Mitigation of Nitrogen Excretion through Dietary Manipulations

Nitrogen (N) Conversion Efficiencies for Different Production Systems

N Efficiency (%) = Product N / Diet N * 100

Environmental Impact of Waste N

Eutrophication
Air Quality and High N Rain

Archived presentation available at: http://www.extension.org/pages/Feeding_Strategies_To_Reduce_Animal_Air_Emissions_Webcast
Effects of Dietary Protein (RDP) on Intake and Milk Yield

Cyriac et al., 2008

Effects of Dietary Protein (RDP) on MUN and N Efficiency

Cyriac et al., 2008

N Efficiency (%) = Milk N / Diet N * 100

Archived presentation available at: http://www.extension.org/pages/Feeding_Strategies_To_Reduce_Animal_Air_Emissions_Webcast
Effects of RDP on Cow Performance and Excretion

- DM Intake, kg/cow/d
- Milk, kg/cow/d
- MUN, mg/dl

RDP % of DM
- 11.3
- 8.8

Effects of RDP on N Excretion and Ammonia Emissions

- TKN, kg/pen/d/10
- TAN, kg/pen/d
- Ammonia, kg/pen/12 h

RDP % of DM
- 11.3
- 8.8

Metabolizable Protein (MP) = RUP + Microbial Protein

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**Summary**

1. We can improve N efficiency of Dairy Cows
   - a) Reduce RDP below NRC requirements
   - b) Reduced RUP will improve efficiency but lost production results

2. Given all the ethanol byproducts, RDP currently increases Feed Costs
   - a) Has saved money in the past
   - b) May again in the future

3. Reduced dietary N leads to reduced manure N and ammonia emissions
   - a) Very little N is lost from the barn
   - b) Ammonia emissions from manure storage facilities
   - c) Huge temperature effects

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