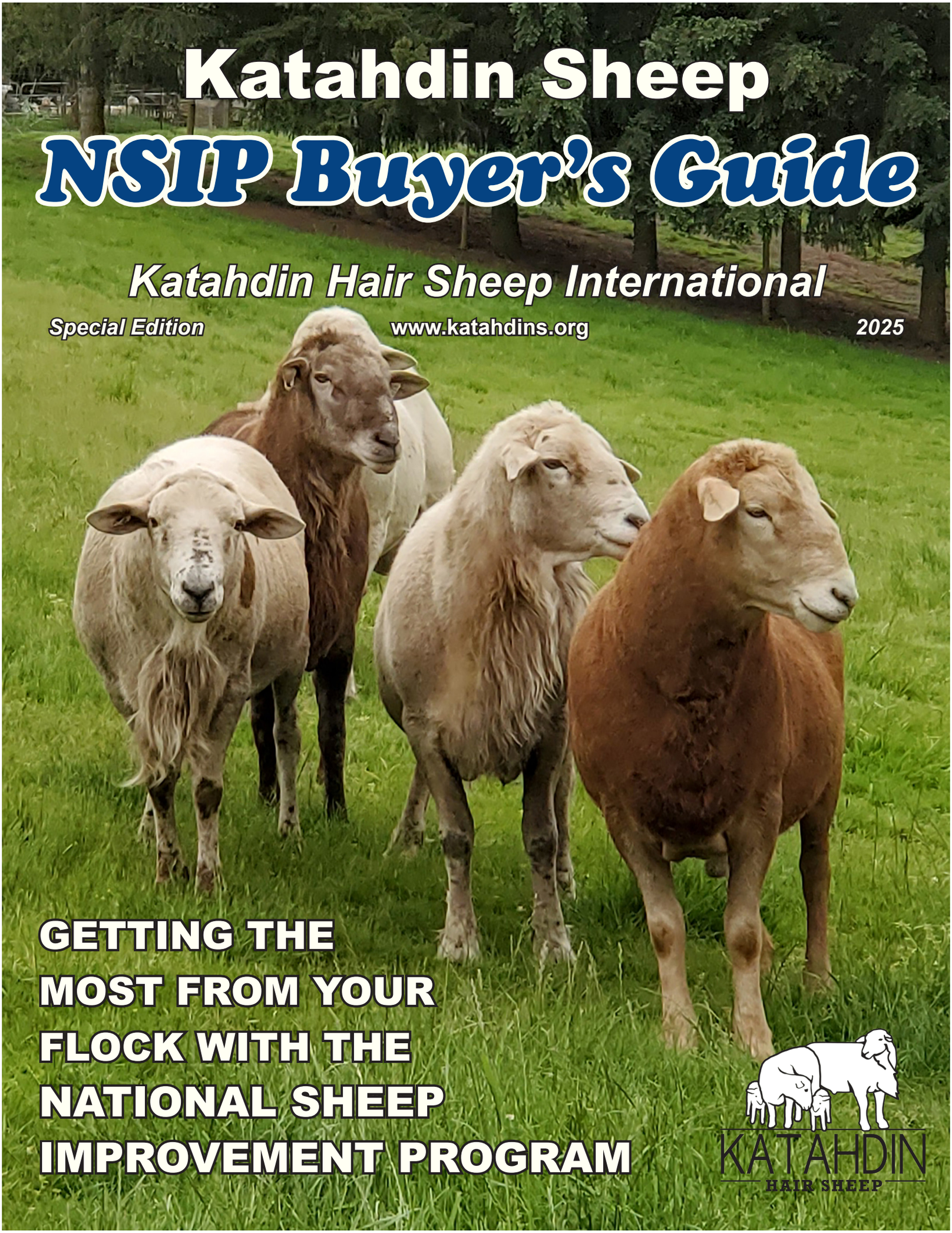

Katahdin Sheep
NSIP Buyer's Guide

Katahdin Hair Sheep International

Special Edition www.katahdins.org *2025*

GETTING THE MOST FROM YOUR FLOCK WITH THE NATIONAL SHEEP IMPROVEMENT PROGRAM

KATAHDIN
HAIR SHEEP

WELCOME

Katahdin Hair Sheep International

WELCOME

Thank you for picking up this copy of the *Katahdin Sheep Buyers Guide*. We hope you find the information useful to your operation.

