

## Factsheet

FACTSHEET 19-007 AGDEX 434/10 JANUARY 2019

### INTRODUCTION

Lamb marketing is the main source of revenue for most Ontario sheep operations. It is an opportunity to maximize revenue from the lamb crop. There are opportunities such as holiday markets, forward contracting through a value chain or direct marketing to restaurants or farmers markets that can be used to increase revenue. To take advantage of these opportunities, it is important to be able to forecast lamb production and predict when lambs will be finished and ready for the marketplace. This factsheet will describe how to estimate the number of lambs that will be available for market. The companion OMAFRA factsheet, *Predicting Lamb Finishing*, describes the factors affecting lamb finishing and how to estimate when lambs will be ready for market.

### FORECASTING LAMB PRODUCTION

In order to forecast lamb production, the management cycle must be examined. The number of lambs that will be available for market will depend on gestation length, conception rates, prolificacy, mortality, breeding dates and the number of lambs kept for replacements in the flock. The following sections describe the variation in these factors, how to calculate individual flock numbers and provide reasonable industry estimates to use if individual farm numbers aren't available.

#### Gestation Length

The average gestation length for sheep is considered to be 147 days. There is variation around that average, and different breeds and flocks will have different earliest-expected lambing dates. Earlier-maturing and more prolific breeds tend to have shorter gestation lengths than later-maturing breeds. For example, producers with Rideau sheep may expect lambs after 142 days, and producers with Suffolk sheep may expect lambs after 150 days. The gestation length for individual sheep and different pregnancies can also vary. As a result, even when ewes are synchronized

and bred on the same day, lambing can happen over a period of 5–10 days. Recording ram in and ram out dates as well as the date the first and last lambs are born will allow for calculation of the range of days that lambs are born in your specific flock. For example, you may find that the first lamb is born 145 days after the rams are put in, and the last lamb is born 150 days after the rams are taken out.

#### Conception Rate

In a study done by Casas, et al. (2004) in Nebraska, U.S. conception rates were compared among ewes of different ages bred in August, October and December. The 5-year project was designed to produce 1,800 F1 ewes, which lambed at 1, 2 and 3 years of age. Ewes were group-mated by Suffolk rams for 35-day periods that began August 5, October 15 and December 15. Ewes bred in August were exposed to a teaser ram for 17 days prior to breeding. The results by age of ewe and month of breeding are shown in Table 1.

Table 1 shows that ewe lambs have significantly lower conception rates compared to 2- and 3-year-old ewes. They also appear to have a shorter season than their older counterparts. These results can be used as reasonable estimates of conception by age in season. To calculate your own flock conception rates, record the number of ewes exposed to a ram and divide by the number of ewes actually lambing.

**Table 1.** Conception rates for different ages and month of breeding

Month of Breeding	Conception %	Conception %	Conception %	All Ages
	1 year old	2 year old	3 year old	
August	40.1	83.6	87.7	70.5
October	66.6	93.1	94.3	84.7
December	74.7	95.3	93.9	88.0
Overall	60.5	90.7	90.2	

Source: Casas, et al. (2004).

**Table 2.** Average mortality by breed

Breed	No. Born	Aver. No. Born per Lambing	% Mummified	% Still Born	% 0–10 days	% 11–50 days	% 51–100 days	Total % Mortality
Dorset	3,066	1.55	0.02	3.8	3.7	1.1	0.7	9.3
Suffolk	1,916	1.64	0.2	4.2	4.9	3.8	2.0	15.1
Rideau	8,413	2.35	0.7	7.9	4.7	4.3	1.1	18.7
Crossbred	13,644	1.75	0.01	5.6	3.0	4.8	1.3	14.7
All breeds	48,945	1.83	0.1	5.7	3.7	4.5	1.3	15.3

Source: GenOvis, 2013.

## Mortality

Percent mortality varies by breed, prolificacy and farm. Table 2 shows the average mortality recorded by Ontario producers on the performance testing program in the year 2013 for the major breeds and across all breeds recorded on the program.

An extensive survey of sheep health was done in Quebec in the years 1999–2001. Data was collected from 30 flocks representing over 3,000 ewes for a full year. A portion of the lamb mortality results are shown in Table 3.

