



Latest Changes To National Cattle Evaluation Systems

K-STATE
Research and Extension

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Overview

- Provide a brief update on significant changes to the genetic evaluation systems at breed associations
- New/novel trait development (EPD/phenotype collection)
- Updates on availability or parameterization of selection indexes
- Touch on genomics but that's a topic for another day (Oct. 28 Brown Bagger, Dr. Spangler)



Angus

- Dry Matter Intake (DMI) EPD published and incorporated in \$F and \$B,
- Implemented Genomic Calibration 4 in Sept. 2014, another calibration in progress
- Working with UGA to implement a single step process, no definitive release date
- Updated Angus \$Values economic assumptions, moved update timing to July
- Novel trait development: collecting foot phenotypes; PAP score EPD; adaptability-heat stress/fescue tolerance



Brangus

- Moved NCE from UGA to Livestock Genetic Services
- Implemented single step method for incorporation of genomic data (>4K animals genotyped at 30K or higher)
- Evaluating Adj WW and YW methods, widened age to 130-300, 90 windows, non-linear adjustments.
- Novel trait development: fertility and end product value indexes, stayability, docility, feet and leg scoring system



Beef Master

- Moved NCE from ABRI to Livestock Genetic Services
- Plan to deploy Maternal and Terminal Indexes in Spring 2016
- Development of GEPDs for 2016



Charolais

- Moved to new software: collaboration with National Center for Beef Excellence
- Deployment of GE-EPDs
- Inclusion of static Terminal Sire Index (also available as customizable index via website) in sire summary



Chianina

- Moved to IGS common base
- Planned migration to new software vendor
 - Provide interim EPDs/GE-EPD capabilities
- Other IGS developments



Gelbvieh

- Shifted to IGS Common Base
- Shifted to DigitalBeef software
- Novel trait development: Feed intake, tenderness, sustained fertility/productivity
- Other IGS developments



Hereford

- Released Teat and Udder EPD (2014)
- Plan to release Carcass Weight in Spring 2016
- New calibration planned for 2016 (>20K genotypes)
- Move to monthly runs in Jan 2016
- Plan update of indexes with new traits and economic assumptions
- Novel trait development: heifer conception rate, sustained cow fertility, feed intake, docility



Limousin

- Moved to IGS common base
- Shift to DigitalBeef software
- New Limousin/LimFlex prediction equation available, GE-EPDs system updated shortly
- Novel trait development: feed intake/efficiency; maternal data: breeding, udder scores, BCS and mature weights, temperament
- Other IGS developments



Maine-Anjou

- Moved to IGS common base
- Migration to new software vendor (DigitalBeef)
 - Provide interim EPDs/GE-EPD capabilities
- Sequencing a number of bulls via collaboration with MU
- Other IGS developments



Red Angus

- IGS participant for growth and carcass; CED, CEM, HPG, Stay and ME @ CSU single breed models
- In process of recalibrating genomic tests
- Deployment of Herd Builder and Grid Master selection indexes
- Aggressive plans for collection of feed intake and actual carcass data
- Novel trait development: feet and leg scoring; genomic data incorporated in threshold traits; feed intake; environmental stress
- Other IGS developments



Santa Gertrudis

- Moved NCE to Livestock Genetic Services
- Uses a single step GBLUP for evaluation since 2013
- Tenderness EPD available for breeders
- Deployed two indexes: Growth and Carcass



IGS Collaborating Breeds:

Simmental, Gelbvieh, Limousin, Maine-Anjou, Chianina, Red Angus, Shorthorn,
Canadian Simmental, Canadian Gelbvieh, Canadian Limousin, Canadian Angus, Canadian Shorthorn

- 12 breeds, 16 million animal records
- Development of BOLT (Biometric Open Language Toolkit) with Theta Solutions LLC
 - Genetic evaluation on 2015 hardware/programming rather than 1990s programming and under-allocation of compute resources
 - Massively overhauled, multi-GPU, multi-CPU, multi-threaded software to tackle huge systems of equations, improved throughput and efficiency
 - Reduced compute time from days to minutes for existing models
 - Deployment of new single step NCE in early 2016; accuracies via direct inversion rather than estimates
 - Enable more frequent evaluations; possible realtime implementation?



Thank You!
Questions?

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