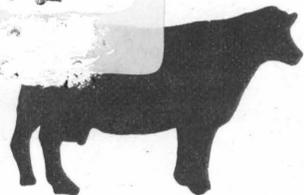


LD  
5655  
A 762  
no. 113  
c. 2

# Dairy guidelines

DIVISION VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY BLACKSBURG, VIRGINIA

Series 113 - July 1977



## GROUPING COWS FOR COMPLETE RATION FEEDING



G. M. Jones - Extension Specialist, Dairy Management

The concept of blending all feedstuffs into a complete ration is relatively new. It is estimated that some form of complete ration is fed on 150 to 200 Virginia dairy farms. The nutrient content of the complete ration should satisfy the requirements of the higher-producing cows. However, when this complete ration is offered to the entire milking herd, cows in late lactation, and especially cows with prolonged lactations due to breeding problems, tend to become too fat. These cows often undergo serious health problems at calving.

Often it is desirable to divide the milking cows into more than one group. The number of cows in a group should be regulated so as to fit a regular milking and feeding routine. During milking, it is not desirable to leave cows in the holding area for more than 90 to 120 minutes. If 35 cows are milked per man-hr., the number of cows in a group should not exceed 53 to 70 for a one man milking operation or 105 to 140 for two men. The smallest capacity mixer wagon is sufficient for 60 to 80 cows when cows are fed twice daily (Murley and Jones, 1976).

### Grouping According to Milk Production

Larger dairy farms have found it convenient to group cows according to level of milk production. Such a practice has been reported to increase milk production and result in greater profits (Bath, 1976).

To reduce milk production variation within a group, a minimum of three groups of milking cows is suggested. Greater numbers of groups reduce the differences between groups in nutritive content of the ration and consequently reduce the drop in milk production when cows are moved from one group to another.

At 3 to 4 days after calving, fresh cows are placed in the group where concentrate feeding is greatest. Fresh cows are maternally oriented and therefore should not be moved into the group until 3 days after calving. Cows are left in this group for at least 2 months so that they have the opportunity to reach their maximal ability for milk production. Cows whose production does not merit the highest level of concentrate should be moved to a lower production group after two months. A disadvantage to this system is that open cows may be transferred to a second group. Two groups of cows would have to be checked frequently for cows in heat.

California (Bath, 1976) suggests that cows should be ranked according to fat-corrected milk (FCM) yield rather than actual daily milk so that differences between cows in milk fat test is considered. It is, however, doubtful that many dairymen would calculate FCM yield for individual cows.

BLACKSBURG VIRGINIA  
AUG 1 1977  
V.P.I. & S.U. LIBRARY

### Grouping by Age or Udder Quality

Grouping cows by level of milk production can have disruptive effects on milk production and reproduction if conditions favor continuous agitation between cows to establish social dominance. Such a condition may be due to continual addition of new cows or removal of established cows. However, upsets may result when groups or herds are too large and cows lack individual recognition by other cows.

One alternative is to group cows for an entire lactation according to speed of milking, age, and size:

1. First calf heifers. Increase concentrate by 4 lb. per cow daily above recommended amount and decrease forage by equivalent amount of dry matter to satisfy additional growth requirements.
2. Second and third lactation cows, older cows with good udders and sound feet.
3. Cows with average udders or cows who are slow milkers.
4. Older cows with large udders.

This system of grouping may be acceptable for herds of 200 cows or more. Cows may become too fat during late lactation and all groups would have to be watched closely for symptoms of heat.

### Grouping by Body Condition into Two Groups

In discussions among Dr. H. F. Troutt (Veterinary Science), Prof. W. H. Collins (Agricultural Engineering), and myself, it became obvious that neither the feeding of one complete ration to all milking cows nor grouping according to production level could satisfy the criteria needed in an adequate system.

Research studies have shown that a high energy ration, as would be found when grouping by production level, results in greater feed intake and less body weight loss after calving than when fed a ration similar to one advisable for the entire lactation. In addition, cows do not lose weight for as long a period after calving, which should have an effect upon conception rates and milk persistency for the remainder of the lactation. Cows on the high energy ration attained post-calving body weights at approximately 10 weeks earlier and post-partum estrus occurred at 36 days compared to 60 days. Such a feeding program would be advantageous if a dairyman desires to breed his cows as soon after 40 days as possible.

We recommend that cows receive a complete ration containing 17 to 18% crude fiber from 3 days after calving until they regain their postcalving body weight. It is estimated that this would occur at 200-225 days after calving. It would be beneficial to add 3 lb. hay to this ration, which could be done by chopping at 3 inch lengths rather than baling. After cows had regained body weight, and at 210-225 days in lactation, they would be moved to a second group where the ration contained 26-28% crude fiber. This ration would be fed until drying-off.

