NANP NRSP-9 SUMMIT 2019

National Animal Nutrition Program

Leveraging Resources, Linking Researchers

National Animal Nutrition Program

Leveraging Resources, Linking Researchers

BOARD ON AGRICULTURE AND NATURAL RESOURCES

1944 2019

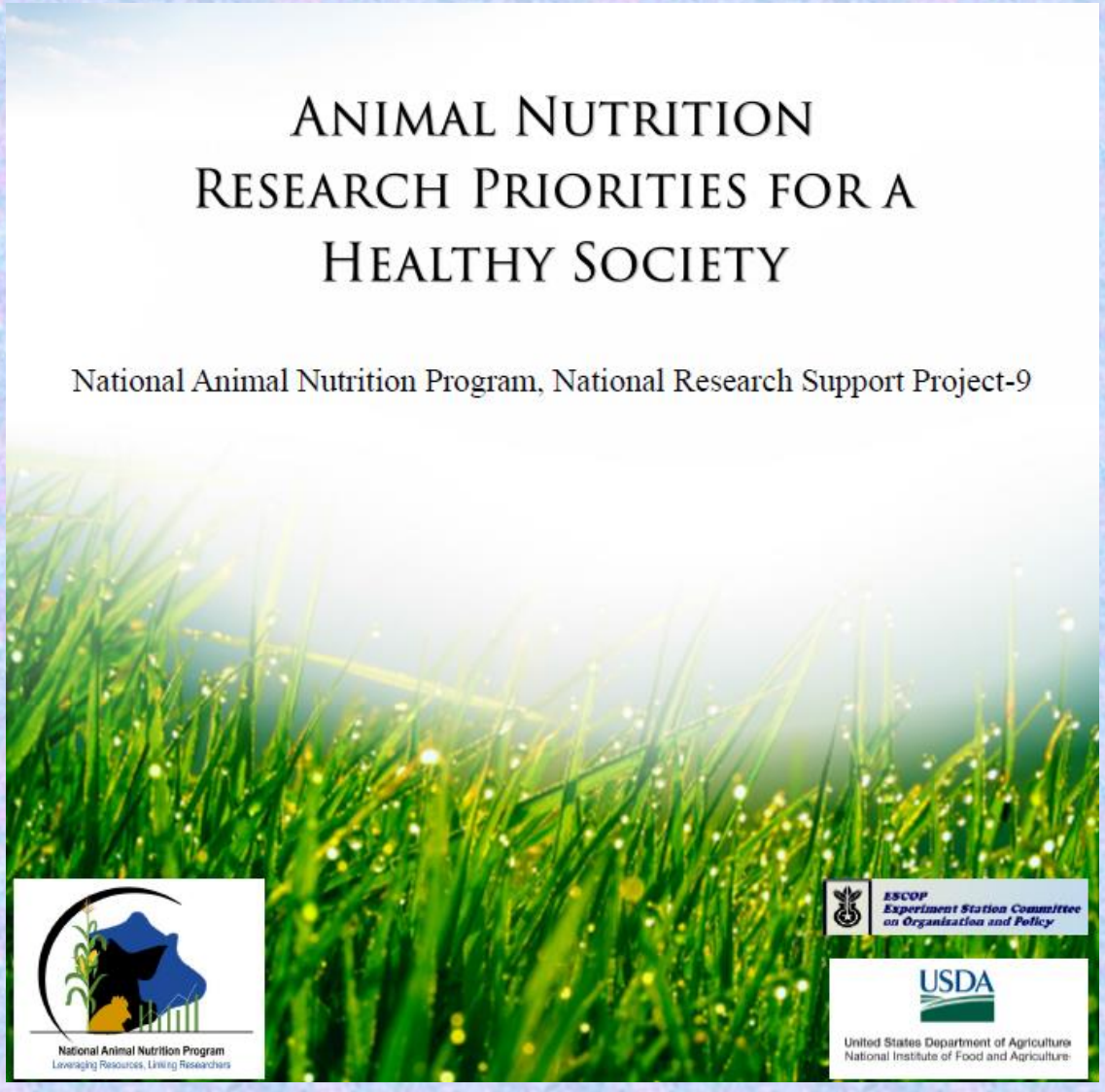
The National Animal Nutrition Program (NANP)

From Then to Now

Merlin D. Lindemann

NANP Coordinating Committee, Chairman

Summit 2015


ANIMAL NUTRITION
RESEARCH PRIORITIES FOR A
HEALTHY SOCIETY
National Animal Nutrition Program, National Research Support Project-9
National Animal Nutrition Program
Leveraging Resources, Uniting Researchers
ESCOP
Experiment Station Committee
on Organization and Policy
USDA
United States Department of Agriculture
National Institute of Food and Agriculture

