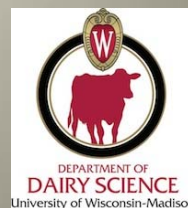


Dairy cattle nutrition & cost control

Randy Shaver, Ph.D., PAS, ACAN
Dairy Science Department



Base Required Nutrition

- Water
- Dry Matter Intake (DMI)
- Protein (CP = N × 6.25)
- Fibrous CHO (NDF, Forage NDF)
- Non-Fiber CHO (NFC)
- Energy (TDN, NEL)
- Macro-Minerals (Ca, P, Mg, S, K, Na, Cl)
- Trace-Minerals (Se, Zn, Mn, Fe, Cu, I, Co)
- Vitamins (A, D, E)

Vitamin A,E supply shortage & price run-up

- Prices up 3-6x; +10x
- Common Holstein supplementation levels in the industry
 - 150,000 IU A; 1,000-2,000 IU E (per cow per day)
 - 2016 annual per cow A+E were costs about \$15 for those levels
- Dairy NRC requirements for Holsteins
 - 75,000 IU A; 500-1,000 IU E (per cow per day)
 - Needs based on mastitis, RPs, metritis, fertility & colostrum
- Weiss (OSU) recommended strategies
 - Feed at NRC levels
 - Prioritization if it becomes necessary
 - 1) Prefresh Cows; 2) Far-Off Dry; 3) Fresh Cows; 4) Early Lactation; 5) Mid/Late Lactation
 - Vit. A could be reduced to 50% of NRC for several months
 - Vit. E could be reduced to 50% of NRC in lactating cows for a few months, and in bred heifers until 60 days before calving (likewise for Vit. A in bred heifers)

Enhanced Required Nutrition

- Protein (RUP; RDP; Amino Acids [Lys, Met])
- Fibrous CHO (peNDF)
- Non-Fiber CHO (Starch; Sugar)
- Supplemental Fat (for Energy)
- DCAD ([-] Dry Cows; high [+] lactating cows)



Feed Additive Use Considerations

- **Recommended (R)**
 - Well-established efficacy in research trials
 - ROI calcs & Type II Error concerns favor use
 - Targeted use may still be important
- **Not Recommended (NR)**
 - Established lack of efficacy in research trials
 - Unfavorable ROI calcs.
 - Better options
 - Questionable MOA; Sounds too good to be true
- **Experimental, Evaluative (E)**
 - Insufficient controlled research data available
 - Questionable ROI

The R's

- **Monensin (Rumensin®)**
- **Buffer**
- **Yeast Product**
 - **Transition focus**
- **Biotin**
- **Zinc Methionine**

