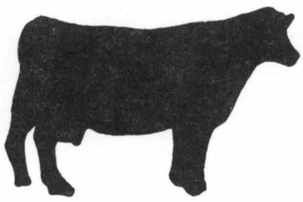
dairy guidelines

EXTENSION DIVISION VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY BLACKSBURG, VIRGINIA

Series 157 - Revised August 1979



USE THE SIMPLIFIED DAIRY (DAIR2) PROGRAM RIGHT

W. Ray Murley and G. M. Jones
Extension Specialists, Dairy Nutrition
VPI&SU, Blacksburg, VA 24061

The Simplified Dairy Cattle Feeding Program (DAIR2 on the Virginia CMN program) is simply a ration balancer. It calculates the pounds of concentrate and the percentage protein of the concentrate to use to balance the energy and protein of a cow (or cows) if she consumes the forage(s) in the quantities indicated and if the forages contain the dry matter, crude protein, and fiber that the forage analyses show.

Many changes in feeds or systems of feeding can occur on a farm from day to day, thus the DAIR2 program can, at best, serve only as a guide. Therefore, a dairyman must apply his cowmanship know-how and use sound judgment in the daily routine of using the program:

1. Forages, either silage, hay or haylage, must be correctly sampled so that the analyses represent the forage that the cow eats. Silage or haylage can be properly sampled by taking 10 or more handfuls as the unloader operates over the entire feeding cycle (from upright silos) or a similar number from the fresh-cut face of a horizontal silo. Mix these handfuls thoroughly in a tub or basket and then take a handful of the composite, place in a plastic bag, press the air out and tie. This plastic bag should be protected enroute to the lab so that no punctures occur. The sample should be sent to the lab as fast as practical. If it is going to be held for a long period, the sample should be refrigerated.

   A similar procedure should be followed in sampling hay. Try to sample several bales and take a composite of the many samples.

2. Use judgment in the frequency of sampling the forages. If the results appear to be too high or too low in dry matter, crude fiber, or protein, get another sample immediately. Any time that a new silo is opened, or when silage within a silo has come from a different field or variety, or there was a long delay between fillings, re-sample. Don't rely too long on the results of a single sample. Once each month is recommended as the maximum time between sampling and more frequently if judgment so indicates.

3. Make forages available to the cows. The DAIR2 program can only tell how much of each feedstuff to feed; it cannot do the feeding. If the cow does not eat the pounds of various feedstuffs listed on the print-out, then the ration is not balanced. Silage or haylage should be fed to the lactating herd in sufficient quantities so that up to 10% of the amount fed can be cleaned out of the manger and fed to the dry cows.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, and September 30, 1977, in cooperation with the U. S. Department of Agriculture. W. R. Van Dresser, Dean, Extension Division, Cooperative Extension Service, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061; M. C. Harding, Sr., Administrator, 1890 Extension Program, Virginia State College, Petersburg, Virginia 23803.

4. Don't change feed too fast. If the computer indicates that a high protein concentrate should be fed, and if a 16% or 20% concentrate is currently used, then step up the percentage by 4% increments at about weekly intervals (24%, 28%, 32%, 36%, 40%). Don't jump from a 20% to a 40% from one feeding to the next. Use judgment on changing the pounds fed daily per cow. For instance, 7.5 lbs of a 32% concentrate will provide the same amount of protein as 12 lbs of a 20% concentrate (2.4 lbs).

   Also, when changing silos, open the new silo two to three weeks before the old one runs out and gradually blend the two silages with a gradual increase of the new silage. This will provide an opportunity to sample the new silage so a new ration can be formulated before the old silage is depleted.

5. There is some feeling among dairymen and Extension Agents that feeding a 36% or 40% concentrate individually in the parlor at milking time, especially to high producing cows, causes problems. These could be caused by too rapid change to the higher protein concentrate, or there may be too much fat in the form of oil in the oil meal. Nutritionally, there is no known evidence that a ration cannot be balanced for protein, energy, minerals and vitamins with this feeding program. The high protein concentrates work well in a complete ration (mixed with silage).

   Palatability may be affected by the high mineral content. If supplemental minerals are held to no more than 4% of the concentrate, then this should overcome the problem. The additional minerals needed may be fed on the silage.

6. Check the level of milk in the bulk tank after each milking. If it drops greatly from the previous day, then check to see if the proper ration was fed. There are, also, other management items to check in addition to the feeding program. If the level of milk drops gradually over several days, then make an adjustment in the feeding program, using the best judgment possible, and immediately get another sample of forage(s) and another ration formulated.

All of the points listed above apply to the individual feeding option where the concentrate is fed separately from the silage or haylage. If a complete ration, using a mixing wagon, is being fed, then following item 4, especially for the concentrate, is not as important. The silage tends to mask the taste, dustiness, etc. of the concentrate so intake of the feeds will not drop as it may with individual cow feeding. Also, one can switch types of grains or oil meals more quickly with the complete ration than with separate concentrate feeding.

