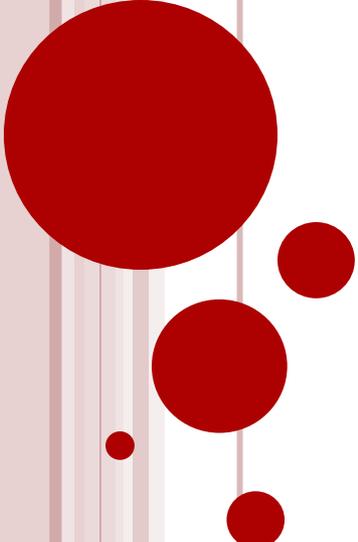


USING PERFORMANCE TECHNOLOGIES

A decorative graphic on the left side of the slide consists of several red circles of varying sizes, arranged in a vertical line that tapers towards the bottom. The largest circle is at the top, and the sizes decrease as they go down.

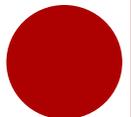
Matt Woolfolk

ASA Annual Meeting Educational Forum

December 1, 2018

INSIDE THIS PRESENTATION

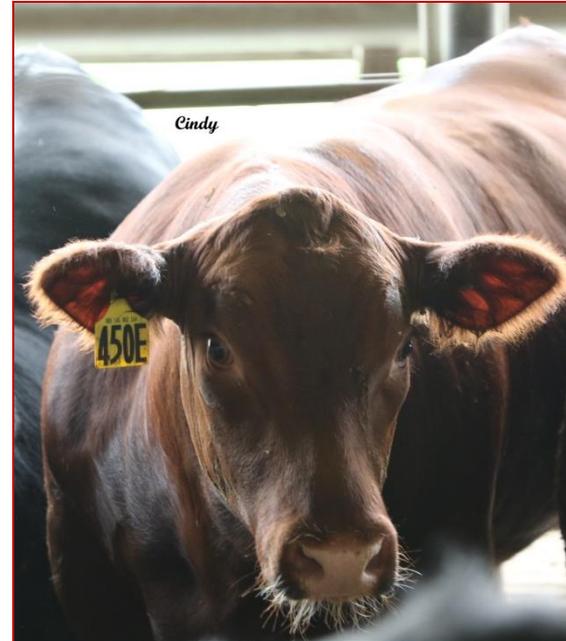
- Hopefully, there's some stuff you know already
- Hopefully, there's something you didn't know
- If you don't learn anything, then I hope you at least get to thinking about what you already know and how maybe, just maybe, you could do something different to make your operation and the Shorthorn breed better



BREAKING DOWN PERFORMANCE TECHNOLOGY

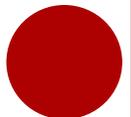


- The Simple
 - Weights
 - Ultrasound
- The Complex
 - Carcass Data
 - Feed intake
 - DNA Testing
- The Future
 - ?



WHY SHOULD YOU CARE

- In ONE WORD, what's our responsibility as an industry?



“I’M NOT RAISING & SELLING BEEF”

- Seedstock producers have a different market
 - Bulls, females to commercial cattlemen and fellow Shorthorn seedstock producers
- Where do your commercial customers’ calves go?
 - Into feedlots and then into the beef supply
- Beef is a big part of what we do!

- “I’m not a writer.” –Matt Woolfolk
 - 4 American Rancher TV Shows
 - Monthly Shorthorn Country articles
 - Promotional handouts and flyers
 - Conclusion: the numbers guy had to care about writing...it’s part of what I do



PERFORMANCE & RAISING BEEF

- If I used TWO words to describe why we do what we do...
 - BEEF
 - PROFIT

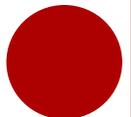
- We have these performance tools at our disposal to help us do a better, more profitable job of raising our cattle to provide beef to the consumer



WEIGHT TRAITS

- The things many breeders are already collecting
 - Birth Weights
 - Weaning Weights
 - Yearling Weights

- As long as cattle are sold by the pound, no matter the stage of production, these traits will matter!

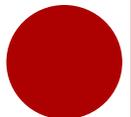


ASA PERFORMANCE REPORT CARD

- Animals in the system with these data points
 - 2015-2016 FY
 - Weaning Weight: 33.2%
 - Yearling Weight: 9.4 %
 - Ultrasound: 4.9 %
 - 2016-2017 FY
 - Weaning Weight: 31.8 %
 - Yearling Weight: 11.8 %
 - Ultrasound: 6.3 %
 - 2017-2018 FY
 - Weaning Weight: 33.2 %
 - Yearling Weight: 10.3 %
 - Ultrasound: 4.5 %
- 

CARCASS INFORMATION

- Carcass ultrasound: to get an idea of carcass merit of our breeding stock without having to kill them!
- Actual carcass data on feeder cattle is also very important
 - We do get some breeder submissions for carcass data
 - ASA National Sire Test at U of Illinois: large data set



