

DAIRY MANAGEMENT

COLOPHON:

Veepro Dairy Management is a supplement to the Veepro Magazine. It contains articles, tips and advice aimed at the management of dairy farms worldwide.

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The right kind of feed and the right ration for low production cows and for cows in their dry period are extremely important. The reward consists of more milk the moment these cows enter full production again. And more milk means more income.

END OF LACTATION RATION



Often not enough attention is paid to the feed and rations of cows with a low milk yield and dry cows. This can lead to problems. It means that highly productive cows are not optimally prepared for their high production period. You lose milk that way. In addition, all kinds of problems can occur during the calving period. This article highlights several important aspects of rations for low production and dry cows. We also pay attention to the ration of highly productive cows. Each of these groups has its own specific requirements.

Production groups

Separating cows into production groups is essential in order to provide cows with different ration requirements with the right kind of ration. In tie-stall barns, this can easily be achieved, as each cow receives its individual ration. It gets more complicated in free-stall barns, in which many herds are housed nowadays. It is almost impossible to provide each cow

with the desired ration if cows with low and high yields are all in the same group. In such cases it becomes necessary to split the herd into production strings housed in separate areas of the barn. With groups of cows in their own fenced-off areas, it becomes possible to balance the desired ration for each production group. The number of production strings depends on the size of the herd. Two groups is a good start, but more is better. More groups means that it is easier to balance the rations.

Separating cows into production groups is essential in order to provide cows with different ration requirements with the right kind of ration.

GROEP/GROUP: DROGE KOEIEIEN/ DRY COWS	
RANTSOEN/ RATION:	
16 KG. GRASKUIJL/ GRASS SILAGE	46 KG. DS/ KG. DM
3 KG. SNIJMAISKUIJL/ MAIZE SILAGE	10 KG. DS/ KG. DM
2 KG.	20 KG. DS/ KG. DM
1 KG.	10 KG. DS/ KG. DM
100 GR. MINERALS	
TOTAAL:	116 KG. DS/ KG. DM

Feeding plan for roughage

A second reason for splitting your herd into production groups has to do with feed allocation in the winter or in the dry season. In this time of year feed quality often starts to play a role, with highly productive cows often receiving the superior feed.

To provide for the dry and winter seasons, dairymen have to harvest and store roughage during the growing season. For most farms this means that the harvesting of roughage takes place at different points in time, almost always leading to a quality varying per harvest. There are various reasons for this difference in quality. Sometimes it is the weather conditions, sometimes the cutting of the grass is left too late. But there are more circumstances that can negatively influence the quality of the roughage. The roughage supply often includes a batch of a quality that is not good enough to be fed to highly productive cows. However, with or without

the addition of concentrates, this batch could very well serve to feed cows with low milk yields, dry cows, or the older youngstock.

It therefore pays off to put together a feeding plan prior to each dry or winter period. In this plan different feed batches are assigned to the various groups. Naturally, one should take into consideration the calving time of the herd. This distinction in different feed batches also prompts farmers to split the herd into production groups.

balanced portion to arrive at the required level. This strategy of adjusting the concentrates fed according to the production of the individual milk cow needs to be carried out during both the high and low production period.

In the low production period, this approach plays an important role. Too many concentrates fed have a negative effect on body condition, for the cow could easily grow too fat. Therefore it is very important to monitor the condition of these low production cows. Based on his findings,

concentrates should be diminished. Once the cow is in her dry period, a further decline in body condition should be absolutely avoided, for the breakdown of body fat could lead to fatty liver syndrome.

When the body condition is too high at the start of the dry period, it will stay too high until calving. This could cause problems during calving, and at the start of the next lactation.

Example of a feeding plan for 4 months:

	month 1	month 2	month 3	month 4
Dry per 1. (6 wk)	Batch 4		Batch 3	
Dry per 2. (2 wk)	Batch 1		Batch 2	Batch 5
High prod. cows	Batch 1		Batch 2	Batch 5
Low prod. cows	Batch 4		Batch 3	
Youngstock >10 mth	Batch 4		Batch 3	
Youngstock <10 mth	Batch 1		Batch 2	Batch 5

During the period when the herd can take in fresh roughage, the feed does not have to be split according to different production groups. In most cases the quality of fresh roughage doesn't vary much. That's why the dairy cows and also the youngstock are often fed the same fresh roughage.

the farmer can easily adjust the concentrates supply if necessary.

