AMS – Feeding Strategies and feedbunk management

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Dairy Management Advisor - AMS
SC North America

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1. Feeding Principles

Consistency

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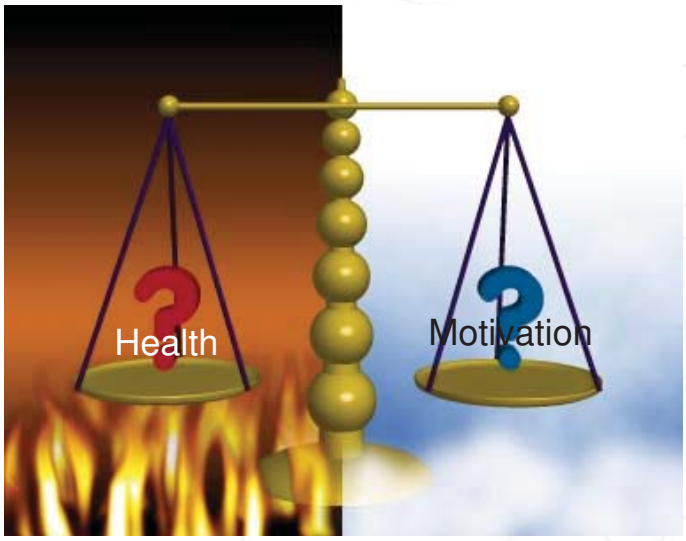
1. Feeding Principles



Balance

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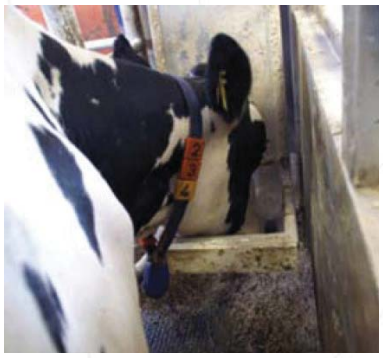
1. Feeding Principles

- Feed a safe and palatable concentrate pellet.



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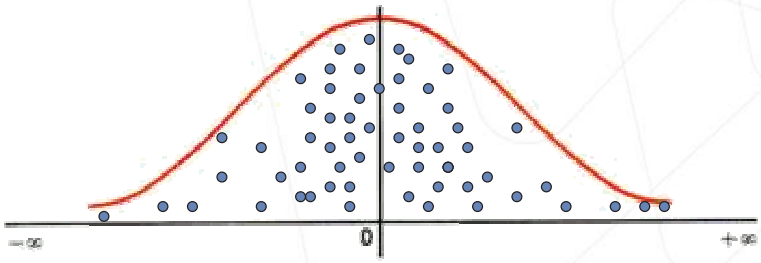
1. Feeding Principles

• Balance feed bunk based on VMS Herd Avg. Feed consumed.



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1. Feeding Principles

Devices are just a Bridge

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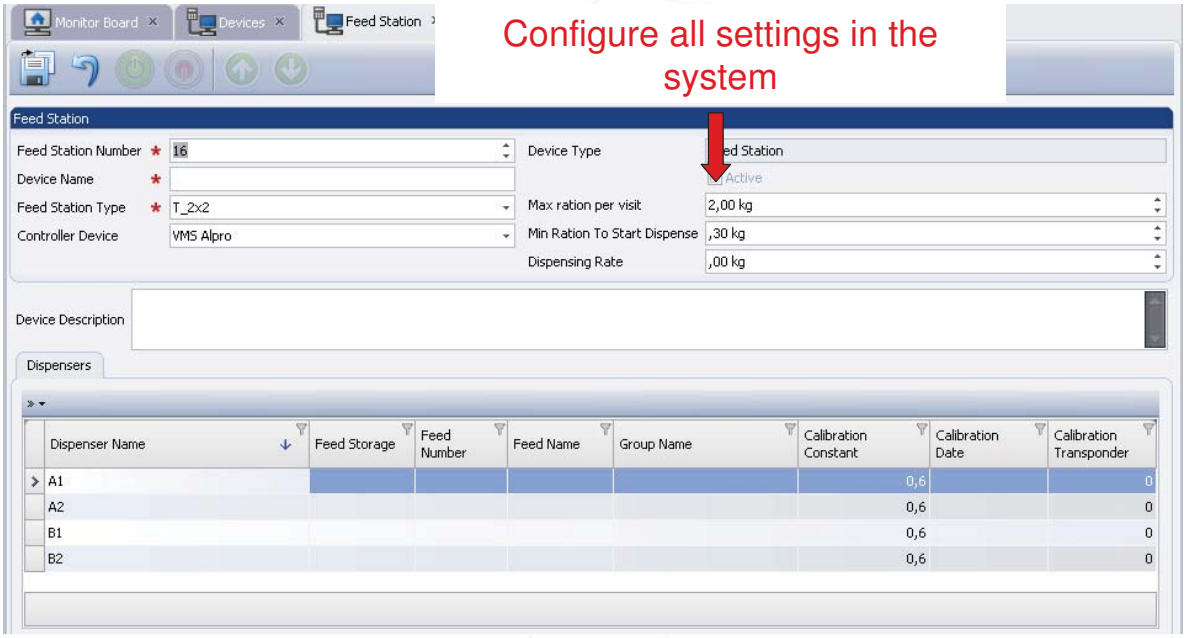
1. Feeding Principles



