Highlights from the Leading Edge Project

Presenter:

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Host/Moderator: Jay Parsons

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This evening's talk

Objectives of the project



What we did and learned
Ram selection
Breeding
Lambing
Weaning
Finishing
Harvest

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LET'S GR

Alfex

thru change

Superior Farms AMERICAN LAMB



QUALITY MEATS

PREMIUM

SEN CON

USA

Objective

Building on a foundation

In 2016 study, demonstrated a 3 lb. advantage in weaning weight in lambs sired by NSIP rams



Objective

Extend on original study to:

- Compare rams from distinctive categories (NSIP and industry)
- Evaluate their progeny's performance from birth to harvest
- Incorporate DNA technologies

Ram selection (May to Oct. 2017)

42 Suffolk rams
 15 industry rams

- 13 NSIP high postweaning body weight rams
- 14 NSIP high postweaning muscle depth rams



NSIP rams' expected progeny differences (EPD)

			Weight EPD (lb.)		Ultrasound EPD (mm)	
	Record	Ram category	Weaning	Post- weaning	Muscle depth	Fat depth
	At selection (Aug. 2017)	Weight	5.4	10.3	-0.01	-1.36
		Muscle	2.0	3.9	2.61	-1.17
		Difference	3.4	6.4	-2.62	-0.19
	Recently (July 2019)	Weight	4.7	9.3	0.01	-1.37
		Muscle	1.5	3.1	2.57	-1.14
		Difference	3.2	6.2	-2.56	-0.23

Breeding (Nov. 2017)

 Mickel Brothers Sheep Co. (Spring City, UT)

- 1,100 commercial white-faced ewes
- 17 day breeding on regrowth alfalfa stubble



Lambing (April 2018)

1,491 lambs born from 879 ewes over a 3-week period > 1.69 lamb per ewe lambing Shed lambed Allowed fostering Sire? Near birth > Weighed ➤ Tagged (EID)

A DNA sample was collected > on rams prior to breeding



A DNA sample was collected
 > on rams prior to breeding
 > on lambs near birth



Up to 163 genetic markers on DNA panel

- Assignments based on exclusion of sires
 - Key that full suite of potential sires are included

Animal	Marker 1	Marker 2	Marker 3
Lamb	AB	AA	BB
Sire 1	вв 🗸	AA	АВ 🗸
Sire 2	AA 🗸	АВ 🗸	À

(Heaton et al. 2014)

- Up to 163 genetic markers on DNA panel
- Assignments based on exclusion of sires
 - Key that full suite of potential sires are included
- Among 1,457 lambs with a DNA sample, 92% aligned with a sire
 - Nearly all losses were lab based (quality control; heterozygosity rate)

(Heaton et al. 2014)

Number progeny per ram

Considerable variation in number of lambs sired by individual rams



Number of progeny

Weaning (Sept. 2018)

Grazed in mountains

- Dry summer
- 1,104 lambs weighed in 4 hr.
 - Used Shearwell EID Weigh Crate
 - 1.26 lamb per ewe lambing





Weaning performance



Genetic differences in weaning weight

	Weight EPD (lb.) recently [†]		Progeny	
Category	Weaning [‡]	Post- weaning [‡]	weaning weight (lb.) [§]	
Weight	4.6	9.2	108.6	
Muscle	1.9	4.2	104.1	
Difference	2.6	5.0	4.5	

- [†] EPD from July 2019, weighted by the number of lambs with a wean weight from each ram.
- Weaning and post-weaning weights recorded at 45 to 90 and 90 to 150 days, respectively.
- [§] At, on average, 161 days of age.

Lamb birth and rearing type effects on weight weaned

	Birth- rear. type	Single- Single	Twin- Single	Twin- Twin
/	Indiv. wt. (Ib.)	113.9	106.0	98.7
	Litter wt. (Ib.)	113.9	106.0	197.4



Finishing (Sept. 2018 to Apr. 2019)

Shipped to Arthur Feed Lots for finishing (Burley, ID)

Fed to a similar weight and target condition

Drafted in 6 batches

Finished weights



Spread of ram category by harvest date



Harvest date

Harvest (Dec. 2018 to Apr. 2019)

- Lambs shipped to Superior Farms for slaughter (Dixon, CA)
- Comprehensive carcass evaluation
 - Electronic grading (VSS2000 System camera) of yield and quality grades
 - Carcass weights
 - Other carcass measurements



Harvest Date 🤪	2018/12/20	Occ 🤪	46.90
Species 🍘	Lamb ABF	Occ_Yield_0 🤪	66.78
Program 🥝	ABF	Breast 🥝	8.7
Lot No 🥝	401	Rack 🥝	8.4
HotWeight 🥝	70.9	Shoulder 🥝	17.5
Yield Grade 🥝	2.490000	Legs 🥝	23.6
Quality Grade 🥝	Choice	Loins 🥝	7.4
		Neck 🥝	1.7



Trotters 🥝

3.1

Harvest Date

Serial#

Twin Born Ewe Lamb	BW 14lbs
WW 110.23	168 days of age at weaning
135.58 Live Wt.	70.9 Hot Weight 52.29 Dressing %
89 days on feed	0.285 ADG

Hot carcass weight and dressing percent



Hot carcass weight and dressing percent



Summing up

- Progeny of NSIP-sired rams performed as anticipated based on sires' genetic merit
 - >+4.5 lb. weaning weight in high weight
 - Worth +\$6.39 to +\$7.25/lamb (feeder price)
 - +1.1 lb. saleable meat yield in high muscle
- On average, progeny of industry rams performed intermediary to or less than muscle/weight NSIP rams

Summing up

- With DNA sample on sires and lambs, able to reliably assign parentage
- Tremendous opportunity to increase output by producing and rearing twin born lambs
- Variability in ram fertility troubling

Some further steps

Complete carcass measures

- Loin eye areas, fat depth and skin thickness
- Provide rams' owners with details on their own animals
- Share results more widely
 - ➤ Webinar
 - Industry article(s) and pamphlet
 - Journal article(s)



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Mickel Brothers Sheep Co. Arthur Feed Lots

