



# T179 National Animal Nutrition Program (NANP): Databases, Modeling Resources, and Training for Dairy Nutrition Research

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## ABSTRACT

- Dairy nutrition research increasingly requires harmonized datasets and reproducible modeling workflows to synthesize evidence across studies.
- The NANP (NRSP-9) provides curated, research-based databases and modeling resources that support model development, parameterization, testing, and evaluation.
- By linking diet, animal, and response variables, NANP resources enable more transparent and comparable approaches to predictive modeling.
- Through the Nutrition Modeling Committee, NANP promotes observed-data repositories, interoperable platforms, shared workflows, and guidance for model implementation.
- Training workshops and open educational materials further support best practices in reproducible analysis.
- Together, these efforts strengthen cross-study synthesis and help translate experimental evidence into robust predictive models for dairy nutrition research.

## NANP AT A GLANCE

**500K+** Observations on animal performance & metabolism

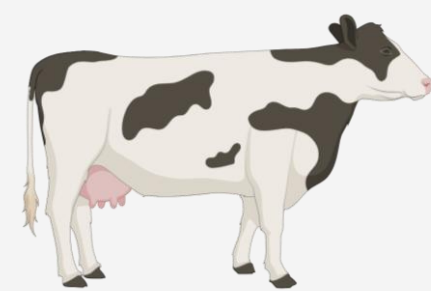
**4M+** Feed ingredient records archived

**300+** Modeling & statistics resources

**30+** Peer-reviewed publications

- Workshops reached **~750** participants from **five** continents
- Materials viewed **3,000+** times
- Led by **31** scientists across **22** institutions with diverse species expertise

## DAIRY CATTLE MODELING COMMITTEE



### Focus

- Nutrient Efficiency:** Improve predictions of digestion and nutrient partitioning to support model evaluation across datasets.
- Sustainable Systems:** Quantify trade-offs among production, nutrient excretion, and emissions under diverse diets and management.
- Precision Management:** Develop and test data-driven approaches for predicting performance across heterogeneous environments.

### Impact Areas

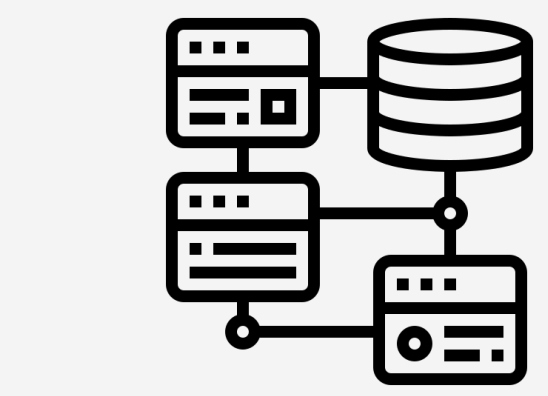
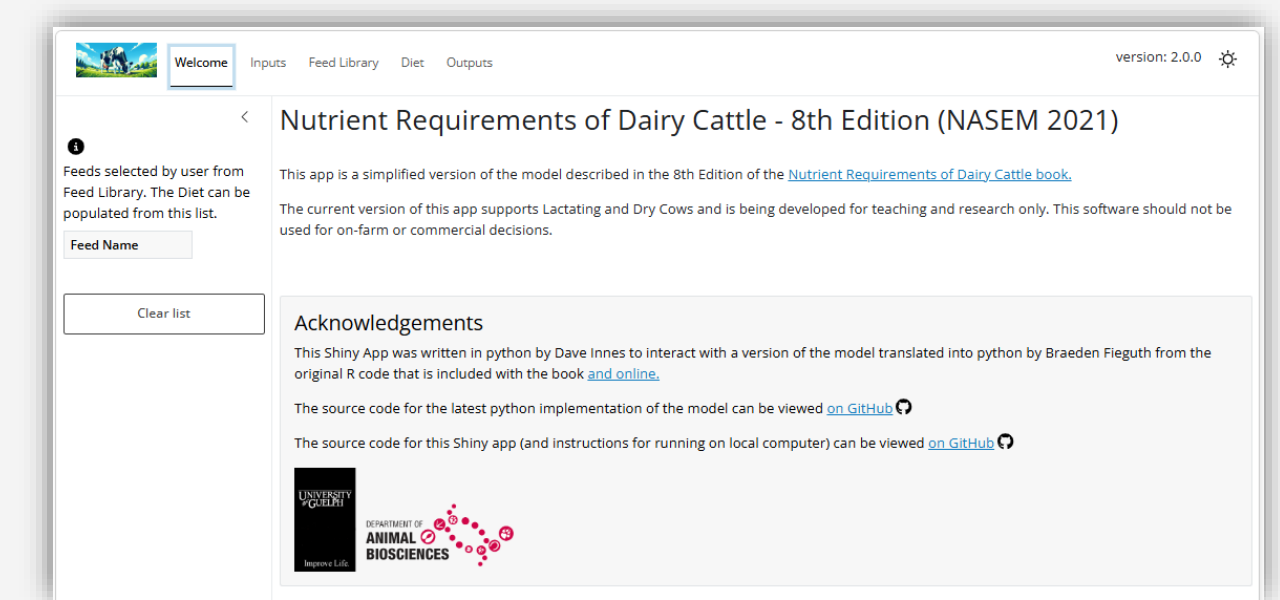
- Modernizing Standard:** NANP databases and modeling resources support model development, benchmarking, and reporting consistency relevant to nutrient requirement frameworks.
- Climate-Smart Solutions:** Integrated modeling workflows enable consistent quantification of nutrient-use efficiency and environmental outcomes to support comparative assessments.

