

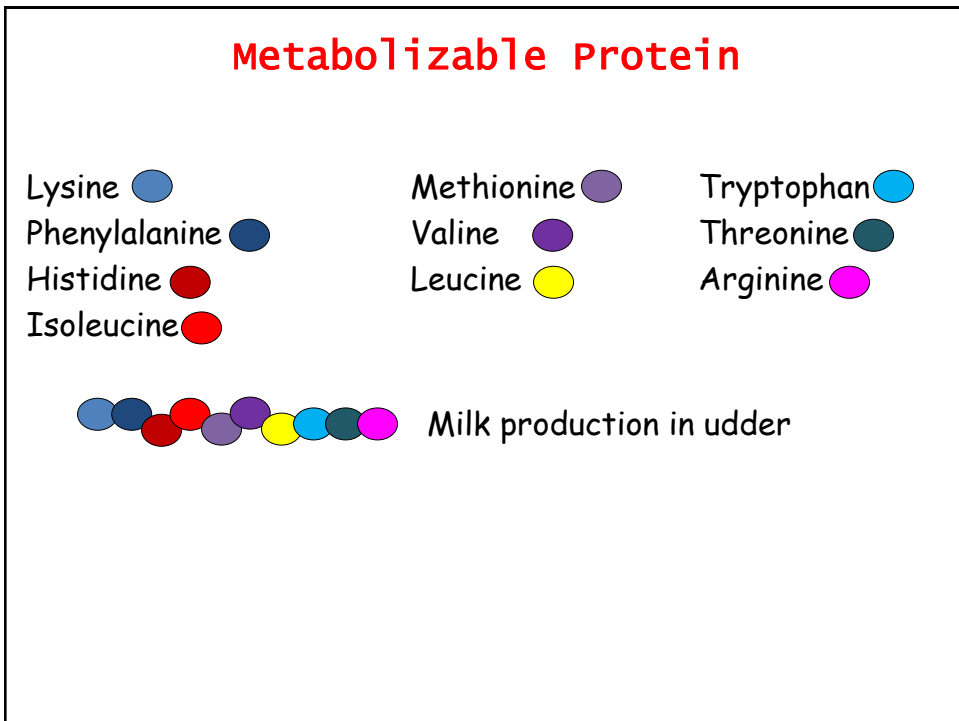
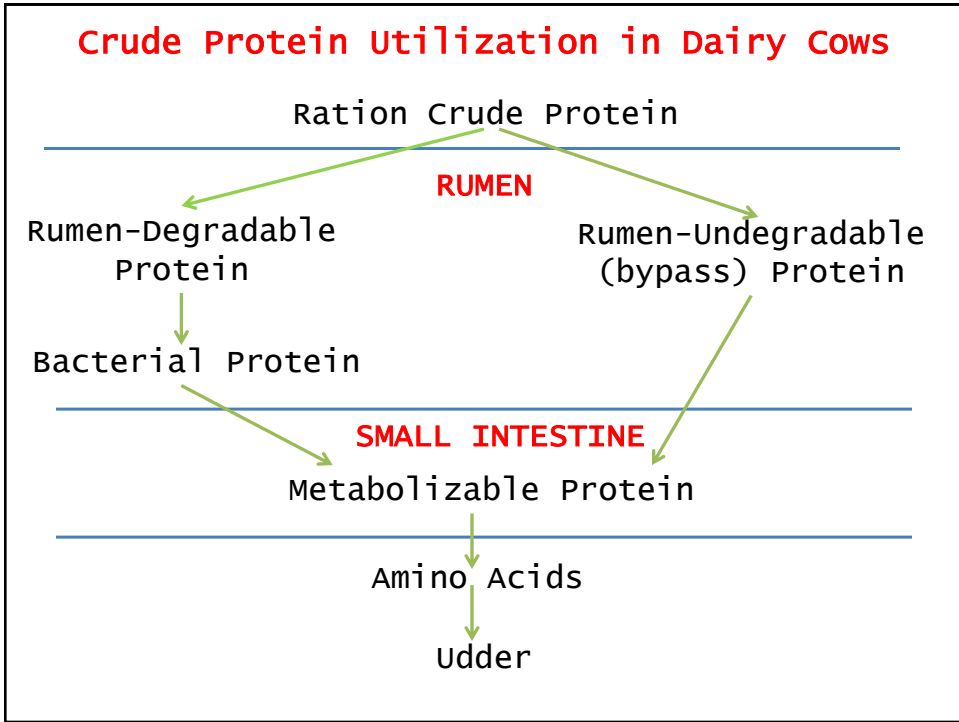
Opportunities and Challenges for Feeding Low Crude Protein Rations to Dairy Cows

