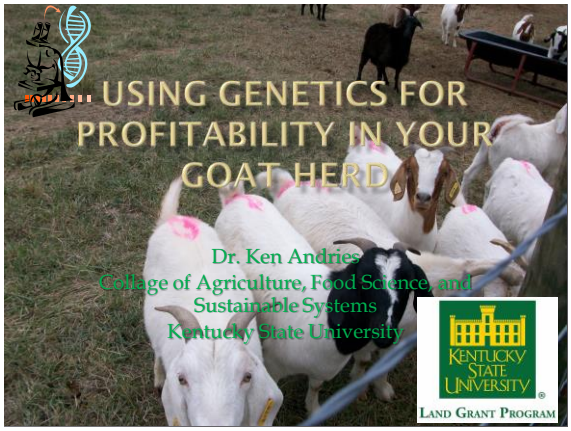


"In most commercial pedigrees little information of any kind is included except the names and identifying numbers of the animals. Such a pedigree is useful only to the extent that one knows or can find from some other source how meritorious or mediocre those ancestors were."

J.L. Lush, Animal Breeding Plans. 1945

How do we determine Value?

- What can this buck(or doe) offer the herd
- How many kids are expected from this individual per produced per year?
- How long do you plan to keep them in the herd?
- How much more will their kids be worth than others?

Basic Genetics

- In general: 50% of genetics from the dam and 50% from the sire.
  - Dam has a little higher in actual % but this rule is very close.
- Traits of economic importance (repro, growth) are controlled by many genes.
- Your sire selection stays with your herd for many years through his daughters.
- In 5 years 85% of your herd will trace back to the sire you use today. (10% replacement rate)

Look at Some Goat Production

ID	YRS	Born	AVG BW	# WN	AVG WNWT	Total Wt Wn	Life $
5088	4	10	18.57	8	55.75	223.00	$468.30
5105	4	8	14.73	6	53.25	213.00	$447.30
5127	3	3	9.35	3	45.00	135.00	$283.50
5139	5	10	17.06	9	65.60	328.00	$688.80
5150	7	14	15.19	13	56.60	396.20	$832.02
5151	2	3	10.46	2	31.00	62.00	$130.20
5156	5	8	9.64	6	36.60	183.00	$384.30
146	3	70	7.24	58	34.15	1,980.70	$4,159.47
616	7	119	8.2	86	38.71	3,329.06	$6,991.03
859	5	120	7.62	97	33.53	3,252.41	$6,830.06

Kid price is $2.10/lb.

Quick History of Performance Testing

- Dairy herds started measuring performance in the 50's and 60's for milk production.
- Beef cattle started BIF to standardize Performance programs in 1968.
- Beef moved to performance pedigrees and then to EPDs in the 80's
- NSIP stared in 1986 and produced flock EPD for sheep and offered to Meat Goat Industry.
- Research into use of DNA assisted selection (genomics) in the 2000's for many species.

Results in Beef Cattle

- Average weaning weight has increased by 150% (175 lbs.) with only a small increases in birth weight.
- Calving difficulty has been reduced greatly.
- Carcass traits are now an economical trait for cow/calf producers
- Most commercial beef cattle producers utilize data in selecting bulls.
- AI has become very wide spread in the commercial industry partly due to performance data.
- Key point: it did not happen over night and started with simple data collection.

Impact on Sheep Industry

- Austria started in 1990.
- Quality issues were identified as a problem as wool market was decreasing.
- Research and selection resulted in increased carcass weight and increased economic value.
- Most of the increase was due to improved performance (growth).
- A common industry goal of improved meat quality was part of the success.
- LAMBPLAN was key to allowing producers to improve selection effectiveness.

What tools are Available?

- Average goat producer keeps no records of performance.
- Basic performance records from birth to weaning can be used to make progress.
- Adjusted weights provide a better picture of performance, remove some environmental factors.
- EBVs and EPDs are possible with meat goats if we have data to process.

Population Averages for Meat Goats:

	N	# Born	BWT	# Wean	WNWT	ADJWT	ADG or doe wt.
Kids	12,143		7.53		38.62	43.29	0.34
Does	7,039	1.87	13.75	1.59	64.93	73.03	103
Sire	713	17.69	7.64	14.64	39.40	43.51	

Using Data in Your Herd

- Data collection gives you information to make progress towards goals.
- Can impact health traits as well as performance.
- Individual data such as on-farm performance data is not as effective as national evaluations.
- Individual/on-farm data only apply to individuals within the contemporary group.
- This limits their use when purchasing or comparing individuals from multiple groups.