CARCASS DATA

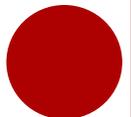
- 2015, 2016, 2017 born breeder submitted data
 - Not all from one plant, not all collected identically
- Averages on 341 head
 - Age: 472 days
 - Live wt: 1256 lb
 - HCW: 808 lb
 - Dressing %: 64.3%
 - REA: 13.72 sq. in.
 - Backfat: 0.53 in
 - Marbling: 5.6 (Choice quality grade)
 - YG: 2.9



NATIONAL BEEF QUALITY AUDIT

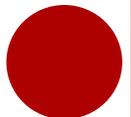
- 2016 USDA Carcass Quality Traits
 - 4.5 million head
 - HCW: 868 lb
 - REA: 13.78 sq. in.
 - Backfat: 0.54 in
 - Marbling: 5.75 (Choice)
 - YG: 3.1

- Conclusion: as a breed, we are good, but can be better at some things



FEED INTAKE & EFFICIENCY

- We've been able to measure how well an animal gains on feed for a long time
- Being able to know how much they eat in comparison to how much they gain is very important as well
- Gain: Revenue created
- Feed consumed: Expense incurred
- Goal: Find animals who gain cheaper



FEED INTAKE & EFFICIENCY

○ How This Works

- EID in ear
- Scale in feed bunk
 - Animal weight
 - Feed eaten
- EID is scanned when animal enters feed bunk
- Data transmitted to computer
 - Feed consumed
 - Animal weights
 - Feeding behaviors
- Use data collected to calculate F:G, ADG, DMI, RFI



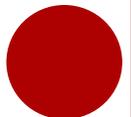
THE ABC'S OF FEED EFFICIENCY

- ADG: Average Daily Gain
 - How much cattle gain per day
- DMI: Dry Matter Intake
 - How much dry matter is being consumed in feed
- F:G: Feed to Gain ratio
 - How much feed (DMI) did it take animal to gain 1 lb
- RFI: Residual Feed Intake
 - A predictive equation
 - For an animal's gain, there's a predicted amount of feed it should take to reach that level of gain
 - RFI measures if they ate more or less than expected to achieve their rate of gain



FEED INTAKE & EFFICIENCY RESEARCH

- ASA Research Project with Iowa State University
 - Armstrong Research Farm, Lewis, IA
 - Erika Lundy, Patrick Wall, grad student TBA
- Shorthorn and ShorthornPlus females
- Analyzing relationships between intake/feed conversion and reproductive efficiencies
- Collecting feed intake and reproductive data
 - Repro tract scores
 - Pelvic measurements
 - Determination of puberty/first cycle



IOWA STATE PROJECT

- First opportunity through ASA to record feed intake data on female breeding stock
- As of now, would be first data of its kind of female breeding stock in ASA database



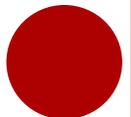
BREEDER PARTICIPATION

- Project needs 60 heifers per cycle
 - Minimum 2 cycles necessary
- Breeders can nominate groups of 5 heifers
- Shorthorn and ShorthornPlus are eligible
- Heifers born in 2019 will be first eligible crop
- Watch for more information Spring 2019



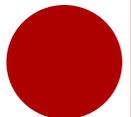
DATA FROM ASA NATIONAL SIRE TEST

- All progeny produced through the ASA National Sire Test at Univ. of Illinois have data collected through a GrowSafe system
- Largest source of this type of data
- 2017 calf crop data coming soon
- 2018 and 2019 calf crops to follow
- Total: 350+ Shorthorn sired cattle tested



COLLECTING INTAKE YOURSELF

- Some breeders are collecting the data on their own
- There are feedlots and facilities that will contract with seedstock producers
- We can help you find a location to test your cattle
- If you choose to go this route, PLEASE send us the data!!!



WHY WE NEED THE DATA

- Feed intake data will be part of development of new EPDs to measure feed efficiency traits
- “I want the EPD before I start collecting data...”
- “I want a house built before I have the lumber...”



WHY WE NEED THE DATA

- IGS allows us to benefit from information collected in other associations
 - Some interbreed connectivity in bloodlines

- Illinois data, Iowa State data, producer data
 - What we need to strengthen the predictive tools on our Shorthorn cattle



FOOD FOR THOUGHT

- Feeding cattle to a desired finish weight (1,350lb)
- What's it worth to have cattle that finish:
 - 14 days sooner?
 - 30 days sooner?
 - 45 days sooner?
- Measuring intake and efficiency helps ID the genetics that can get to an end point quicker...and cheaper
 - Feed: gain ratio
 - Cost of gain

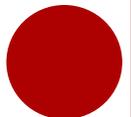


DNA TECHNOLOGY

- Not really new, but not going away!