Maybe R, Maybe NR

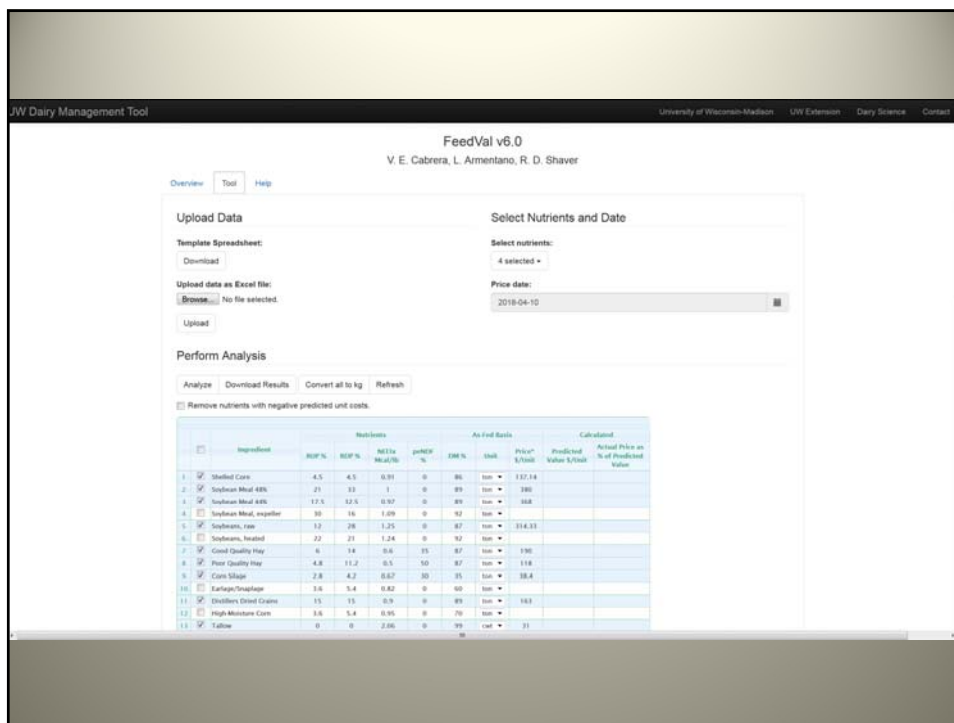
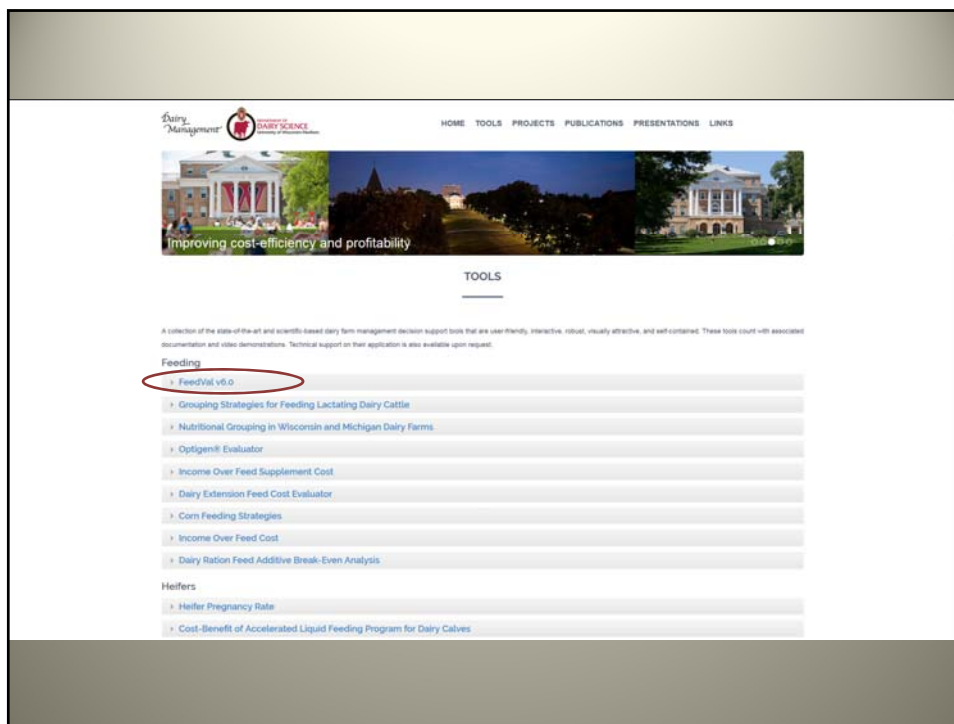
- **Rumen-Protected Choline**
 - **Transition only; If ketosis, fatty liver issues**
- **Mycotoxin Control Products**
 - **If mycotoxin issues**
- **Bunk Stability Products**
 - **If bunk heating issues; Hot, humid conditions**
- **Anionic Salt Products**
 - **Dry cows; High K, DCAD, hypocalcemia issues**
- **Organic Trace Minerals**
 - **Mn, Cu, Se; up to half of supplemental**

NR's

- **Niacin**
 - Protection; Dose; Cost; Inconsistent response
- **Slow-Release Urea**
 - Cost
- **Enzymes**
 - Dose; Cost; Inconsistent response
- **Beta Carotene**
 - Vitamin A cheaper alternative
- **B-Vitamin Packs**
 - Protection; Dose; Cost; Lack efficacy

E's

- **Bacterial DFM's**
 - Transition
- **CLA**
 - Transition
- **Fatty Acids**
 - Transition; Repro focus; C18:2, C18:3, EPA/DHA



FeedVal v6.0 predicted dairy feed prices and rankings for March 2018¹
 V.E. Cabrera, P. Hoffman, and R. Shaver

Ingredient	DM %	Unit	Feed Prices (\$/Unit)		Actual Price as % of Predicted	Best-buy Ranking
			Market	Predicted		
Hominy	89	ton	90.0	196.0	46	1
Wheat Middlings	89	ton	95.0	188.7	50	2
Corn Gluten Feed	89	ton	118.0	214.9	55	3
Wheat	89	ton	121.7	209.4	58	4
Distillers Dried Grains	89	ton	164.0	275.7	59	5
Shelled Corn	86	ton	132.1	196.3	67	6
Corn Silage	35	ton	37.0	49.2	75	7
Soy Hulls	89	ton	138.0	171.5	80	8
Oats	89	ton	173.8	190.1	91	9
Whole Cottonseed	89	ton	195.0	208.7	93	10
Soybeans, raw	87	ton	314.3	335.8	94	11
Blood Meal	94	ton	650.0	692.2	94	12
Sunflower Meal	89	ton	185.0	194.1	95	13
Soybean Meal 48%	89	ton	362.0	354.5	102	14
Urea	99	ton	472.0	463.5	102	15
Beet Pulp	89	ton	165.0	161.5	102	16
Molasses	89	ton	170.5	167.6	102	17
Barley	89	cwt	10.1	9.6	105	18
Linseed Meal	89	ton	265.0	248.9	106	19
Soybean Meal 44%	89	ton	350.0	328.4	107	20
Canola Meal, solvent	90	ton	347.0	301.0	115	21

post-BST Considerations

- **Managing body condition**
 - **Multi-ration grouping**
 - **Later lactation group(s) - Maintain milk yield and body condition using digestible fiber from forages and byproducts versus highly fermentable starchy grains (Allen, MSU, HOT)**

