



A Progressive Feeding Program For Milk Production

COOPERATIVE EXTENSION SERVICE MICHIGAN STATE UNIVERSITY

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If these factors limit milk production of your cows:

1. Hay quality medium to fair—harvested late—full-bloom or seed stage of maturity—weather damaged and considerable loss of leaves.
2. High-moisture grass silage (direct-cut or not wilted enough) may reduce nutrient intake from forage by 30% compared to good quality hay or low-moisture silage.
3. Feeding limited grain because:
 - (a) You believe grain is too expensive.
 - (b) You believe that more grain will cause mastitis, swollen udders, or "burn-up" the cow.
4. Ration too low in protein—most noticeable with grass hay or mature legume hay. High levels of corn silage.
5. Cows lack inherent milk producing ability—using bulls of unknown ability. No records. No culling. No herd improvement program.
6. Grain feeding limited by time cow is in the milking parlor.

FEED CONSUMPTION IN MILKING PARLORS

Parlor type	Eating time in minutes per milking	Grain per day average cow
Double 5 herringbone	14	16 lbs.
Double 3 walk-through	10	11 lbs.
3 U side-opening	7	8 lbs.
3-in-line side opening	8	9 lbs.

Follow this plan for top milk production per cow:

Prop-up your hay quality

After hay is in the barn (or silo) it's too late to worry about how good or poor it might be. Chemical analysis or guessing feed value will not make the cow eat it any better or improve the milk producing value. Resolve to make better forage next year.

You can make top milk production per cow with your forage if you:

1. Feed corn silage as liberally as allowed by the farm silage supply.
2. If feeding high moisture (direct-cut) grass silage at a heavy rate. Feed an extra 2 pounds of grain for each 10 pounds of silage above 30 pounds per day.

- Balance the ration to contain 11 to 12% protein (total ration air-dry basis). Determine if extra protein is needed by supplying an extra pound of protein per cow for a 3 to 4 day period occasionally. Watch milk production for the answer.

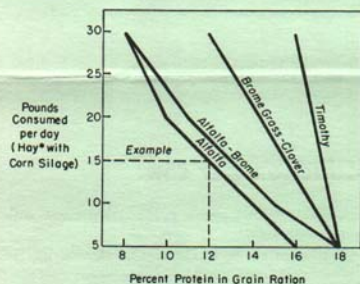
Protein Feeding Guides

When you feed enough grain to meet energy requirements, it is seldom necessary to use a grain ration containing more than 12 to 13 percent crude protein. See Grain Feeding Schedule.

A. When feeding 20 pounds or more of good quality alfalfa hay and corn silage to appetite, farm grains (corn, oats, barley) will furnish enough protein for about 70 pounds of milk per cow daily. Cows milking more than 70 pounds should get 1 pound of 44 percent protein supplement or equivalent for each additional 10 pounds of milk per day.

B. When alfalfa is limited to 10 pounds and other forages comprise the remainder of the roughage, a 12 to 13 percent protein grain ration will be adequate to meet protein requirements when fed at the recommended rates.

C. When the amount of grain fed is limited to a maximum of 18 to 20 pounds per cow daily, the grain ration should contain the percentages of protein indicated in Figure 1 to balance the various kinds and amounts of forages. In the Figure 1 example, when feeding 15 pounds of alfalfa hay, the grain ration should contain 12 percent protein. These rations are adequate to provide protein and energy for about 70 pounds of milk per day. Increasing the amount of grain to meet energy requirements of higher producing cows will overfeed protein when the ration contains more than 14 percent protein.



*1 pound hay equals 3.0 pounds hay stage or 1.7 pounds haylage.

FIG. 1

Protein content of grain rations with hay-corn silage combinations when grain limited to 18-20 pounds per cow daily.