- Tests for genetic conditions
 - TH, PHA, DS

- Genotyping
 - uLD, 50K, 150K tests



GENOTYPING

- What do the test names mean?
 - Number of DNA Markers analyzed
 - uLD: 25,000 markers
 - 50K: 50,000 markers
 - 150K: 150,000 markers
 - These are the tests for genomically-enhanced EPDs
 - The yellow highlights in Digital Beef



GE-EPDs

- The simple version:
- All 3 available tests result in the same GE-EPDs
 - The “key” markers being analyzed are on all tests
- Markers are analyzed, and certain gene sequences have a known “value” for a trait
 - Ex: a sequence that is known to positively effect WW
- All those sequences are compiled and their effects are combined into the EPD calculations



GE-EPDs

- Does that mean the EPDs are going to move?
 - No!
- Could they move?
 - Yes, some
- The main change behind GE-EPDs is increased accuracy values for traits



GE-EPD ACCURACY

- Two yearling heifers in the database
 - Both with complete performance data submitted
 - GE-EPD vs Non GE-EPD
 - CED Acc: 0.38 vs 0.18
 - WW Acc: 0.45 vs 0.28
 - Milk Acc: 0.38 vs 0.19
 - Stay Acc: 0.21 vs 0.13
 - REA Acc: 0.40 vs 0.26
 - Simply stated: There's a noticeable difference!



ACCURACY DIFFERENCES

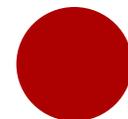
- How much progeny data would it take to equate to the difference in accuracy between a GE-EPD and non GE-EPD young animal?

Trait	Estimated Progeny Equivalents
Calving Ease Direct (CED)	15
Birth Weight (BW)	21
Weaning Weight (WW)	22
Yearling Weight (YW)	24
Milk (MK)	18
Calving Ease Maternal (CEM)	3
Stayability (ST)	25
Carcass Weight (CW)	6
Ribeye Area (REA)	8
Marbling (MB)	5
Fat Thickness (FT)	6



FUTURE WITH GENOTYPING

- There are traits with less information and a poorer grasp of the genomic impacts on them
 - Longevity
 - Fertility
 - Udder quality
- Why? Don't have as many female genotypes collected
 - 50Ks on bulls are great, but make it hard to gather info on what genes and markers might affect longevity, fertility, etc.
- This led to the development of the ASA Genomic Enhanced Heifer Project (GEHP)
 - Rebates for uLD/50k on qualifying yearling heifers



GENOMIC ENHANCED HEIFER PROJECT

- Yearling heifers: uLD or 50k test
- Requirements
 - Heifer must be born on or after January 1, 2017
 - 75% of the yearling heifer inventory, with at least 3 heifers submitted, must be tested
 - All heifers tested must have a recorded calving ease score, birth weight, weaning weight, and yearling weight
 - Heifers with carcass ultrasound or feed intake records will receive an additional \$15/head credit
- Can receive up to \$30/heifer in credit
 - Would mean a \$10 uLD or a \$25 50k test
- Space is limited, because money is limited!
 - Contact me to enroll your yearling heifers

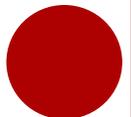


OTHER ANIMAL AG INDUSTRIES

- My conversation with a colleague employed in the breeding/genetics sector of a pork company

- Beef is at an obvious disadvantage
 - Sows farrow an average 2.5 litters per year
 - Aiming for 6 to 8 litters per sow
 - Large litters per farrowing (10-12 pigs/litter)
 - Supplies much more data into the system

- Laser-focused on one main goal
 - Produce end product (Bacon) profitably
 - Not as many goals/segments as beef cattle



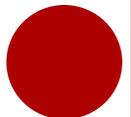
MY CHAT WITH A PIG BREEDER

- Genomic testing is used in their sow program
 - Like in beef cattle, it can be cost prohibitive
- “Live and die” by performance data
 - Premature pig mortality
 - Number of pigs born alive
 - Number of pigs that survive to harvest
- Data drives the decisions, not emotion
 - Breeding, culling decisions are totally data driven
- “If you want to make progress, you’ve got to be willing to look at the data and make a business decision.”



“WHAT I LEARNED FROM PIGS”

- Marty Ropp: 2018 BIF Convention Presentation
 - “Proprietary Genetics”: Large companies own and produce the genetic lines for hog production
 - Similar to an AI bull stud, if the bull stud mated cows
 - Vertical Integration of the Industry
 - “Lines” of hogs with specialized purpose, not breeds
 - Can’t call them breeds because it’s overwhelmingly hybrids!
 - “A few professionals make all decisions” on genetics
 - 1993: Selection Index Technology in swine breeding
 - “In a competitive industry, science-based decisions and profit will win over opinion and dogma.”



“Beef has a good
story but
someone needs
to tell it.”

Dr. Tryon Wickersham
Texas A & M University

