Maximizing Dairy Feeding Software

Nik Ver Steeg

Diamond V
The Trusted Experts In Nutrition & Health

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System Setup

- Weight Instability
  - Analysis
  - Reducing Weight Instability
    - Equipment Training
    - Using Motion
    - Loading Procedure Training
- Increasing Weight Accuracy
  - Calibration

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System Setup

- Weight Instability Analysis

Weight Instability @ Your Dairy

Sample Dairy (Feb 3)

10% of Loading Actions have instability >= 80 lbs (26 of 262 actions)

42% of Unloading Actions have instability >= 80 lbs (61 of 144 actions)

21% of All Actions have instability >= 50 & 80 lbs (87 of 406 actions)

Date/Time	Load Name	Loading/ UnLoading	Ingr/Pen	Weight Instability
2/3/2020 10:46:28 PM	FlexLd: Open Heifers	UnLoading	H 54	1045
2/3/2020 6:46:54 PM	FlexLd: High Cows AM	UnLoading	MC 12	510
2/3/2020 10:47:55 PM	FlexLd: Open Heifers	UnLoading	H 64	470
2/3/2020 6:18:03 AM	FlexLd: High Cows AM	Loading	MC Hay Bales	360
2/3/2020 5:05:12 PM	FlexLd: High Cows AM	UnLoading	MC 4	335
2/3/2020 9:21:01 PM	FlexLd: Preg heifers	UnLoading	H 79	335
2/3/2020 11:03:57 AM	FlexLd: High Cows AM	UnLoading	MC 11	310
2/3/2020 11:05:03 AM	FlexLd: High Cows AM	UnLoading	MC 12	305
2/3/2020 10:47:13 PM	FlexLd: Open Heifers	UnLoading	H 52	290

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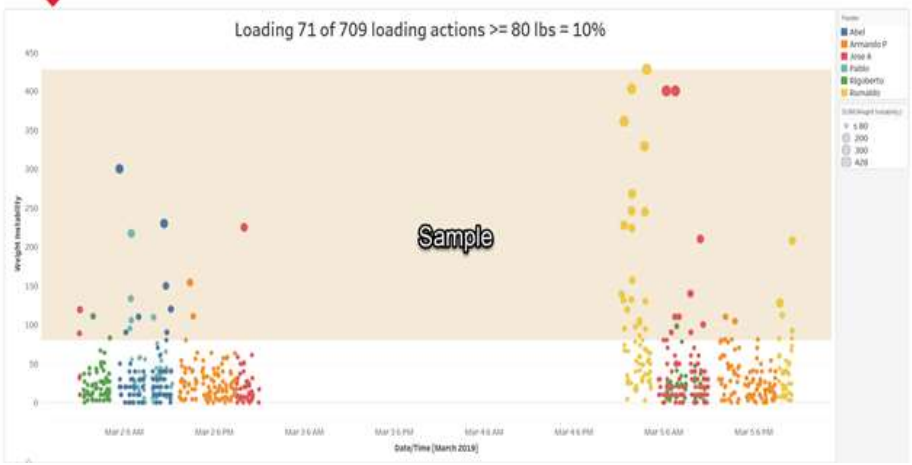
System Setup

- Weight Instability Analysis

Weight Instability @ Your Dairy



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System Setup

- Reducing Weight Instability
  - Equipment Training

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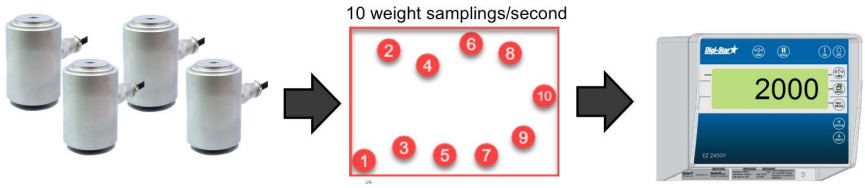
System Setup

- Reducing Weight Instability
  - Equipment Training



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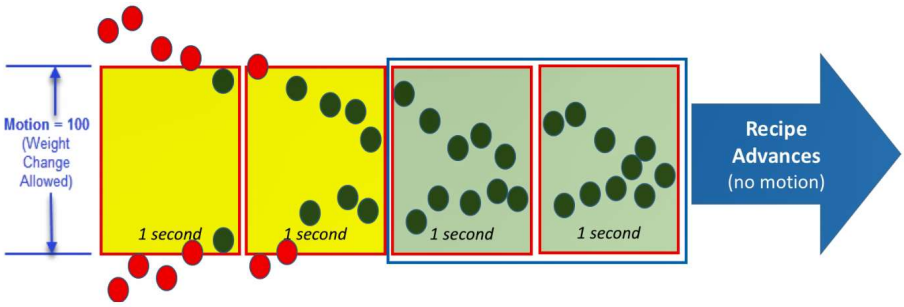
System Setup

