



Selection and Culling Decision Making for Hair Sheep Producers

David Fernandez
Extension Livestock
Specialist

Many producers want to know which breed, ram or ewe is the “best” one, and the most common answer they get frustrates them because the answer is, “It depends.” Why can’t you just get a straight answer? The reason is that there are so many variables included in making this decision which are specific to your farm that your “best” ram or ewe will not be the same as your neighbor’s. Let’s begin by figuring out what those variables are, how to manage them, what tools are available to help you make a decision and how to use those tools.

Production Goals

The variables over which you have the most control are your goals. In the U.S., 94 percent of sheep producers have fewer than 100 sheep (USDA, 2011). Many of these sheep operations are hobby farms that have grown into, or are growing into, a business, and their goals have not been carefully thought out. So, the first question you must ask yourself is, “What kind of sheep or sheep product am I trying to produce and sell?” The answer to this question usually has a lot to do with who in your area wants to purchase your sheep.

For example, most hair sheep producers are “commercial” producers. Commercial producers sell lambs for meat, often to

local ethnic or specialty markets and individuals. A few sell their lambs at the nearest livestock auction. Producers who breed replacement ewes and rams are known as “seed-stock” producers. They breed replacement ewes and rams to sell to other hair sheep producers – the “seed” for the next generation of genetically superior sheep. A very small number of hair sheep farmers may sell to 4-H/FFA fair and show participants. However, hair sheep do not generally show well against the larger, heavier-muscled, woolled meat breeds, so not many youth show hair sheep. The growing popularity of hair sheep breeds in the U.S. may eventually lead to the creation of hair sheep classes at county and state fairs, improving this market opportunity.

Farm Environment

The next question to ask yourself is, “What is the environment on my farm like and how will it affect my sheep?” Producers in the southeastern



FIGURE 1. Farm environments can be quite variable, even within short distances of one another. These St. Croix sheep will respond differently to their environment than Katahdin or Dorper sheep will. (Photo courtesy of USDA-ARS)

U.S. face warm, humid conditions that favor the development of parasites and hoof rot organisms. Winters are generally short and mild, and summers can be dry as well as hot. Land can vary from level and fertile to hilly and rocky. Water is usually available in the form of rainfall, surface water (including manmade ponds) or well-water. Pastures are usually made up of warm-season grasses in the southernmost range of the region and mixed warm- and cool-season grasses as you move northward.

Let's assume for the moment that you are a commercial producer raising lambs for a local market in Arkansas. For which characteristics, or "traits," should you select? Generally, you will sell your lambs on a "per-head" rather than "per-pound" basis. You will also likely experience problems with the barberpole worm (*Haemonchus contortus*), a parasite that lives in the stomach of the sheep and sucks its blood. Heavy infections of barberpole worms can kill sheep in just a few days. (For more on controlling the barberpole worm, see *FSA9608, Fecal Egg Counting for Sheep and Goat Producers*, at http://www.uaex.edu/Other_Areas/publications/PDF/FSA-9608.pdf or your local Cooperative Extension office). For these reasons, you may choose to select animals for excellent reproductive traits and parasite resistance.

Expected Progeny Differences (EPDs)

The National Sheep Improvement Program (NSIP; www.nsip.org) collects performance data from sheep producers across the country and develops EPDs. EPDs are Expected Progeny Differences, which are the amounts the offspring of a particular parent are expected to differ from the **average for the breed**. You cannot use EPDs to compare sheep of different breeds. You also have to realize that even though a particular animal may have excellent EPDs, it may not be a good fit for your farm's specific environment. The performance of an animal is made up of both its genetic potential and its environment. EPDs are the best tool available to estimate the **genetic** potential of an animal as a parent.

Let's go back to our example. Suppose you are looking for a new ram. Which EPDs might you want to use? You want to increase the number of lambs you have available for sale, and you will want to reduce the impact of parasites on your flock. NSIP calculates EPDs for "Percent Lamb Crop," also called "Number Born." A positive number for this EPD would mean the ram should produce daughters that will produce more lambs at lambing. An EPD of 2 percent, for example, would mean there should be two more lambs born for every 100 lambs born to the offspring of this ram.

You may also choose to use the "Number Weaned" EPD. This EPD not only takes into account the number of lambs born to the daughters of this ram, but also how well his daughters care for their lambs. Again, suppose the ram's EPD for Number Weaned is two. This ram's daughters would be expected to wean two more lambs for every 100 lambs produced than the breed average. This EPD may be more valuable to you because even if more lambs are born, if they do not survive to weaning, they cannot be sold.

Finally, you may want to use the FEC EPD. The FEC EPD, or Fecal Egg Count EPD, is a measure of parasite resistance, especially to gastrointestinal worms such as the barberpole worm. Fecal egg counts are actual counts of the number of parasite eggs present in a gram of feces. The more eggs per gram, the higher the worm load and the more likely the ram will succumb to parasite-related problems. In this case, a **negative** EPD is preferable. Animals with negative numbers have fewer eggs per gram than the breed average, indicating better parasite resistance.

There are a number of other traits for which you can select based on EPDs. While only selecting for a single trait permits the most rapid improvement, once you reach your goal for that trait and begin selecting for another trait, it is difficult to maintain the first trait at your goal level. Selecting for too many traits, on the other hand, can slow genetic progress, and you may be selecting for traits that are not critical to your production system.