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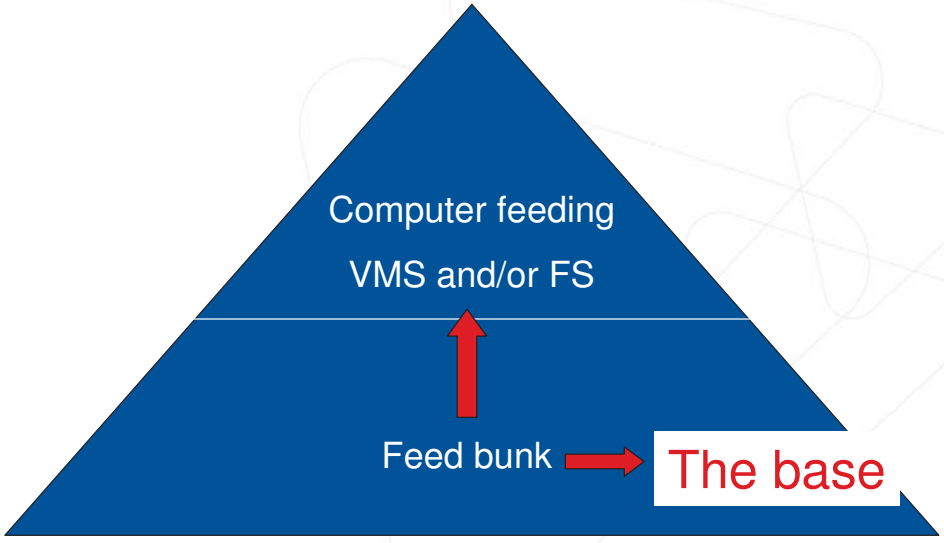
1. Feeding Principles



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2. The base defines the strategy

What do you feed at the feed bunk?

- Partial Mixed Ration
- Forage mixture

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2. The base defines the strategy

1. Partial Mixed Ration

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1. Partial Mixed Ration

1. Partial Mixed Rations with a high grain content.
2. Partial Mixed Rations with a low grain content.

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1. Partial Mixed Ration

1. Partial Mixed Rations with a high grain content.

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1. PMR with a high grain content

- Almost a TMR feeding strategy.
- Avg. 4 lb/cow/day feed at the robot.
- Feed table range: 2-6 lb/cow/day.
- Max. per visit: 1 – 2 lb.
- Works best at:
  - Milk first pre – selection
- Feed bunk + VMS

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1. PMR with a high grain content

- Main motivator is:

Guided flow:

- Stalls
- VMS
- Ration
- Stalls

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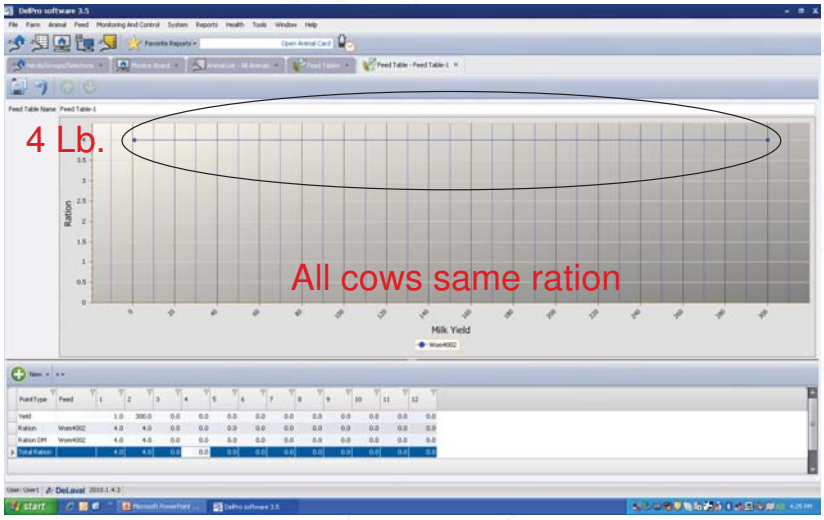
1. PMR with a high grain content

“Candy” concept



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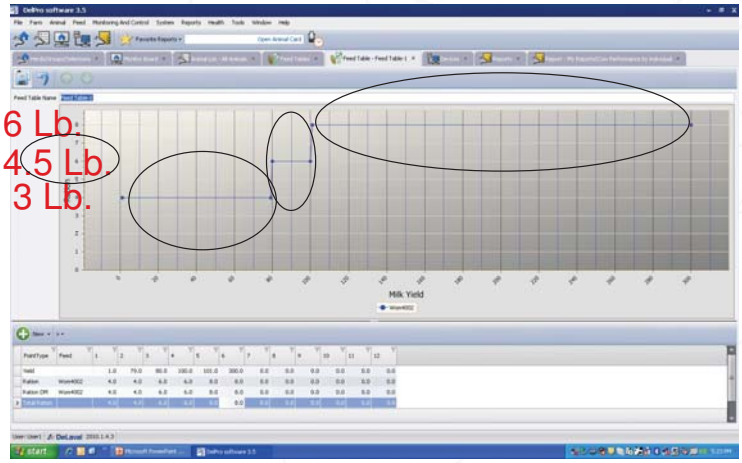
1. PMR with a high grain content