We are excited about the growth of the Katahdin Breed and hair sheep in general. Whether you are raising registered Katahdin breeding stock or commercial crossbred lambs, Katahdins with NSIP data can help you maximize your flock's potential. Pages 4 and 5 contain great information about selecting goals for your flock and how to identify animals that will help you reach those goals.

We feature producers with very different goals and backgrounds to help you envision how you can use Genomically Enhanced Estimated Breeding Values (GEBV) in your flock. The ever-growing list of Katahdin breeders enrolled in NSIP can be found at **www.NSIP.org**.

Several times in this magazine there is mention of the importance of also using your eyes to select for traits not measured by NSIP. Sound feet and legs, and correct mouth structure, should always be checked visually. Also, we would never suggest that every trait needs to be maximized. You should select for the traits that are important to you in a way that will help move your flock in the direction you desire.

Thanks again for picking up this guide and best of luck on your buying decisions.

Katahdin NSIP Committee

IN THIS ISSUE

The Katahdin Sheep Buyers Guide is a Katahdin Hairald publiction.

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Katahdin Hair Sheep International

A BREED WHOSE TIME HAS COME

KATAHDIN HAIR SHEEP

Hardy • Low Maintenance • Superior Lamb Crops • Meat Quality • Parasite Resistance • No Shearing

Photos submitted by KHSI members and printed with permission.

GENETIC SELECTION

Genomic Enhanced Estimated Breeding Values

GEBVs - THE KEY TO YOUR PROFITABILITY

Genomic Enhanced Estimated Breeding Values (GEBV) quantify the genetic merit of a sheep for a particular trait. They express the expected deviation of performance of an animal for each trait. Each GEBV consists of an age category and a measurement type. In the following example, if the ram has a GEBV of 3.0 kg for weaning weight (WWT) he has the genetic potential to be 3 kg heavier at weaning compared to others in the breed and his lambs should be 3.0 pounds heavier at weaning, when we convert to pounds, and since each lamb inherits half its genetics from its sire.

Available GEBVs

Birth Weight (BWT) estimates direct genetic effect on weight at birth. Positive selection on BWT GEBVs is anticipated to increase birth weight and have correlated positive effects on early lamb survival especially in twins and triplets. Negative pressure is expected to decrease birth weights and lambing difficulty if oversized lambs are a common problem.

Maternal Weaning Weight (MWWT) estimates genetic merit for mothering ability and mainly reflects differences in ewe milk production. Selecting for high MWWT is expected to increase milk production and overall mothering ability of ewes which will reflect in increased pounds of lamb weaned.

Weaning Weight (WWT) provides an estimate of preweaning growth potential and will receive positive selection pressure in most flocks due to its impact on pounds of lamb weaned per ewe exposed and overall profitability.

Post Weaning Weight (PWWT) reflects the genetic potential for lambs to grow after weaning based on both pre and post weaning data. Selecting for PWWT will favor individuals with rapid growth to market weight.

Number of Lambs Born (NLB) expresses the genetic potential for prolificacy and is reported in a percentage (%). If a ram has 26% NLB GEBV, he should sire daughters that will have 26% more lambs than the average, or if he sires 100 daughters, they will drop 26 more lambs compared to average.

Number of Lambs Weaned (NLW) evaluates combined effects of prolificacy and lamb survival and is also expressed as a percentage. If a ram with NLW GEBV of 12% sires 100 daughters, those daughters will wean 12 additional lambs compared to average.

USA Maternal Index combines NLB, NLW, MWWT and WWT into one, easy to use number. Positive selection will increase multiple maternal traits at one time.

Post Weaning Eye Muscle Depth (PEMD) estimates the genetic potential for muscling. Positive selection pressure will increase carcass cutability and is estimated based on ultrasound measurements.

Post Weaning Fat (PFAT) expresses the genetic potential for carcass fatness over the loin at the 12th and 13th ribs. Used in conjunction with PEMD, carcass composition and quality can be improved.

Weaning and Post Weaning Fecal Egg Count (W/ PFEC) shows the genetic potential to resist internal parasites and is expressed as a percentage of reduction. Negative pressure will increase genetic resistance to parasites.

NSIP
National Sheep Improvement PROGRAM

THERE'S A GEBV FOR THAT

Part 1

Start 'em out right

GEBVs Hit the Mark for Young Producer

When, at age 12, Caleb Pirc of Good Shepherd Farm near Meridian, Idaho, decided to raise sheep, he picked Katahdins because neither he nor his parents were interested in shearing sheep. "We went to a demonstration, saw the shearer wrestle a 200 lb. ewe, came home and said 'we don't want to do that'," tells Pirc. He had seen hair sheep, and had done a bit of research on the Katahdin breed. His direction was clear.