Tim Mutsvangwa
Department of Animal and Poultry Science



Feeding Low Crude Protein Rations

- Why feed low CP diets?
 - Economic, environmental, animal fertility issues
- Opportunities for reducing low CP diets
 - Show me the evidence!!!
 - How low can we go?
- Roadmap to successful implementation of low CP diets
 - What are the challenges?



why focus on feeding lower
crude protein rations to
dairy cows?

why Feed Lower Crude Protein Rations?

- “More is better approach” not true
- Feed protein is expensive
 - Reduce CP intake, maintain milk production
 - Reduce feed cost per unit milk produced
 - More \$\$\$\$\$
- Need to reduce nitrogen (N) excretion into environment
 - Surface, underground water resources
 - Air quality

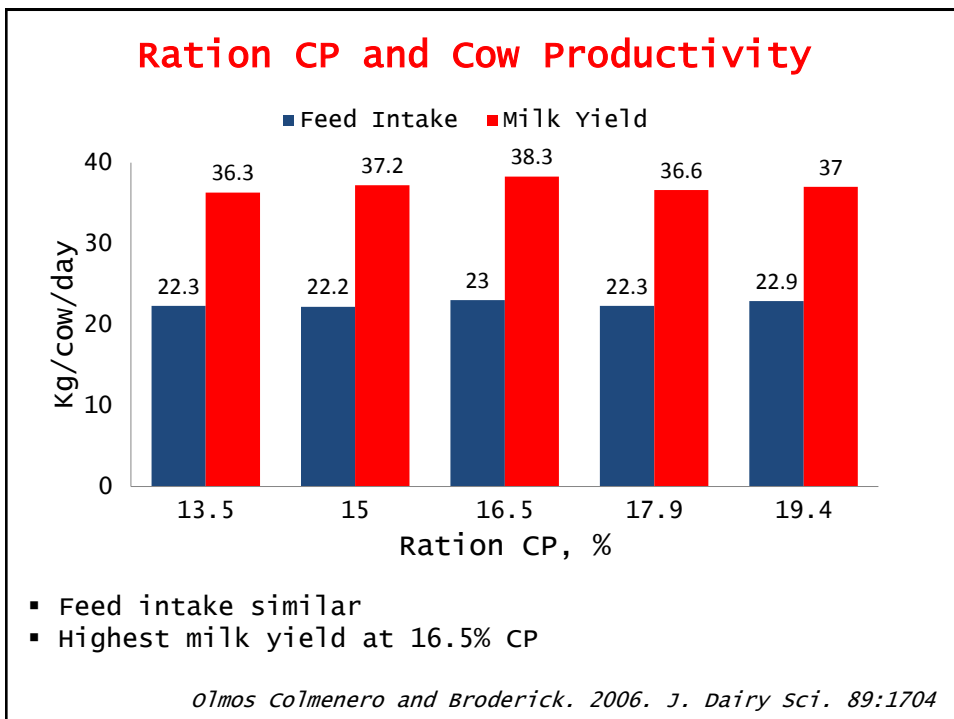
Why Feed Lower Crude Protein Rations?

- Improved reproductive performance
 - Better conception rates
 - Improved embryo viability
- Create space in ration for other nutrients that could increase production

