

Experiences with Feed Management Software

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How accurate are your feeders when mixing and delivering feed? While this seems like a simple question, it is one many dairymen cannot answer. It is difficult to answer not due to mismanagement, but rather lack of a method to easily and accurately record feeding data. Most farms track herd and individual cow performance using monthly DHI testing or on-farm recording systems, but until recent years no such system existed for feeding systems. However, now there are tools available to producers to track operator performance, quickly adjust rations for DM changes, track inventory levels, and calculate estimated DMI.

How feed management software works

Feed management software creates a link between the mixer and the computer to allow better management of the feeding program. Systems vary in their mode of operation, with some providing wireless transfer of information while others use external storage devices. Either way, the process is the same. Ration information, including DM for each ingredient and lbs./cow/d for each feed are entered into the computer program. Cow numbers for each group to be fed are also entered to calculate total load weights to be mixed. This information is saved and transferred to the mixer. Each user is assigned a unique ID number that is entered at the mixer prior to loading. The operator simply selects the load that needs to be mixed from a list displayed on the indicator and is prompted for how much of each feed needs to be added. The scale will count down as feed is added and once the desired weight is achieved, records how much was loaded and advances to the next feed. After loading is complete, the scale prompts the operator which group should be fed and again records how much is delivered to each group.

Advantages

- **Quick and accurate ration adjustments.** Changes in DM can be entered into the program and rations are automatically recalculated to reflect these changes. Also, the program eliminates the need to keep feed sheets based on the number of cows fed. All that is needed is a copy of the ration from the nutritionist detailing lbs/cow/d of each feed that is to be fed.
- **Tracking operator performance.** Each feed loaded into the mixer and the amount delivered to each group of cows is automatically recorded at the mixer. This information is transferred back to the computer, where reports organize the information to show accuracy for each ingredient or load sorted by operator. Managers can use this information to monitor employees without spending valuable time physically observing loading.
- **Improved feed inventory monitoring.** As a new load of feed arrives, the total tons received can be recorded in the program. The amount of each

- feed loaded is automatically deducted from the inventory, providing a better estimate of what remains.
- **Shrink estimation.** Comparing the amount of feed the program indicates should be left with what actually remains will give an estimate of shrink. The difference between these two numbers is what is lost to shrink.
 - **Estimation of DMI.** Based on the amount of feed delivered to each group and the number of cows in each group, the estimated DMI is calculated.
 - **Automatic calculation of ration costs.** Costs for each ingredient are entered into the program and can be adjusted as new loads of feed arrive. Reports are generated based on these feed costs and the amount fed to indicate total ration costs.

Daily Feeding Deviations

Nine Virginia dairies have been using one of these systems (TMR Tracker™, Digi-Star LLC, Fort Atkinson WI) for 4 – 9 months. Table 1 shows preliminary results for daily feeding deviation. Feeding deviation is represented as the actual amount mixed divided by the amount of feed desired for that day. It is important to note the standard deviation and range when interpreting this table. Simply looking at the average, one might conclude that feeding variation on the farm is miniscule. However, examining the standard deviation indicates that from day to day, accuracy could vary from underfeeding -1.23% to overfeeding 4.55% the following day. Consequently, the amount of feed presented to the cows can vary by 5.78% on average. It is possible that the quantity of feed delivered from one day to the next could differ by as much as 23.73% if a severely underfed day is subsequently followed by a large amount of overfeeding. Milk production is closely related to the amount of feed consumed by the cow. Large variation in the quantity of feed presented to the cows can translate into more variation in milk produced. Achieving more stable milk shipments is possible with less variation in the feeding program.

Table 1. Daily percent deviation in feeding

Herd size	Average deviation (%) *	Standard Deviation (%)	Lower Limit (%)	Upper Limit (%)	Range (%)
100 – 200	0.37	2.62	-9.38	8.40	17.78
200 – 300	3.41	3.18	-9.31	14.35	23.66
300 – 400	0.69	1.30	-6.36	4.08	10.44
400+	1.06	1.81	-7.25	9.79	17.04
Total	1.66	2.89	-9.38	14.35	23.73

* Average deviation = (actual lbs. feed mixed/d)/(lbs. feed desired/d) * 100

Producer perceptions

Producers using feed management software show satisfaction with the program to date. In a survey conducted in December 2006, the following initial findings were elucidated:

- All participants reported that the software met expectations and, if given the choice, they would invest again.
- Eight of nine perceived feed management software as economically beneficial.
- Six of nine credit feed management software for improving their feeding management.
- Five producers noted improvements in ration consistency following use.
- Change made to the feeding program due to TMR Tracker was correlated ($r=0.80$) with improvement in ration consistency.
- Five of nine claimed employee training as the most challenging aspect of implementing TMR Tracker.
- Four of nine (44%) attributed most problems to operator error.
- All farms utilized the software to monitor operator performance and saw no change in quantity of feed purchased.
- The average computer ability rating (as perceived by the producer) was 2.5 on a scale of 1 to 5, where 1 is no knowledge and five is proficient.

