Field application of the CNCPS

T.P. Tylutki
“I thought Tylutki was a Cornell person”

- True 50% of the time.

- 50% of my time is as a consultant to Venture Milling
  - product support
  - R&D
  - QC

- Plus private consulting with a few herds
How I use the model

- Ration formulation
- Ration evaluation
- Trial design
- Product development
CNCPS/CPM and Venture Milling

- products have been developed based upon the model.
- successful implementation of the products requires use of the model
Industry problem

- currently, nutrient management has not reached the animal nutrition input side
  - strictly driven by maximizing output
    - milk production
    - milk fat
    - milk protein
  - won’t change until forced to do so
CNCPS and consulting

- CNCPS is a powerful tool for a consultant
  - ration formulation
  - ration planning
    - coupled with a spreadsheet can do forage allocation across the whole herd
  - decrease nutrient excretion
  - powerful what-ifs and troubleshooting
  - typically can increase income over feed cost
What ifs

- improve forage quality
- increase forage quantity
  - available to certain groups
  - fed to lactating cows
- change processing
  - ground vs. steam flaked corn
  - solvent vs. expellers soy
Decrease nutrient excretion

- P is somewhat simple
  - I seldom use inorganic P supplements
    - many lactating diets below 0.35% P
  - result on one farm has been a 30% reduction in manure P
N more difficult

- still use some safety factors for protein
- risk of decreased production too high
  - decrease milk, decrease gross income, lose client
- need high quality and quantity forage
- model great for matching CHO and PRO to maximize microbial protein
Troubleshooting/evaluation

- model can be used to look at a “snapshot” of a herd when there is a problem
- acidosis or sub-clinical acidosis
- poor forage quality
- poor feeding management
Model limitations

- investment
- time
- data
- forage analysis required

- $20 (NIR) to >$100 if all wet chemistry, VFAs, and NDF in vitro digestibility
Improvements needed

- improved optimizer
- current optimizer in CNCPS is not stable
- should be able to optimize across multiple groups
- less inputs
- a lot of repetitive inputs between groups
- more electronic transfer of inputs
- integrate with herd management records
More improvements

- more training
- a lot of people have the model but don’t understand it
- training focusing on decreasing ration safety factors
- better economic analysis
- ability to feed rations to multiple groups
Non-model improvements needed

- forage quality
  - either too low (65% NDF grass) or too high (30% NDF alfalfa)
  - soluble proteins too high (25% CP alfalfa with 65% soluble protein)

- to ensure acceptable levels of milk production, must feed 19 to 20% CP diets