- Add 1% dicalcium phosphate for extra phosphorus, and 1% trace mineral salt to the grain ration. Adequate amounts have already been added to most commercial protein supplements.
- Feed forages at least 4 times per day. A supply of good edible forage should be available at all times.
- Feed grain according to schedule, keeping in mind that grain feeding tables and "thumb rules" are, at best, only guides. Adjustments for individual cows and differences in roughage quality are often necessary. The following plan is suggested as a starting point:

Before calving—Feed about 1 to 1.5 pounds of grain for each 100 pounds of body weight of the cow for at least 2 weeks prior to calving and continue for 4 days after calving. A longer pre-feeding period may be necessary depending on the condition of the cow.

After freshening—(a) Continue 1 to 1.5 pounds of grain per 100 pounds body weight for 4 days.

(b) After 4 days gradually increase grain according to the schedule provided below within 2 weeks after freshening.

(c) Continue to increase grain as long as the cow continues to increase in production. When the cow ceases to increase in milk production with increased grain feeding, continue feeding at this level as long as she maintains milk production.

(d) For every 3-pound gradual decline in daily milk production, decrease grain one pound daily. If cows drop in production due to changes in roughage quality, increase grain to make up the difference.

GRAIN FEEDING SCHEDULE

Milk/day lbs.	Grain/day* lbs.	Milk/day lbs.	Grain/day* lbs.
30	12	66	26
36	14	72	29
42	16	78	31
48	18	84	36
54	22	90	40
60	24	96	unlimited

*For 30% moisture grain multiply above amounts by 1.25.

If grain is fed in the milking parlor, feed extra grain in feed-lot bunks.

Good cows will not have sufficient time to eat enough grain to maintain high milk production. Cows capable of producing 60 pounds or more of milk per day during early lactation soon lose considerable body weight. They will decline rapidly within two months to a lower level of production that can be maintained by the level of feeding offered.

Feed grain in the feed bunk according to one of the following plans:

Group feed during first 4 months of lactation or until a cow drops below 50 pounds of milk per day. An area of the yard can be fenced off for **PLAN 1** grain feeding as cows leave the parlor after each milking. Offer an additional 10 to 15 pounds of grain per cow depending on the amount of grain fed in the parlor (see table on page 1) and the production level of the cows. This plan will make best use of grain by feeding it to the cows that need it most.

If the feed-lot cannot be arranged for group feeding, provide an extra 8 to 12 pounds of grain per cow daily for all cows in the feed-lot. This can be **PLAN 2** fed as top dressing on silage or fed in separate bunks. With this system some cows will get more than they need and others will not get enough for maximum production but it will be better than feeding no extra grain.

Feed corn silage free choice and 5 to 10 pounds of alfalfa hay per day.

PLAN 3 A. Provide 10 to 20 pounds ground ear corn for those milking above 40 pounds of milk per day depending on the average level of production.

Feed protein supplement in the milking parlor according to this schedule:

Dry cows and those milking up to 20 pounds of milk per day—none. Add one pound of 44% protein for each 10 pounds of milk above 20 pounds per day.

Note: One pound of 44% protein is equivalent to 0.8 pound 55%; 0.9 pound 50% or 1.4 pounds 32% protein. (See table below.)

PROTEIN FEEDING RATES FOR PLAN 3-A

Daily milk production	Daily protein supplement			
	32%	44%	48%	55%
lb.	lb.	lb.	lb.	lb.
30	1.4	1	0.9	0.8
40	2.8	2	1.8	1.6
50	4.2	3	2.7	2.4
60	5.6	4	3.6	3.2
70	7.0	5	4.5	4.0
80	8.4	6	5.4	4.8
90	9.8	7	6.3	5.6

Note: 48%, 50% or 55% protein supplements containing urea should be used with caution at the higher rates indicated in the table.

B. Heavy corn silage rations can be supplemented by feeding 4 pounds of 44% protein or equivalent (see table above) per 100 pounds of silage fed. Grain rations should then contain only 12 or 13% protein.

Provide a strong, summer feeding program

Plenty of high-quality feed should be available whether from pasture, green chopped or fed out of storage. If milk production drops, because of inadequate pasture, or mature forage, the ration should be supplemented with extra hay or silage and additional grain.

