



NSIP

National Sheep  
Improvement  
PROGRAM

# Ram Buying Guide

USE EBVs TO SELECT QUALITY RAMS & REACH PRODUCTION GOALS



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Industry Association



# Ram Buying Guide

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# Ram Buying Guide

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## How to Use This Ram Buyers Guide

### LEARN HOW TO USE EBVs WHEN PURCHASING RAMS

Selecting breeding rams is arguably the most important decision a sheep producer needs to make. After 4 generations, over 90% of the flock's genetics are contributed by the ram. Therefore, careful consideration needs to go into each breeding decision.

The National Sheep Improvement Program (NSIP) was established to provide estimated breeding values (EBVs) to seedstock producers. These EBVs are to be used by both the seedstock and commercial producers to breed sheep tailor suited to maximize production efficiency. Using EBVs in the selection process minimizes the guesswork of ram selection by assigning a number value to the genetic merit of a breeding sheep for certain production traits, which allows for quick and easy comparisons between rams.

EBVs are a much stronger selection tool than raw data or centralized testing. They use on-farm data to predict performance in their normal environment. This data is adjusted to account for known non-genetic factors that influence performance. Then the data is combined with data from all the relatives of that ram in the source flock or any flock with related animals. This is the best technology available to predict the true genetic potential of a ram.

This guide will take you through the process of evaluating your current production levels, establishing goals for productivity improvement and then how to select rams using EBVs to help achieve those goals. The worksheet on page 10 will help walk you through the 3-step process toward genetic improvement.

Like any other production decision, rams should be selected that will increase the productivity and profitability of your sheep enterprise.

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## Interpreting EBVs

Estimated breeding values are an indicator of how an individual's performance for a trait relates to the average for the breed on NSIP.



In the above example, this ram has an EBV of 3 kg for weaning weight (WWT), which means that ram has the genetic potential to be 3 kilograms heavier at weaning. If he sires progeny, each lamb inherits half of their genes from the ram, so the progeny would be expected to be 1.5 kg heavier at weaning due to the genetic potential inherited from their sire.

There are EBVs for body weight at different ages, carcass measurements, reproduction, parasite resistance and wool.

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## Step 1. Evaluation of Current Production

In order to make genetic progress, the current production level of a flock needs to be determined. Use your current flock production records to determine lambing and weaning rates, average weaning rate, average loin area, average back fat thickness, average fleece weight and average fiber diameter. All of these should be recorded on the worksheet, using your flock's current production levels in column B on page 10.

### ROWS 1 & 2

Lambing and weaning rate should be expressed as a percentage, e.g., 120 lambs born from 100 ewes has a lambing rate of 120%. (See the sample form on page 11 for an example).

### ROWS 4 & 5

If lambs are marketed in a grid- or value-based pricing system, the average loin eye area and back fat thickness can be placed in rows 4 and 5.

### ROWS 6&7

As wool is another source of revenue for most flocks, fleece traits can be entered into rows 6 and 7 on the worksheet.

Parasite resistance is an important health concern for many flocks that are managed on pasture that are challenged with intestinal round worms and can also be accounted for.



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## Step 2. Establishing Goals

Now that the current production levels are entered, goals can be established to help improve each of these traits. These goals set in column C should be determined to increase productivity and profitability, but they should also be attainable. List the goals for each trait in column C in the worksheet on page 10. Refer to page 11 for a sample.

Keep in mind that sometimes a goal can be set to decrease a certain trait, such as with fiber diameter.

After productivity goals are established, it is important to prioritize which traits are the most important for improving profitability. When establishing a priority, the traits that impact profitability the most should be analyzed first. For most commercial producers, profitability is generally determined by pounds of lamb weaned per ewe. This is determined by a combination of lambing rate, weaning rate and weaning weight of lambs. The trait in lines 1-3 that has the largest difference between your goal and your current level should be the first priority.

### Why is setting priorities important?

The priority listing is important because while it is possible to select for multiple traits simultaneously, in general, the more traits you select for at one time, the slower the genetic progress will be in each. By focusing on 1 or 2 important traits, genetic progress will be seen much sooner than by trying to improve all 5 traits at once. The priority of each trait should be listed in column D on the worksheet.

