

Managing Income Over Feed Costs

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Feed is the single largest item of dairy farm expense, 40 percent to 60 percent of total costs. Generally, as milk yield increases, income over feed costs (IOFC) increase, but feed costs per cwt of milk decrease. Larger herd size does not necessarily mean that milk production and IOFC per cow will increase. Well managed herds of any size can be competitive on a per cow basis. However, larger herds and producers who have formed commodity buying alliances tend to have cost advantages when it comes to quantity feed purchases. In North Dakota, purchased feed costs for lactating dairy cows generally include protein supplements, macro minerals (calcium, phosphorus, and magnesium), trace minerals, vitamins, salt, supplemental fat sources, and for some, a quantity of excellent quality hay. These feeds take up 20 to 40 percent of annual milk sales (excluding purchased forages) and thus make up a substantial portion of a farm's annual expenses. The purchased feeds below can total \$2.25 per cow per day (using April 2008 feed costs quoted for eastern North Dakota) when including purchased hay.

| | | |
|----------------------------|---------------------------------------|--------|
| Protein supplements | (4 lb @ \$.19/lb) | \$0.76 |
| By-product feeds | (5 lb @ \$.09/lb) | \$0.45 |
| Macro minerals | (0.5 lb @ .23/lb) | \$0.11 |
| Trace mineral and vitamins | (\$0.05/day) | \$0.05 |
| Salt | (\$0.02/day) | \$0.02 |
| Fat | (animal and oil seed, 1.5 lb @ \$.32) | \$0.48 |
| Additives | (variable) | \$0.13 |
| Purchased hay | (5 lb @ \$0.08/lb) | \$0.25 |

Since grains and forages are normally produced on the farm, they have not been included in the following analysis example. Charges for service of purchased feeds (forage testing, ration balancing, consulting, and feed quality monitoring), however have been included. Questions raised are: How much should my purchased feeds be? When should I purchase feeds? How can I position purchased feeds? What cost is too high? Purchased feed costs for lactating dairy cows are affected by two main factors: 1) average crude protein content of forage, and 2) milk production level of the herd.

The first step in estimating purchased feed costs is to determine purchased feed needs at various levels of milk production and various levels of forage quality. The following table, "Daily Purchased Feed Cost for Lactating Cow," assumes amounts of 44% protein supplement, 50% by-pass protein source, calcium-phosphorous (Ca-P) mineral, magnesium (Mg) mineral, and trace minerals/vitamins/salt lactating cows need on the average throughout their lactation. These values are shown for various levels of herd milk production and forage crude protein levels. The amounts are estimates based on the assumption that all lactating cows in the herd are receiving a balanced diet through a single group total mixed ration (TMR). These amounts will have a built-in cushion when compared to top-dress feeding systems, which use slightly less purchased feeds

than single group TMR feeding systems. The table combines dical, magnesium, trace minerals and vitamins with salt costs together into one category and adds the 5¢/cow/day service charge for ration consulting. Undegraded protein (by-pass protein) sources were incorporated in the ration when milk production levels were 19,000 pounds or higher. Fat was added at .6 pound for 19,000 pounds of milk, 1.3 pounds for 21,000 pounds, and .7 pound of protected fat plus 1.3 pounds of unprotected fat for 23,000 pounds of milk. Typically, supplemental fats cost about 20¢ per pound. Unprotected fat charges can be reduced 30 to 50 percent if oil seed sources are used. Depending on soybean, sunflower and/or cottonseed prices, the cost per pound of added fat can be 6¢ to 10¢ when the value of protein and minerals are considered.

Deduct and adjust purchased feed costs to reflect your herd and management differences. The table points out the importance of high quality forages, higher milk yield, and suggested changes in purchased feeds, while illustrating the importance of comparing costs related to milk production (Holstein herds).