VIRTUAL GROUPS IN A GROUP, BASED ON MILK PRODUCTION



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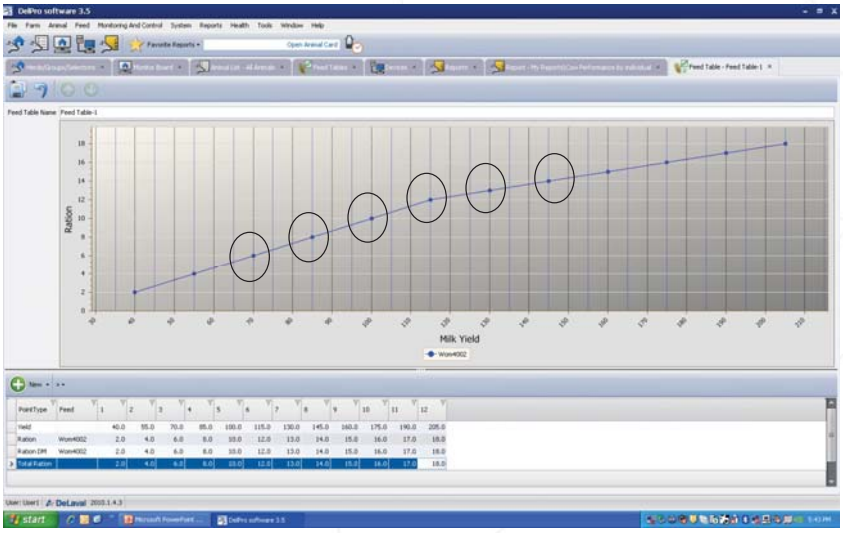
1. PMR with a high grain content

INDIVIDUAL COWS IN A GROUP



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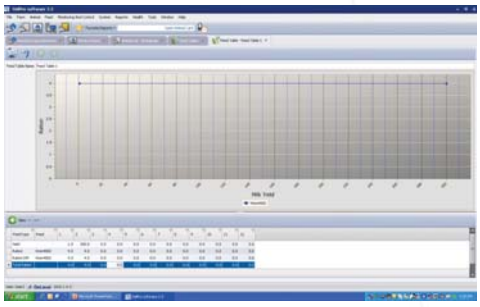
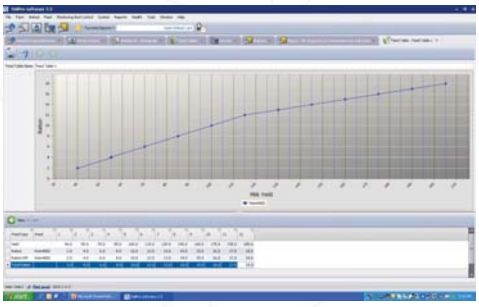
1. PMR with a high grain content

MIXED STRATEGIES: DIM +
Individual Milk production

15 – 100 DIM

> 101 DIM





6 Lb.

3 – 4.5 - 6 Lb.

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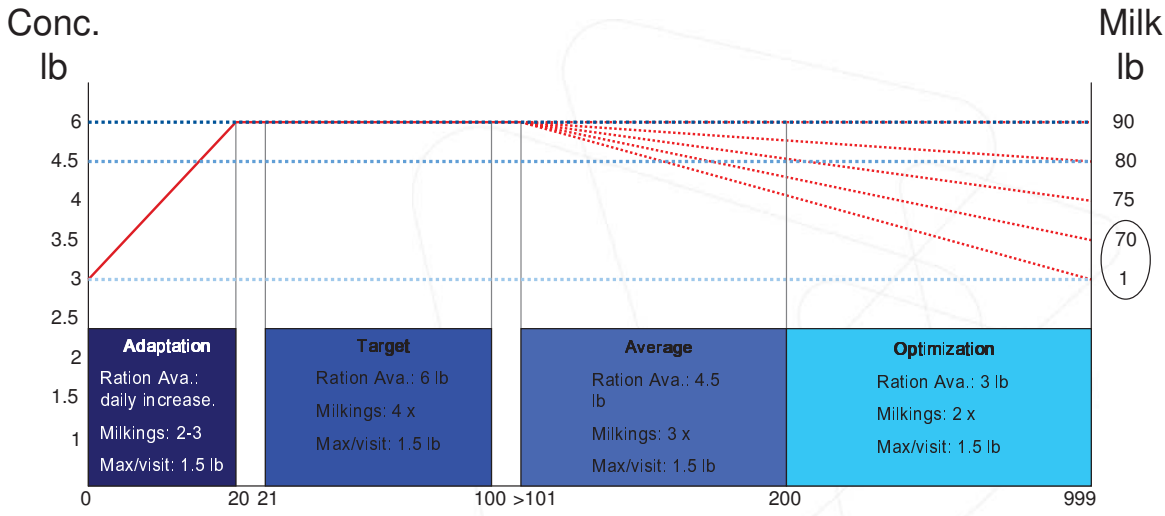
1. PMR with a high grain content



Production Scenario:

Avg. Milk production: 80 lbs

Avg. Milkings/day: 3x

Target 1st third: 90 lb, 4x

Target 2nd third:80 lb, 3x

Target 3rd third: 70 lb, 2x

Settings:

0-20 DIM: Manual ration and target.

21-100 DIM: Flat feed table based on DIM

>100 DIM: Feed table based on MP

Max. Available per visit: 1.5 lb

Min. Ration Avail/cow/day: 3 lb

Max. Ration Avail/cow/day: 6 lb

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1. Partial Mixed Ration

1. Partial Mixed Rations with a high grain content.
2. Partial Mixed Rations with a low grain content.

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2. PMR with a low grain content

- Strong focus on top dressing individuals or virtual groups, based on milk production and/or days in milk.
- Avg. 8-10 lb/cow/day feed at the robot.
- Feed table range: 4 – 16 lb/cow/day.
- Max. per visit: 2 – 4 lb.
- Works best at:
  - Free flow, Feed first and Milk first
- Feed bunk + VMS

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2. PMR with a low grain content

- Main motivator is:

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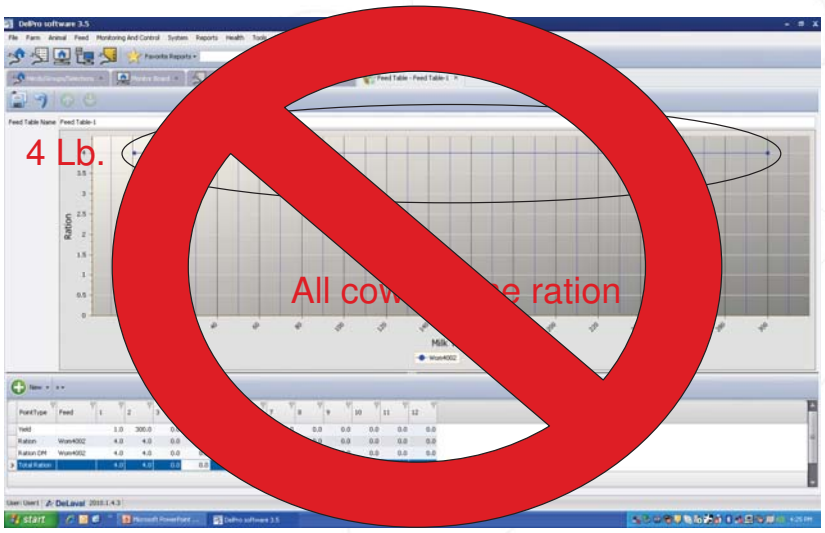
2. PMR with a low grain content

"Candy" concept



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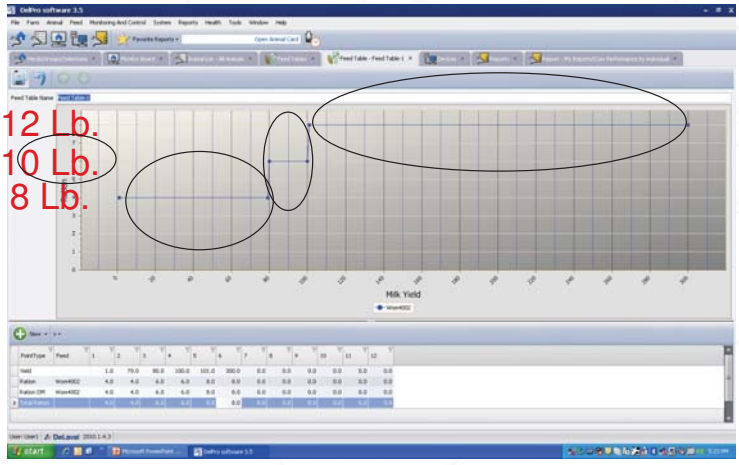
2. PMR with a low grain content

VIRTUAL GROUPS IN A GROUP,
BASED ON MILK PRODUCTION



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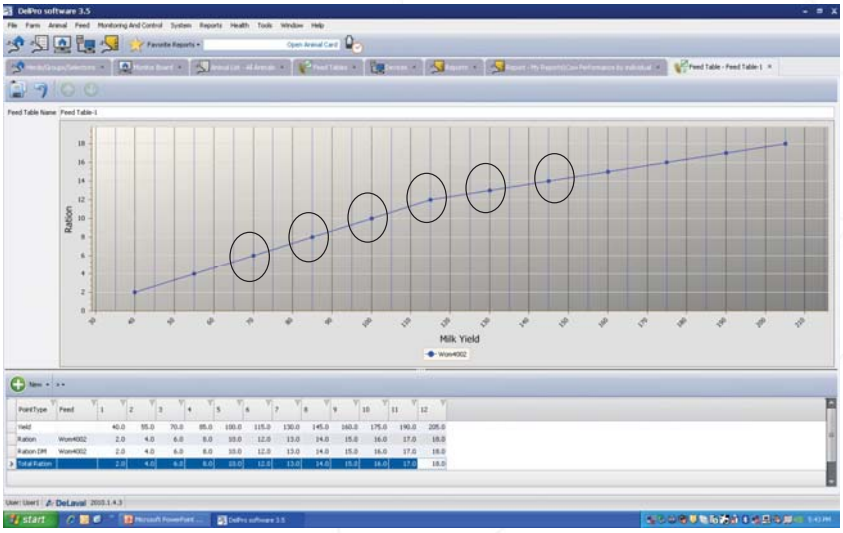
2. PMR with a low grain content

INDIVIDUAL COWS IN A GROUP



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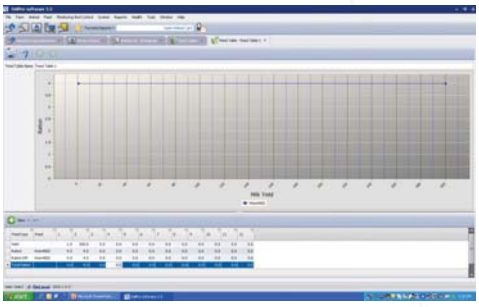
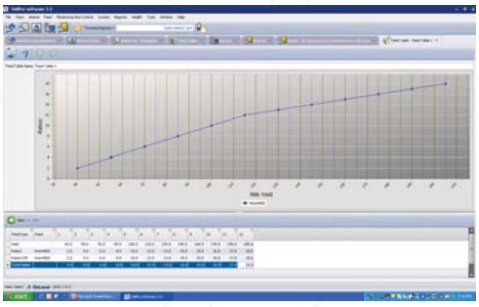
2. PMR with a low grain content

MIXED STRATEGIES: DIM +
Individual Milk production

15 – 100 DIM

> 100 DIM





16 Lb.

4 - 16 Lb.