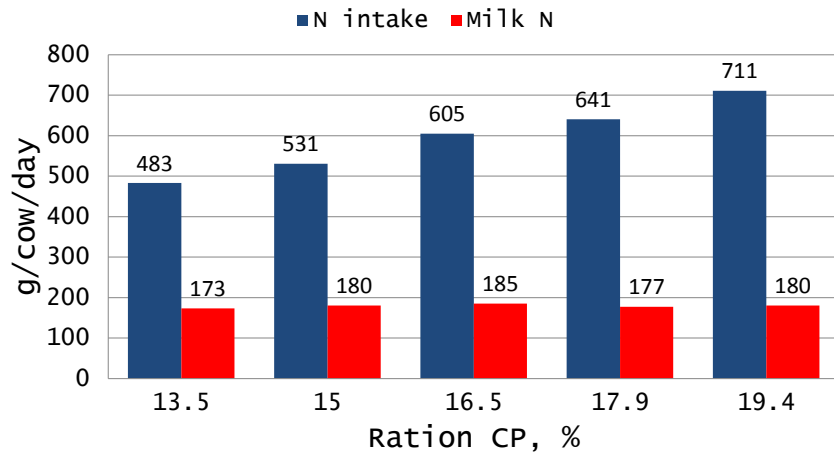
How Much Ration CP Are We Feeding On-Farm?

- Ration CP requirements based on recommendations developed more than 10 years ago
 - 17-19% ration CP
- University of Manitoba survey of dairy farms
 - 18.3% ration CP

Research is available to support feeding lower crude protein rations



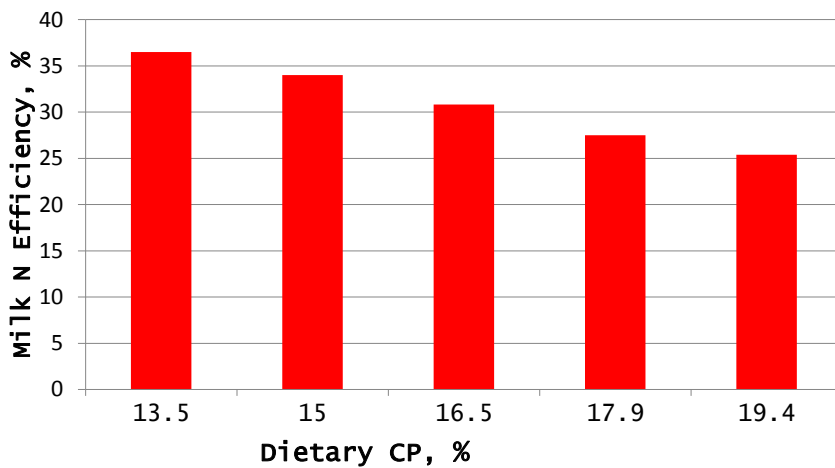
Nitrogen Intake and Milk Nitrogen Output