Seven years later, not having to shear wool is still one of the reasons he likes his Katahdins, but only one.

He grazes his 40 ewes on irrigated pasture, selling lambs directly to customers by the whole or half carcass or by the cut. His lamb is marketed as "all natural." They receive no grain, not even creep feed.

Pirc relies on NSIP Genomic Enhanced Estimated Breeding Values (GEBV) to meet climate, market and management challenges. His production system depends on prolific ewes with good mothering traits and lambs that hit the ground healthy and ready to grow. And they all need to be able to fight off parasites.

Lucky, there is a GEBV to address each of those issues.

GEBVs allow the breeder to enhance or minimize certain traits according to their management system and their flock's needs. They can move a flock toward fewer singles, or fewer triplets. Number of Lambs Weaned (NLW) can be the best predictor of economic potential, by indicating which ewes can best care for their lambs, and which will require help to raise triplets or quadruplets.

Using the Number of Lambs Born (NLB) GEBV, Pirc selects breeding stock with genetic data that holds lambing rate steady, so as to maintain consistent twins and occasional triplets, without incurring high loss rates. By ensuring NLW is high, while holding NLB steady, he can maintain those twins without reaching lambing rates unsustainable on grass alone. He does this not just when buying animals, but also when deciding which ram and ewe lambs to keep to improve his flock.

A ewe not only needs to produce multiple lambs, she has to support them. Pirc uses Maternal Weaning Weight (MWWT) to select for milk production traits – both quantity and quality.

MWWT addresses the relationship between milk production and mothering ability and early lamb growth. A higher MWWT indicates increased milk production and mothering ability, while a low MWWT may mean the ewe will have trouble supporting multiple lambs. "The difference between a profitable lamb and a non-profitable lamb is the difference between a healthy and an unhealthy lamb," says Pirc, "and that begins with ample and nutritious milk." Especially, he adds, with his lambs going straight from mother to pasture. Pirc lambs in the spring and markets in late fall, with lambs weighing in at 80-100 lbs.

For Katahdin producers, the US Hair Index combines milk, growth and prolificacy into one easy to use composite.

"Having all that data rolled into one number is a powerful thing," says Pirc.

Experts suggest first selecting animals with a high Index, then taking a deeper look at individual GEBV traits to fine-tune your selection for your operation.

In his operation, Pirc has been able to compare lambs within a single lamb crop, offering a ready example of the impact of GEBV selection.

Two ewes produced triplets, each with two ram lambs and one ewe lamb. The sets of triplets were born 15 days apart and raised the same. At 4.5 months, the

ram lambs from one set weighed 57-60 lbs. The ram lambs from the younger set weighed 70-75 lbs. on the same day.

"Their genetics were different," explains Pirc. "Obviously, those are the genetics I want to work on building. NSIP data will help me do that by identifying the genetics, and helping me track my progress."

Like all ag producers, Pirc has to find a way to work in concert with nature, a necessity that all too often means overcoming challenges.

For sheep producers, parasites can destroy a sheep's health and cut a hole in farm profits.

The Katahdin breed carries a natural inclination toward parasite resistance, a heritable genetic trait analyzed by using fecal egg counts (FEC), with a GEBV to help producers choose animals that can offer the best parasite protection. Stock with lower than average fecal egg counts can be identified as genetically superior in the selection for parasite resistance.

In Pirc's part of southern Idaho, conditions are warm and his irrigated pastures are wet. His veterinarian, a Mississippi native, says it has all the factors for the parasites to flourish that he sees in the South. As such, Pirc has begun putting heavy selection pressure on the Weaning Fecal Egg Count (WFEC) and Post Weaning Fecal Egg Count (PFEC) GEBVs.

Pirc utilizes a management-intensive grazing system, moving sheep daily, to reduce exposure during times of heavy parasitic pasture loads. He still needs to heavily rely on the sheeps' natural resistance in those conditions, and his ability to improve that resistance through breeding.

"Parasite resistance is crucial to keeping growth on a good trajectory," says Pirc. "It helps ensure a lamb has a chance to show its genetic growth potential by making sure it stays healthy." And it is essential in an all-natural program to avoid the use of chemical dewormers.