FIGURE 2. EPDs (listed here as EBVs or Estimated Breeding Values) and performance data for a ram lamb offered in a sale (USDA-ARS).

	USDA ID	USD2038	Performance Data	
	Registered Status	ELIGIBLE	Birth Wt	6.8
	DOB	02/05/2012	60 Day Wt	30
	Sire ID	MOF919	90 Day Wt	43
	Dam ID	USD9048	Birth/reartype	2/2
	Codon 171/136		Characteristics	White
EBVs	Wwt (60)	-0.6	PWwt (120 d)	-0.5
	MWt (60)	-0.8	NLB (%)	12
	NLW (%)	15	WFEC	3
	PFEC	-53	EPT	103.9

Recordkeeping

How will you know if you are making any progress? Recordkeeping! Good livestock managers keep accurate records. What records should you keep? Again, the answer depends. Each animal must have its own identification number. Basic production records for hair sheep producers may include:

Birth Weight	Number of lambs born per ewe	Fecal Egg Counts/FAMACHA Scores
60-Day Weaning Weight	Number of lambs weaned per ewe	Body Condition Score/Health Issues
120-Day Post-Weaning Weight	Pounds of lamb weaned per ewe	Birth Date

The most important thing to remember about records is to keep only those records you will use. It is easy to become overwhelmed with too much data, and the time involved in obtaining the records may be excessive if you keep too many.

How do you use the records you are keeping? Use your records to select new rams to correct problems in your flock or to enhance the strengths of your flock. As your flock's genetics improve, you can see which ewes no longer produce lambs that are desirable, and the ewe can be culled from the herd. You can use your records to improve your sales and prices if you are interested in becoming a seedstock producer or selling breeding animals to other producers. Your records also make it easier to see if you are making a profit or losing money, access credit and apply for government disaster relief or other programs that are based upon your productivity.

Culling Decisions

Culling is often difficult for sheep producers with small flocks. Each animal is known individually and may have been on the farm for many years. The decision to cull a ewe can often be a very emotional one. However, as you transition from being a hobby farmer to a farm business, or under emergency conditions such as a drought, you will have to choose which animals to sell and which to keep. The following considerations may make the process a little easier.

First and foremost, all ewes that failed to become pregnant during the breeding season should be culled from the herd. Non-pregnant ewes still have to be fed, cared for and maybe even provided veterinary services, yet they will bring you no income to cover those costs in the coming year.

Do you have any ewes with bad udders, poor feet and legs, broken-mouthed ewes or other physical problems that may prevent them from caring for themselves or their lambs in the coming year? These ewes increase your labor needs, generally have lower productivity than their flock mates and should be culled.

Ewes that require regular deworming should be removed from the flock as well. Only 20 percent of your ewes are usually responsible for shedding 80 percent of the parasite eggs found on your farm (Kaplan, 2005). By removing these ewes, you are not only reducing the number of parasite eggs on your farm, but you are also selecting for parasite resistance in your ewes.



FIGURE 3. Ewes that require deworming more than two or three times per year should be culled because they are not parasite resistant and shed more worm eggs onto pastures. (Photo by Susan Schoenian)

Finally, look over your production records to see which ewe lambs should be chosen to replace these ewes as well as ewes that no longer produce at or above the flock average for the production traits you consider most important.

Summary

To answer your original question with something other than "It depends," you will need to establish production goals, understand your production environment, keep accurate production records and be willing to make good culling decisions. Then you can use EPDs to answer the question, "Which sheep is the best?" You can also use your production records to identify which sheep are best in your own flock. By breeding the best with the best, you will produce the best, at least for your goals, environment and market.

References

Kaplan, R. Responding to the emergence of multiple-drug resistant *Haemonchus contortus*: smart drenching and FAMACHA®. Proceedings of the Kentucky Veterinary Medical Association Morehead Clinic Days Conference, Morehead, KY, June 4-5, 2005. <http://www.sheepandgoat.com/ACSRPC/Resources/famacha.html>. Accessed 9/19/2012.

National Sheep Improvement Program. 2012. www.nsip.org. Accessed 9/19/2012.

USDA, National Agricultural Statistics Service. 2012. Farms, Land in Farms, and Livestock Operations 2011 Summary. www.nass.usda.gov/Publications/Todays_Reports/reports/fnlo0212.pdf. Accessed 9/19/2012.

Accredited by North Central Association of Colleges and Schools Commission on Institutions of Higher Education, 30 N. LaSalle, Suite 2400, Chicago, Illinois 60602-2504, 1-800-621-7440/FAX: 312-263-7462.

Printed by University of Arkansas Cooperative Extension Service Printing Services.

DR. DAVID FERNANDEZ is Extension livestock specialist with the 1890 Cooperative Extension Program and is located at the University of Arkansas at Pine Bluff.

Issued in furtherance of Extension work, Act of September 29, 1977, in cooperation with the U.S. Department of Agriculture, Dr. James O. Garner Jr., Dean/Director, 1890 Research and Extension Programs, Cooperative Extension Program, University of Arkansas at Pine Bluff. The University of Arkansas at Pine Bluff School of Agriculture, Fisheries and Human Sciences offers its programs to all eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.