- Reducing Weight Instability
  - Using Motion



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System Setup

- Reducing Weight Instability
  - Loading Procedure Training

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System Setup

- Increasing Weight Accuracy
  - Calibration

Platform Scale: Light Weight: 68640
(Empty Mixer, Truck/Tractor, Driver)
Platform Scale: Heavy Weight: 116180
(Loaded Mixer, Truck/Tractor, Driver)
Platform Scale: Net Weight: 47540
Mixer: Premix Weight: 44930
Difference: 2610
Mixer is weighing 94.5% of true weight

Resulting Recording Discrepancies
Inventory Usage (AsFed): 15 tons/day short
450 tons/month short
Intakes (AsFed): 5 lbs/hd short

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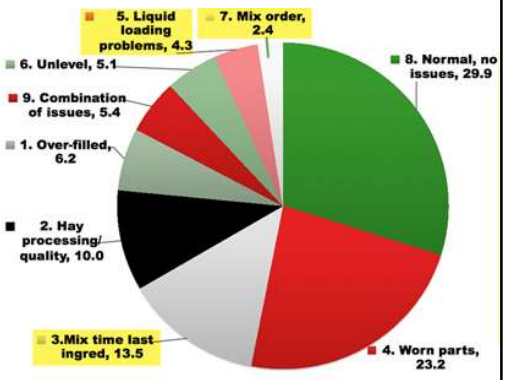
Mixer Setup

- TMR Audits – Mixing Basics
  - Auger, Kicker Plate, Knife Wear
  - Level Mixing
  - Auger Timing
  - Mixing Speed
  - **Mixing Order**
  - Loading Position
  - Hay/Straw Processing
  - Liquid Distribution
  - **Completed Mix Time**
  - **Load Size**



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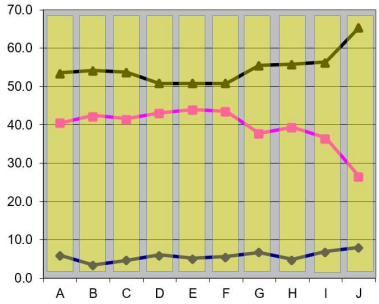
Mixer Setup

- TMR Audits – Mixing Basics
  - Load Size *(My Favorite Example)*



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Mix Setup Strategies

- Forage Management
  - Face Management
    - Expose as little as possible
    - Mix today's forage to reduce Nutrient & Dry Matter variability
  - Sample Dry Matters regularly
  - **Enter Dry Matters into the feed software!!!**

Corn Silage	DM %	AsFed (lbs/hd)	DmFed (lbs/hd) Actual	DmFed (lbs/hd) Difference from Formulation	CP (lbs)	CP (lbs) Difference from Formulation	NE (Mcal)	NE (Mcal) Difference from Formulation
Formulated	29.6%	75	22.2		1.75		17.3	
Dry Pocket	35.1%	75	26.3	4.1	2.08	0.33	20.5	3.2
Wet Pocket (rain)	25.9%	75	19.4	-2.8	1.53	-0.22	15.1	-2.2

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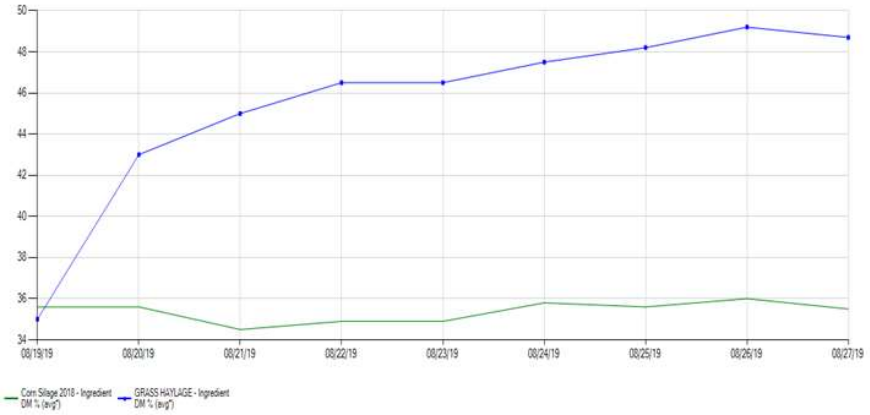
Mix Setup Strategies

