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G99-1394 Feeding Program: Quality Control Checklist

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Feeding Program: Quality Control Checklist

Use this check list to ensure that your feeding program is effective and profitable.

Rick Grant, Extension Dairy Specialist

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The following guidelines will help assure that your herd's feeding environment is optimal for maximum feed intake, milk production and cow comfort.

Dry Matter Intake

1. Increase nutrient density of diet to account for expected 30 percent reduction in dry matter intake (DMI) seven to ten days prepartum (*Table I*).
2. Ensure that all nutrient requirements are met as outlined in *Table I*.
3. Rate of increase in DMI postpartum should be three to four pounds per week (first parity) and five to six pounds per week (second parity).
4. Maximum DMI is at least 4.0 percent of body weight.
5. Cows reach maximum DMI by eight to ten weeks postpartum to coincide with peak milk yield and, if applicable, bovine somatotropin administration.
6. Feed delivered allows for five to ten percent refusals.

Eating and Ruminating Activity

1. When resting in free stall area, at least 50 percent of cows should be ruminating.
2. Palatable feed is available immediately after milking to increase DMI.
3. Provide at least 2 feet of linear bunk space per cow for milking groups and 0.5 feet for 4- to 8-month-old heifers and 1.5 feet for 17- to 21-month-old heifers.
4. Never make a cow push against feed barrier while eating.
 - a. Encourage feeding activity by pushing up feed at least four times daily, and(or)
 - b. Tilt headlocks by about 6 inches at top to increase reach by about 25 percent.
5. Even if headlocks are tilted, be sure to encourage feeding activity by pushing up feed at least four times daily.
6. Provide 14 feet of alley behind feed line and first row of stalls and 12 to 14 feet wide alley at crossovers with water tanks.
7. Feed is available to cows for at least 20 hours per day.
8. Feed manger surface is smooth and free of rough edges; do not use elevated feed bunks to reduce feed tossing and to increase saliva production.

Just Fresh Cow

1. Fresh cows are grouped separately from one to three weeks postpartum (varies by cow).
2. Monitor daily: feed intake (look for cows obviously off-feed), body temperature until it's <102.5° F, rumen movements (1 to 2 per minute), uterine discharge, ketone test on urine.

Nutrition and Health

1. Milk urea nitrogen (MUN) measured monthly with results between 14 to 18 mg/dl.
2. Urine pH monitored in close-up group is between 5.5 and 6.5.
3. Nonesterified fatty acids (NEFA) in blood monitored in close-up cows is <0.40 mEq/L.
4. Body condition score (BCS) at parturition is 3.5, at breeding is 2.4 to 2.8, at confirmed pregnancy is 2.7 to 3.0, and at dry-off is 3.4 to 3.7.
5. BCS is measured at eight weeks prior to dry off so there is time to adjust body condition if needed.

Ration Quality

1. Mixing time is no longer than 5 min or 10 min (with added hay) to avoid excessive particle size reduction.
2. Total mixed ration (TMR) particle distribution is monitored weekly with Penn State Particle Separator with 8 to 10 percent of particles on top screen and 30 to 50 percent on middle screen (*Table II*).
3. Refusals are examined daily for evidence of sorting.
4. Old TMR is removed from feed area daily before fresh feed is delivered.
5. Scales and liquid metering devices are checked monthly for accuracy.

Table II. Recommended particle distributions using Penn State Particle Separator.			
<i>Screen</i>	<i>Corn silage (% As-Fed)</i>	<i>Haycrop silage (% As-Fed)</i>	<i>TMR (% As-Fed)</i>
Top	10-15 (sole forage) 4-6 (with other forage)	15-25	8-10
Middle	40-50	30-40	30-50
Bottom	40-50	40-50	40-60
Notes: <ol style="list-style-type: none"> Percentages are presented as percent of total weight retained on each screen. Check particle size during forage harvest. Once the forage is in the silo, it's hard to alter the particle size! Monitor particle size of TMR weekly, especially if source of forage changes. Monitoring particle size of TMR also will let you know if over-mixing is occurring. Over-mixing reduces forage particle length. Visually examine the particles retained on each screen. For example, if a TMR contains 20 percent of its weight on the top screen, which is well above the 8-10 percent recommendation, but most of the weight is corn cobs that are not eaten by the cow, then the particle distribution is erroneous. Make certain that the particles comprising the top screen fraction actually are consumed by the cow. If they consistently end up in the weigh-back, then the top screen fraction has to be reduced accordingly. Fiber is only effective if it's eaten. Individual silages can have small percentages on the top screen (<5%) if they are not the only forage being fed. It is the particle distribution of the forage blend actually fed which is most important. A complete interpretation of forage quality requires both chemical and physical (particle size) measurements. 			