Daily purchased feed cost for lactating cow at various milk production and forage crude protein levels.

| <u>Production</u> | <u>Feed</u> | <u>Forage Crude Protein</u> | | | | |
|---------------------------------------|---------------------------------|-----------------------------|-------------|-------------|-------------|-------------|
| | | <u>12%</u> | <u>14%</u> | <u>16%</u> | <u>18%</u> | <u>20%</u> |
| 15,000 lb RHA | Protein Supplement (\$) | 0.72 | 0.54 | 0.36 | 0.18 | 0.00 |
| 525 lb Fat | By-pass Protein Supplement (\$) | - | - | - | - | - |
| 65 lb Peak | Mineral/Vitamin/TM/Salt (\$) | 0.22 | 0.20 | 0.18 | 0.16 | 0.15 |
| 50 lb Ave Milk | Service (\$) | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Total Purchased Feed Cost (\$) | | 1.00 | 0.80 | 0.60 | 0.40 | 0.21 |
| 17,000 lb RHA | Protein Supplement (\$) | 1.08 | 0.90 | 0.72 | 0.54 | 0.36 |
| 595 lb Fat | By-pass Protein Supplement (\$) | - | - | - | - | - |
| 75 lb Peak | Mineral/Vitamin/TM/Salt (\$) | 0.24 | 0.22 | 0.20 | 0.18 | 0.16 |
| 57 lb Ave Milk | Service (\$) | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Total Purchased Feed Cost (\$) | | 1.38 | 1.18 | 0.98 | 0.78 | 0.58 |
| 19,000 lb RHA | Protein Supplement (\$) | 1.08 | 0.90 | 0.72 | 0.54 | 0.36 |
| 665 lb Fat | By-pass Protein Supplement (\$) | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| 85 lb Peak | Mineral/Vitamin/TM/Salt (\$) | 0.28 | 0.27 | 0.25 | 0.23 | 0.21 |
| 63 lb Ave Milk | Unprotected Fat (\$) | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 |
| | Service (\$) | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Total Purchased Feed Cost (\$) | | 3.07 | 2.87 | 2.67 | 2.47 | 2.27 |
| 21,000 lb RHA | Protein Supplement (\$) | 0.90 | 0.81 | 0.72 | 0.63 | 0.54 |
| 735 lb Fat | By-pass Protein Supplement (\$) | 2.70 | 2.43 | 2.16 | 1.89 | 1.62 |
| 95 lb Peak | Mineral/Vitamin/TM/Salt (\$) | 0.30 | 0.28 | 0.27 | 0.25 | 0.23 |
| 70 lb Ave Milk | Unprotected Fat (\$) | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 |
| | Service (\$) | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Total Purchased Feed Cost (\$) | | 5.07 | 4.69 | 4.31 | 3.93 | 3.55 |
| 23,000 lb RHA | Protein Supplement (\$) | 1.08 | 0.99 | 0.90 | 0.81 | 0.72 |
| 805 lb Fat | By-pass Protein Supplement (\$) | 3.24 | 2.97 | 2.70 | 2.43 | 2.16 |
| 105 lb Peak | Mineral/Vitamin/TM/Salt (\$) | 0.32 | 0.30 | 0.28 | 0.27 | 0.25 |
| 77 lb Ave Milk | Unprotected Fat (\$) | 1.11 | 1.11 | 1.11 | 1.11 | 1.11 |
| | Protected Fat (\$) | 0.34 | 0.34 | 0.34 | 0.34 | 0.34 |

| | | | | | |
|---------------------------------------|-------------|-------------|-------------|-------------|-------------|
| Service (\$) | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 |
| Total Purchased Feed Cost (\$) | 6.14 | 5.76 | 5.39 | 5.01 | 4.63 |

Assumptions: Protein supplement (>40%) @ \$0.18/lb, by-pass protein @ \$0.54/lb, 50% Ca/P mineral @ \$0.30/lb, unprotected fat @ \$0.85/lb and protected fat @ \$0.48/lb, mag-ox @ \$0.29/lb, trace mineral @ \$0.05/cow/day and salt @ \$0.02/cow/day.

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