By selecting with GEBV data, Pirc has been able to increase number of lambs weaned, produce lambs with better growth potential, and reduce his flock's parasite load and the damage it can cause, all while reducing inputs. Genetics help him select rams for their size, preferring a medium ram to a larger one that requires more feed, while maintaining its potential to produce lambs with high growth potential.

That all means more profit per pound of lamb, just what Pirc needs as he continues to build his flock and business.

"It's a fun journey for sure," says Pirc, "and I'm excited to see where the Katahdin breed goes as genetic progress continues. I'm young, and I don't come from a farm background. But I've found my niche. I may not be one of the 10,000 head producers, but I can be the guy who sells natural lamb to people who want to eat local. Using NSIP GEBVs helps me to be the best I can be at that."

Good mothering is essential for getting lambs off to a good start.

BUYING A RAM

NSIP ram buying guide

PURCHASING RAMS WITH GEBVs

How to Use the NSIP Ram Buying Guide

In just four generations, over 90% of the flock's genetics are contributed by the ram.

Selecting breeding rams is arguably the most important decision a sheep producer needs to make. Using GEBVs 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, allowing for quick and easy comparisons between rams. The ***NSIP Ram Buying Guide***, with its **3 Step Process** and worksheets will help to select the right ram for you.

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, and average back fat thickness. Parasite resistance is an important health concern for many flocks and can also be improved with GEBVs.

Step 2. Establishing Goals

Goals can be established to help improve each of the targeted traits. Goals should be focused on increasing productivity and profitability, but they should also be attainable.

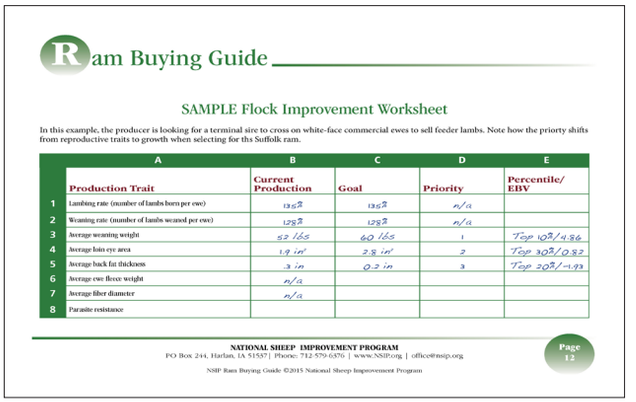
Once productivity goals are established, it is important to prioritize which traits are the most important for improving profitability. For most commercial producers, profitability is generally determined by pounds of lamb weaned per ewe, a combination of lambing rate, weaning rate and weaning weight of lambs. Goals can be established to help improve each of the targeted traits.

Step 3. Selecting Rams Using GEBVs

Ask seedstock producers for a list of GEBVs on their rams. A list of breeders with NSIP GEBVs can be found at **www.nsip.org**, or sheep and their data can be sorted through the online searchable database at **www.nsipsearch.nsip.org.**

Production indexes, which combine GEBVs for several traits into one number to give an idea of the overall genetic potential of an animal, can be helpful. For example, the US Hair Index balances growth, milk, number born and number weaned.

Worksheets in the **NSIP Ram Buying Guide** *can help you indentify targeted traits and set breeding goals to improve your flock's profitability. A copy of the* **NSIP Ram Buying Guide** *is available on the NSIP website or by contacting NSIP.*



Ram Buying Guide

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 priorty shifts from reproductive traits to growth when selecting for ths 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%/+3.86
4	Average loin eye area	1.9 in²	2.8 in²	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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NSIP Ram Buying Guide ©2015 National Sheep Improvement Program

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Final Selection Criteria

After the desired GEBVs 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
- Have a correct mouth structure
- An excellent representative of the breed standard

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

Remember: *GEBVs do not replace the value of a reputable seedstock provider.*

Why set priorities?

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 trying to address several traits at once.

www.nsip.org

Buying Tips

Genetic selection should be viewed as an investment into your sheep flock: investing in the future genetic merit and productivity of your herd for generations to come. Since these decisions can have such lasting impacts, we need to use as much information as possible and GEBVs are the most accurate, scientifically proven way to estimate genetic potential.

With so many traits available, producers need to take a close look at where to place emphasis in the selection program. Selection pressure should be placed on the traits that have the largest economic impact on the sheep enterprise.