Minerals

The DAIR2 program recommendations for mineral feeding are broad and often misunderstood. The program does not show the percentages of minerals that should be in the concentrate nor the amount in the total ration dry matter. But if a dairyman is mixing his concentrate on the farm or is having it custom mixed, the amounts of the various mineral sources listed on the print-out will keep the total mineral intake within reasonable and acceptable levels. If a commercial concentrate is being fed, then it is suggested that the percentage of calcium, phosphorous and salt contained in the concentrate be known so total mineral intake can be calculated.

Levels and ratios of calcium and phosphorus are extremely important for the lactating and dry cow. The levels for the lactating cow in the total ration dry matter (including all forages, grains, protein supplements and minerals either force-fed or free-choice) for calcium should be between 0.60% and 0.85% of the total ration dry mater and for phosphorus between 0.4% and 0.5%. For the dry cows these levels can range between 0.7% and 0.8% for calcium and between 0.3% and 0.4% for phosphorus. The ratio of Ca:P should be held between 1.5 and 2 parts calcium to one part phosphorus for both the lactating and dry cow.

A trace mineral salt, self-fed, will usually be adequate or it can be added to the concentrate at the rate of 1% (20 lbs per ton) for 16% and 20% concentrates, 1.5% for 24% to 32% concentrates and up to 2% for 36% and 40% protein feeds.

Vitamins A and D should be provided the cow in some form. A vitamin supplement may be added to the concentrate mixture at levels between 7 and 15 million I.U. each of vitamin A and D, with the lower levels added to 16% to 24% protein concentrates and the higher levels added to the 28% to 40% concentrates. The vitamins may be injected when the cow is dried off, at 2-3 weeks prior to breeding, and at 3 months into the lactation. Follow the instructions on the bottle for levels to inject.

The DAIR2 ration balancer program has made a big impact on the feeding programs on dairy farms in Virginia. Many dairymen are feeding 32% to 40% protein concentrates today, where this was unheard of just a few years ago. This program, although not a least-cost program, does, in fact, approach a least-cost feeding system since it exactly matches the concentrate feeding to the quality, quantity and species of forages grown and fed on the farm. Thus it maximizes the feeding of forages, which are, in most instances, the lowest cost sources of nutrients available. Even though a high protein concentrate costs more per ton than a 16% or 20% concentrate, it is needed in such lower quantities that the over-all feed cost is reduced.

If any dairyman reads this who is not currently using the DAIR2 program as a guide in feeding his cows, then he is missing a great opportunity to reduce his feed costs without suffering a drop in milk flow. Call your local Extension Agent.

SIMPLIFIED DAIRY FEEDING PROGRAM DAIR2

NAME OF DAIRYMAN _____ PHONE NO. _____

ADDRESS _____ DATE _____

_____ COUNTY _____

1. List the feeding program desired.
   1 = Individual cow fed according to production. 2 = Complete ration. _____

2. Is the herd divided into two groups on production, each group fed differently? No 1 _____ Yes 2 _____

   If yes, will you feed different concentrate formulas to each group if desirable? No 0 _____ Yes 1 _____

   Winter or Summer feeding? WTR SMR

3. COW INFORMATION

	Body Weight	Daily Milk	Fat Test
Group A (high production group)	_____,	_____,	_____
Group B (low production group)	_____,	_____,	_____

   If only one group, list as Group A.

4. FEED OTHER THAN HAY, SILAGE, OR CONCENTRATE, if used. (Haylage, H.M. Corn, etc.)
   Name (Limit 16 spaces) _____

	Group A,	Group B
Pounds fed/cow/day	_____	_____

Forage Test: List analysis or lab test	As Fed	Dry Basis	Dry Basis
	DM_____,	CP_____,	CF_____

   Lab No. if recent test was made? _____
   Are you sending sample? Yes _____ No _____

5. HAY, if used. Name _____

	Group A,	Group B
Pounds consumed/cow/day:	_____,	_____

Forage Test:	As Fed	Dry Basis	Dry Basis
	DM_____,	CP_____,	CF_____

   Previous Lab No.? _____
   Are you sending a sample? Yes _____ No _____

6. SILAGE* (must be used - can be hay, pasture, etc.).
   Name _____

Forage Test:	As Fed	Dry Basis	Dry Basis
	DM_____,	CP_____,	CF_____

   Previous Lab No.? _____

7. CONCENTRATE

	Group A,	Group B
Crude fiber (as-fed) %	_____	_____

   If not specified, 8.0% will be assumed.
   If home-mix, list ingredients and amounts of each on back and we will estimate CF.

*If two silages are fed, list percentages of each and forage test or submit samples.

These forms, as well as forage analyses request forms, are available through the local County Extension Office.