Table III. Recommended theoretical lengths of cut for silages.		
<i>Forage type</i>		<i>TLC (inches)</i>
Alfalfa silage		1/4 to 3/8
Corn silage		
	Unprocessed	3/8 to 1/2 (if very dry, use 1/4)
	Processed	3/4
Sorghum silage		3/8 to 1/2
Grass silage		1/4 to 3/8
Notes: <ol style="list-style-type: none"> Moisture content of any crop affects the actual particle length of the silage being chopped at a specific TLC. Use Penn State Particle Separator during harvest and adjust chopper setting accordingly to ensure a proper particle distribution. Never use a chopper setting of less than 1/4 inch TLC for alfalfa or other grass silages because rate of passage from the rumen will increase and digestibility will decrease. The recommendation for processed corn silage is based on corn harvested at 1/2 milk line (67 percent moisture) for which 3/4 inch TLC resulted in best fat-corrected milk production, feed intake, and chewing activity. But, the ideal TLC for processed corn silage is still under investigation and the recommended TLC could be fine-tuned. 		

Forage and Ingredient Quality

1. Sample and test forages weekly for dry matter percent and adjust ration accordingly.
2. Sample and test forages at least monthly, or when change in source is made, for chemical

composition: DM, Crude protein (CP), acid detergent insoluble nitrogen (ADIN), acid detergent fiber (ADF), neutral detergent fiber (NDF), net energy for lactation (NEL), Ca, P, Mg, K.

3. Use Ohio State Equation to estimate an accurate NEL value for all feeds. This equation is available at most feed testing laboratories.
4. Sample and test grains monthly and every load of commodities.
5. Maintain an accurate forage and feed inventory to plan forage allocation by cow group.
6. Silage pH should be <4.00 for corn and other cereal silages and <5.00 for legume and grass silages.
7. Use a silage processor when harvesting corn silage.
8. Chop all silages at proper theoretical length of cut (*Table III*).
9. Target forage compositional values to proper group of livestock on your farm (*Table IV*).
10. Monitor feeds for mycotoxins and cottonseed for gossypol content
11. Monitor particle size of silages at harvest using Penn State Separator; 15 to 20 percent should be on top screen for haycrop silage and 5 percent (if not only forage) or 10 to 15 percent (if only forage) for corn silage.
12. Inoculate all silages according to label directions.

Table IV. Alfalfa quality and dairy cattle use.				
<i>Cattle group</i>	<i>ADF</i>	<i>NDF</i>	<i>RFV</i>	<i>Tolerance</i>
Fresh cow group				
High cow group	<28	<38	160-185	+5
Heifers to breeding	<31	<41	150-175	+5
Medium cow group				
Heifers to breeding if needed				
Heifers after breeding				
Dry cows if needed	31-35	40-46	130-149	+5
Older heifers-marginal				
Dry cows-marginal	36-40	47-53	105-129	
Notes:				
<ol style="list-style-type: none"> 1. Relative feed value (RFV) greater than 185 is not usually necessary. In fact, it can create problems with inadequate effective fiber in the ration, especially if the forage makes up the majority of the total forage. 2. As heifers mature, the forage quality needed decreases. In general, reserve the highest quality forage for heifers that have not been bred. 3. Alfalfa fed to far-off dry cows can be of moderate quality (RFV < 130), but a combination of corn silage plus grass forage is recommended to maintain energy intake and to avoid high Ca intake. 4. Alfalfa of RFV < 115 is best used as bedding on a dairy farm. 				

Water Quality

1. No more than 20 to 25 cows per waterer.
2. No less than 2 inches of trough space per cow.
3. Clean water is provided within 50 feet of feeding area.
4. Water intake should be approximately 0.5 gallon per pound of milk.
5. Drain and clean waterers weekly or more frequently if needed.
6. Test water at least yearly for: bacteria, mineral content, nitrates, pH, sulfur, and stray voltage.

Heifer Growth

1. Monitor heifer growth every three months for body weight, wither height and body condition score.
2. Heifers should calve at 22 to 24 months of age at 1311 to 1422 lb body weight, 54 to 56 inches in wither height, and 3.5 body condition score.
3. Heifers attain 1.7 to 1.8 pounds per day average daily gain.

Feeding Program Profitability

1. Total feed cost per cwt of milk sold <\$6.00.
2. Milking herd feed cost per cwt of milk sold <\$4.00.
3. Pounds of milk sold per worker >1,000,000.

General Considerations

1. Feet and leg problems limit mobility and feeding activity.
2. Monitor manure consistency, color, and content of grain.
3. Monitor haircoat appearance and cleanliness.
4. Respiration-check for coughing or nasal discharge.
5. Make certain forages are free of weeds, mold, and hardware.
6. Be considerate and gentle when handling cattle.

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