The Virginia Cooperative Extension Service by law and purpose is dedicated to serve all people on an equal and nondiscriminatory basis.

An Equal Opportunity/Affirmative Action Employer

The most desirable ration for dry cows is grass hay, properly supplemented with minerals. However, hay-fed dry cows need to adjust to the high energy milking ration which would be available after calving. The 26-28% crude fiber ration fed during late lactation would be suitable for this adjustment, starting at 10-14 days before calving. If hay was not available in sufficient quantities for dry cows, the late lactation ration would be satisfactory for dry cows.

Examples of rations for these two groups are shown in Table 1.

This system would suggest a need for 1.5 ton hay per cow annually in a herd averaging 90 days open. It is estimated that a similar 100 cow herd would average 50-55 cows on the milking ration, 29 cows on the late lactation ration, and 18 cows on the dry cow ration.

#### Magnetic Feeders

Magnetic feeders may offer another alternative in herds where all lactating cows are grouped together. Dairymen have reported that the use of these feeders maintained body condition and allowed cows to peak at a higher level of milk production.

Excess concentrate intake from the feeder must be avoided by exerting adequate cow pressure. Allow one cow per hour of exposure to the feeder or 20-25 cows per feeder.

Boss cows may be a problem, especially those that have been removed from the feeder. Alternatives are to provide two feeders to minimize the competition or leave the magnet on the cow. In the latter case, these cows could become too fat.

Other problems encountered with magnetic feeders include: moisture condensation in motors, lost magnets, not all magnet cows use the feeders, new cows tend to eat too much, the need to protect the stall especially in traffic pattern areas, and the need to protect the metal area to overcome the problem of magnets not contacting the activation plate.

The magnet should not be removed from a cow until the herd feeding program will support her milk production. Leave the magnet on for the first 60 to 90 days after calving. Remove magnets from mature cows when their production is approximately 15 lb. above the daily herd average. Remove from first calf heifers at 10 lb. above herd average.

#### Economics of Grouping Cows

It has been shown that grouping cows in at least three production levels is more economical than leaving all cows on the same ration for the entire lactation. The reason is the different ratios of forage-to-concentrate. Feed costs have been estimated for three systems (Table 2), using November 1976 prices. Differences in feed cost does not appear to be a major factor in grouping.

---

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, 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.

References

- Bath, D. L. 1976. Group-feeding cows in milk production strings. Dairy Tales, Vol. 6, No. 7, University of California, Davis.
- Chandler, P. T. 1977. Complete dairy rations. Proc. 31st Ann. Virginia Feed Convention and Nutrition Conference, p. 36.
- Murley, W. R. and G. M. Jones. 1976. Complete rations for dairy herds, Dairy Guideline Series 111, VPI&SU.

-----  
 Table 1. Example rations<sup>+</sup> for grouping cows according to body condition.

	Milking ration	Late lactation ration
Corn silage, lb./cow	66	48
Hay, lb./cow	3	10
Concentrate, lb./cow	16.5	4.5
% Protein	26	40
% Fiber	3.7	9
Ration dry matter content		
% Protein	15.0	12.8
% Fiber	18.0	25.7

<sup>+</sup>Formulated to supplement the corn silage. Feed analysis is necessary.

-----  
 Table 2. Economic comparisons between one complete ration to all cows, grouping according to body condition, or grouping according to production level.

Days in lactation	Milk <sup>+</sup> (lb/day)	Fat (%)	Dry matter intake <sup>+</sup> (lb/day)	Cumulative net energy balance		
				one ration	two groups	three groups
				------(Mcal)-----		
20 <sup>†</sup>	56.2	2.4	33.5	-23.3	-7.2	0
60	60.6	3.1	38.1	-51.9	-17.5	-2.0
100	57.5	3.7	38.8	-77.9	-24.9	-.8"
140	51.9	3.9	38.1	-70.3	1.1	6.8
180	45.6	4.1	36.2	-54.4	34.4	22.8
220	40.0	4.1	35.0	-28.7	29.5 <sup>§</sup>	48.4
260	33.8	4.1	33.1	66.0	50.5	80.8"
300	28.8	4.6	31.6	149.4	72.4	112.3
Total	14,832	3.6				
Feed cost				\$666	\$655	\$663

<sup>+</sup>Chandler (1977)

<sup>§</sup>Cows change groups at 220 days

<sup>†</sup>40 day periods

"Cows change groups at 112 and 240 days