- Forage Management



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Mix Setup Strategies

- Load Styles: Scripted vs Flex Loads
  - **Accumulating Deviations**
    - **= Larger Difference between Target & Actual**

	Scripted	Flex
flexible pen assignments		
flexible unload assignments		
structured		
requires less feeder decisions		
allows more feeder decisions		
more setup / maintenance		
accumulates deviations		
higher mixer efficiency		
better load to load consistency		

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Mix Setup Strategies

- Load Styles: Scripted vs Flex Loads

Total Tgt vs Act Differences
- Pen 1: 589 lbs (+1.85/hd)
- Pen 2: 393 lbs
- Pen 3: -1581 lbs (-5.0/hd)

Loads - Actual Loads

Setup | Feeding Progress | Actual Loads

Load	Loading/UnLoading	Ingr/Pen	Ingr DM/ Pen Count	As Fed Tgt Per Load	As Fed Adj Per Load	As Fed Act Per Load	
AM P1-2-3 Load 1							
	UnLoading	Totals					
		Averages					
		Pen 1	318	11,446	11,632	11,710	+264
		Pen 2	316	11,542	11,705	11,840	+298
		Pen 3	317	10,822	10,560	10,220	-602
AM P1-2-3 Load 2							
	UnLoading	Totals					
		Averages					
		Pen 1	318	10,696	10,730	10,880	+184
		Pen 2	316	10,988	10,978	11,060	+ 72
		Pen 3	317	11,133	10,770	10,480	-653
PM P1-2-3 Load 3							
	UnLoading	Totals					
		Averages					
		Pen 1	318	8,799	8,808	8,940	+141
		Pen 2	316	8,557	8,502	8,580	+ 23
		Pen 3	317	10,646	10,330	10,320	-326

Sample

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Mix Setup Strategies

- Mixing Orders
  - **Proper Mixing Base**
  - Lower Inclusion Earlier
  - Dry before Wet

Wheat Straw	391	Wheat Straw	391
Energy Booster	244	Canola	3322
Canola	3322	Energy Booster	244
Protein Mix	3630	Protein Mix	3630
Dry Corn	7600	Dry Corn	7600
Gluten	4814	Gluten	4814
Heifer Mineral	35	Haylage	5054
Wheat Forage	11841	Heifer Mineral	35
Haylage	5054	Wheat Forage	11841
Corn Silage	3070	Corn Silage	3070

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Mix Setup Strategies

- Mixing Orders
  - Proper Mixing Base
  - **Lower Inclusion Earlier**
  - Dry before Wet

Hay	769		Hay	769	
Cottonseed	3805		Cottonseed	3805	*4574*
Canola	7750		Nurisol Bag	180	3.9%
Premix	6314	*18638*	Canola	7750	
Nurisol Bag	180	1.0%	Premix	6314	
Rolled Corn	10779		Rolled Corn	10779	

Hay	2058		Hay	2058	
Almond Hulls	1971		Almond Hulls	600	*2658*
Corn Silage	11606		Rumensin	146	5.5%
Premix	10964	*26599*	Corn Silage	11606	
Rumensin	146	0.5%	Premix	10964	
Water	3217		Water	3217	

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Mix Setup Strategies

- Mixing Orders
  - Proper Mixing Base
  - Lower Inclusion Earlier
  - **Dry before Wet**

Straw	*86%*	3742	Straw	*86%*	3742
Soybean Meal	*90%*	626	Soybean Meal	*90%*	626
Wet Cake	*32%*	1029	Amino Plus	*88%*	623
Sweet Gluten	*60%*	1402	Mineral	*97%*	681
Amino Plus	*88%*	623	Wet Cake	*32%*	1029
Mineral	*97%*	681	Sweet Gluten	*60%*	1402
Silage	*32%*	13897	Silage	*32%*	13897

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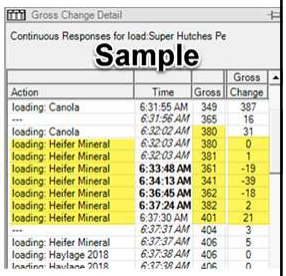
Mix Setup Strategies

- Low Inclusion Handling
  - Use Low Inclusion feed software settings
  - Count bags or use a hand scale
  - Shake the ingredients in **slowly** for 10-15 seconds
  - Double check that these ingredients are actually being added