During the low production period, the farmer should monitor his cows in such a way that they have a condition of max. 3.5 at the beginning of the dry period. When the body condition exceeds 3.5 the cow is too fat. In that case the amount of

Low production

When does a cow belong to the low production string? Various criteria can be listed:

- cows about to calve, and who are therefore about to enter the dry period
- cows in lactation for around 200 days (with a normal production persistence)
- cows whose milk yield is dropping (too) rapidly
- cows with a too good condition score (depending on the calving date)

The available amount of feed can also form the basis for a distinction between high and low production strings:

- Highly productive cows often get a larger basic supply of concentrates than the cows with lower milk yields.
- If a dairyman has limited roughage of good quality, he needs to feed this to the highly productive milking cows and the youngstock younger than 10 months of age. The rest of the feed goes to the low production group.

Concentrates

When feeding concentrates, different rations for highly productive cows and for the rest of the herd are certainly called for. The ration of a highly productive cow can (when converted to a dry concentrate feed with 90% dry matter) include more than 10.5 kg of concentrates (see also the Veepro Magazine Dec. 2000 issue). It is important that, after calving, the amount of concentrates is slowly increased to this level. Provided the cow is healthy after calving, you must count with a period of at least two weeks to achieve this. If 10,5 kg is the maximum level of concentrates a dairyman feeds to his cows, it is important to keep up this level until approximately 60 days after calving. In this way the cows will have 60 days to reach their maximum milk yield. After 60 days, the concentrates fed will have to be adjusted to the milk production of each individual cow, which is a precise job. It is necessary to calculate the requirements of each cow. The procedure then is as follows: In the production group all cows obtain a basic concentrate supply. In addition, every cow receives an individual

Ration balancing should be geared towards a body condition of 3.5 when the cow enters the dry period. In practice it often means that the cow can be fed concentrates on the basis of her milk yield during the first 200 days of her lactation. After 200 days, the supply of concentrates is not only determined by milk yield, but also on the basis of the body condition.

BODY CONDITION SCORES

A cow's body condition is expressed in points. It is a matter of very close observation and touching in order to be able to give the right points (also see Veepro Magazine, September 2000). The best way to evaluate the body condition is by looking at the fat layers on:

- the tail hollow
- the pins
- the ribs
- the lumbar vertebrae

Scoring body condition by giving a score for the amount of fat in the tail hollows



DRY COW

After her lactation a cow enters a dry period that lasts for about 2 months.

It's advisory to divide the dry cows into 2 groups.

Group 1: Dry cows in stage I

This period lasts for a maximum of 6 weeks. During this time the cow is allowed some rest, especially from a production point of view.

Group 2: Dry cows in stage II or close-up stage

This period lasts a minimum of 2 weeks. The June 2001 issue of Veepra Magazine will cover this stage extensively.

In this article we will focus on dry cows in stage I. In the first week of this period the cow needs to dry up. After that, the ration must be balanced with her body condition. Ideally the dry period begins with a body condition of 3.5. During the dry period, the body condition should not fall back, not even when the cow was too fat when she entered the dry period. If the body condition of the cow is below 3.5 when entering the dry period, this cow can be fed above her energy levels so that her body condition can increase. The final goal is to make sure that the cow has a body condition of 3.5 at the moment of calving.

During stage I, the reticulum should rest, but the rumen should not shrink. Therefore, the cow should be fed unlimited amounts of roughage. In order to maintain

CHECKLIST FOR DRY COWS

- udder health, dried-up udder
- rumen fill
- rumination
- body condition of maximum 3.5. Evaluate at pins and ribs.



The udders of dry cows should be dried-up completely



Rumen fill
A full rumen should stick out slightly



Ruminating behavior

Dairy cows should constantly and strongly ruminate



the right level of body condition (any increase should be avoided), the quality of the roughage should not be too high. Summarizing we can say that the ration of a dry cow in stage I should meet the following criteria:

- voluminous, in other words sufficiently

dry and light;

- rumen filling, in order to keep the rumen in good shape;
- fiber-rich feed to keep the digestive system going;
- silage that is tasty with high sugar levels, not silage that smolders or contains fungus;
- with limited energy to prevent fattening;
- with limited protein in order to prevent waste;
- low calcium, because of the mobilization of the cow's own body reserves;
- low in potassium allowing optimum utilization of other minerals.

CHECKING LOW PRODUCTION COWS

1. body condition

- maximum score of 3.5;
- cows in this group must not get any fatter;
- take care with excessive starch in the ration.



2. manure composition

- feed should be well digested;
- manure composition should not be too thin or too solid;
- manure should not contain undigested feeds;
- the fibers in the manure should be short/digested. This indicates plenty of rumination.



The manure should not contain undigested feed

3. figures:

- kg milk, % fat, and % protein

COMMON MISTAKES

With low production cows and dry cows, the following mistakes are often made:

- excessive body condition scores at the start of the dry period;
- excessive body condition at the time of calving;
- making a cow with excessive body condition lose weight during her dry period;
- not enough body condition;
- incorrect minerals supply during the dry period.

