

## Management Options When Feed Supplies are Limited and/or High in Cost

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Many factors have contributed to the present feed situation resulting in record high prices and, in some instances, short supplies. If the cheap dollar, high cost fuel and fertilizer along with scarce world inventories weren't enough, the late, cold and damp spring coupled with recent flooding has created a risk situation unlike any experienced to date. Even though new territories are now being explored in dairy management, other experiences of the past may provide some direction as to options for the present as well as the future.

One of the most common questions I receive from dairy producers at this time is what commodity feeds can fit into dairy rations that may also reduce cost. A few alternatives do exist however inclusion rates and, in some cases, availability may limit opportunity.

For example, at \$7.00 corn, \$392 soybean meal, \$13.43 limestone and \$34.40 dicalcium phosphate prices; beet pulp, corn gluten feed, distiller's grains, hominy feed, malt spouts, soy hulls and whey represent good buys. However, both corn gluten and soy hulls were in short supply the third week of June with some suppliers unable to identify inventory for delivery. Just a couple of weeks previously canola meal also was a competitive buy but had since become unavailable.

Another issue is the increased value of forages. Limited supplies and compromised quality along with a questionable start to the growing season are cause for concern for forages as well as for grains. It may be difficult to find and price justify commodity feeds for forage replacement. What to do?

You and your nutritionist will want to keep an ongoing eye on a fast changing ration cost, available feeds and inventory situation. If ever in the history of feeding cows the effort in on-going inventory evaluation and planning was justified that time is now. Don't wait until the last minute to purchase feed needs.

Here are a few management options to consider:

- Don't use tabular values for nutrient composition of feed ingredients, get them analyzed
- Errors in the nutrient analysis of feed ingredients commonly result from poor sampling technique on farm and infrequent feed sampling.
- Variation in the layering of forages into bunker silos (i.e. alfalfa silage versus corn silage or silage of different qualities) and the relative uniformity of sample and feed removal from the face can lead to a discrepancy between the forage test and what is actually fed.

- Switching between silo bags before forage tests are received and a new ration is formulated can cause wide swings in nutrient delivery.
- Mark silo bags and bunkers when forage quality\cuttings changes\are placed into storage.
- Minimize feed sorting by feeding forages of similar particle length.
- Routinely determine the DM content of wet ingredients and adjust the rations accordingly to maintain correct and consistent DM proportions of ingredients.
- Reduce the operator error that is associated with feed mixing and delivery. Maximize batch-to-batch consistency.
- Feeding a partial TMR or some portion of the daily allotment of forage or concentrate separate from the mix can be a large source of variation in nutrient consumption among cows within a group.
- Don't overcrowd cows at the feed bunk; don't over crowd close-up and recently fresh cows, period.

### **ADDITIONAL STRATEGIES THAT MAY MAKE YOU MONEY**

- Booking feeds can often save money. For example, a producer recently shared that booking soybean meal just a few months ago was now saving him \$5,000/month in purchased feed costs.
- Carefully consider feed additives. Every 12 cents of added feed costs per cow will add \$12 per day to a 100-cow group. Unless that extra 12 cents adds more than 2/3 of a lb of milk, it's not adding to profit.
- Expensive ration costs mean that fewer lower producing cows will be able to pay for their keep. Determine what your milk production breakeven is given the cost of your ration.
- Consider early dry off
- Reevaluate feeding more than one ration, balanced only for early lactation cows, to the herd.
- If your cow's are averaging 90-100 days in milk for first service, consider earlier voluntary waiting periods to breed cows back. For visual heat detection, try a VWP of 60 days, 70-80 days if using synchronization.
- Establish a maximum number of repeat inseminations then stop breeding repeat cows.
- Reevaluate current culling thresholds. If a cow isn't milking well enough to cover feed and labor costs and isn't pregnant she doesn't offer any future profit potential.
- Minimize dry period lengths, 60 days for first lactation and 45 days for mature cows if milking enough to cover feed and labor costs.
- Maximize the use of farm produced forages and grains
- Plan to harvest as much high quality forage as possible. Make arrangements to purchase lower quality forages for support stock.
- Inventory forages by quality into storage.
- Don't feed dairy quality forage to non-producing dairy cattle.