NANP NRSP-9 SUMMIT 2019

Producing Food with Animals: Sustainability, Efficiency, and Security in the US

National Animal Nutrition Program, National Research Support Project-9

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National Animal Nutrition Program

- **Established in 2010; renewed (and expanded) in 2015.**
- **A research-support activity requested by stakeholders.**

- **Focus of the NANP:**
  - **Address challenges facing researchers, educators, and support agencies in animal agriculture and fill voids in the research and academic communities.**

Funding and Governance

- NANP is one of seven National Research Support Projects.
- Administrative Advisors from four regions:
  - Bret Hess (Lead), University of Wyoming
  - Lesley Oliver, University of Kentucky
  - David Benfield, The Ohio State University
  - Rick Rhodes, University of Rhode Island
- National Program Leaders from USDA/NIFA:
  - Charlotte Kirk Baer (Lead)
  - Steve Smith

Structure of the National Animal Nutrition Program

- Coordinating Committee – M. Lindemann (UK)
- Feed Composition Committee – P. Miller (UNL)
- Modeling Committee – M. Hanigan (VT)

Coordinating Committee Members

- Merlin Lindemann (Chair), University of Kentucky
- Gary Cromwell (Past-Chair), University of Kentucky
- Todd Applegate, University of Georgia
- Don Beitz, Iowa State University
- Ryan Dilger (Feed Comp), University of Illinois
- Heidi Rossow (Modeling), University of California-Davis
- Nancy Irlbeck, Washington State University
- Jack Odle, North Carolina State University
- Delbert Gatlin, Texas A&M University
- Carey Williams, Rutgers
- Joel Caton, North Dakota State University
- Robin Schoen, National Academies/NRC (Liaison)

Feed Composition Committee Members

- Phil Miller (Chair), University of Nebraska
  - Andres Schlageter – University of Nebraska
- Ryan Dilger, University of Illinois
- Bill Dozier, Auburn University
- Mark Edwards, Cal Poly – San Luis Obispo
- Alexander Hristov, Pennsylvania State University
- Brian Small, University of Idaho
- Mark Nelson, Washington State University
- Michael Lilburn, The Ohio State University
- Casey Bradley, DSM
- William Weiss, The Ohio State University

Modeling Committee Members

- Mark Hanigan (Chair), Virginia Tech
  - Veridiana De Souza Daley, Virginia Tech
- Heidi Rossow, University of California-Davis
- Tim Hackmann, University of Florida
- Ermias Kebreab, University of California-Davis
- Peter Ferket, North Carolina State University
- John McNamara, Washington State University
- Luis Tedeschi, Texas A&M University
- Nathalie Trottier, Michigan State University
- Mike VandeHaar, Michigan State University
- Dominique Bureau, University of Guelph

How Does the National Animal Nutrition Program Collaborate with NASEM (the National Research Council)?

Support

- **Scientific and Technical**
  - **Development of a system for management of feed ingredient information, including a feed ingredient database.**
  - **Modeling support for establishment of nutrient requirements for agricultural animals (beef, dairy, swine, and poultry).**
  - **Assistance to requirement revision committees – respond as requested and as able to help meet their needs**

Websites:

National Animal Nutrition Program

www.animalnutrition.org

Global Animal Nutrition Network

https://gann-nanp.org/expert

The **National Animal Nutrition Program**

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Feed Composition

Modeling

Who Are We?

The National Animal Nutrition Program (NANP) serves as a forum to identify high-priority animal nutrition issues and provides an integrated and systemic approach to sharing, collecting, assembling, synthesizing, and disseminating science-based information, educational tools, and enabling technologies on animal nutrition that facilitate high-priority research among agricultural species.

Learn More

Workshops & Symposia

Nutrition Modeling in R is an important component of nutritional research as diet formulation is a quantitative process. To design diets that meet or exceed the nutrient requirements of the species of interest, one must be able to predict the absorbed nutrient supply and the animal needs for those nutrients, or more robustly, animal responses to varying supply of the nutrients. Thus the construction and parameterization of models is prevalent in animal nutrition research. In the Nutrition Models Workshop you will learn modeling approaches required to construct, parameterize, and evaluate a model.

2018 NANP Symposium: Future of Data Analytics in Nutrition: Knowledge Gaps, Data Collection and Quality, and the Role of Supporting Tools for Sustainable Development. ASAS-CSAS Annual Meeting, Vancouver, Canada.