Gross Change Detail

Continuous Responses for load:Super Hutches Pe

Sample

Action	Time	Gross	Gross Change
loading: Canola	6:31:55 AM	349	387
---	6:31:56 AM	365	16
loading: Canola	6:32:02 AM	380	31
loading: Heifer Mineral	6:32:03 AM	380	0
loading: Heifer Mineral	6:32:03 AM	381	1
loading: Heifer Mineral	**6:33:48 AM**	361	-19
loading: Heifer Mineral	**6:34:13 AM**	341	-39
loading: Heifer Mineral	**6:36:45 AM**	362	-18
loading: Heifer Mineral	**6:37:24 AM**	382	2
loading: Heifer Mineral	6:37:30 AM	401	21
---	6:37:31 AM	404	3
loading: Heifer Mineral	6:37:37 AM	406	5
loading: Haylage 2018	6:37:38 AM	406	0
loading: Haylage 2018	6:37:38 AM	406	0

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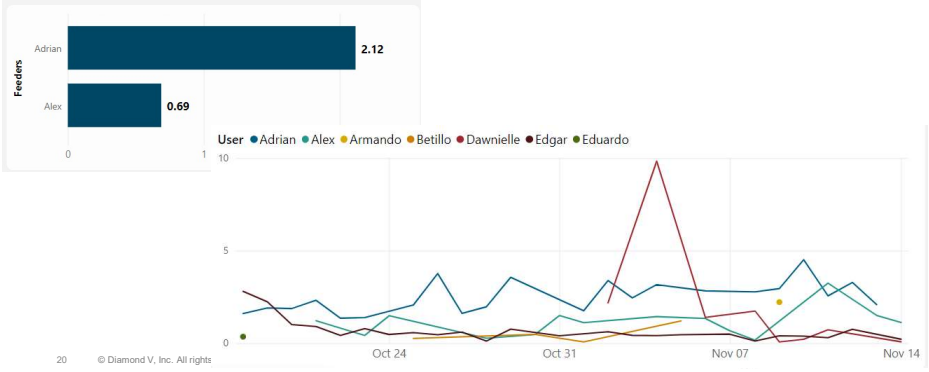
Mix Setup Strategies

- Mixing Times
  - Use them (2-3 minutes)
  - Don't Over Mix
  - Verify they are setup correctly (no auto advancing)
  - Reporting: Over/Under Mixing Deviations



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Feeder Performance

- Set & Communicate Goals
- Monitor & Report Performance
- Avoid Abstract Values
  - Percentages are too impacted by: Load Size, # of Ingredients, Low Inclusion Ingredients

Totals	28150	dev	% dev
High Premix	9150	50	0.546%
Haylage Mix	910	50	5.495%
Sweet Gluten	2050	50	2.439%
Silage 2018 SMALL	16040	50	0.312%
		200	2.198%

Totals	14000	dev	
High Premix	4551	50	1.099%
Haylage Mix	453	50	11.048%
Sweet Gluten	1020	50	4.904%
Silage 2018 SMALL	7977	50	0.627%
		200	4.419%

Totals	28150	dev	% dev
High Premix	9150	50	0.546%
Haylage Mix	910	50	5.495%
Sweet Gluten	2050	50	2.439%
Silage 2018 SMALL	16040	50	0.312%
		200	2.198%

take mineral out of Premix

Totals	28130		
High Premix	8850	50	0.565%
Haylage Mix	910	50	5.495%
Sweet Gluten	2050	50	2.439%
Silage 2018 SMALL	16020	50	0.312%
Mineral	300	50	16.667%
		250	5.095%

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Feeder Performance

- Set & Communicate Goals
- Monitor & Report Performance
- Avoid Abstract Values
- Start with AsFed Deviations *(the Natural Feed Language)*
- Set AsFed Deviation Goals by Ingredient Type
- Report % of Excessive Deviations
- Other Values to Monitor
  - Unloading Deviations
  - Mixing Time Deviations
  - 1st Feeding Time
  - Forage DM Testing

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Feeder Performance

- Feeder Incentive Programs
  - Bonus Pool
  - % of Feeder Contribution
  - Discount by % of Excessive Deviations

Feeder Incentive Program

Bonus Pool $255

	Feeder 1	Feeder 2	Feeder 3	Feeder 4
Feeder Contribution (% of Mixed AF Lbs)	43%	39%	10%	8%
Max Potential Bonus	$110.52	$99.64	$25.52	$19.31
% of Loading Actions in Excess	5.7%	6.4%	10%	15%
Bonus deduction %	1.9%	4.1%	13.2%	27.4%
Bonus deduction $	$2.10	$4.06	$3.37	$5.30
Bonus	**$108.42**	**$95.59**	**$22.16**	**$14.01**