- If forage is needed and the opportunity presents itself establish emergency forage crops. If dairy quality forages are needed evaluate the relative economics of harvesting soybeans for forage vs. grain. Late planted soybeans, corn or sorghum-sudan and winter ryegrass may be viable forage options.
- Plan to lower ration cost by harvesting increased levels of corn for silage. Feeding more corn silage may not be an economical option if you need to buy the supply. Plan for harvest and storage needs accordingly. Higher levels of corn silage can be fed to later lactation cows, but watch body condition!
- If your cows are producing significantly below the production level the ration is balanced at, lower the ration target to a more realistic and lower cost level.
- Minimize harvest, storage and feeding loss.
- It may be difficult to design a minimum forage ration given availability and cost of alternatives, i.e. cottonseed.
- If you're not now feeding a TMR consider purchasing a total ration delivered to your farm by those who can do so. You may save money and won't have to invest in equipment that may not pay for itself with small herds.
- Because the investment of raised replacements represents the second greatest cost on the dairy farm behind feed, try to lower heifer and dry cow's as well as lactating cow ration costs.
- Track and manage feed efficiency to get the most out of expensive feed. Moving average lactating herd feed efficiency from 1.4 to 1.5 lbs of milk per lb of dry matter (DM) saves \$0.95 per cow per day at today's prices.
- Harvest, store and feed out forages to keep total ash content below 10% for legumes, 7-9% for grasses and 4-5% for corn silage. Every percentage of ash in feed is a percentage point of soil fed in place of forage. It may be a cheap replacement but it doesn't produce as much milk and the cow knows it isn't forage even though the ration thinks it is.
- Consider feeding to an empty manger vs. feeding expensive weigh-backs to support stock. This requires more time and a heightened level of feed bunk management to maintain production. Alternatively, consider feeding for 2%-3% weigh-back rather than 5%-6%.

Here are suggested feeding guidelines for forages and high-fiber by-product feeds in diets for milking cows when you are fortunate to have reasonably priced alternatives.

**Table 1.** Recommended minimum concentrations (% of DM) of NDF from forage and total diet NDF and recommended maximum concentrations (% of DM) of NFC for diets containing ground corn as primary starch source fed as TMR of adequate particle size (NRC, 2001).

<u>Minimum NDF from forage</u>	<u>Minimum NDF in Diet</u>	<u>Maximum NFC in diet 1</u>
19%	25%	44%
18%	27%	42%
17%	29%	40%
16%	31%	38%
15% <sup>2</sup>	33%	36%

1 Non-fiber carbohydrate = 100 – (%NDF – NDFIP + % CP + %Fat + %ash).

2 Not recommended because of depression of milk fat test.

**Table 2.** Recommended minimum concentrations (% of DM) of NDF from forage and total diet NDF and recommended maximum concentrations (% of DM) of NFC for diets of lactating dairy cows fed in herds without TMR feeding or with inadequate TMR particle size, highly rumen fermentable starch sources (i.e. steam-flaked corn or high moisture corn versus dry corn), and (or) poor feed delivery and bunk management practices (adapted from NRC, 2001).

<u>Minimum NDF from forage</u>	<u>Minimum NDF in Diet</u>	<u>Maximum NFC in diet 1</u>
19%	--	--
18%	--	--
--	29%	40%
--	31%	38%
--	33%	36%

1 Non-fiber carbohydrate = 100 – (%NDF – NDFIP + % CP + %Fat + %ash).

**Table 3.** Tabular mean NDF and NFC concentrations (% of DM; NRC, 2001) for selected forages, grains, and high-fiber byproducts.

<u>Ingredient</u>	<u>NDF%</u>	<u>NFC%<sup>1</sup></u>
Alfalfa	35-50	20-30
Grasses	50-65	10-20
Corn Silage	45-55	30-40
-	-	-
Shelled Corn	9.5	75.4
Ear Corn	21.5	64.3
Alfalfa Meal	41.6	28.8
Beet Pulp	45.8	35.8
Brewers Grains	47.4	13.9
Canola Meal	29.8	25.9
Citrus Pulp	24.2	56.8
Corn Gluten Feed	35.5	30.4
Cottonseed Hulls	85.0	3.5
Cottonseed Meal	30.8	19.0
Distillers Grains	38.8	16.3
Hominy	21.1	60.1
Linseed Meal	36.1	31.0
Malt Sprouts	47.0	23.2
Soybean Hulls	60.3	18.3
Sunflower Meal	40.3	27.7
Wheat Middlings	36.7	35.3
Whole Cottonseed	50.3	2.7

<sup>1</sup> Non-fiber carbohydrate = 100 – (%NDF – NDFIP + % CP + %Fat + %ash).