Lecture	File
1. Relevance and Collaboration with the National Research Council. **Merlin D. Lindemann**, University of Kentucky. The National Animal Nutrition Program (NANP). link	Download
2. Food and Agriculture Cyberinformatics and Tools. **Charlotte Kirk Baer**. National Program Leader. National Institute of Food and Agriculture US Department of Agriculture. link	Download
3. The evolution of mathematical models for animal nutrition: what to expect next? **Luis Tedeschi**, Texas A&M University. link	Download

Modeling

Animal Nutrition and Metabolism Database

Modeling & Statistical Information

Software

Code Examples

Nutrient Req. Models

NRC Beef Model 2016

NRC Beef Model 2000

Nutrient Requirement Models

Click the links below to begin downloading the linked document. To save the file to a particular location on your computer, right click on the link, select the "Save Target As" option and then choose the folder on your computer into which you would like the file to be saved.

Nutrient Requirements of Beef Cattle: Eighth Revised Edition (2016)

- Beef Cattle Model 2016

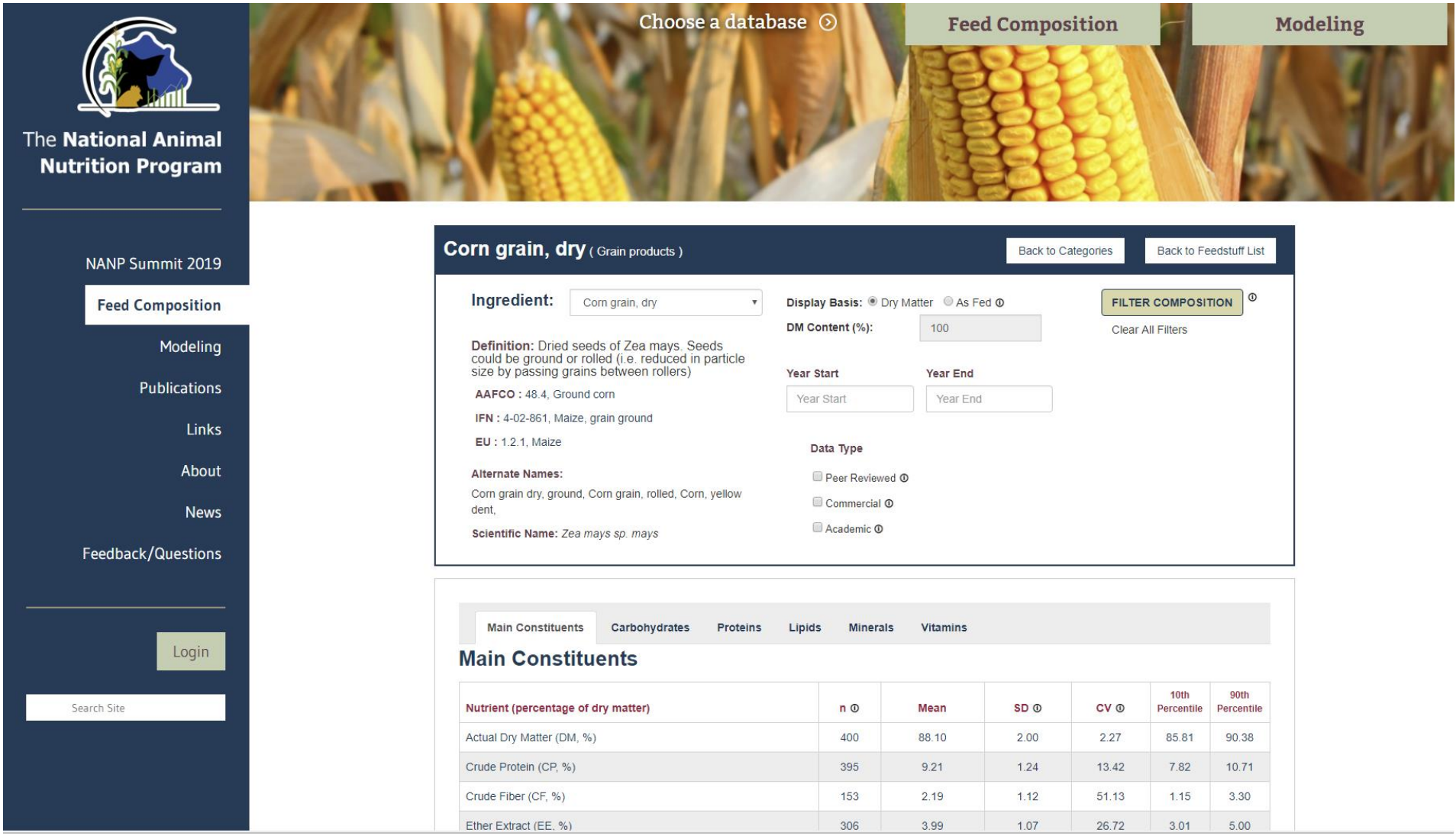
Software Downloads: Nutrient Requirement Models of Beef Cattle (Compatible with Windows 7 32-bit and 64-bit machines):