UW Dairy Management UNIVERSITY OF WISCONSIN DAIRY SCIENCE

HOME TOOLS PROJECTS PUBLICATIONS PRESENTATIONS LINKS

Improving cost-efficiency and profitability

TOOLS

A collection of the state-of-the-art and scientific-based dairy farm management decision support tools that are user-friendly, interactive, robust, visually attractive, and self-contained. These tools come with associated documentation and video demonstrations. Technical support on their application is also available upon request.

Feeding

- FeedVal v6.0
- Grouping Strategies for Feeding Lactating Dairy Cattle**
- Nutritional Grouping in Wisconsin and Michigan Dairy Farms
- Optigen® Evaluator
- Income Over Feed Supplement Cost
- Dairy Extension Feed Cost Evaluator
- Corn Feeding Strategies
- Income Over Feed Cost
- Dairy Ration Feed Additive Break-Even Analysis

Heifers

- Heifer Pregnancy Rate
- Cost-Benefit of Accelerated Liquid Feeding Program for Dairy Calves

UW Dairy Management Tool University of Wisconsin-Madison UW Extension Dairy Science Contact

Grouping Strategies for Feeding Lactating Dairy Cattle
V.E. Cabrera, UW-Madison Dairy Science

Overview Upload Farm Details Group Cows Reap Benefits Sample Farm: Total Cows = 470

Tool Overview

This tool evaluates grouping strategies for feeding lactating dairy cattle. It uses different criteria to group cows, optimizes the cows belonging to a feeding group, suggests a group diet ration based on Net Energy (NEL, Mcal/lb) and Crude Protein (CP, %), computes the expected Income Over Feed Cost (IOFC), and the additional economic benefits of feed grouping after additional costs of management, labor and an expected milk depression on lactating cows re-grouped.

A herd test file is needed to use the tool. This should contain information regarding Cow ID, Lactation, Days in Milk (DIM), Milk Produced, and Milk Fat Content. Optionally, for more accurate calculations, Body Weight (BW) could be added (if BW is not provided, the tool calculates BW based on lactation and DIM after a user-entered average BW for primiparous and multiparous cows). The tab with name upload farm details helps the user upload an excel file with those parameters. It is suggested to first download the parameters file to a local computer and then use this as a template to enter farm specific data. The tool will always indicate which file is being used. The number of lactating cows in the file will be automatically counted and displayed. Also in this tab the user defines indirectly the price of feed energy (SAC) and feed protein (\$ lb CP), which are based on nutritive content and prices of referred feeds (Corn and Soybean meal). The user can over-write these calculated values, if desired.

Once the data have been entered, the user could move to the tab with name 'Group Cows'. This tab is self-explanatory and follows a decision tree structure to help the user analyze grouping strategies. After following the questions in the decision tree, the user could hit the 'Analyze' button and get the results in the 'Reap Benefits' tab. This last tab of the tool (Reap Benefits) displays the economic benefit of different group strategies compared to the farm defined current strategy.

Acknowledgements

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Haycrop Silage Quality Indicators for High-Producing Dairy Herds

Parameter	Indicates Better Quality	Primary Reason
NDF	↓	↓ Rumen Fill Limitation of DMI Potential for production response or feeding of higher-forage diets
Lignin	↓	
uNDF ₂₄₀	↓	
NDFD ₃₀	↑	↑ Energy Density Potential for production response or feeding less corn grain
NFC (includes soluble fiber)	↑	
CP	↑	↓ Supplemental Protein
Ash	Minimal Soil Contamination	↑ Energy Density
RFV; RFQ	↑	Quality Index for Ranking

Legume Silage Quality Indicators for High-Producing Dairy Herds

Parameter	Indicates Better Quality	n	Average \pm 1 STDEV
NDF (% DM)	↓	111,310	42 - 37
Lignin (% DM)	↓	100,029	7 - 5
uNDF ₂₄₀ (% NDF)	↓	25,541	45 - 36
NDFD ₃₀ (% NDF)	↑	61,568	46 - 57
NFC (% DM)	↑	94,337	26 - 30
CP (% DM)	↑	112,423	21 - 24
Ash (% DM)	Minimal Soil	100,888	<13
RFV	↑	100,831	141 - 167
RFQ	↑	51,453	155 - 179

Summary of combined multi-year, multi-lab (CVAS, DairyOne, RRL, DLL) data

Questions?

