

TECHNICAL BULLETIN

DAIRY



REDUCED RATION SORTING, IT'S VALUE

What is the value of reducing ration sorting? Higher dry matter intakes, more consistent dry matter intakes, and improved rumen health are a few. Feeding 3-5 lbs. of QLF liquid supplement per cow per day to stick feed particles together will reduce TMR sorting and add palatability to the total TMR.

Table 1. Shaker Analysis of Total Mixed Ration

	Actual	Goal
Top Screen, %	9.33	7-12
Middle Screen, %	47.0	30-50
Bottom Screen, %	43.6	<50

Dry matter intake is one of the biggest challenges in high producing dairy cows. Over the years, tremendous strides have been made in improving the quality of the rations fed to dairy cattle but feed bunk management is a key element to maximizing dry matter intake. Some of the key elements of feed bunk management include: providing ample bunk space per cow; keeping fresh feed in front of the cows at all times; monitoring feed refusals; cleaning feed bunks regularly; minimizing feed bunk competition; and providing plenty of clean, fresh water. Yet, no matter how well the above are accomplished, it is the consistency of each bite that is important. If the cow can sort the TMR, particularly as it pertains to fiber, rumen function is compromised and maximum dry matter intakes and production are not attained. A lack of effective fiber intake by the dairy cow may result in one or more of the following disorders: increased incidence of displaced abomasums, decreased cud chewing activity, feed intake fluctuations, sub-acute and acute acidosis, milk fat depression, loose manure and foot disorders (laminitis, white line disease etc.).

Table 2. Shaker Box Analysis - 6 Hour Intervals

	0 hr.	6 hrs.	12 hrs.	18 hrs.	23.5 hrs.
Top Screen, %	9.3	13.7	21.5	27.5	58.7
Middle Screen, %	47.0	42.3	41.6	38.9	26.7
Bottom Screen, %	43.6	44.0	36.8	33.3	14.5

Table 3. Long Particle Intake

Time of Day	Feed Consumed Lbs. As-Fed	Actual Long Particle Lbs. As-Fed	Predicted Long Particle Lbs. As-Fed
9am-3pm	36	0.35	3.35
3pm-9pm	27	0.42	2.50
9pm-3am	17	2.08	1.58
3am-8:30 am	20	4.02	1.87
Total	100	6.87	9.30

Having proper particle size distribution is an important part of a total ration formulation program. The results of a forage and TMR particle distribution analysis can be a valuable tool in formulating high energy rations and troubleshooting effective fiber intake challenges. The Nasco Forage Particle Separator was designed at The Pennsylvania State University to physically separate a feed sample into three portions; particles greater than 0.75 inches, between 0.31 and 0.75 inches, and those smaller than 0.31 inches. Much has been written on particle size distribution recommendations of forages and TMR's for optimal performance and health of the dairy cow. But little has been done to evaluate what the cow actually consumes – Are cows capable of sorting the components of the TMR? A recommended particle size distribution of a TMR using the Penn State separator is shown in Table 1 under goal.

In a research report (Martin. 1999. UW Arlington Dairy Day), a TMR was tested when it was first fed and at six-hour intervals thereafter for 24 hours. If the cows are not sorting, the numbers should remain the same over the time period the cows have access to the TMR. The ration as mixed and presented to the cows

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shook out to meet the goals (Table 1). At 6-hours (Table 2) after feeding, the top screen shook out slightly higher than the recommended level (13.7%), at 12-hours the percentage increased to 21.5%, at 18-hours it was 27.5%, and at 23.5 hours the TMR shook out with 58.7% on the top screen.

In this study, 36% of the herd's ration was eaten during the first six hours (9 a.m. and 3 p.m.). Therefore the long particle (top screen) intake should be 3.35 lbs. (Table 3) but in actuality each cow only consumed 0.35 lbs. of long particles. Long particle intake increased as the day went on but only because there was less of the other TMR elements to choose from. In total, the cows consumed only 73.8% of the predicted long fiber intake. Cows do not uniformly consume what is mixed in a "typical" TMR. Every bite of TMR does not provide a balanced nutritional profile of energy, protein, vitamins, fiber and minerals.

What is the value of reducing ration sorting?

- Higher dry matter intakes
- More consistent dry matter intakes
- Improved rumen health

What can be done to reduce TMR sorting? Feed 2-3 lbs. of QLF liquid supplement per cow per day to stick feed particles together and add palatability to the total TMR. The addition of QLF liquid supplements to a TMR helps maintain consistent feed consumption, improves ration palatability, improves dry matter intake and minimizes problems related to separation of ration ingredients and accumulation of fines. Other suggestions are: feed higher quality forages, process hay, process whole plant corn silage, add ingredients to the TMR in the proper sequence to optimize feed particle size, check weigh back or refusals to monitor sorting, feed more than 1 time per day, and maintain top quality, wholesome and palatable feed ingredients.