Example of On-Farm Data

Year	BWT	WWT	Age at Wean	ADG	90DWT	AWWT
2008	7.28	32.52	89.88	0.28	32.94	35.80
2009	7.65	26.35	71.50	0.26	31.02	36.07
2010	7.43	29.89	67.40	0.34	38.07	41.29
2011	6.95	25.38	60.98	0.30	34.10	36.87
2012	6.54	30.76	96.91	0.25	29.05	31.62
2013	7.01	27.08	84.02	0.25	29.49	31.34

- Purchase of a large number of yearlings that entered production in 2011 and 2012.
- Introduction of the purchased doe kids and breed sires, without data, moved our selection back several years.

Information on NISP

- Currently the NSIP version provides genetic evaluation of goats across different breeds and across different flocks within a breed group.
- KIDPLAN is the goat version of LAMBPLAN, this is the program used by NSIP.
- An Australian Sheep Breeding Value (ASBV) describes a goat's genetic performance expressed in terms of the expected genetic performance of it's offspring.
- The breeding value is calculated by a BLUP analysis that can include information on the goat's own performance and/or its relative's performance.
- ASBV data is submitted to KIDPLAN through NSIP by members.

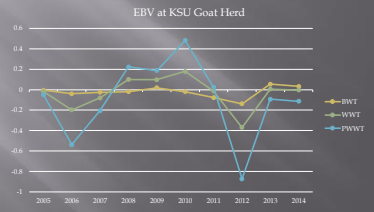
Available EBVs for Goats

- **Birth Weight (BWT) –**
- **Weaning Weight (WWT) – direct genetic effect on** preweaning growth potential.
- **Maternal Performance** – estimate of maternal impact on preweaning growth.
- **Postweaning Weight (PWWT) –** Looks at early and late postweaning periods.
- **Yearling Weight (YWT) –** genetic merit for growth to 12 months of age.
- **Number of Kids Weaned (NLW) -** evaluates combined doe effects on prolificacy and kid survival to weaning.
- **Worm Egg Count (WEC) -** evaluates genetic merit for parasite resistance based on worm egg counts recorded at weaning or at early or late postweaning ages.

Some basic information on BV's

- BVs are designed to be used to compare the genetic potential of animals independent of the environment and location.
- The traits to focus on will depend on your herd objectives and markets.
- When selecting, consider your current performance and where you wish to move your herd.
- The program provides some Selection Indexes that can be used as a way of weighing up different traits for a particular breeding objective.
- Indexes can be helpful to narrow down selection however the individual trait values must be considered.
- The program also provides percentile band reports can be useful to determine how an animal ranks relative to the rest of the breed for individual traits.

Genetic Trends



Genetic Trends

- Current Trends in EBV at KSU

Look at some animals:

Buck 616:
98 kids born, 86 weaned
BWT: 8.2, BWT EBV: 0.03
ADJWNWT: 43.87, WNWT EBV: 0.812
NLW EBV: 0.173

Buck 856:
119 kids born, 97 kids weaned
BWT: 7.62, BWT EBV: 0.019
ADJWNWT: 39.59, WNWT EBV: 0.362
NLW EBV: 0.028

What are Selection Tools?

- Data that can help you know the genetic value of an animal.
- Allow you to compare animals directly or indirectly on this genetic merit.
- Includes performance data, visual appraisal, and pedigree information.
- Two main performance based tools exist:
  - Adjusted weights – good within a contemporary group
  - EBVs and EPDs – statically calculations that are more useable across herds and locations.

Selecting Replacements with Data:

- First eliminate all animals with poor structural soundness, Udder issues, health issues, and temperament.
- Then sort remaining individuals by performance data.
- Select the top performers until you have enough replacements.
- If you must have more decide which of the first group you are willing to deal with and then take the top performing from that group, NOT RECOMMENDED but can increase numbers if needed.

Culling Based on Performance

- First sort and list all animals that have health, udder, and temperament problems and list as cull.
- Second, separate yearlings from mature animals in records.
- Third Sort both groups based on total adjusted weaning weight.
- Fourth, cull the bottom 5 to 10% of both groups.
  - Remember that you need to keep replacements for these and any death losses.

Cautions:

- Eliminating animals with structural, health, udder, and temperament problems is critical and not in the performance data.
- Need to keep extra replacements incase some don't breed and some will not be good mothers.
- Making exceptions is easy, the impact on your herd is always negative.
- Use adjusted weaning weight or EBV for selection to be sure you are placing animals on an even field.
- This method of culling greatly penalizes females that have and raise a single and rewards those that have triplets.

Conclusions

- Genetic progress can only be made through evaluation and selection towards a set of goals.
- EBV's are a critical tool to use in comparing animals on genetic potential.
- Progress from individual data is limited, participation in NSIP will greatly improve accuracy of selection and result in sustainable improvement in performance.

Final Thought:

"In each generation of animals in his herd or flock, the breeder must select those to be saved for breeding from those to be used for other purposes. Perhaps he will also select animals from other herds for use as breeders in his. These are the most important things he does."

Breeding Better Livestock. Rice, Andrews, and Warwick 1953