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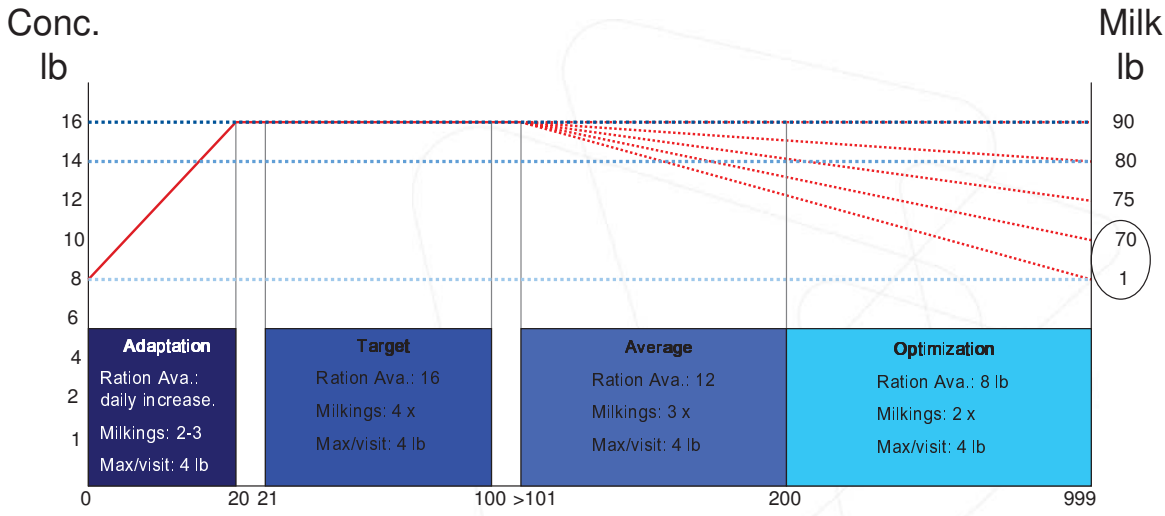
2. PMR with a low grain content



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Settings:

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>100 DIM: Feed table based on MP

Max. Available per visit: 4 lb

Min Ration Avail/cow/day: 8 lb

Max Ration Avail/cow/day: 16 lb

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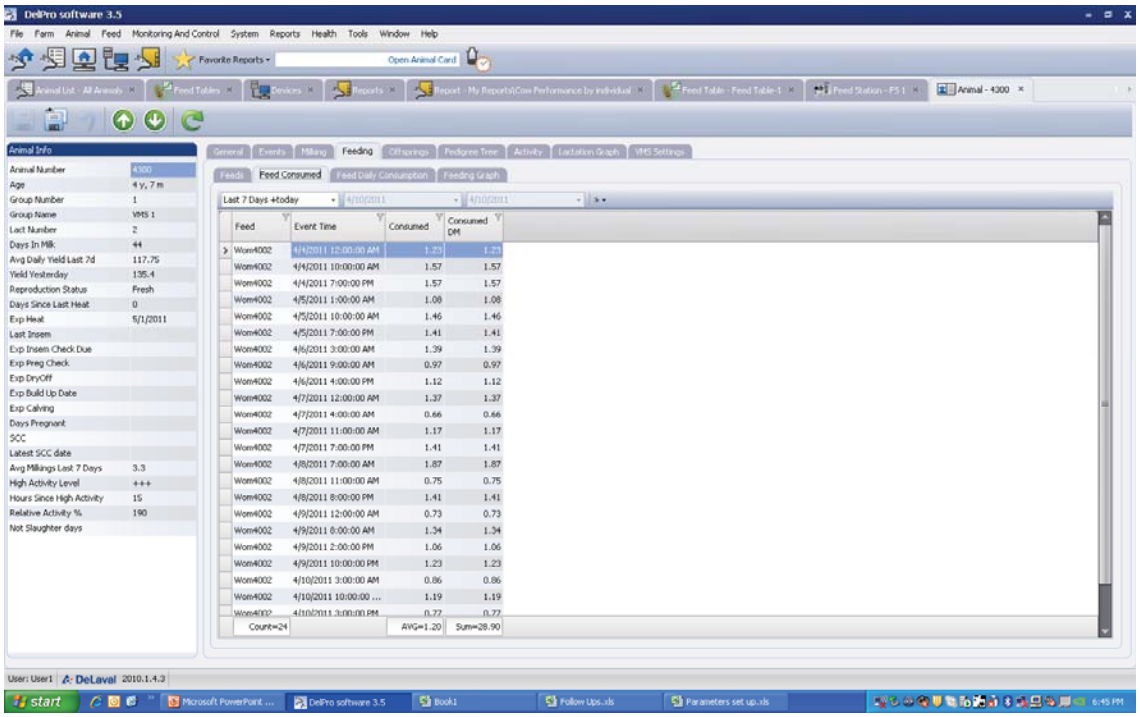
Goal : Consistency



1. The base defines the strategy

1. Partial Mixed Ration
2. Forage mixture

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2. Forage Mixture at the feed bunk.

- All grain goes through the VMS and feeding Stations.
- Avg. 14 – 20 lb/cow/day
- Feed table range: 8 – 22 lb/cow/day.
- Max. per visit: 4 lb.
  - Ex. Total ration avail: 22 pounds
    - Milkings per day: 3
    - Feed delivered by the VMS: 12 lb
    - Feed delivered by the FS: 10 lb
    - Total: 22 lb, delivered in 3 visits to VMS, and 3 visits to FS.

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2. Forage Mixture at the feed bunk.