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## Step 3. Selecting Rams Using EBVs

### Determine a Breed

Now that the goals for improvement have been prioritized, EBVs can be used to select rams that will help reach those goals. But first, a decision must be made on what breed or breed type will be most helpful to reach productivity goals. For instance, Targhee, Polypay, and Katahdin are maternal breeds that focus on development of replacements for different environments or management styles. Whereas, Suffolk and Hampshire are terminal breeds that focus on growth and carcass merit of lambs destined for market. Within each breed type, there are different breeds that might fit each commercial breeder's goals or environment better than another breed.

### Compare EBVs and Index Scores

After a ram breed has been chosen, the next step to ram selection is to ask the seedstock producer for a list of the EBVs on their rams from NSIP. Breeders with EBVs can be found at [www.nsip.org](http://www.nsip.org). Also, a list of trait leaders are reported by breed on our website. If a ram breeder cannot provide EBVs, rams should not be purchased. The spreadsheet of EBV data can be overwhelming at first but using this guide, you will be able to decipher the numbers and make the correct selections.

To start analyzing EBVs, production indexes can be very helpful. A production index combines the EBVs for several traits into one number. The indexes give an idea of the overall genetic potential of an animal or if an animal is genetically, an "all-around" good sheep. For example, the western range breeds like Targhee or Rambouillet use the Western Range Index, which balances number of lambs born, growth potential and fleece characteristics all into one number. Both hair and wool farm flock breeds, focus on number of lambs weaned and weight of lambs weaned. The terminal sires use the Carcass Plus index which places more emphasis on growth and carcass traits like eye muscle depth and back fat. Any ram being considered for purchase should be within the top third (60th percentile) in index value to assure their genetic merit.

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## Compare EBVs and Index Scores (continued)

While the indexes provide a general overview of genetic merit, every flock has its own unique traits that could be improved. Therefore, EBVs for individual traits should also be analyzed. The trait listed as priority 1 on the worksheet should have the most emphasis for selection followed by 2, 3, etc.

To compare rams with different index or EBV values, they need to be compared both to each other and also to the average of the breed. To make this comparison, NSIP publishes percentile reports for each breed group that indicate the range of values of EBVs within each group. These percentile reports can be found on the NSIP website at <http://nsip.org/usa-percentile-reports/>. For example, when looking at the Targhee breed, if a ram has a Number of Lambs Born (NLB) EBV of 10.3 that ram would be in the 75th percentile of the breed.

It is a good idea to print off these percentile reports so that while looking at rams with EBVs, they can be ranked based on their merit within that breed.

By using the percentile reports, EBVs can be used to place the right amount of selection pressure on the production traits that are of most importance economically. In general, rams should only be used from the top 50% of the breed to expedite genetic progress. When selecting multiple rams, make sure each ram has EBVs that will benefit the flock as a whole and their values complement each other.



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## Final Selection Criteria

After the desired EBVs have been identified in a ram, the animal should be evaluated for the “common sense” phenotypic traits. Rams should always be:

- Sound on their feet and legs,
- Free of any abnormalities, and
- Have a correct mouth structure.

Estimated Breeding Values do not replace the value of a reputable seedstock provider. Quality sheep breeders will effectively use EBVs, phenotype, and supplemental performance data to breed quality animals that are designed to perform in the commercial setting. In addition, reputable breeders should be able to assist ram buyers with determining which rams would be best for them to accomplish their goals. However, seedstock breeders that do not use EBVs are not using the most current technology available and are likely not committed to the future of the commercial sheep industry. Further, if health status is a concern, the health status of the flock should be examined for biosecurity purposes focusing on scrapie resistance, OPP, spider syndrome etc.

By using this method, the ram buyer is minimizing risk associated with ram selection, especially for non-visual traits such as:

- Prolificacy,
- Milk production, and
- Parasite resistance.

No longer is a ram being purchased on phenotype and hoping that he improves the performance of the flock. Estimated breeding values are a proven technology to help facilitate flock productivity improvement and the producer's financial returns. If your source of seedstock provider is not on NSIP, encourage their participation in moving the U.S. sheep industry forward. NSIP is the genetic foundation for a profitable U.S. sheep industry.