## NANP RESOURCES

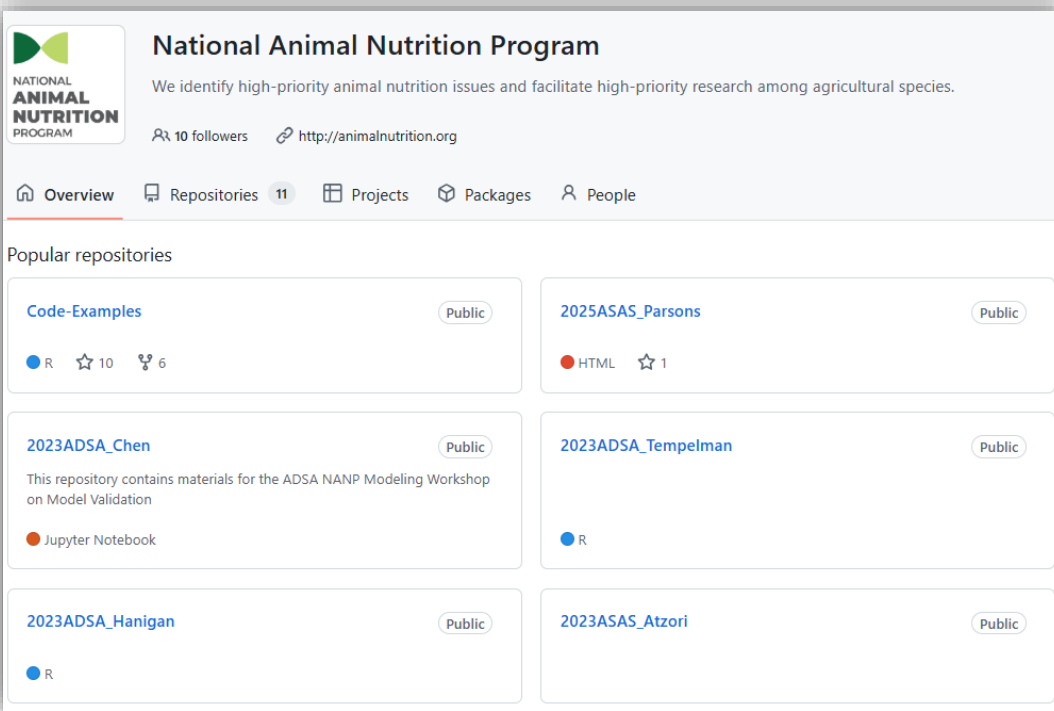
| Nutrients       |        |      |     |     |          |           |           |        |        |        |        |
|-----------------|--------|------|-----|-----|----------|-----------|-----------|--------|--------|--------|--------|
| Item ID         | Pub ID | Year | Sex | Age | Var Name | Var Value | Var Units | SE     | SD     | CV     | SE     |
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| Item 0000000002 | 002    | 1    | 000 | 000 | 00.000   | 00.000    | 00.000    | 00.000 | 00.000 | 00.000 | 00.000 |
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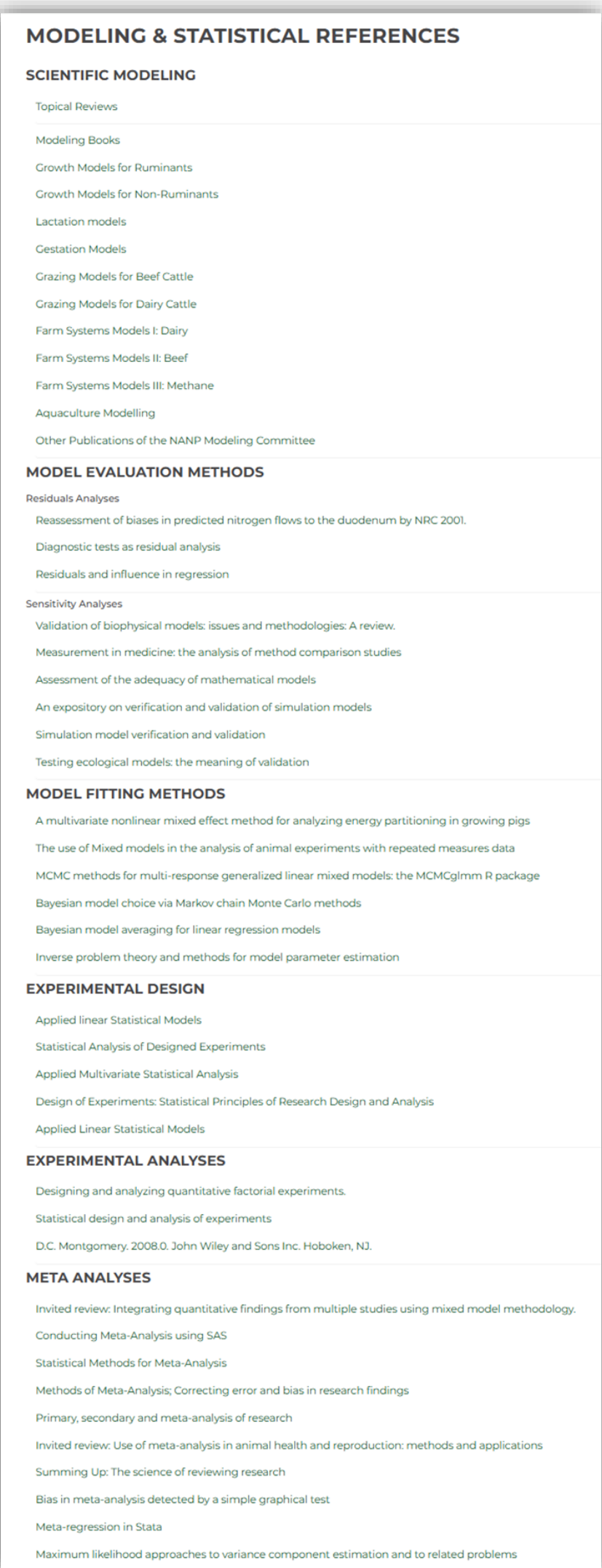
### Models (GitHub)



