

Examples of rations

How much compound concentrate (with moderate content of energy and protein) should you supplement to a cow? This depends mainly on the type and amount of fodder fed, body weight, milk production, body condition of the cow etc. The table below is a rough guideline for the amount of concentrate feeds needed for a cow weighing 450 kg with average body condition and producing different amounts of milk.

Fodder ration per cow per day	Kg concentrate needed per day for a cow with the following milk production per day:					
	0 kg milk	5 kg milk	10 kg milk	15 kg milk	20 kg milk	25 kg milk
Rice straw 20 kg	3	5	8	11	11*	11*
Rice straw 10 kg + medium quality grass 30 kg	1	3	6	9	12	12*
Medium quality grass 55 kg	0	2	5	8	11	12*
High quality young grass 65 kg	0**	0	3	6	9	12

- * This amount is the maximum to be fed to avoid digestive problems (rumen acidosis) but the ration does not provide enough nutrients the cow needs and she will lose weight. Higher quality fodder is needed.
- ** The amount of nutrients from fodder is too much for this dry cow; if body condition is good the dry cow should be fed with lower quality fodder.

Attention points:

- When feeding a ration with low quality fodder extra protein is needed. Concentrate can be partly replaced by tofu waste or beer waste: 6 kg tofu waste or 5 kg beer waste can replace 1 kg of concentrates. Both can be included in the ration to a maximum of 25 kg per day.
- When feeding large quantities of concentrate (>6 kg) per day it should be divided and fed in at least



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Sustainable Intensification of Dairy Production in Indonesia

BALANCED FEEDING OF THE DAIRY COW



Why balanced feeding?

Feeding costs make up the largest costs of milk production. Balanced feeding is feeding the cow according to what she needs. This will result in lower feed costs per kg milk, a high milk production, good health, and less emissions to the environment.



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A dairy cow needs water, energy (carbohydrates, fat), protein, minerals and vitamins to maintain her body, to produce milk, for pregnancy and growth.

WATER

A dairy cow likes to drink water many times per day especially after eating and milking. Cows should have access to water all the time. The amount of water a cow needs per day is 10% of body weight (40-50 litres), plus the amount needed to produce milk (4-5 liters per kg of milk produced). An improved feed and water trough (see picture) makes sure that the cow can drink whenever she likes.



Example:

Minimum daily water consumption of a cow of 450 kg and 20 litres of milk.

Maintenance: 45 litres water
20 litres milk: 80 litres water

Total water consumption: 125 litres/day.

FEEDSTUFF

Fodder

A dairy cow is a ruminant. She therefore needs fibrous feedstuffs (fodder) to remain healthy. Fodder has a variable moisture content and also the nutrient contents of the fodder varies:

- High quality fodder (high energy and protein): young king grass (less than 1 m tall), leaves of sweet potato, legumes like Indigofera and Calliandra;
- Medium quality fodder (moderate energy and protein) : road-side grass, vegetable waste, maize stems, silage;
- Low quality fodder (low energy and protein): rice straw.

A cow will consume more of high quality fodder than of lower quality fodder.



Concentrate feeds and wet by-products

Concentrate feeds and wet by-products have a relatively high energy and/or protein content and are needed as supplement to fodder especially for lactating cows.

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Minerals and vitamins

Fodders and other feeds provide often not enough minerals and vitamins. If a mineral pre-mix is not included in the compound concentrate feed, additional mineral mixture should be fed separately. This mineral mixture should contain at least calcium, phosphorus and trace minerals like selenium etc.

Balanced feeding

Balanced feeding is feeding the cow according to her requirements. This means:

1. Feeding the cow according to her required body condition, the amount of milk produced, stage of pregnancy, etc;
2. Make sure that there is a good balance in the ration between the amount of fodder and the amounts of concentrates and wet by-products. Too large amounts of concentrates and/or wet by-products will lead to health problems (rumen acidosis);
3. A cow producing 20 kg of milk compared to a cow producing 5 kg should get better quality fodder and more concentrates or wet by-products;
4. Cows with a high milk production need concentrates or wet by-products with a high protein content;
When feeding low quality fodder, you need to supply extra concentrates or (wet) by-products with a high protein content;
6. Depending on her body condition, a dry cow should be fed with lower quality fodder and lower amounts of concentrate.