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**“A breeding soundness exam should always be performed evaluating physical health and adequate scrotal circumference.”**

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## Flock Improvement Worksheet

	A	B	C	D	E
	Production Trait	Current Production	Goal	Priority	Percentile/EBV
1	Lambing rate (number of lambs born per ewe)				
2	Weaning rate (number of lambs weaned per ewe)				
3	Average weaning weight				
4	Average loin eye area				
5	Average back fat thickness				
6	Average ewe fleece weight				
7	Average fiber diameter				
8	Parasite resistance				

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## SAMPLE Flock Improvement Worksheet

In this example, the producer's top priority is to increase weaning rate from 100% (1 lamb per ewe) to 135% (1.35 lambs per ewe). Note how goals were outlined in every area and then the priority column (D) can be used to narrow in on the most important traits.

	A	B	C	D	E
	<b>Production Trait</b>	<b>Current Production</b>	<b>Goal</b>	<b>Priority</b>	<b>Percentile/ EBV</b>
1	Lambing rate (number of lambs born per ewe)	120%	150%	1	Top 10%/14.6
2	Weaning rate (number of lambs weaned per ewe)	100%	135%	2	Top 20%/12.6
3	Average weaning weight	62 lbs	75 lbs	3	Top 30%/1.32
4	Average loin eye area	n/a			
5	Average back fat thickness	n/a			
6	Average ewe fleece weight	6.5 lbs	10.0 lbs	5	Top 50%/7.84
7	Average fiber diameter	22 micron	20 micron	4	Top 40%/- .53
8	Parasite resistance	n/a			

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## SAMPLE Flock Improvement Worksheet

In this example, the producer is looking for a terminal sire to cross on white-face commercial ewes to sell feeder lambs. Note how the priority shifts from reproductive traits to growth when selecting for this Suffolk ram.

	A	B	C	D	E
	Production Trait	Current Production	Goal	Priority	Percentile/EBV
1	Lambing rate (number of lambs born per ewe)	135%	135%	n/a	
2	Weaning rate (number of lambs weaned per ewe)	128%	128%	n/a	
3	Average weaning weight	52 lbs	60 lbs	1	Top 10%/4.86
4	Average loin eye area	1.9 in <sup>2</sup>	2.8 in <sup>2</sup>	2	Top 30%/0.82
5	Average back fat thickness	.3 in	0.2 in	3	Top 20%/-1.93
6	Average ewe fleece weight	n/a			
7	Average fiber diameter	n/a			
8	Parasite resistance				

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## SAMPLE Flock Improvement Worksheet

In this example, this farm-flock Polypay producer markets finished lambs and is looking for a Polypay ram to produce replacement females.

	A	B	C	D	E
	Production Trait	Current Production	Goal	Priority	Percentile/ EBV
1	Lambing rate (number of lambs born per ewe)	140%	165%	1	Top 10%/25.5
2	Weaning rate (number of lambs weaned per ewe)	130%	155%	3	Top 30%/18.5
3	Average weaning weight	55 lbs	65 lbs	2	Top 20%/2.4
4	Average loin eye area	n/a			
5	Average back fat thickness	n/a			
6	Average ewe fleece weight	6.5 lbs	6.5 lbs		
7	Average fiber diameter	n/a			
8	Parasite resistance	n/a			

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## SAMPLE Flock Improvement Worksheet

This Katahdin producer direct markets grass fed lambs to restaurants and farmers markets. Parasite resistance is a priority in this environment.

	A	B	C	D	E
	Production Trait	Current Production	Goal	Priority	Percentile/EBV
1	Lambing rate (number of lambs born per ewe)	120%	130%	2	Top 20%/16
2	Weaning rate (number of lambs weaned per ewe)	95%	115%	3	Top 30%/15
3	Average weaning weight	45 lbs	50 lbs	4	Top 40%/1.2
4	Average loin eye area	n/a			
5	Average back fat thickness	n/a			
6	Average ewe fleece weight	n/a			
7	Average fiber diameter	n/a			
8	Parasite resistance	Drench 4x per year	Drench 2x per year	1	Top 10%/-89

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