### Database



### Software (user tool)

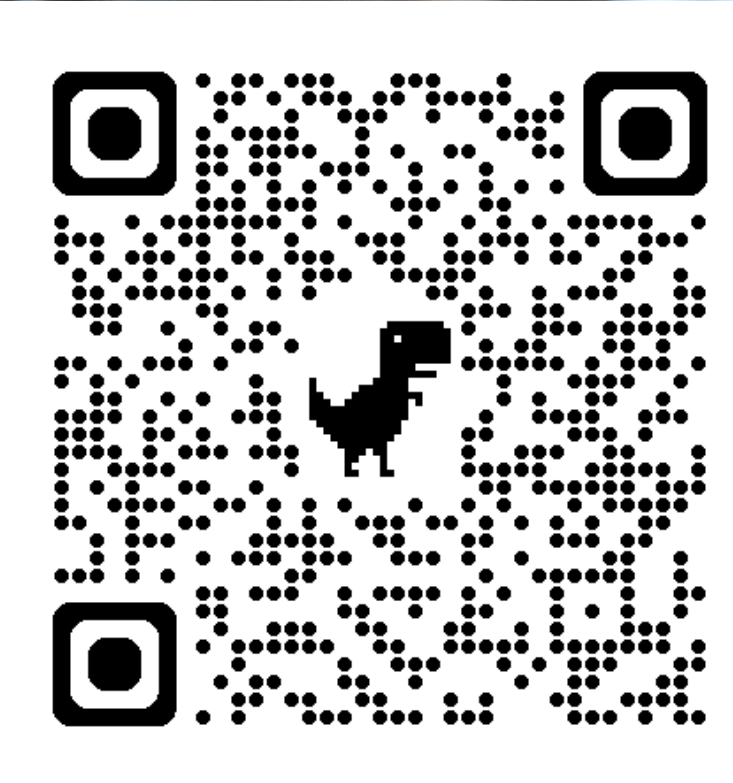


- Article & book for modeling (100+)**
- Publications used NANP resource (30+)**

## FUTURE WORK

- Expand observed data**
  - ✓ Add intake, milk yield/components, BW/BCS, and health records for benchmarking.
- Standardize study reporting**
  - ✓ Harmonize diet, DIM/parity, and management metadata for reproducible modeling.
- Integrate sustainability**
  - ✓ Include N and P efficiency, enteric CH<sub>4</sub>, and manure nutrient flows.
- Improve feed libraries**
  - ✓ Expand TMR, PMR, pasture-based, and component-feeding libraries.
- Deployment & evaluation**
  - ✓ Support versioning, standardized metrics, dairy use cases, and training materials.

**MORE INFO**



**animalnutrition.org**



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