- Works best at:
  - Feed first:
    - Stalls
    - Feed bunk
    - SSG: If milking permission granted: Feed at the VMS
    - SSG: If milking permission not granted: Feed at the FS, located in a feeding pen between SSG and Stalls.
    - Stalls
  - Free flow
  - Milk first

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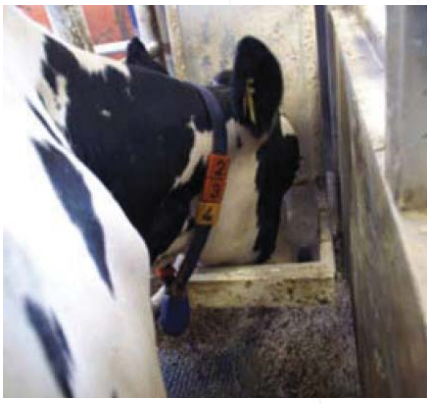
2. Forage Mixture at the feed bunk.

- Main motivator is:



Concentrate feed at:

- VMS
- Feeding Stations:
  2 FS / 60 Cows

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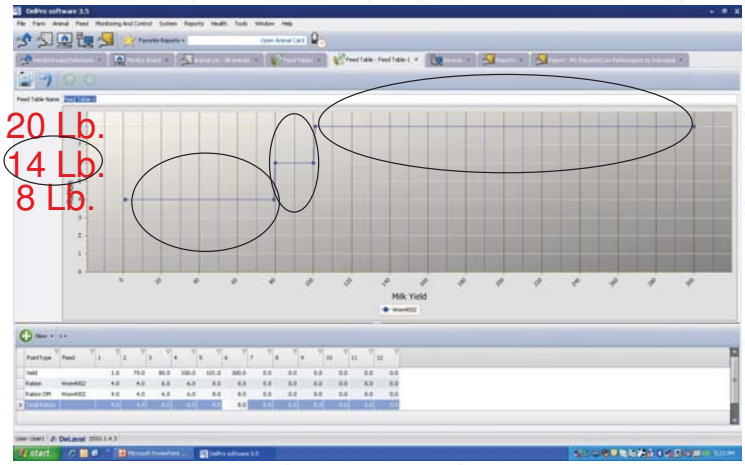
2. Forage Mixture at the feed bunk.

VIRTUAL GROUPS IN A GROUP,
BASED ON MILK PRODUCTION



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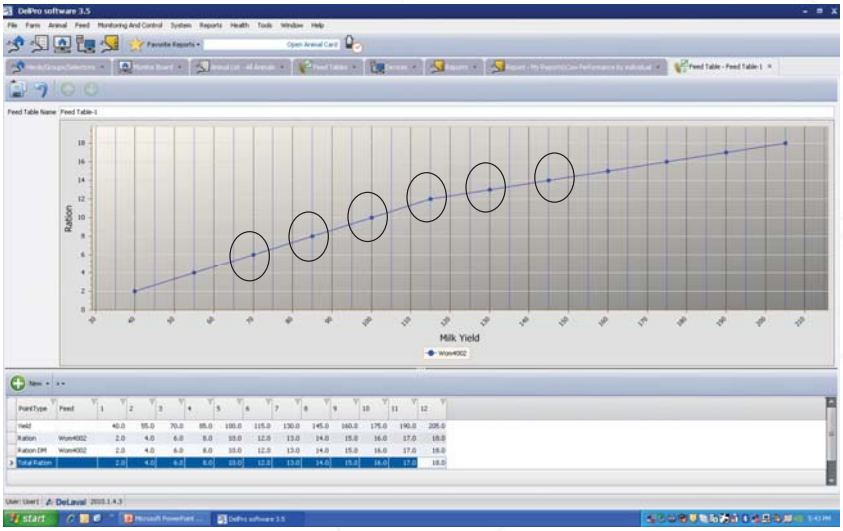
2. Forage Mixture at the feed bunk.

INDIVIDUAL COWS IN A GROUP



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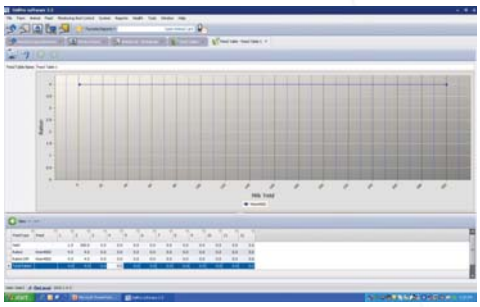
2. Forage Mixture at the feed bunk.

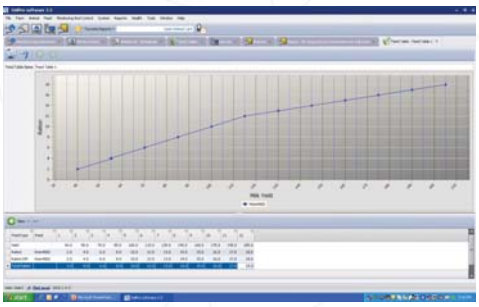
MIXED STRATEGIES: DIM +
Individual Milk production

15 – 100 DIM



22 Lb.

> 101 DIM



4 - 22 Lb.