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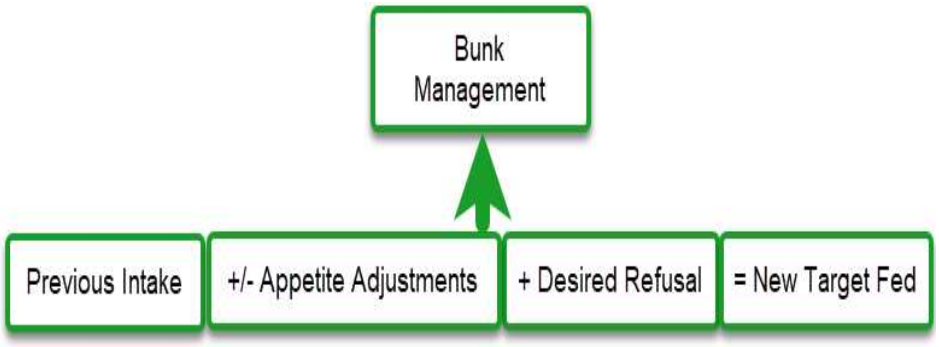
A New Approach to Bunk Management



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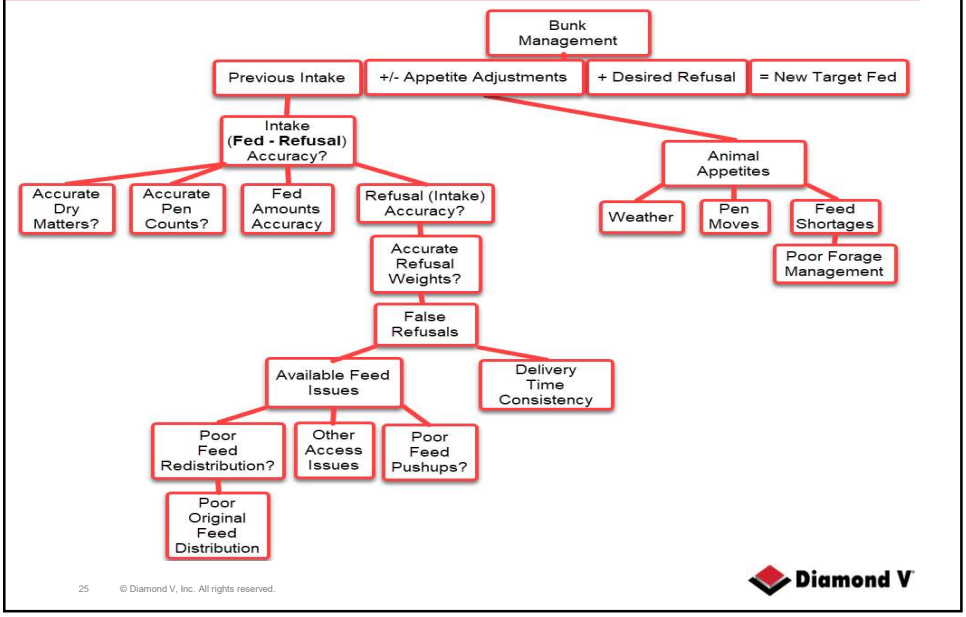
A New Approach to Bunk Management



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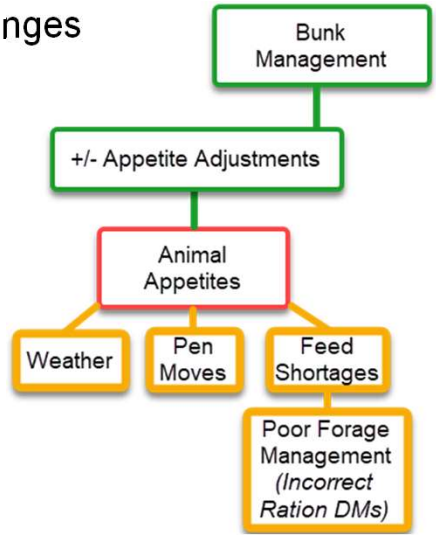
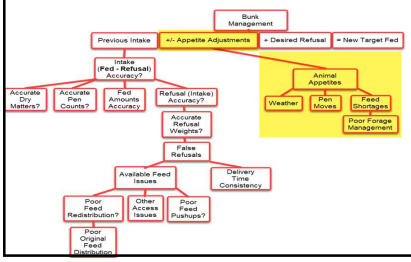
A New Approach to Bunk Management