- Milk nitrogen output constant

Olmos Colmenero and Broderick. 2006. J. Dairy Sci. 89:1704

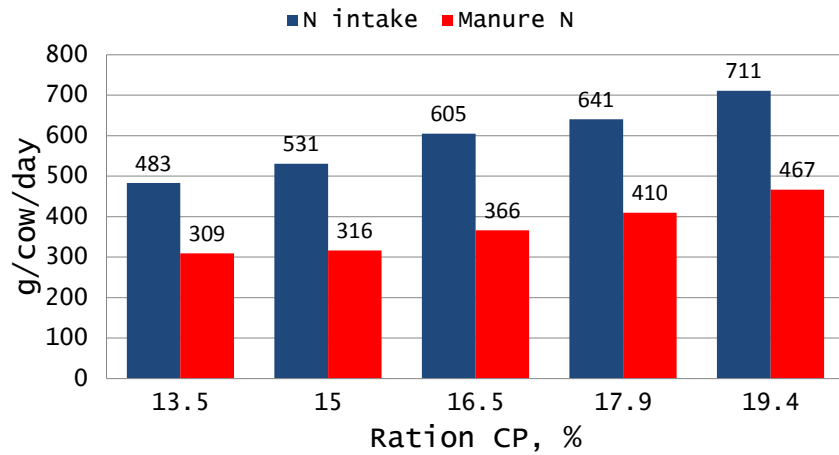
Milk Nitrogen Efficiency and Ration CP



- Milk nitrogen output/ration nitrogen intake

Olmos Colmenero and Broderick. 2006. J. Dairy Sci. 89:1704

Nitrogen Intake and Manure Nitrogen Output

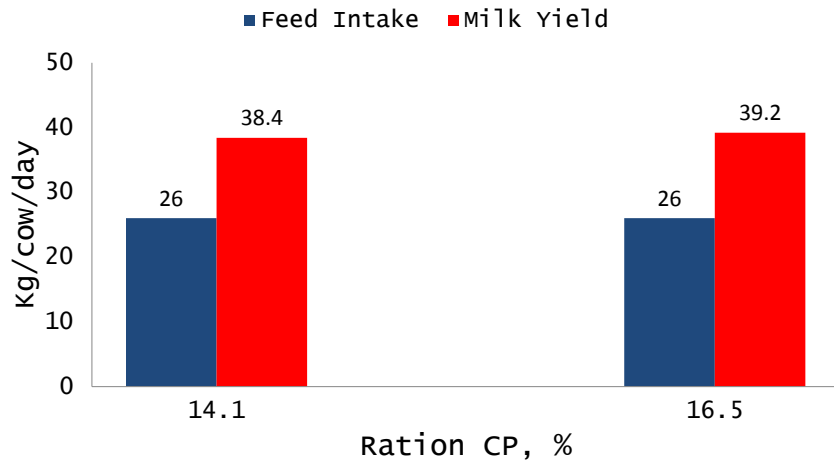


- Manure N output increased

Olmos Colmenero and Broderick. 2006. J. Dairy Sci. 89:1704

So how low can we drop ration CP before cow productivity is adversely affected?

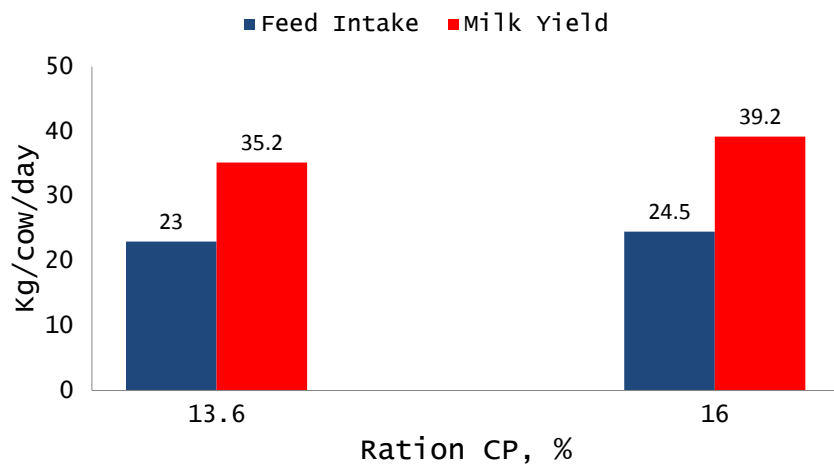
Ration CP and Cow Productivity at U of SK



- Feed intake, milk yield similar
- Short-term study!!