It's important to remember though, to match genetic potential to the environment the animals will be raised in. Even if a ewe is in the top 5% of the breed for NLB GEBVs, if they don't receive adequate nutrition during breeding and pregnancy, they won't be able to express that genetic potential, which is like putting watered down fuel into a high-performance race car.

CLICK TO FIND THAT PERFECT RAM

NSIP puts pedigree and performance data at your fingertips with an online searchable database. The database allows producers to search by breed through all rams available with the desired GEBVs for productivity improvement of your flock.

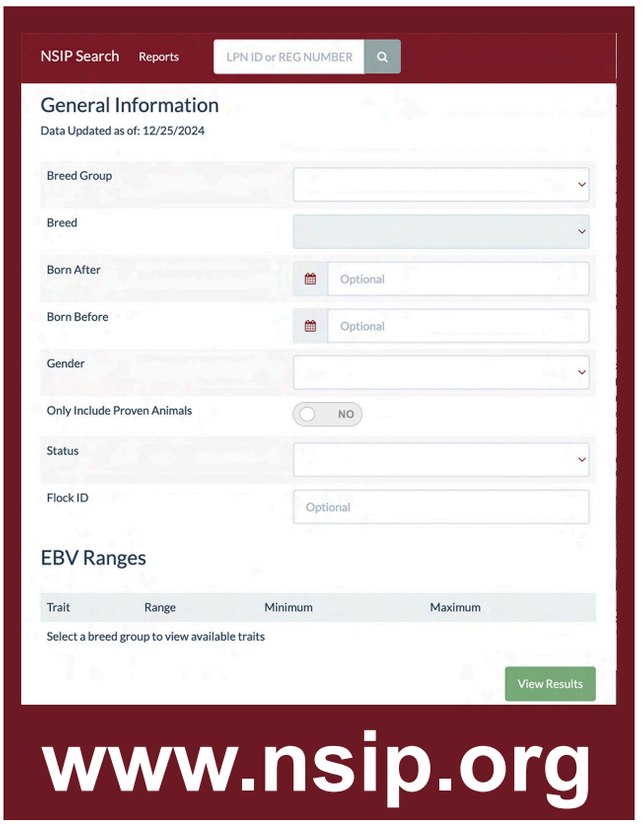
The database is easily accessible though the NSIP website and easy to use. Simply plug in the breed group, breed, gender, and preferred birthdate of breeding stock. Then supply the desired range of specific GEBVs to meet your flock's needs. Searching by flock ID is also possible.

Former NSIP Executive Director Rusty Burgett says the database makes it easier to select rams based on GEBVs tailored to the individual flock, and by doing so, increases access to NSIP for those not previously buying breeding stock according to GEBVs and helps disseminate the genetics for enhanced production and profitability into commercial flocks.

The searchable database also gives a boost to breeders wanting to expand their market, by giving buyers greater access to available stock.

"Measured improvements can be seen in commercial lamb production with wider adoption of genetics-based selection."

The Sheep Industry Roadmap identifies genetic improvement and the introduction of quantitative genetics to both breeding and commercial stock as crucial to advancement of the U.S. sheep industry. The NSIP Searchable Database and NSIP Ram Buying Guide were funded in part through the Let's Grow grant program.



Our primary objective is to increase the use of GEBVs in ram selection by making selection decisions easier for producers. That's how we will meet our common goals, and increase the productivity of sheep flocks industry-wide over time.

Expert Tips

"The benefit of using GEBVs from NSIP is the vast amount of information available to make the most educated selection decisions on our sheep operations to become more productive, efficient and profitable.

Sometimes the immense amount of information available through NSIP can be overwhelming and the online searchable database is the most efficient way to sort through that information to find the right animals for your operation. Producers can indicate which breed they are looking for then refine the data set based on their priorities.

Using the Ram Buying Guide, you can set production goals for a trait, then enter in the desired range for that GEBV in the searchable database, which will return a list of all the animals available that meet those criteria along with contact information for the breeder.

In a time when we are bombarded with information constantly, the online searchable database provides an easy-to-use platform to simplify the selection process based on GEBVs. The sheep industry has never had access to this volume of data before, but that data needs to be used for it to have an impact. This searchable database makes it easy to comb through tens of thousands of animals and hundreds of thousands of data points in a split second."

Former NSIP Executive Director Rusty Burgett

The NSIP Marketplace Facebook page provides an additional platform to find information on breeding sheep selected with GEBVs. The interactive, social media outlet can be used to advertise breeding sheep and specify which areas of genetic merit they excel in, as well as post photos to assure structure and breed character meet the needs of interested producers. It's a great way to get conversations started about various topics and connect information to those looking for it.