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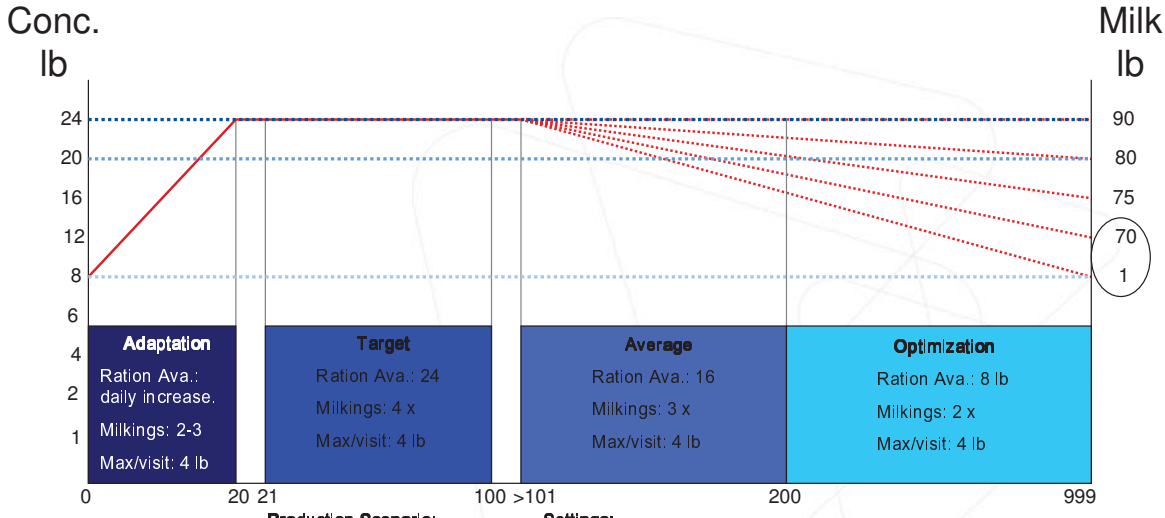
2. Forage Mixture at the feed bunk.



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Max. Available per visit: 8 lb
Min Ration Avail/cow/day: 16 lb
Max Ration Avail/cow/day: 24 lb

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Example an AMS Barn Diet

Ingredient Detail

Imperial		AsFed Amount	Ing DM Percent	Ration DM Amt	% of As Fed	As Fed Lbs/Ton
1831	Corn Silage 34DM	77.000	33.700	25.949	69.153	1383.060
6421	Rye Silage, 12% CP 35I	12.000	34.800	4.176	10.777	215.540
2714123	Soybean Meal 48%	5.500	89.000	4.895	4.939	98.789
2680015	Corn, Ground Shelled 1:	5.000	85.000	4.250	4.490	89.809
2706115	Canola Meal 34%	2.400	90.000	2.160	2.155	43.108
2722000	Cottonseed, Whole	2.000	92.000	1.840	1.796	35.923
2714113	Heat Proc Soybeans	2.000	92.000	1.840	1.796	35.923
2723021	Wheat Midds	1.000	88.000	0.880	0.898	17.962
6561	Wheat Straw	0.750	90.000	0.675	0.674	13.471
2820020	Calcium Carbonate	0.750	99.000	0.743	0.674	13.471
2714126	Amino Plus	0.750	87.500	0.656	0.674	13.471
2794521	Molasses, Liquid	0.550	75.000	0.413	0.494	9.879
2649665	Sodium Bicarb	0.500	99.000	0.495	0.449	8.981
2830060	Salt	0.250	99.000	0.248	0.225	4.490
2649060	Calcium Sulfate	0.150	97.000	0.146	0.135	2.694
2800010	Urea	0.125	99.000	0.124	0.112	2.245
2730100	Bloodmeal	0.120	93.000	0.112	0.108	2.155
2859214	Choice White Grease	0.100	99.000	0.099	0.090	1.796
2640015	DCAD Plus	0.100	99.000	0.099	0.090	1.796
2850900	Magnesium Oxide	0.100	99.000	0.099	0.090	1.796
UC1000	UC DAIRY TECH PMD	0.075	97.630	0.073	0.067	1.347
2130210	Vit E 20,000 IU/LB	0.064	95.000	0.061	0.057	1.150
2550005	Molasses, Dry	0.040	94.000	0.038	0.036	0.718
937	Smartamine M	0.010	98.000	0.010	0.009	0.180
2134168	Mintrex R	0.010	99.000	0.010	0.009	0.180
1003030	Rumensin 90.7 Premix	0.004	99.000	0.004	0.003	0.066
		111.348		**50.095**	**100.000**	**2000.000**

Nutrient Analysis (DM %)

1	Dry Matter	%	44.987	125	Total Starch and Sug:	%	29.945

Source: Homan M., 2012

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Example an AMS Barn Diet

Nutrient Analysis (DM %)

2	Crude Protein	%	17.144	19	Calcium	%	0.895
219	MP	%	11.334	20	Phosphorus	%	0.384
134	Lys / Met Ratio	-	3.697	21	Salt	%	0.494
233	Met MET	%	0.209	22	Potassium	%	1.393
232	Met LYS	%	0.773	23	Sulfur	%	0.238
136	MP Met NRC	%	0.075	24	Magnesium	%	0.353
137	MP Lys NRC	%	0.266	25	Added Zinc	ppm	85.597
14	TDN	%	72.796	27	Added Copper	ppm	18.287
3	RUP (%CP)	-	34.291	32	Sodium	%	0.502
4	RDP (%CP)	-	65.709	43	Ash	%	8.330
69	Peptide	%	1.748	44	Lignin	%	2.996
5	Sol P (%CP)	-	25.956	33	Chloride	%	0.404
79	NEl	Mcal/lb	0.752	31	Added Selenium	ppm	0.428
41	Fat	%	4.073	151	Rumensin	g/ton	13.218
126	PUFA	%	1.811	16	Added Vit A	IU/lb	3600.548
11	ADF	%	18.084	17	Added Vit D	IU/lb	720.110
12	NDF	%	31.601	18	Added Vit E	IU/lb	39.955
185	Forage NDF	%	24.878	26	Added Iron	ppm	14.752
13	eff-NDF	%	28.296	28	Added Manganese	ppm	55.023
49	NDFd (%NDF)	-	57.735	29	Added Cobalt	ppm	0.353
116	NDF Digest.	-	0.493	30	Added Iodine	ppm	1.177
47	Forage DM	%	61.487	225	Urea	%	0.247
100	NFC	%	39.307	133	N / S Ratio	-	11.540
37	DCAB (mEq/100g)	-	31.155	42	Fiber	%	21.614
123	Sugar (non-starch)	%	3.667	175	RDP (%CP) NRC	-	66.111
188	Starch (non-sugar)	%	26.278	132	NFC / RDP Ratio	-	3.489
124	alpha Carbohydrate	%	27.530	130	K/ Ca+ Mg Ratio	-	1.116