NRC Beef Model (1996, 2000): Beef Set Up 1.0.3 (.zip)

Supportive Documentation for Above Programs (The following documents are in PDF form):

- Modifications in the NRC Beef model (1996, 2000) and NRC Dairy model (2001) software
- Detailed NRC Beef (1996, 2000) Software Modifications

Software Downloads: Nutrient Requirement Models of Dairy Cattle (Compatible with Windows 7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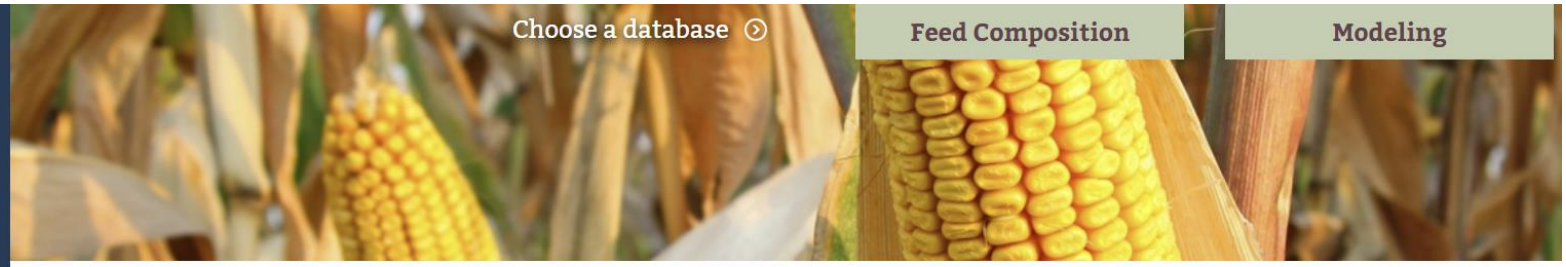
Corn grain, dry (Grain products)
Back to Categories
Back to Feedstuff List
Ingredient:
Corn grain, dry
Display Basis: Dry Matter As Fed
DM Content (%):
100
FILTER COMPOSITION
Clear All Filters
Definition: Dried seeds of Zea mays. Seeds could be ground or rolled (i.e. reduced in particle size by passing grains between rollers)
AAFCO : 48.4, Ground corn
IFN : 4-02-861, Maize, grain ground
EU : 1.2.1, Maize
Alternate Names:
Corn grain dry, ground, Corn grain, rolled, Corn, yellow dent,
Scientific Name: Zea mays sp. mays
Year Start
Year End
Year Start
Year End
Data Type
Peer Reviewed
Commercial
Academic
Main Constituents
Carbohydrates
Proteins
Lipids
Minerals
Vitamins
Main Constituents
Nutrient (percentage of dry matter)
n
Mean
SD
CV
10th Percentile
90th Percentile
Actual Dry Matter (DM, %) 400 88.10 2.00 2.27 85.81 90.38
Crude Protein (CP, %) 395 9.21 1.24 13.42 7.82 10.71
Crude Fiber (CF, %) 153 2.19 1.12 51.13 1.15 3.30
Ether Extract (EE, %) 306 3.99 1.07 26.72 3.01 5.00



The **National Animal Nutrition Program**

Code Examples

Modeling:

A Simple, One Pool Dynamic Model in R

Repeatedly Simulating a Dynamic Model Using Different Inputs

A 3-Pool Dynamic Model

Least Cost Diet Formulation

Diet Forumation to Optimize Profit

Statistical Analyses:

Linear Regression

Nonlinear Regression

Analysis of Variance

Analysis of Covariance

General Linear Models

Mixed Models

Get started with R

Future - Goals and Direction

- **Expanded opportunities with the website.**
- **More dynamic, current, and robust feedstuff data base.**
- **Expanded educational options through the website.**
- **Modeling workshops at societal meetings (ADSA, ASAS, PSA, ESS).**
- **Integrated animal performance databases with nutrient requirement estimates.**

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