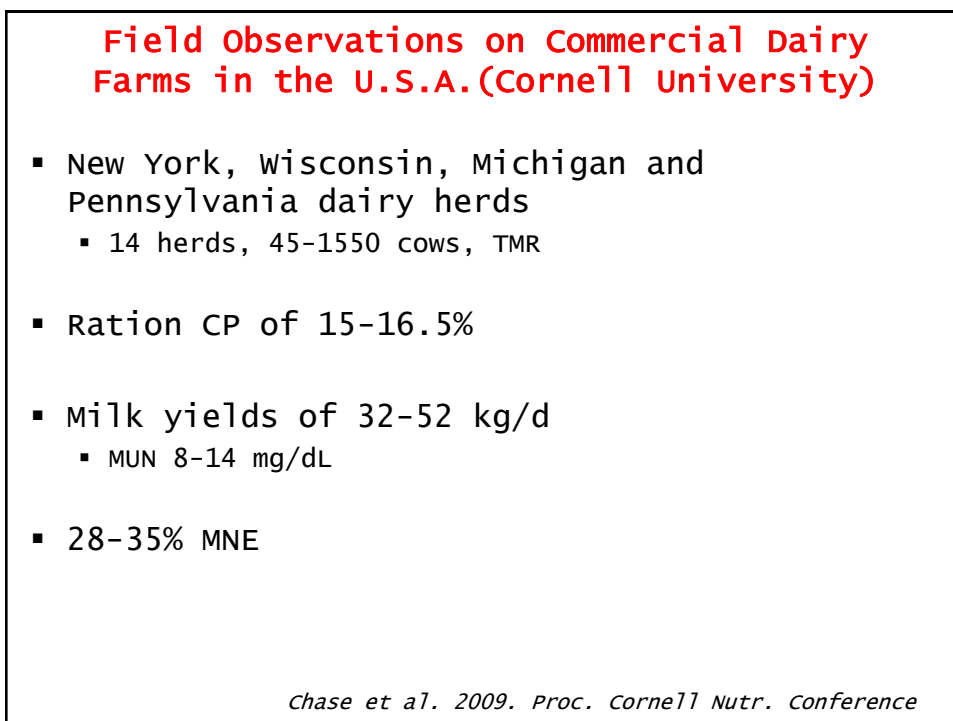
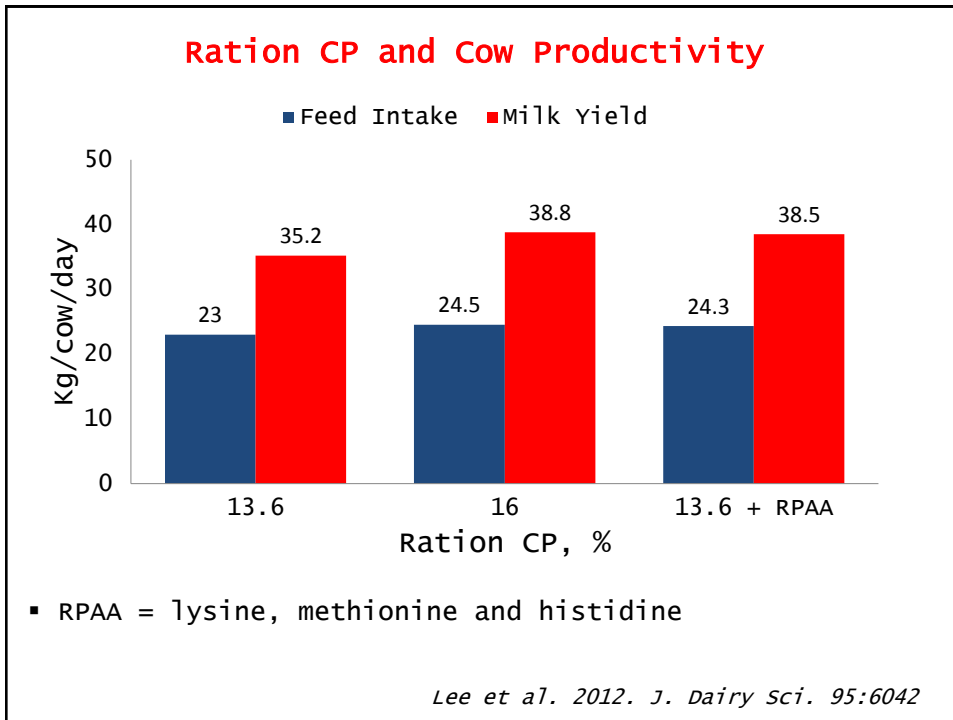
Davies et al. (unpublished)