- Fine Tuning for Appetite Changes
  - Weather
  - Pen Moves
  - Previous Feed Shortages
    - Inaccurate Ration DMs





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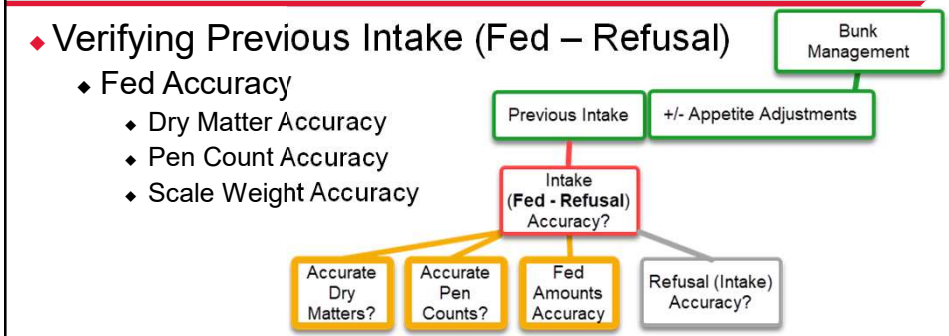
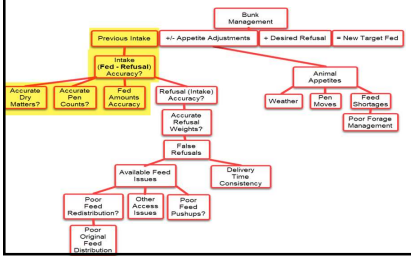
A New Approach to Bunk Management

- Verifying Previous Intake (Fed – Refusal)
  - Fed Accuracy
    - Dry Matter Accuracy
    - Pen Count Accuracy
    - Scale Weight Accuracy





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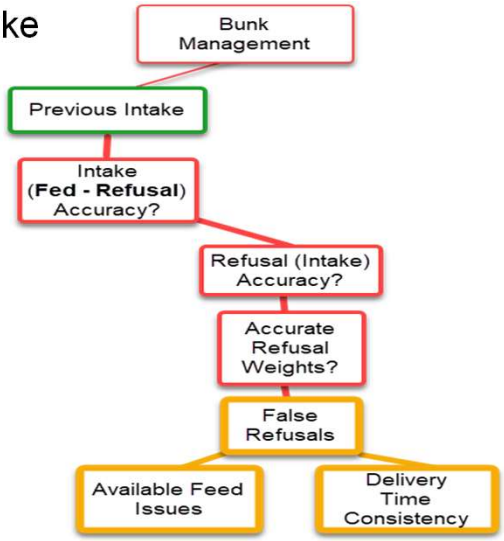
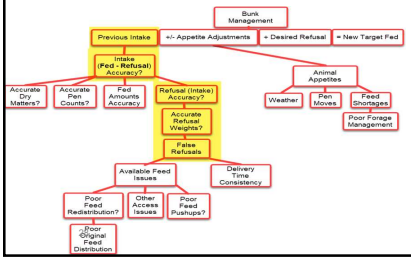
A New Approach to Bunk Management

- Verifying Previous Intake (Fed – Refusal)
  - Refusal Accuracy
    - False Refusal?





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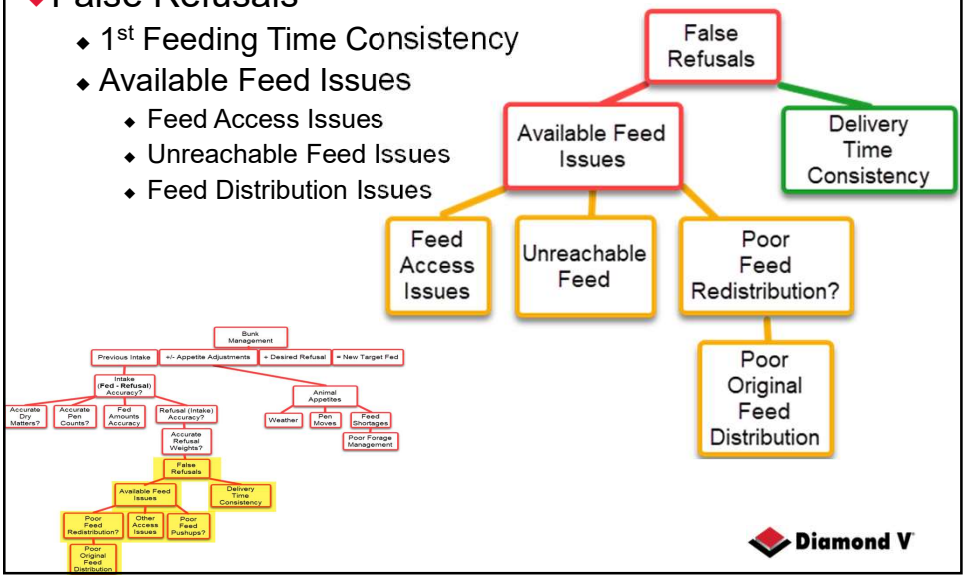
A New Approach to Bunk Management