Challenge the cow - - - then cull

Herds are constantly being upgraded by culling and using improved breeding stock. High producing cows require more energy to maintain high levels of milk production than most dairymen are accustomed to feeding. Underfeeding is most obvious on the better cows in a herd. There is little benefit in breeding for high production unless cows are fed for high production.

- *Challenge every cow* to produce at maximum capacity by feeding grain liberally during the early part of the lactation.
- *Watch body condition*—if a cow loses considerable body weight during early lactation, chances are good that she needs some extra grain. Certain exceptionally high producers cannot eat enough grain to maintain good condition but they should be given the chance.
- *Measure milk production*—milk production records are essential for determining which cows "respond" to heavier grain feeding and deciding how much grain should be fed. Some cows will profitably benefit by feeding two to three times the normal amounts of grain while others will not increase

milk production enough to justify the extra grain fed. The highest return from grain results from feeding the highest amount of grain to the cows that need it most. Milk production records will:

- Provide a basis for grain feeding.
 - Measure response from feeding more grain.
 - Provide a basis for culling unprofitable producers.
 - Indicate progress in herd improvement.
- There is a milk production record plan to fit every purpose and budget.

- Dairy Herd Improvement Association (DHIA) Records
 - Owner-Sampler Records (OS)
 - Weigh-A-Day-A-Month (WADAM)
 - Dairy Herd Improvement Registry (DHIR)
- Records are an investment in more profitable dairying. See your county extension agents or local DHIA supervisors for the details.

Use milk records to measure response from heavier grain feeding

Some cows will show an immediate and obvious "increase" in milk production when fed more grain. Other cows will produce more total milk per lactation by merely maintaining production at a higher than normal level for a longer part of the lactation. The benefit from heavier grain feeding is more difficult to detect in such cases since daily production might not "increase." These are some checkpoints:

- Allow 30 to 60 days of heavier grain feeding to determine the milk production response.
- After this time, compare "actual milk production" with "normal lactation tables" to determine if the cow is producing at a higher rate or continuing at the same rate she was expected to produce before extra grain was fed.
- If the milk production rate is not higher than the normal lactation curve within 60 days, return to the previous grain feeding schedule.

Win—lose or draw

For each 1000 pounds increase of milk per cow you gain \$10 to \$30 per cow above feed cost.

If your production does not increase—Congratulations! Your feeding program was already adequate for the ability of your cows.

If your production per cow is still below state DHIA average—

Use better breeding.

Cull heavily.

Check other management.

Grain is cheap compared to the price of milk

Generally throughout Michigan the cost of grain per pound is only $\frac{1}{2}$ to $\frac{3}{4}$ the price received for milk. Studies have shown that high producing cows will return \$4.00 to \$7.00 worth of milk per 100 pounds of grain fed up to the productive capacity of the cow. You and the cow must determine how much grain can profitably be fed.

Grain is frequently as cheap as hay in the southern half of Michigan and nearly as cheap (per 100 pounds of nutrients) in most of Northern Michigan. The feed value of grain is much more uniform than the feed value of hay.

Other hints for high production

- Feed dry cows enough grain to re-build body condition
- Grow heifers to capacity for a strong first lactation
- Breed heifers to freshen at 24 months
- Breed only to bulls recognized for high production
- Raise a calf per cow per year
- Protect herd health—
 - Use good milking practices and keep milking equipment in good order to help control mastitis
 - Provide adequate barn ventilation
 - Follow recommended disease control procedures.
 - Protect your investment. Have your calves vaccinated against brucellosis

2 HIGH PRODUCING COWS ARE BETTER THAN 5 LOW PRODUCERS

Number of cows and total milk production required to return \$5,000 for "labor and management."

Production per cow		Number of cows	Total milk produced lb.
Milk lb.	Butterfat lb.		
8,500	328	46	391,000
9,700	375	33	320,000
12,300	450	22	270,600
13,700	520	18	252,000

Adapted from DHIA and Farm Management Records.