EXAMPLE OF RATIIONS

It is impossible to balance an individual ration for each cow. The composition of rations for low production cows and dry cows is therefore done on a group-by-group basis. It is always possible to vary the amount of concentrates per cow within the group afterwards.

In this article we calculate the rations for a farm with an average milk yield of 8000 kg milk per cow. The average weight of the cows is 650 kg. The table below shows the rations that are suitable to be fed to low production cows and dry cows in stage I of the dry period. These ingredients are used to compose a ration for the low production and dry cows.

Ration for low production cow

The ration below is a ration for 20 kg milk with 4.25% fat. The average quality of the roughage is approx. 850 FUM (units energy). Single-fed concentrates have been used to balance this ration. These concentrates can also be fed mixed. The ration has a small deficiency in terms of energy. The total mineral content of the mentioned minerals is sufficient, without the need for adding extra minerals.

If limited grass silage is available, but straw is plentiful then part of the grass silage in the ration can be substituted by straw. As a result the dry matter intake will decrease, because the quality of straw is lower. Another consequence is that most of the time more concentrates with higher proteins levels have to be added to the ration.

Ration for dry cow

The table below shows a ration for cows in stage I, the first 6 weeks of the dry period. The calculated energy requirement is comparable to the maintenance requirements + the requirements for producing 6 kg of milk.

The ration is deficient in protein. In stage I of the dry period that is mostly not a problem. There is also a slight magnesium deficiency. This is not a problem either in this case, since due to the low protein and potassium content in the ration the utilization of Mg is very high. If desired a small quantity of MgO can be added to the ration.

STANDARDS FOR CONVERSION

	*FUM	MJ	GDPC
Maintenance / 600 kg body weight	5013	35.5	390
Maintenance / 50 kg body weight	300	2.1	25
1 kg milk 4.00 % fat	450	3.1	63

* 1 FUM = 1.65 kcal = 6.9 kJ
1000 FUM = 1.65 Mcal = 6.9 MJ
145 FUM = 1.0 MJ

Table 1. Analysis of the roughage and concentrates to be fed.

Feed	%DM	FUM	Gdcp	Gcp	Sugar	Ca	P	Mg	Na	K
Corn silage ¹	30	977	37	78	12	1.4	1.6	1.3	0.5	12.3
Grass silage 2 ¹	40	810	90	150	60	5	4	2.3	2.5	25
Barley straw ¹	85	520	10	40	-	2	1	1.2	1.5	12
Wheat meal ²	90	1064	94	111	22	0.7	3.2	1	0.1	4.2
Sugarbeet pulp ²	90	927	60	89	120	8.2	1	2.7	1.2	7.3
Soy pulp ²	90	990	386	424	75	3.5	7	2.6	0.2	20.4

¹ Analysis of corn silage, grass silage, and barley straw is per kg of dry matter.

² Analysis of the dry concentrates is per kg product.

Table 2. The ration for a low production cow with 20 kg milk and 4.25% fat.

Feed	Kg	Kg DM	FUM	Gdcp	Gcp	Sugar	Ca	P	Mg	Na	K
Corn silage	7	2	1954	74	156	24	3	3	3	1	25
Grass silage ²	30	12	9720	1080	1800	720	60	48	28	30	300
Wheat meal	1	0.9	1064	94	111	22	0.7	3.2	1	0.1	4.2
Sugarbeet pulp	1	0.9	927	60	89	120	8.2	1	2.7	1.2	7.3
Soy pulp	1	0.9	990	386	424	75	3.5	7	2.6	0.2	20.4
Total intake		16.7	14655	1694	2580	961	75	62	37	33	357
Per kg dry matter						154	58				
Total required			14750	1710	2505	1002	69	48	35	17	60
Per kg dry matter						150	60				

Table 3. The ration for a dry cow in stage I.

Feed	Kg	Kg DM	FUM	Gdcp	Gcp	Ca	P	Mg	Na	K
Grass silage 2	20	8	6480	720	1200	40	32	18.4	20	200
Barley straw	3.5	3	1560	30	120	6	3	3.6	4.5	36
Total intake		11	8040	750	1320	46	35	22	24.5	236
Per kg dry matter					120					
Total required			8000	800	1320	35	30	25	10	35
Per kg dry matter					120-130					



TIP:

Be careful not to include too much corn silage in the ration of low production cows, and cows in stage I of the dry period. Too much corn silage can lead to such high levels of undegradable starch that the cows will grow fat. In stage I of the dry period, the reticulum also doesn't get a chance to get sufficient rest in this case.