- False Refusals
  - 1st Feeding Time Consistency
  - Available Feed Issues
    - Feed Access Issues
    - Unreachable Feed Issues
    - Feed Distribution Issues



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A New Approach to Bunk Management

- False Refusals
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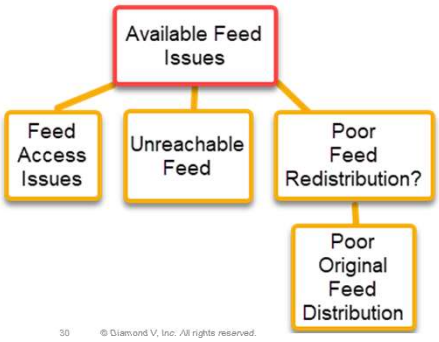
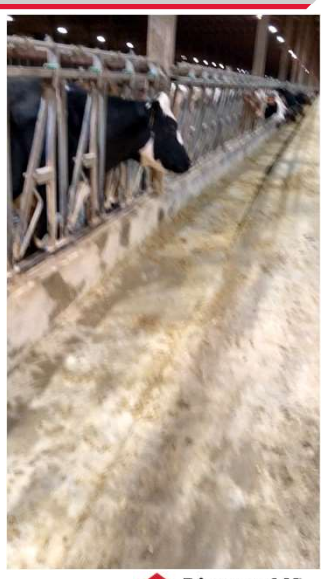
  - Available Feed Issues
    - Feed Access Issues
    - Unreachable Feed Issues
    - Feed Distribution Issues





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A New Approach to Bunk Management

- False Refusals
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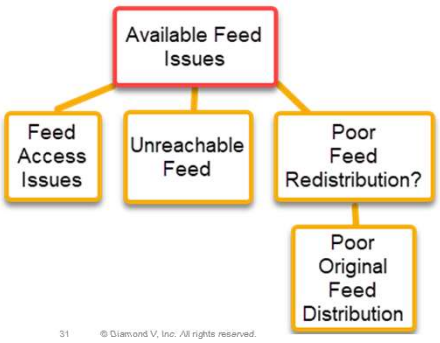
  - Available Feed Issues
    - Feed Access Issues
    - Unreachable Feed Issues
    - Feed Distribution Issues



	Pen 9			Pen 12		
clean time	5:53 AM	1200		7:45 AM	1500	
fed time		6:08 AM			8:05 AM	
score time	2:55 AM	3:58 AM	5:10 AM	3:07 AM	4:19 AM	6:05 AM
hrs until fed	3:13	2:10	0:58	4:58	3:46	2:00
	fill score	fill score	fill score	fill score	fill score	fill score
1 (west)	2	2	2	1	1	0
2	5	5	5	1	1	1
3	5	5	5	1	1	1
4	5	4	4	2	2	2
5	5	4	3	3	2	2
6	3	3	2	3	2	1
7	2	2	0	3	0	0
8	2	1	1	3	3	1
9	2	2	0	2	2	2
10	2	1	0	2	2	1
11	1	1	0	2	2	1
12	0	0	0	1	1	1
13	0	0	0	2	2	1
14	2	1	1	3	3	2
15	3	1	1	3	3	1
16	4	2	2	2	2	1
17	3	3	1	3	3	2
18	2	2	1	4	4	2
19	2	1	1	4	4	3
20	3	1	1	3	3	3
21	3	2	1	4	4	3
22	3	2	2	4	4	3
23	3	2	1	4	4	3
24	3	2	0	3	3	3
25	2	2	0	4	3	2
26	2	1	0	3	3	2
27	2	2	1	3	3	2
28	2	2	1	2	2	2
29	2	1	1	3	3	1
30	2	1	0	2	1	1
31	0	0	0	2	2	2
32	0	0	0	2	2	1
33	1	0	0	3	3	1
34	2	0	0	4	4	2
35	2	1	0	4	4	2
36	2	1	0	2	2	2
37	2	0	0	2	2	2
38	1	0	0	2	2	1
39	0	0	0	2	1	0
40	0	0	0	3	2	0
41	1	1	0	3	1	0
42 (east)	1	0	0	2	0	0
# holes out	132	288	408	48	108	252
% out	26%	57%	81%	10%	21%	50%

