

PROLOGUE TO THE SYMPOSIUM ON INTAKE BY FEEDLOT CATTLE

The Organizing Committee:
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BACKGROUND

In 1984, a conference on Feed Intake by Beef Cattle sponsored by Oklahoma State was held in Oklahoma City. As a result of strong and persistent encouragement from industry representatives, especially Tom Peters and Ken Eng, we decided to hold another conference related specifically to intake by feedlot cattle. This conference, held in Tulsa Nov 17 through 19, 1994 was co-sponsored by the Plains Nutrition Council. The agenda for the symposium on intake by feedlot cattle is listed on the following pages.

CONFERENCE SUPPORT

Generous support to partially cover the cost of publication of these proceedings was provided by industry representatives. Those donors which deserve our sincere thanks include:

Hoffman LaRoche, Nutley, NJ
Elanco, Greenfield, IN
Syntex Animal Health, West Des Moines, IA
Pioneer Hi-Bred International, Johnston, IA
American Cyanamid Company, Wayne, NJ
Diamond V. Mills, Inc., Cedar Rapids, IA
Zinpro Corporation, Edina, MN
Land O'Lakes Beef Feeds, Fort Dodge, IA
Chr. Hansen's Biosystems, Milwaukee, WI
Purina Mills, St. Louis, MO
Dekalb Feeds, Rock Falls, IL

The organizing committee also is deeply indebted to each of the speakers who took time from their busy schedules to attend at their own expense and to freely and openly discuss their findings and ideas with those in attendance. In most cases, they also wrote a paper to include in these proceedings.

COVER PHOTOS

Speakers pictured on the front cover from left to right included: (top row) Scott Laudert, Karen Launchbaugh, Rick Stock, Gordon Carstens, Gabriella Varga; (row 2) Pete Anderson, Mark Froetschel, Gerald Schelling, Sam Coleman, Andy Cole; (row 3) Robbi Pritchard, Roberto Sainz, Rod Preston, Tom Peters, Ken Eng.; (row 4) Jim Oltjen, LeRoy Hahn, Mike Galyean, Steve Soderlund, Neal Merchen; (row 5) Larry Berger, Gary Vogel, Tim Stanton, Bob Brandt and Dale Larson. Speakers who did not supply a photo and therefore shall remain incognito include: John Rakestraw, Keith DeHahn, Cal Ferrell, Merida Smutz, Steve Rust, J. C. Pekas, Dee Griffin, Kevin Pond, John Thornton, Scott Anderson, Mike Shafer, Bill Tucker, and Spencer Swingle.

Finally, we are indebted to all who attended the conference (names are listed at the back of the proceedings) and asked pertinent and probing questions. The transcribed questions and answers cannot fully reflect the interchange among participants in the conference.

NOVEL IDEAS PRESENTED

Conference summaries were provided by Drs. Ken Eng and Mike Galyean. Some of the novel concepts advanced in this conference that serve as food for further thought and research were:

- Maximum feed intake may reduce efficiency of energy use, especially with processed grain diets. Higher intakes increase maintenance expenditures, but what specific nutrients are involved and how they alter maintenance are not clear. Some cattle with high intakes make rapid liveweight gains; others do not gain rapidly and for some reason are inefficient.
- Empirical intake models provide the best estimates of intake at any given time in a feeding period.
- ME intake seems more consistent than feed intake.
- Time of day and frequency of feeding can markedly influence feed efficiency.
- Limit or programmed feeding may reduce some of the problems associated with feed management in large feedlots. The primary incentives for programmed feeding are to reduce cost of

growing rations (when roughage cost is high) and to delay finishing by smaller framed cattle, especially heifers.

- Feeding behavior, aversion, timing, meal size and frequency can be altered by many factors but remain incompletely understood. Microchemical components of feeds may impact rate of passage and feed intake.
- Rather than intake forcing growth, energy requirements and nutrient metabolism serve as a pull to control intake. Degree of pull is influenced by hormonal status. Calorie disposal in the form of synthesized protein or fat via lipogenesis may set the ceiling for ME intake.
- Selection for rapid rates of growth or large lean body mass has not increased efficiency of energy use.
- Benefits from grain processing and fat supplements vary with environmental conditions.
- Feed preferences are not evident when animals are given a single feed. But whether animals consume more calories when offered a selection rather than a single feed remains unclear.
- "When cattle are not at the feedbunk, very little feed disappears." (John Thornton)
- Freda Owens, Fred's identical twin sister, is quite striking.

1994 INTAKE BY FEEDLOT CATTLE - SYMPOSIUM OKLAHOMA STATE UNIVERSITY & PLAINS NUTRITION COUNCIL

Tulsa Marriott, Nov. 17 (7:30 PM) to Nov. 19 (Noon)

November 17, 1994.