Source: Homan M., 2012

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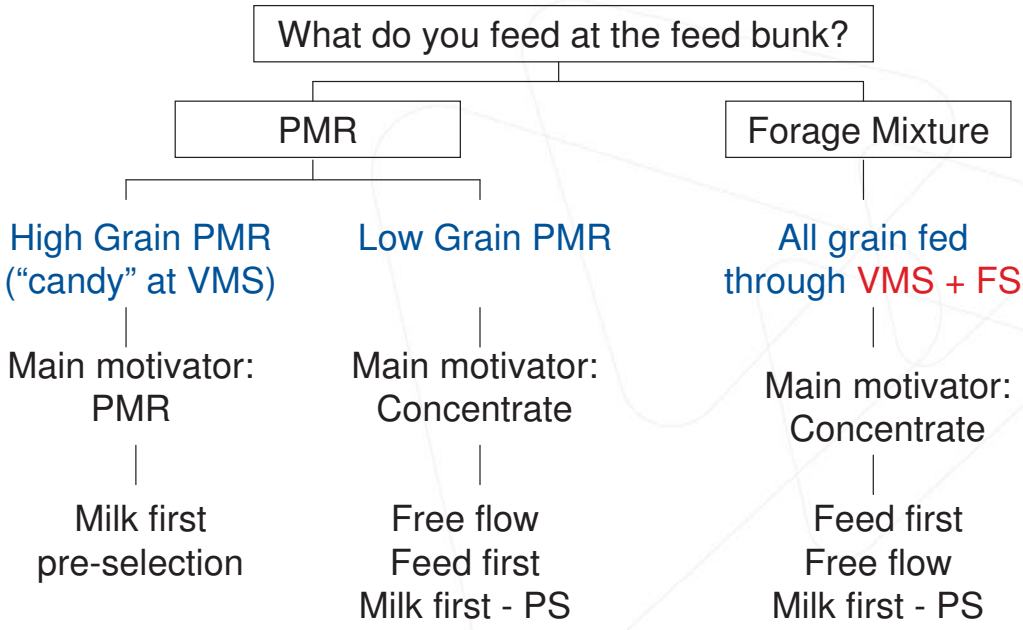
Summary



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Feed bunk

Bunk space Debate
Western dairy farmer, October 2.011 by Catherine Brown

- University of British Columbia: 27 inches/cow.
- Official dairy code of practice CA: 30 inches for fresh cows, 24 inches for rest of the herd.
- Robotic dairies with frequent feeding: Min. 17 inches/cow Dairy Logix – CA
- Study in Ireland: Min. 8 inches/cow if feed is always in front of the cow.

Dairyland initiative
University of Wisconsin 2.011
http://thedairylandinitiative.vetmed.wisc.edu

- 30 inch headlocks for transitions cows, 24 inch headlocks for the rest of the herd.

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How to optimize feed bunk space?

- Increase feeding and push up frequency

Feeding frequency:
More than 2X per day.

Evaluate sorting as a routine.

"The changes in distribution of feeding time resulted in cows having more equal access to feed throughout the day"

"subordinate cows were not displaced as frequently when fed more often"

"the amount of sorting of the feed was reduced by increasing the frequency of feed delivery from 1x to 2x. These results indicate that frequent delivery of feed improves access to feed for all cows, particularly during peak feeding periods when fresh feed is provided, and reduces the amount of feed sorting"

Frequency of feed delivery affects the behavior of lactating dairy cows.
J Dairy Sci. 2005 Oct;88(10):3553-62.

DeVries TJ, von Keyserlingk MA, Beauchemin KA.

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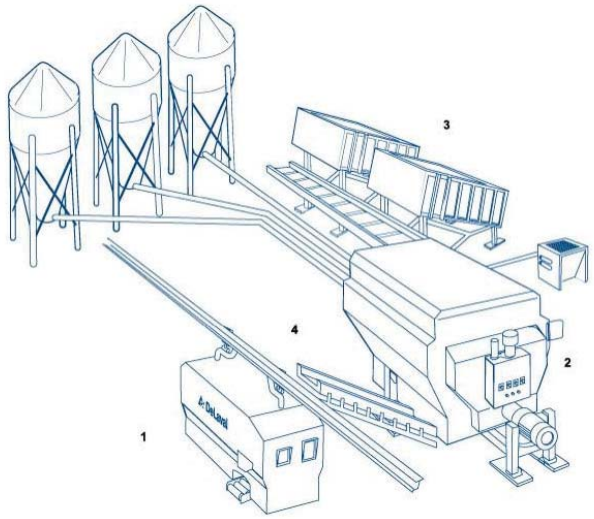
Automatic feeding systems

Optimat™ master



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Head locks

- UBC research by Enders, 21% fewer feed bunk displacements with HL.
- A trend today is 27 – 29 inches per headlock instead of 24 inches, better cow comfort and space usage.

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Feed Stalls

- Recent University of British Columbia research shows better Feed Bunk usage with feed stalls, means less Feed Bunk displacements, fewer long term health problems and less transition cow problems.

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