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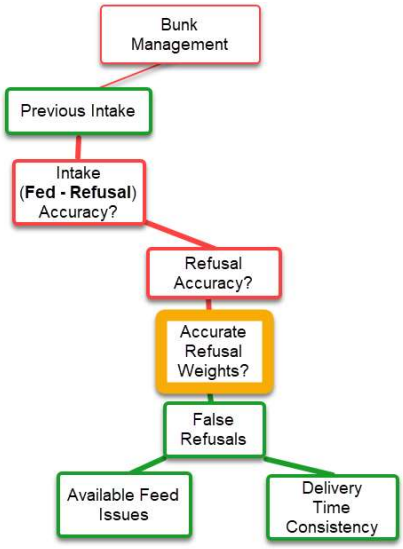
A New Approach to Bunk Management

- Refusals
  - Why?
    - Clean Start to each day
    - Increases Intake Accuracy
      - Can lead to reduced refusals
    - Higher Quality of feed daily
    - Lower Quality Refusal can be used in other rations more effectively
    - Fresh feed promotes higher intakes
    - Results in a more consistent ration from day to day



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A New Approach to Bunk Management

- Refusal Recording Strategies
  - Automatic Weighing Refusal/Pen thru Mixer
  - Manual Entry of Weighed Refusal/Pen
  - Manual Entry of Estimated Refusal/Pen
  - Refusal Left
- Refusal Reuse Strategies
  - Adding Refusal as an Ingredient in other rations
    - Challenging to manage
  - Add to Refusal Loads
    - Refusal is loaded first
    - Remaining ingredients are automatically increased or decreased on a dry matter basis

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A New Approach to Bunk Management

- Intake Management Strategies:
  - *Less than 5% Change*
- Refusal Management Strategies
  - Target Refusal Rates
    - 2%: Maintenance, Dry Cows
    - 3%: High Cows
    - 5-7%: Fresh Cows, Closeups
  - Refusal Rates can be lowered by eliminating False Refusal Elimination
  - Ideally, daily actual less than 1% from Target Refusal Rates

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Inventory & Shrink

- What does successful look like?
  - Platform Scale Management Program
    - Self Service Check In/Out
    - No Weigh / No Pay

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Inventory & Shrink

- What does successful look like?
  - Feed Software
    - Loads are automatically transferred from Platform Scale
    - Incoming Inventory
      - Commodity Deliveries
        - AsFed Weights
        - Dry Matter %
        - Pre-shrink: 1%
      - Harvests
        - AsFed Total Weight
        - Average Dry Matter %
          - Double Dry Matter samples every 5 loads/field
          - 100 g samples in bread pans
          - Large Oven (48 samples)
        - Pre-shrink
      - Fine Tuning of Shrink comes at end of pile True Up
        - Less than 1% to originally entered pre-shrink %

Pre-Shinks	
Corn Silage	7%
Haylage	6-7%
Barlage	10%
Earlage	2%
Dry Hay	3%

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Inventory & Shrink

- What does successful look like?
  - Feed Software
    - Inventory Usage
      - Forage Pile Management
        - No more than 10 ft (5 days) of forage exposed
        - Double Dry Matter samples
          - Every M / W / F
          - During & After Rain Events
            - Example: 3% dm adjustment for ½" rain

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Inventory & Shrink

- Successful Inventory Tracking Payoffs
  - Accurate Shrink Predictions
  - No spoilage
  - Enabled to experiment & fine tune other aspects of harvesting
    - Faster you get the pile covered, the lower the shrink
    - Chop Length significantly impacts shrink
    - Ideal Harvest Moisture is critical
      - Example: Haylage sweet spot: 45% DM
    - Longer Chop Lengths on Corn Silage increase components

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My Challenge to You

- Engage with Customer Support
- Take Advantage of Training Offered
- Be a Squeaky Wheel!
- Demand Good Support
  - Feed Software is worthless without it!
- Demand the features you need
- If not getting results, don't give up
  - Keep Calling
  - Reach out to others

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