**Table 4.** Calculated forage concentration in the diet to meet minimum NDF from forage guidelines with forage of varying NDF concentration (DM basis).

<u>Minimum NDF from forage</u>	<u>40% NDF forage</u>	<u>45% NDF forage</u>	<u>50% NDF forage</u>
19%	48% 1	42%	38%
18%	45%	40%	36%
17%	43%	38%	34%
16%	40%	35%	32%

1 Dietary forage concentration as % of DM.

**Table 5.** Example calculations of forage replacement values for alternative roughage sources and high-fiber byproducts.

<u>Ingredient</u>	<u>NDF 1</u> <u>% of DM</u>	<u>pef 2</u> <u>% of NDF</u>	<u>peNDF 3</u> <u>% of DM</u>	<u>Replaces</u> <u>per lb. DM</u> 4	<u>Replaces</u> <u>per 5 lb. DM</u>
<b><u>Replaced Haylage</u></b>					
Medium Chop Length	45	85	38.3	--	--
<b><u>Replacement Feeds</u></b>					
Coarse Chopped Straw	73.0	110	80.3	2.1	10.5 5
Coarse Chopped Grass Hay	55	95	52.3	1.4	7.0
Coarse Chopped Alfalfa Hay	45	90	40.5	1.1	5.5
Alfalfa Meal	41.6	40	16.6	0.4	2.0
Beet Pulp	45.8	30	13.7	0.4	2.0
Brewers Grains	47.4	40	19.0	0.5	2.5
Canola Meal	29.8	40	11.9	0.3	1.5
Citrus Pulp	24.2	30	7.3	0.2	1.0
Corn Gluten Feed	35.5	40	14.2	0.4	2.0
Cottonseed Hulls	85.0	90	76.5	2.0	10.0 6
Cottonseed Meal	30.8	40	12.3	0.3	1.5
Distillers Grains	38.8	40	15.5	0.4	2.0 7
Hominy	21.1	40	8.4	0.2	1.0

Linseed Meal	36.1	40	14.4	0.4	2.0
Malt Sprouts	47.0	40	18.8	0.5	2.5
Soybean Hulls	60.3	30	18.1	0.5	2.5
Sunflower Meal	40.3	40	16.1	0.4	2.0
Wheat Middlings	36.7	40	14.7	0.4	2.0
Whole Cottonseed	50.3	90	45.3	1.2	6.0 7

1 Adapted from NRC (2001).

2 Physical effectiveness factors (% of NDF) adapted from Mertens (2002).

3 Physically effective NDF (% of DM) calculated as  $NDF^*(pef/100)$ .

4 Replacement value of feeds per lb. of DM for example haylage calculated as  $peNDF$  replacement feed divided by  $peNDF$  of haylage to be replaced.

5 Straw usually limited to 2-4 lb./cow/day for milking cows to formulate diets of sufficient energy density.

6 High forage replacement with cottonseed hulls should coincide with the feeding of coarse-chopped dry hay to provide adequate rumen mat formation. Actual feeding amount should be determined by dietary NDF and NFC guidelines provided in Table 1.

7 Actual feeding amounts may be limited ingredient fat content.

**Table 6.** Suggested feeding limits for selected high-fiber byproducts 1 .

<u>Ingredient</u>	<u>Suggested Limits</u> <u>lb. DM per cow per day</u> 2
Alfalfa Meal	5 - 10
Beet Pulp	8 - 12
Brewers Grains	5 - 10
Canola Meal	5 - 10
Citrus Pulp	5 - 10
Corn Gluten Feed	10 - 15
Cottonseed Hulls	5 - 10
Cottonseed Meal	5 - 10
Distillers Grains	5 - 10
Hominy	10 - 15
Linseed Meal	5 - 10

Malt Sprouts	5 - 10
Soybean Hulls	8 - 12
Sunflower Meal	5 - 10
Wheat Middlings	8 - 12
Whole Cottonseed	5 - 8

1 Adapted from Howard (1988).

2 Actual amounts fed should be determined by formulation of diets for requirements and limits for nutrients, such as CP, RUP, RDP, NDF, NFC, fat and P, especially when multiple high-fiber byproducts are used in the same diet.

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