Chair - Fred Owens, OSU

7:45PM **KEYNOTE ADDRESS:** What We Need To Know About Feed Intake. Johnny Rakestraw
ANIMAL FACTORS

8:05PM Effects of background, age, gender - Keith DeHahn, Farmland Industries, KS

8:25PM Body composition effects on maintenance, intake & efficiency - Cal Ferrell, MARC, NE

8:45PM Behavior & bunk management - animal & human factors - Scott Laudert, Lilly Research Labs, KS

9:05PM Effects of food neophobia and aversions on feed intake - Karen Launchbaugh, Texas Tech

9:25PM Variation among animals in intake & efficiency -Live & carcass basis - Merida Smuts, South Africa
(Langston University, OK)

9:45PM Effects on health and efficiency of daily variation in feed intake-Individual animals and pens-
Terry Klopfenstein & Rick Stock, NE

November 18, 1994.

Chair - Keith Lusby, OSU

8:00AM Effect of biological type on feed intake - Steve Rust, MI

8:20AM Compensatory gain - Gordon Carstens, Texas A&M

8:40AM Gut size and passage rate - Gabriella Varga, PA

- 9:00AM Effects of hormonal implants - Pete Anderson, Syntex, IA
 9:20AM Gastrointestinal hormones and neural controls - Mark Froetschel, GA
 9:40AM BST, somatomedins, somatostatin - Gerald Schelling, ID
 10:00AM Superalimentation vs feed restriction: Effects on body growth and composition and on gastrointestinal organ size and metabolism - Jerome Pekas, MARC, NE

Chair - Don Wagner, OSU

- 10:40AM Detecting and recording health problems - receiving and autopsy checklist and slaughterhouse scorecard - Dee Griffin, UNL-GPVEC, NE

HUMAN CONTROL & MEASUREMENTS

- 11:00AM Intake monitoring systems:
 Electronics and Markers - Kevin Pond, NC
 Fecal NIR - Sam Coleman, USDA EI Reno, OK
 11:30AM Intake control systems - Andy Cole, USDA, Bushland, TX
 Calan gates, Pen pointers, Dairy systems

Chair - Sally Northcutt, OSU

- 1:00PM Feeding frequency & timing - Robbi Pritchard, SD
 Mechanically programmed feeding
 1:20PM Degree of restriction, feeding management, bunk space, diet formulation - Richard Zinn, CA
 1:40PM Why does restriction improve efficiency? - Roberto Sainz, CA
 Mechanically programmed feeding systems and application
 2:00PM Step-up programs - Rod Preston, Texas Tech
 2:20PM Practical experience with programmed, controlled & plateau feeding - Tom Peters, Dekalb Feeds, IL
 2:40PM Panel: Successes & Failures with programmed feeding - Kenneth Eng, Tom Peters, et al. ad lib.
 3:00PM Computer models of mean & daily intakes - Jim Oltjen, CA
 Demonstrations of computer systems

ENVIRONMENTAL FACTORS

Chair - Don Gill, OSU

- 4:00PM Environmental influences on feed intake and performance - LeRoy Hahn, MARC
 4:20PM Effects of season, weather, health, management - Mike Galyean, NM, and Mike Hubbert, Hubbert Biosystems, NE
 4:40PM Practical experience with season, weather, pen size & design, bunk shape & space - Panel
 John Thornton, Hitch II, KS; Scott Anderson, CRI Feeders, OK; Mike Shafer, XIT, TX.

WATER & FEED FORMULATION/PREPARATION

November 19, 1994.

Chair - Don Wagner, OSU

- 8:00AM Diet cation-anion balance - Bill Tucker, MS
 8:20AM Grain processing - Fred Owens, OK
 8:40AM Roughage levels and sources - Spencer Swingle, Syntex, TX
 9:00AM Moisture levels/fermentation products - Steve Soderlund & Bill Mahanna. Pioneer Hi-bred, IA
 9:40AM Protein level - rumen ammonia & bypass protein - Neal Merchen & Larry Berger, IL

Chair - Fred Owens, OSU

- 10:20AM Ionophores - Gary Vogel, Lilly Research Labs, TX
 10:40AM Formulating rations to maximize performance under:
 - Cold weather conditions - Tim Stanton, CO
 - Hot weather conditions - Bob Brandt, KS
 11:20AM Palatability, flavors & inhibitors: Methods & interpretation - Dale Larson, Farmland, MO

CONFERENCE SUMMARY

- 11:40AM Industry needs - Ken Eng, Eng Inc., AZ
 12:00M Research agenda - Mike Galyean, NM