This study shows an average mortality of 15.8%, which is quite similar to the average results recorded on the Ontario performance testing program. However, this study also reported the range of mortality among the participating flocks. There was a large range in the mortality on each farm with a low of 6.8% and a high of 31.7%. Producers experiencing high mortality rates should contact their veterinarian and discuss ways to improve flock health.

**Table 3.** Pre-weaning mortality as reported in Quebec by (Belanger) from 1999 to 2001

Mortality	%
Average mortality per flock	15.8
Median mortality per flock	14.5
Minimum mortality per flock	6.8
Maximum mortality per flock	31.7
Percent mortality 0–2 days	9.6
Percent mortality 0–10 days	11.8
Percent total mortality pre-weaning	15.4

Source: Adapted from Belanger, et al. (2001).

## Prolificacy

Prolificacy varies between animals and breeds. Table 4 provides the average number born and weaned per lambing numbers for the most popular breeds based on performance information submitted by producers participating in the Canadian performance testing program, GenOvis.

**Table 4.** Average performance testing results for lambing and weaning percentages by breed

Breed	No. Producers	No. Ewes	Aver. No. Born Per Lambing	Aver. No. Weaned per Lambing
Dorset	44	1,718	1.55	1.42
Rideau	36	3,082	2.35	2.00
Suffolk	37	1,111	1.64	1.45
Crossbred	101	6,520	1.75	1.55
All breeds	191	21,231	1.83	1.61

Source: GenOvis, 2013.

## Breeding Dates

The actual breeding dates chosen will affect conception rates and prolificacy due to the fact that sheep are seasonal breeders. The breeding date will also determine the time of year that lambs are born and may be varied to take advantage of market opportunities. Table 5 can be used to quickly determine the time of year that lambs will be born when choosing breeding dates.

Breeding dates also affect conception rates, due to the fact that sheep are seasonal breeders that breed when days are short. The conception rates in Table 1 apply to in-season breeding. Out-of-season breeding conception rates are more variable. An average expected out-of-season breeding result in Ontario is 50%–60%, using hormone synchronization with a large variation in results of 20%–80% between years and farms.

**Table 5.** Lambing date calculator (based on 147-day gestation)

Breeding Month	Lambing Month	Days
January	June	– 4 days
February	July	– 3 days
March	August	– 6 days
April	September	– 6 days
May	October	– 6 days
June	November	– 6 days
July	December	– 6 days
August	January	– 6 days
September	February	– 6 days
October	March	– 4 days
November	April	– 4 days
December	May	– 4 days

Source: *Lambing Diary*, OMAFRA Publication 834, 2014.

## Calculation of Number of Lambs Available for Market

Calculating your own farm values for gestation length, conception rates, prolificacy and mortality is the most accurate way to estimate lamb production, but if you don't have these values, the average values discussed in the sections above can be used. The following series of formulas can be used to estimate the number of market lambs available for market.

### Formula 1:

Number of ewes bred x average conception rate  
= number of ewes expected to lamb

#### *For example:*

300 ewes bred  
x average conception rate of .90 (90%)  
= 270 ewes expected to lamb

### Formula 2:

Number of ewes expected to lamb  
x average number of lambs born  
= expected number of lambs born

#### *For example:*

270 ewes expected to lamb  
x average of 1.83 lambs born  
= 494 lambs expected born

### Formula 3:

Expected number of lambs born  
x expected average survival  
= number of lambs available

#### *For example:*

494 lambs expected to be born  
x expected average survival of 0.88 (88%)  
= 435 lambs available

### Formula 4:

Number of lambs available  
– number of lambs keeping for replacements  
= number of market lambs available

#### *For example:*

435 lambs available  
– 30 lambs keeping for replacements  
= 405 market lambs

## CONCLUSIONS

Lamb production will be unique and must be calculated for each flock due to the variables that are influenced by flock management. The information in this factsheet provides estimates that can be used if actual flock data is not available. Basic lamb production information can be used to plan the management cycle, develop a business plan and plan for marketing options.

## REFERENCES

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Published by the Ontario Ministry of Agriculture, Food and Rural Affairs  
© Queen's Printer for Ontario, 2019  
ISSN 1198-712X  
Également disponible en français (Fiche technique 19-008)

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