@NSIPmarketplace

NSIP Marketplace provides a platform to connect producers of sheep breeding stock with GEBVs to potential buyers in the purebred and commercial sectors.

Buy & Sell on Facebook

THERE'S A GEBV FOR THAT

Part 2

Hitting the target

Meeting Customer Demand Takes Planning and Data

Breeding a profitable lamb, right down to the specific cut, requires genetic data.

For those mastering the basics of NSIP selection, the Loin Eye Muscle Depth (EMD) GEBV is an indicator of genetic differences in muscling derived from ultrasound measurements of the live animal loin between the 12th and 13th ribs. Animals with positive EMD GEBVs can be expected to produce offspring with larger loin eyes.

"The Katahdin breed is leading the way in increasing loin depth, and decreasing fat (measured by the FAT GEBV), all while maintaining good growth and prolificacy," says Katahdin producer Lynn Fahrmeier. Katahdin meat is gaining in popularity as producers improve carcass quality and consumers discover the meat from sheep without a wool lanolin influence. With carcass quality setting the price, Katahdin lambs will often bring a higher price than wool sheep. Market premiums

Meeting specific market requirments like Loin Eye Depth or maintaining profitabilty in aseasonal breeding programs can be accomplished by the use of genetic data in your breeding decisions.

“It’s all about knowing your target, knowing your sheep, then using the data to get there.”

and discounts will determine the emphasis each producer places on EMD and other carcass data, as will specific customer needs.

Getting the growth you need

At Free Radical Ranch in Piner, Kentucky, Jennifer Myka direct sells specific cuts of lamb at farmers markets and off the farm. Lambs that don’t make the grade are sold wholesale through the livestock market. Her customers are looking for a premium grass fed lamb.

“I want good, solid growth, but I don’t push it,” says Myka. “We’re 100% grass fed, and that only supports so much growth.”

And that takes a special kind of ram. Myka selects breeding stock with moderate to low growth GEBVs, so she knows they will be at optimum performance in her environment.

“You need your GEBVs to match your flock,” says Myka. Along with a focus on growth, she selects for parasite resistance and mothering ability by using maternal trait and FEC GEBVs.

Greg Stewart of World Shepherd Project Farms near Farmington, Georgia, uses data to hone in on specific carcass traits.

A veterinarian, reproductive specialist, and Katahdin producer, he sells French racks, spare ribs, loin chops, boneless sirloin roasts, legs, and whole and ground lamb to private customers including chefs in some of the finest restaurants in the area and on the East Coast. He harvests most of his lambs at 115-125 lbs. and makes future breeding decisions based on carcass and yield data he gets back from the packer.

“What they’re serving is the top line of the animal,” says Stewart. “It’s all about knowing what the customer wants and being able to provide a consistent product and supply.”

Meeting supply demand

For many producers in the direct or ethnic market, meeting demand requires a steady, year-round supply of market lamb, and that requires aseaonal breeding.

Katahdins have an edge over later-maturing, larger framed sheep breeds in aseasonal breeding schemes, as one of the breeds more naturally inclined toward the change. A growing number of Katahdin breeders lamb part of their flock in the fall, spreading out their workload and enabling them to market their lambs throughout the year.

In addition to meeting the demands of a year-round lamb market, aseasonal breeding can increase utilization of facilities and accelerate returns on animal investments.

“The key is knowing your operation, your market and your goals for your flock,” says Fahrmeier. “What are your resources of time, facilities and purchased feed and forage? What markets are local to your farm? It’s hard to sell lightweight lambs at a sale barn that wants nothing but heavy slaughter lambs. It is also hard to sell heavy lambs in an area that is demanding lightweight lambs for a direct or ethnic market.”

Selecting replacements from dams that have proven records of fall lambing increases prospects of success. Fall lambing can lead to lower conception rates and fewer lambs born per ewe. A focus on maternal GEBVs can help minimize those affects.

“Katahdin ewes with good to excellent maternal traits tend to do well in an accelerated lambing system where a producer could get three lamb crops in two years,” Fahrmeier explains. “Selecting replacement lambs from ewes that have a history of lambing in the fall and using the maternal GEBVs of Maternal Weaning Weight (MWWT) and Number of Lambs Born (NLB) and Number of Lambs Weaned (NLW) will help identify those ewes with the maternal traits to thrive in an aseasonal lambing system.”

