

## Utah Study Proves Selecting for EBVs Makes a Difference

A producer-driven field study in Utah proves genetics make a difference in lamb profitability. Conducted by Matt and Dan Mickel at Mickel Brothers Sheep Company of Spring City, Utah, as part of the Leading Edge Sheep Production Group, the ASI Let's Grow funded experiment bred two groups of commercial white-faced ewes to two groups of black faced terminal rams – one with Estimated Breeding Values (EBV) from the National Sheep Improvement Program (NSIP) and one without. The ewes were then managed as one group to avoid environmental variations.

The NSIP-sired lambs weighed an average of 3 lbs. per lamb more than the non-NSIP group.

“The biggest thing we found out with this experiment is these rams did what their records said they would do,” says Bill Shultz of Bunker Hill Farm in DeGraff, Ohio, who supplied rams for the project. “We saw what we, and everyone in the industry, needed to see. We saw in fact what the records said.”

That meets an important goal for the Leading Edge group, a coalition of Utah producers gathered with the mission of utilizing a more vertically integrated system to provide a uniform and quality-consistent product to the consumer. “From the beginning, we have known advancing genetics, as well as adding value-added programs, would be key to meeting our goals,” says Leading Edge Facilitator Tom Boyer. “But some of our producers didn't have a high level of confidence in NSIP. That's due mostly to a lack in the volume of data.”

There are currently more than 300 producers enrolled in the NSIP program, which provides science-based, industry-tested measurements of heritable traits that can be tracked and measured with its system of EBVs. That's a 25 percent increase since 2015, and a 140 percent increase since 2014. “This increase in utilization builds on the volume of data in the system and increases the credibility of the data,” says NSIP Program Director Rusty Burgett. “That doesn't mean the numbers weren't useful before, but increasing the volume of data increases the statistical power of the analysis and improves accuracy.

While NSIP works to build its database, Boyer wanted to prove NSIP's validity to producers in his group. Matt Mickel stepped up to the plate.

### The field trial

Mickel started with the purchase of 14 ram lambs and three yearling rams from Bunker Hill Farm. The rams came with NSIP EBV data. Another 14 rams and three yearlings from Mickel stock, without NSIP data, comprised the control sires.

On November 15, 2015, a band of Mickel's commercial ewes were brought down from the mountain after grazing on typical range ground of old thrush and grass for five weeks.

The ewes were sorted into two groups 20 at a time. “Since older ewes tend to have more twins, and thus smaller lambs, and since younger ewes tend to be at the head of the band and older ones toward the back, I wanted to be sure the age variance in the groups was equal,” says Matt Mickel. “So I sent the first 20 to one coral and the next 20 to another, and so on, through the entire band.”

The two groups of 550 ewes each were branded green or red and sent to identical pastures. “The fields had been harvested at the same time and regrowth was the same,” says Mickel. “There was no better field.”

On November 22, 14 bucks and three yearlings were turned in to each pasture. The NSIP rams were bred to the green-branded ewes and the control rams to the red.

After 14 days, with the ewes running out of feed and the bucks needing refreshed, the herd was mixed and sent to the desert winter range with new bucks. Only the lambs born during the first 14 days (bred during the control period) were used in the experiment.

In early February the ewes were ultrasounded to identify twins from singles, then the ewes were brought back to the ranch in April 2016. The sheep were sheared, remarked for red or green group, and vaccinated.

Those with single lambs were range lambed with the two groups in separate but equal pasture and feed, where they received little attention during lambing. The ewes bearing twins were mixed in the lambing shed.

During their three days in the lambing jug, the lambs were marked with red or green ear tags. Once out of the jug, they were mixed in aging pens.

After 14 days of lambing in the pasture, the single lambs were tagged red or green according to their ewe, and all 1133 lambs (singles and twins) were combined and put out on the range on June 18 as one summer band. Mickel did not track lambing rate specifically by breeding group, but the entire project yielded 1,856 lambs from 1,132 ewes a rate of 164 percent.

“We tried to think of every variable we could,” explains Mickel. “We didn’t want to be able to poke holes in the results.”

The lambs were brought back to the ranch on the evening of September 25. The next morning they were sorted – green on one semi-truck and red on another – until the trucks were filled.

