

## BIF Feed Intake Guidelines Revision

## Feed Intake Guidelines Committee

- ▶ Larry Kuehn, USDA-MARC
- ▶ Steve Munger, Eagle Pass Ranch
- ▶ Kraig Peel, Colorado State University
- ▶ Wade Shafer, American Simmental Association
- ▶ Dan Shike, University of Illinois
- ▶ Matt Spangler, University of Nebraska
- ▶ Bob Weaver, Kansas State University
- ▶ Robert Williams, Cain Cattle Company (AICA)
- ▶ R. Mark Enns, Colorado State University

## BIF Guidelines for Feed Intake measurement and recording available in 9<sup>th</sup> Edition (2010)

- ▶ Since that time, considerable growth in individual feed intake data collected
  - Knowledge base has expanded
- ▶ A request was made to the BIF Board of Directors that the guidelines be reviewed

## Background and Challenges

- ▶ Increasing number of facilities for measuring feed intake.
  - Multiple approaches with different challenges
    - On-farm tests
    - Centralized tests
      - Pre-test management of cattle and influence on test data
  - Different measurement systems
    - GrowSafe Systems Ltd
    - Calan Gates
    - Insentech B.V. Systems
- ▶ Increasingly, the data is being accumulated and/or used for genetic evaluation
  - Maximize use of available data, given the diversity of measurement systems and expense associated with data collection

## Revision Status

- ▶ Solicited input from
  - Alison Sunstrum, GrowSafe Ltd.
  - Dr. Gordon Carstens, TAMU
  - Dr. Mike MacNeil, Delta Genetics
  - Dr. John Basarab, University of Alberta
  - Dr. Lisa Kriese-Anderson, Auburn University

## Current Recommendations

- ▶ Birth and weaning dates/weights recorded
- ▶ Age at start of FI test should not be less than 240 d
- ▶ Age range of tested animals < 60 d
- ▶ 21 d “warmup” period to acclimate to test facility and diet
  - Animals should have transitioned to final diet before starting test

### Current Recommendations

- ▶ Diets—commercial lab testing of diet samples for complete chemical analysis is recommended
  - Want sufficient energy/protein to allow expression of difference in growth and feed intake
  - Bulls  $\geq$  2.4 Mcal ME/(kg DM)
  - Steers  $\geq$  2.9 Mcal ME/(kg DM)

### Current Recommendations cont.

- ▶ Weight recording
  - 2 weights on test and 2 weights off test (minimum)
  - Preferable that weights are collected during test. E.g. every week/2 weeks
    - Feed intake data for that weigh date is not used for analysis.
  - Note in Guidelines: More frequent weights may allow reduced period for measuring rate of gain
- ▶ Feed **must** be provided *ad libitum*
  - If not available *ad libitum* then feed intake for that day should not be included in intake calculations. E.g. weigh days, treatment days, etc)

### Current Recommendations cont.

- ▶ Data auditing—feed consumption
  - Feed delivered to animals and that recorded by the system as consumed should not differ by more than 5%
- ▶ Note:
  - Ration composition/particle size should not allow "sorting" of diet.

### Areas under review

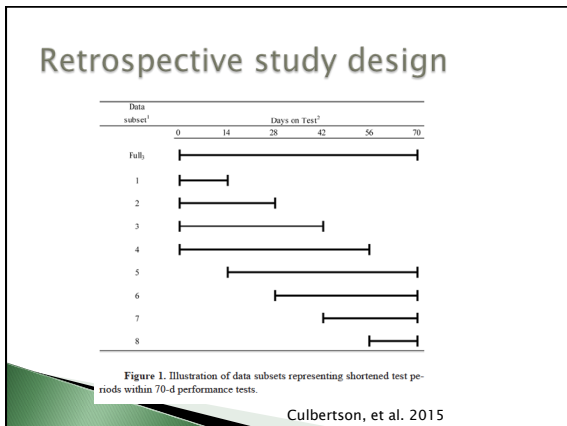
- ▶ Length of warm-up period
- ▶ Length of test for accurate measurement of
  - Feed intake
  - Body weight gain
- ▶ Contemporary group definition
- ▶ Use of embryo transfer data
- ▶ Guidelines revision is for young, growing cattle housed in groups
  - No data from animals housed individually

### Where are we with revisions?

- ▶ Previous recommendations are
  - 21-day warmup period
  - 70-day test to get accurate measurement of body weight gain
  - 45-day test for feed intake
- Because gain and feed intake were coupled in those recommendations the overall recommendation was for 70 day test.

### Where are we with revisions?

- ▶ Appears there may be opportunity to shorten recommended test length if we de-couple feed intake measurement from weight gain.
  - Our approach is to de-couple gain from feed intake measurement



### Correlations to the current recommendations

Subset	Test Length	Feed Intake	Weight Gain
0 to 14	14	.89	.54
0 to 28	28	.94	.79
0 to 42	42	.97	.88
0 to 56	56	.99	.94
14 to 70	56	.99	.96
28 to 70	42	.97	.93
42 to 70	28	.94	.88
56 to 70	14	.85	.78

Culbertson, et al. 2015

### Conclusion—Feed intake

- ▶ Likely an opportunity for shortening recommended test length depending upon trait focus.
  - Archer et al., 1997 and Wang et al., 2006.
- ▶ Recommendation will be for length of test to accommodate 35 days of “good” feed intake measures for a contemporary group.
  - Remember will need a longer test because weigh days, etc data not used.
  - All else equal this could result in the testing of additional animals
    - 40% to 60% increase

### Measuring gain

- ▶ Still determining any opportunity to reduce test length given current published research
  - Will likely remain at 70 days.
- ▶ In the future, potential for reducing this time period given ongoing advances in remote sensing technologies.

### Other Recommendations

- ▶ Data on embryo transfer
  - Lack of research on maternal effects impact on feed intake measures
  - Will recommend that current association policy for use of ET data be used for FI data until more research becomes available.
  - Working on access to data appropriate for estimating these effects

### Other Recommendations

- ▶ Contemporary group recommendations (new addition to guidelines):
  - Historically, contemporary groups are subdivided over time
    - Birth, weaning, yearling are combined for analysis of yearling observations.
  - Recommend use of weaning contemporary group
    - (assuming FI testing between weaning and yearling weight recording)
  - Fit pen independently from weaning contemporary group
    - (i.e. do not split contemporary groups further)
    - For commingled cattle—allows all data from a pen to be used to estimate pen effects.

## Warm-Up period

### ▶ Challenge:

- Central test stations
  - Cattle for various backgrounds and locations
- On-farm test stations
  - On feed and ration adaptation
  - Feeding period
- Naïve to equipment or diet or both?

## Warm-Up period

### ▶ Will remain at 21 days, generally

- Adequate time for cattle naïve to bunk feeding to adapt
- Adequate period for compensatory effects to dissipate
- Adaptation/transition to the test diet
- Will not require animals be in the test facility, but must allow for sufficient "system learning".
- Cattle from diverse sources that are to be tested in the same pen should be commingled during this period
- Opportunities to potentially shorten period if cattle were previously commingled and acclimated to test diet; just train to equipment required; likely will require data inspection and analysis

## Revision status

- ▶ Committee has met numerous times via conference calls
- ▶ Completed writing of new guidelines for
  - Contemporary group definitions and use in genetic evaluation
  - Warm-up period length suggestions
  - Test Length recommendation
    - Feed intake
    - Gain
- ▶ Editing for final version for review by BIF Board of Directors

## Process

- ▶ Revisions will be submitted to the BIF Board of Directors for review
  - Vote
  - Expectation is that document submitted to BOD for approval at the mid-year meeting