td>
</tr>
<tr>
<td>3R</td>
<td>Lamb killed by management</td>
</tr>
<tr>
<td>3S</td>
<td>Moderate injury</td>
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<tr>
<td>3T</td>
<td>Severe injury</td>
</tr>
<tr>
<td>3U</td>
<td>Milk supplemented (if bottle raised, use « B » in Raised as column)</td>
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<tr>
<td>3V</td>
<td>Conformation defect</td>
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<tr>
<td>3W</td>
<td>Hermaphrodite</td>
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<tr>
<td>3X</td>
<td>Ewe laid on lamb - suffocated</td>
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<tr>
<td>3Y</td>
<td>Premature birth</td>
</tr>
<tr>
<td>4A</td>
<td>Lamb not present at weighing (lost, stolen, etc.)</td>
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<td>Lamb sent to test station</td>
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<td>RB</td>
<td>Retained for breeding</td>
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</table>
Ewe Disposal Codes

1K - Sold for breeding
1L - Sold for slaughter
1W - Culled due to age
1X - Predator loss
1Z - Died

1Y - Disposal unknown reason

Ewe Comment Codes

1A - Abnormal udder condition
1B - Poor mother – i.e., rejected lamb
1C - Pregnancy toxemia
1D - Prolapse of reproductive organs
1E - Abdominal rupture
1F - Overfat at lambing
1G - Abnormally thin at lambing
1H - Physical defects
1J - Induced ovulation
1M - Mastitis
1N - No milk
1P - Low productivity
1R - Poor feet and legs
1S - Synchronized estrus
ET - Embryo Transplant
AI - Sired by Artificial Insemination

2A - Premature birth
2B - Easy assisted birth (easily corrected malpresentation)
2C - Difficult assisted birth (hard pull, surgical, etc.)
2D - Born backwards

Ram Disposal Codes

6J - Battery no longer used
6K - Sold for breeding
6L - Sold for slaughter
6W - Culled due to age
6X - Predator loss
6Z - Died

6Y - Disposal unknown reason

Year Letters

G - 1997    P - 2004    Y - 2011    F - 2018
M - 2002    W - 2009    D - 2016    L - 2023
Appendix III

Lamb Input Form — Particular situations

These are examples of particular situations that may happen when completing your lamb input form. It is important to ensure the information is in the correct columns so that credit is given to the right animals. The four following pages contain an example of lamb input form and lamb report where you can find these particular situations.

**Situation 1: Bottle Fed**

The ewe ABC 2J gives birth to 3 lambs, but raises only 2 of them. The third one (ABC 3L) is bottle fed.

**Situation 2: Normal Lambing**

The ewe ABC 16H gives birth to 2 lambs and raises both of them.

**Situation 3: Normal Lambing and a Lamb Is Fostered**

The ewe ABC 21F gives birth to 3 lambs, but raises only one of them (ABC 6L). The second lamb is stillborn (ABC 9006L). The third lamb (ABC 7L) is adopted and raised by the foster ABC 25H.

**Situation 4: Normal Lambing and the Ewe Fosters Another Lamb**

The ewe ABC 25H gives birth to the lamb ABC 8L. She raises her lamb with the lamb ABC 7L that she adopted from the ewe ABC 21F.

**Situation 5: Embryo Transfer and Adoption by a Foster**

The ewe ABC 18G is a recipient ewe (received eggs from another ewe) and gives birth to the lamb ABC 9L. This lamb is sired by the ram GHL 32B and the genetic dam (the one that gives the eggs) is GHL 22D. The comment code “ET” must be written in the Comment column. The lamb ABC 9L is adopted and fostered by the ewe ABC 17F.

The ewe ABC 18G gives birth to a second lamb (ABC 10L) that she raises. The lamb came from the breeding of the ram GHL 32B and the recipient ewe ABC 18G (situation very unusual).

**Situation 6: Normal Lambing for a Ewe that Raises her Lamb and Foster Another Lamb**

The ewe ABC 17F gives birth to the lamb ABC 11L that she raises with the lamb ABC 9L. This lamb was adopted from the ewe ABC 18G.

**Situation 7: Unknown Sire**

The ewe ABC 12E gives birth to 2 lambs and there is only the breed of the sire that is known.

**Situation 8: Unknown Sire and Dead Lambs**

The ewe ABC 14G gives birth to two lambs. The lamb ABC 9012L is stillborn and the second one, ABC 9014L, died 2 days after birth. There is only the breed of the sire that is known.
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<th>Sex</th>
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<th>Raised weight</th>
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</table>

Breeder's signature: ____________________________ Date: ____________________________

The Breeder is responsible for the accuracy of this report and the use of generated genetic evaluations.
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**EPD Run Date**
2011-10-30
### Appendix IV – Breed Codes and Size

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