“It’s all about knowing your target, knowing your sheep, then using the data to get there,” continues Fahrmeier. “That’s how to get lambs that will be exactly what you want at harvest.”

NSIP National Sheep Improvement PROGRAM

America’s GENETIC FOUNDATION FOR A PROFITABLE SHEEP INDUSTRY

THERE'S A GEBV FOR THAT

Part 3

Pounds times the money

Sheep that Pay are Sheep that Grow

In Garner, Iowa, Bryan Gorder produces 90-120 lb. lambs for the ethnic market.

His flock is primarily Katahdin with some Dorper and Romanoff influence.

They tick off all his boxes: prolificacy, good mothering, and good rate of gain.

"A decent ram will be good all across the board," says Gorder. "He will excel in all three areas with high GEBV numbers, not just one."

Gorder was introduced to NSIP by friends in the business, and never looked back. He only buys rams that rank in the 95th percentile and above for his traits of focus.

"Prolificacy of a ram is the best place to start," says Gorder. The NSIP Number of Lambs Weaned (NLW) GEBV identifies the best candidates.

He also looks at MWWT, and the GEBVs measuring growth to produce fast growing, consistent sized lambs.

Gorder mostly lambs in January, and markets to a private buyer until May, usually selling out of the current year's crop by then. But flexibility is required to meet the ethnic demand and its ever-moving timetable. He uses CIDRs to induce cycling for fall breeding and has a 70% conception rate.

He looks for sheep that will mature early, able to hit the ground growing and never stop. They are raised in a dry lot with free access to creep feed and he pushes them hard to meet market dates. Gorder says he spends around $30 per head on feed.

"Weight is the name of the game. Sheep have to be profitable. The best rams have a good Rate of Gain."

“Weight is the name of the game,” says Gorder. “Sheep have to profitable.”

“The best rams have a good Rate of Gain (ROG),” he adds. “You can look at a pen of 200 ram lambs, and you can’t tell which ones will grow efficiently. You need the GEBV numbers to tell you that. The potential for physical changes you can’t see will affect your bottom line.”

So, he relies on the numbers. “You can look at the NSIP ROG data on breeding stock and you might not think .2 to .3 lbs. is a big thing. But spread that over 900 head and it becomes real dollars, really fast.”

Gorder says there is definitely a difference in breeds, and Katahdins make good breeding stock.

He depends on the mothering ability of his 600 ewes to raise his lambs that are born in a hoop barn with no heat in January in Iowa. That means sub-zero temps and robust north winter winds.

“Katahdin is the toughest breed out there,” says Gorder. “The shelter they get is just enough to provide wind protection and keep their back dry.” Gorder also finds Katahdins are easy to handle and produce good tasting meat.

“Get the best ewes you can and don’t skimp on a ram,” he advises. “If you’re going to spend big money on a ram, you’re not going to buy it by sight from a buddy. You want an animal that is proven to produce offspring that will give you a good return. If you’re going to spend money on a ram, he better have data to back him up.”

Gorder also uses NSIP GEBV data to cull unproductive sheep from his flock. “We look at who is not giving us the numbers,” he explains. “Who are the poor milkers, who doesn’t meet the ROG benchmark, or produce healthy twins or triplets and care for them?”

A former cow/calf producer, Gorder says he has been down all the roads, and knows this kind of data-based genetic selection works.

He says producers new to NSIP need not be daunted by what looks like a complex system.

“Don’t let the numbers scare you. And don’t be embarrassed to ask for help,” says Gorder. “Find a good breeder who will tell you the truth, and talk to other producers already using the program. You can lean on these guys. I have.”

A New Way Forward

Genomic Enhanced EBVs

Katahdin Breeders Make U.S. Sheep Industry History

In 2021, Katahdin NSIP breeders became the first sheep producers in the U.S. to have access to Genomic Enhanced Estimated Breeding Values (GEBVs). Many people contributed to bring this benefit to the industry from 2017 to 2019 through a research grant led by Dr. Joan Burke and her research team at the USDA Dale Bumpers Small Farms Research Center in Booneville, Arkansas. A group of 20 cooperating producers generated a genetic database of more than 5,000 lambs during the three-year project. This study formed the genomic reference population for the Katahdin breed, as well as established EBVs for parasite resistance.