“There were approximately 30-50 that didn’t fit on the semi,” says Mickel. “There could have been some heavier or lighter in either group, but overall we were confident we had a good average.”

The trucks were then weighed. Truck #758 carried 420 red, or control, lambs weighing a total of 42,860 pounds. Truck #338 carried 442 green, or NSIP, lambs weighing a total of 46,420 pounds.

Bred, born, and raised in as near identical conditions as possible, the NSIP lambs weighed an average of 105.02 pounds. The control group of non-NSIP Suffolk sired lambs weighed an average of 102.04 pounds.

Shultz says the Suffolk NSIP rams used had an average Weaning Weight EBV of 3.3 and an average Post-weaning Weight EBV of 5.5. “I’d say the difference in lamb weight is a very fair representation of the genetic differences expressed by the EBVs when used in the traditional range management system like Mickel’s,” says Shultz.

Burgett adds some additional calculations: “Based on the average price of \$144/cwt for 102-105 pound lambs at the recent Newell and Billings sales, that 3-pound advantage should bring an additional \$4.32 per lamb. Spread across 442 lambs, each of those NSIP sires added more than \$100 lamb value over the non-NSIP sires. And my guess is those lambs will continue to separate further once they get on feed. If you use those rams for three or four more years, you can clearly see the added value.”

Mickel intends to continue tracking the lambs’ progress as much as possible. Working with his feeder and packer, he hopes to obtain weight and carcass data through slaughter.

That continued chain of information will become vitally important as the Leading Edge group looks at value-added opportunities, including the possibility of a branded lamb product.

“There’s more work to be done,” says Boyer. “Ultimately, there has to be a financial reward for the additional production costs like measuring the loin eye, keeping data, and investing in the top-quality genetics.”

### **More to learn**

“This study proved what we hoped it would prove,” says Shultz, “but it doesn’t provide a long-term answer. Seedstock producers providing genetics to the Western Range have to develop them for the range environment and management systems.” For Shultz, that means asking some basic questions when making

his seedstock breeding decisions: “What does the ideal Western Range terminal sire look like? We’re now focused on weight gain. When and how do we pay attention to carcass traits?” And should that focus be on early or later growth. Shultz says this field trial shows the focus may best be placed on early growth. “It’s all evolving. We’re learning all the time. And we have to adjust our genetics to what we learn.”

NSIP with its system of Estimated Breeding Values is crucial to that effort. “It’s all about the speed of change,” says Shultz. “NSIP enables us to change so much faster, and the accuracy of our breeding decisions is so much better.”

Speedy change is not a concept often touted in the U.S. sheep industry, but Boyer says that needs to change. “The American Sheep Industry Road Map clearly identified the U.S. sheep industry is behind in its application of technology,” says Boyer. “We lack product uniformity. The quality of our lamb and wool is not meeting consumer expectations. We need to investigate additional technologies, and that starts with genetics, to gain the edge we need over our competitors.”

The Leading Edge Sheep Production Group represents approximately 30,000-32,000 ewes, owned and managed by producers wanting to advance their genetics and production methods to help create, and subsequently meet, the demand of an increased market share. Boyer says more producers will follow. While the group started small to facilitate quick implementation and discussion, it is open to expansion. And he’s aware it creates a replicable model.

“We’re seeing small ripples of change throughout the industry,” says Boyer. “The Road Map outlines what we need to do.”

And NSIP is there to help the seedstock producer develop the type of breeding stock the commercial producer needs to meet the industry goals.

“It’s great to see the results of this field trial,” says Burgett. “There has been some hesitation in adopting NSIP over the years and this project proves the technology can help move the industry forward. The outcome proves NSIP is truly the ‘genetic foundation for a profitable sheep industry’.”

#### CUTLINES:

After being bred, born, and raised in as near identical conditions as possible at Mickel Brothers Sheep Company near Spring City, Utah, lambs in the study were loaded onto two semi-trailers according to their sire groups – one with NSIP EBVs and one without. The trucks were then weighed to establish average weights for the groups.

Matt Mickel of Mickel Brothers Sheep Company oversaw the field trial comparing NSIP-sired lambs to non-NSIP sired lambs. The NSIP lambs showed a 3-pound weight advantage at the end of the trial.