Conclusions

Feed management software is another tool available to producers that can potentially improve the feeding program. Improvements in ration consistency, more stable milk shipments, and the ease and accuracy of record keeping from the software have the potential to increase efficiency and profitability. Producers should evaluate their operation to ascertain if the investment provides adequate benefits to justify the cost.



Your Dairy Name
 Your Address
 Your City, State & Zip
 Your Telephone No.
 Your Fax No. & E-mail Address



From: 11-08-06 to 11-15-06

Ingredient Usage Report

Print Date : 2/19/2007

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Ingredient	----- Actual -----		----- Dry -----				----- Cost \$ -----		
	Call Wt	Loaded Wt	Call Wt	Loaded Wt	Dev.	Error %	Planned	Actual	Error
CORN	26,092	26,490	21,916	22,249	398	1.53	\$1,435.06	\$1,456.95	\$21.89
COTTON	13,325	13,460	12,005	12,131	135	1.01	\$926.09	\$935.47	\$9.38
HAY	34,257	35,260	14,937	15,374	1,003	2.93	\$770.78	\$793.35	\$22.57
HGRAIN	31,245	31,490	28,786	29,013	245	0.78	\$4,171.21	\$4,203.92	\$32.71
LGRAIN	8,962	9,110	8,224	8,362	148	1.65	\$1,003.74	\$1,020.32	\$16.58
MOL	7,331	7,050	4,102	3,949	-281	-3.83	\$366.55	\$352.50	(\$14.05)
NCSIL	73,150	74,910	29,040	29,740	1,760	2.41	\$1,097.25	\$1,123.65	\$26.40
OCSIL	92,239	95,340	27,580	28,503	3,101	3.36	\$1,383.59	\$1,430.10	\$46.52
Totals	286,601	293,110	146,590	149,321	6,509	2.22	\$11,154.27	\$11,316.26	\$161.99

Recipe		LOWCOW									
Batch No.	145	Operator		1	ralph						
				---- Call Wt ----	---	Loaded Wt ---			----- Cost \$ -----		
Ingredient	Date	Time		Actual		Actual	Deviation	Error %	Planned	Delivered	Error
HAY	11-08-06	8:18 am		208		230	22	10.58	\$20.80	\$23.00	\$2.20
SBM	11-08-06	8:19 am		299		300	1	0.33	\$31.25	\$31.35	\$0.10
COTTON	11-08-06	8:21 am		277		280	3	1.08	\$22.16	\$22.40	\$0.24
STRAW	11-08-06	8:23 am		39		30	-9	-23.08	\$1.76	\$1.35	(\$0.41)
LOWMIN	11-08-06	8:27 am		109		130	21	19.27	\$25.62	\$30.55	\$4.93
BREW	11-08-06	8:28 am		943		940	-3	-0.32	\$17.45	\$17.39	(\$0.06)
HAYLAG	11-08-06	8:30 am		505		510	5	0.99	\$10.10	\$10.20	\$0.10
BARSIL	11-08-06	8:33 am		559		560	1	0.18	\$6.99	\$7.00	\$0.01
CRNSIL	11-08-06	8:36 am		2,938		2,940	2	0.07	\$51.42	\$51.45	\$0.03
LIQUID	11-08-06	8:39 am		182		180	-2	-1.10	\$13.10	\$12.96	(\$0.14)
CORN	11-08-06	8:40 am		843		850	7	0.83	\$54.37	\$54.83	\$0.46
Batch Summary				6,902		6,950	48	0.70	\$255.02	\$262.48	42\$7.46



Your Dairy Name
 Your Address
 Your City, State & Zip
 Your Telephone No.
 Your Fax No. & E-mail Address



From 11-08-06 to 11-15-06

Recipe / Feed Accuracy by Pen Graph

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Print Date 2/19/2007

Load Accuracy vs Feed Accuracy by Pen