In 2020, KHSI was awarded a grant from the National Sheep Industry Improvement Center (NSIIC). The grant helped with the cost of commercialization of the use of DNA technology in NSIP EBVs. Producers received partial funding to continue to collect and submit DNA using Tissue Sampling Units (TSUs), to increase the size of the Katahdin reference population. Through the leadership of Dr. Ron Lewis (University of Nebraska) and many other contributors, the EBV models for the Katahdin breed were updated to incorporate the use of genomics information to increase their accuracy. The first TSUs were processed in 2021, and the revised Hair Sheep (maternal) Index and updated GEBV algorithms for Katahdins were rolled out in mid-2022.

How do GEBVs work?

To many of us, it's difficult to assess what impact genomics might have on our breeding programs or our bottom lines. Here are some basics that may help you decide whether to adopt this new technology. First, what is the difference between Genetics and Genomics? Genetics focus on a single gene known to control a trait. Genomics can assess many genes and how they correlate to a trait.

There are several areas where genomic evaluation helps sheep producers improve their flocks:

1. GEBVs boost accuracy of the legacy EBVs by an estimated 2-24%, depending on the trait. Having GEBVs on an animal is expected to be similar to having data from several years of that animal's progeny. This leapfrogs our genetic progress by several generation intervals when selecting for desirable traits. It is especially important for maternal traits, which are slow to change in a flock.
2. GEBVs help differentiate the individual genetic merit between twins/triplets. This allows better selection of a superior sibling for replacement stock than using phenotype alone.
3. Ascertaining parentage of an animal. We know there is a percentage error in our records, due to mis-mating incidents, mistakenly assigning lambs to the wrong dam, or errors in written records. Genomics ensures we have the right parents recorded for each lamb.
4. Testing for genetic conditions such as Scrapie Codon 171, Myostatin, and TMEM154 OPP susceptibility is included in the analysis for NSIP. This eliminates the need to sample and pay for a separate test.

There is a cost to the producer to both collect and analyze DNA samples, but the investment has a great return. GEBVs accelerate our progress in identifying and retaining animals which will offer the most future profit in our operations. They help us find animals which are likely to under-produce, so we can avoid keeping them. They guide us in choosing flock sires with the most accurate predictions available. Additionally, genetic improvement reduces our labor and feed costs, all while increasing output. "Doing more with less." It's a win-win!

Evolution of Study

Leveraging the work by KHSI and Katahdin breeders, Dr. Lewis and collaborators launched an additional grant-funded research study in 2022 called "Sheep GEMS" (Genetics, Environment, Management and Socioeconomics.) This study will further advance the GEBV modeling, introduce GEBVs to three other breeds, and focus on discovery of genomics related to flock productivity and climate resilience traits.

By late 2023, the Katahdin breed had amassed more than 10,000 DNA samples, far exceeding that of other participating breeds (Polypay, Rambouillet and Suffolk had more than 2,000 samples combined). Katahdin breeders can be proud of nearly a decade of innovation in genomics research, and dedication to technological advancement that benefits the entire sheep industry. Continuing the tradition of **The Breed Whose Time Has Come!**

RESOURCES

for more information

KATAHDIN HAIR SHEEP

Katahdin Hair Sheep International

Breeder Directory • Online Registration

KHSI Operations Office: 717.335.8280

NSIP Katahdin Sheep Improvement

info@katahdins.org

www.katahdins.org

NATIONAL SHEEP IMPROVEMENT PROGRAM

David Scales

474 S. Shaw Lane, Rm. 1290 Anthony Hall

East Lansing, MI 48824

Phone: 734-301-6931

Email: info@nsip.org

National Sheep Improvement Program

NSIP National Sheep Improvement PROGRAM

www.nsip.org

American Sheep Industry Association
www.sheepusa.org

American Lamb Resource Center
www.lambresourcecenter.com

Eastern Alliance for Performance Katahdins
www.easternalliancekatahdins.com

Katahdin NSIP users discussion group
https://groups.io/g/katnsip

Katahdin Hair Sheep International

A BREED WHOSE TIME HAS COME

Hardy • Low Maintenance • Superior Lamb Crops • Meat Quality • Parasite Resistance • No Shearing

KATAHDIN
HAIR SHEEP

KHSI Operations Office:
717.335.8280
info@katahdins.org

www.katahdins.org

5 Ways to Learn More About NSIP

1. Visit www.nsip.org
2. Visit www.katahdins.org
3. Attend an educational session at a convention or at a site near you.
4. Watch NSIP YouTube videos.
5. Talk to an experienced producer.