



1: Using Terminal Sires

Take Home Messages

- Terminal sires can increase lamb growth rate and lean meat yield.
- Terminal sires should be used in flocks with strong maternal traits.
- All offspring from terminal sires should be sold for slaughter.
- Maternal traits are relatively unimportant in terminal sires.

The majority of sheep farms in Canada generate most of their income from the sale of lambs for meat. Whether you sell to a large packer or have established a list of farm direct customers, lean meat is what consumers want. Fortunately, most traits associated with growth and carcass conformation are moderately to highly heritable and significant gains can be made through genetic selection. To maximize growth rate and lean meat yield, producers should consider a cross breeding program using terminal sires.



Consumer preference - excellent lean meat yield



Consumer displeasure – excessive fat

Do you need a terminal sire? A terminal sire, or ram, is used when the primary objective is to produce good quality market lambs. It can provide the genetics to boost lamb growth, feed efficiency and carcass quality. The benefit of a terminal sire is maximized when used in flocks with strong maternal traits. When you are using a terminal sire that has superior growth and carcass traits, it is recommended that all offspring go to slaughter. Maternal sire breeds are used to improve those traits you need in a breeding ewe flock – don't confuse the purpose of the rams you're using. Maternal traits such as milk production, mothering ability and prolificacy are less important in a terminal sire because all lambs sired should be sent to slaughter.

Identify the terminal sire breeds of sheep that are available to you. There are dozens of breeds of sheep. Terminal sire breeds are specifically known for:

- **growth rate** – average daily gains in well-managed males can exceed 0.5 kg (1.1 lb.) per day and days to market weight can be less than 100 days;
- **feed efficiency** - feed to gain ratios can be as low as 3.5 to 1 when high concentrate diets are used. Feed is typically more than 60 per cent of the cost of producing a market lamb;
- **muscling** – well-developed muscling in the loin and leg areas is highly desirable for market lambs. Assessing muscling of live animals is a hands-on procedure and needs practice. Muscle scores on grading reports are the result of visual appraisal by trained graders;
- **lean meat yield** - fat is not muscle. A grade rule (GR) measurement at the 12/13th rib on a carcass is an indication of overall carcass fatness;
- **large mature size** – growth rate and mature size are correlated. Select a terminal sire breed that will result in carcass weights that fit your target market. Typical carcass yield is 49 per cent of live weight.

Determine what specific characteristics you need in a terminal sire to best complement your current ewe flock. Start by taking a critical look at the lambs you are producing. Consider the following:

- The longer it takes to get your lambs to market weight, the more it costs you. Using terminal sire breeds that exhibit superior growth rate and feed efficiency will likely improve your profitability;
- If you sell only on a live weight basis, a breed that provides maximum growth to market weight is most important;
- If you sell on a carcass basis check your grading sheets or talk to the butcher.
 - If lambs lack muscling or have been discounted on conformation scores, then consider breeds with superior muscling;
 - If lambs are over-fat (but in the target range for carcass weight), then look for a breed with low back fat to improve lean meat yield.

The Lakeland Carcass Sire (LCS) project, conducted at Lakeland College, Vermilion, Alberta, was designed to compare the growth and carcass characteristics of lambs sired by the five terminal sire breeds commonly used in Western Canada.

The sire breeds selected for the three year project were: Canadian Arcott, Charollais, Ile de France, Suffolk and Texel. Each year five rams of each breed were individually exposed to 10 ewes of maternal breeding to produce crossbred lambs. Sires were obtained from 22 breeders in Alberta, Saskatchewan and Ontario.



Well muscled carcass (left) compared to a poorly muscled carcass (right)

Summary of the Results of the Lakeland Carcass Sire Project



Canadian Arcott

- best used to increase growth rate of market lambs
- lambs exhibited highest level of fat (highest GR measurement)



Charollais

- best used to increase growth rate and for general improvement in all traits



Ile de France

- best used to increase muscling and lean meat yield of market lambs



Suffolk

- best used to increase growth rate of market lambs
- lambs exhibited lowest level of fat (superior leanness)



Texel

- best used to increase muscling and lean meat yield of market lambs
- lambs exhibited low levels of fat (superior leanness)

The LCS project provides information to help producers make better decisions on which terminal sire breeds will complement their ewe flock genetics and improve the carcass quality of their market lambs. Detailed results for the project are available in the paper entitled “Growth, Carcass Characteristics and Weights of Retail Cuts of Lambs Sired by Five Terminal Sire Breeds” which will be posted on Alberta Agriculture and Alberta Lamb Producers’ websites after publication.

In summary, the project showed that no single terminal sire breed was superior for all the desirable carcass characteristics required in a lamb supply chain. Once again, there is no “magic bullet,” but the project results confirmed that producers who sell lambs on a live weight basis should consider the superior growth rate of Suffolk, Canadian Arcott and Charollais sires. Producers selling on a carcass basis should look at the superior leanness of Suffolk sires if their flock produces lambs that are over fat, or the superior conformation of the Ile de France or Texel if their lambs lack muscling. Some may prefer the “all purpose” attributes of the Charollais sires who had intermediate or superior rankings for every trait examined.

Other Considerations

While the Lakeland project tested a sample of the terminal sire genetics available in Canada, it was not comprehensive enough to provide a complete assessment of each breed. Breed data in genetic improvement programs such as GenOvis (www.genovis.ca) should also be consulted. Also, there is significant variation within each breed for the traits studied – certain genetic lines within breeds may produce different results.

Hybrid vigour will increase lamb survival rates in your flock - pick terminal breed genetics that are different from your ewe flock.

Remember, genetic improvement will only be possible and profitable when good nutrition and husbandry practices are carried out. Superior genetics will not overcome inferior management practices.

Additional Reading

The Lakeland Carcass Sire (LCS) project, conducted at Lakeland College, Vermilion, Alberta, was designed to compare the growth and carcass characteristics of lambs sired by the five terminal sire breeds commonly used in Western Canada.

Building Better Lambs 2: Selecting Terminal Sires

Building Better Lambs 3: How to Use Performance Records to Select Terminal Sires

Building Better Lambs 4: Managing Sires for Superior Performance

Useful Websites

Canadian Sheep Breeders Association <http://www.sheepbreeders.ca/info.html>

Genovis www.genovis.ca

Lakeland Carcass Sire Project [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/sg10536](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sg10536)

Author: Dale F. Engstrom, P.Ag.

Reviewers: Dr. Kathy Parker (ALP), Blair Dow (LC), Tracy Hagedorn (ARD)

Editor: Susan Hosford (ARD)

October 2010