Ration CP and Cow Productivity



- Low ration CP depressed feed intake, milk yield

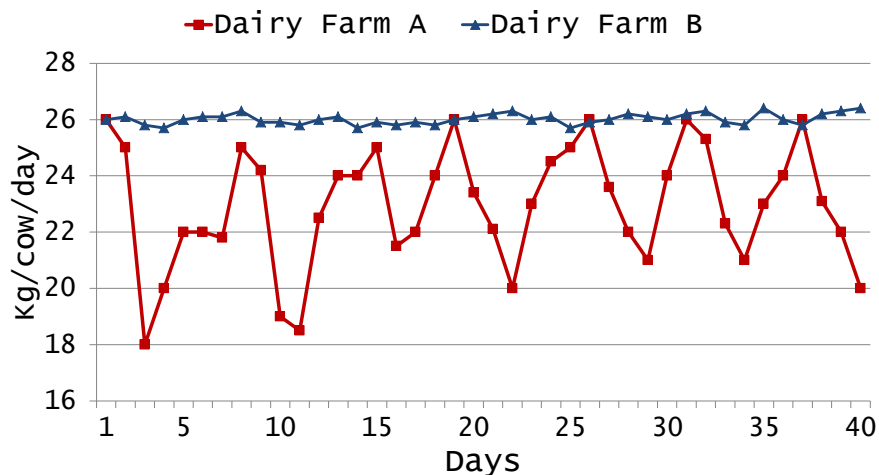
Lee et al. 2012. J. Dairy Sci. 95:6042

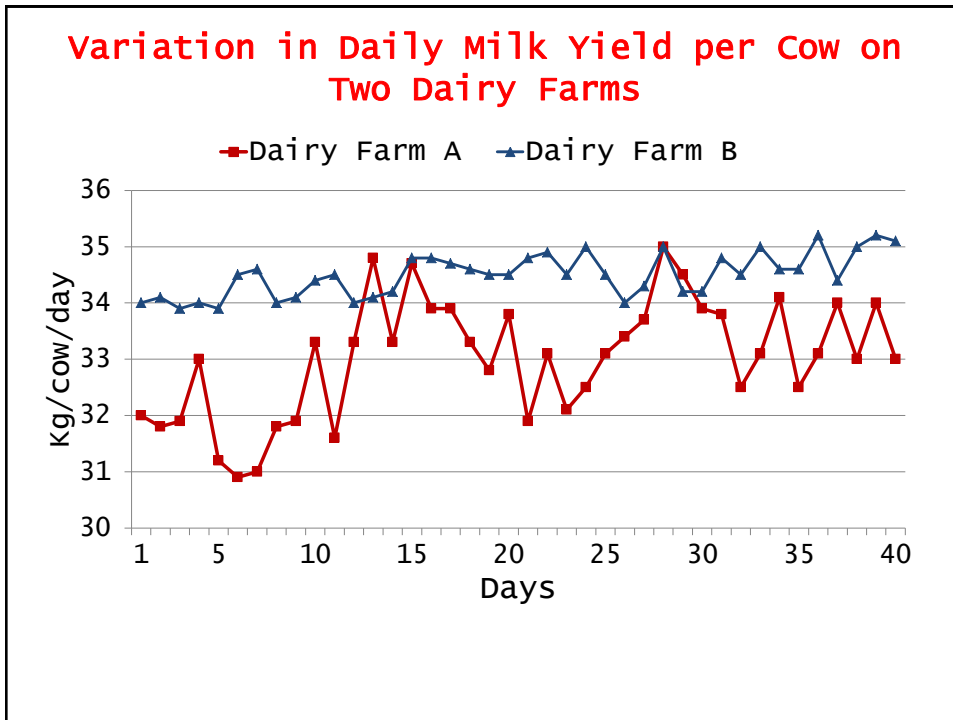


Implementing a Lower CP Ration On-Farm

- Conduct in-depth analysis of current operation
 - Evaluate current ration using CPM (Dairy), AMTS etc.
- Assess feeding management practices to assess consistency
 - Daily milk yield, feed intake per cow
 - Herd MUN
- Determine if the dairy herd is a good candidate for change

Variation in Daily Feed Intake per Cow on Two Dairy Farms





Implementing a Lower CP Ration On-Farm

- If dairy herd is a good candidate
- Set goals and objectives
 - Lower ration CP while maintaining milk yield, cow health, reproduction etc.

Implementing a Lower CP Ration On-Farm

- Obtain forage, feed ingredient samples and analyze for ration formulation model inputs
- Formulate lower CP rations using computer model
 - Balance for metabolizable protein
- Define what will be monitored to assess results
 - Milk yield and composition (MUN)
 - Feed intake
- Start feeding cows!!

Implementing a Lower CP Ration On-Farm

- Monitor performance
- Monitor performance
- Monitor performance
- Feed ingredient composition
 - Forage moisture content
 - By-products
- Make changes if necessary

Conclusions on Feeding CP Diets

- Do more with less
- 15–16.5% ration CP can be fed and will support high levels of milk production
 - 65–75 c/cow/d lower feeding costs compared to 18%
 - Optimal N efficiency
 - Minimal N excretion
- Ration CP at 14% or less results in a deficiency in metabolizable protein
 - Supplement with rumen-protected amino acids??

Thank You for Your Support!!



