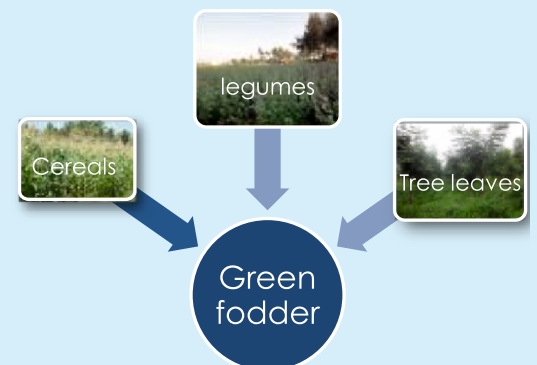


ICAR-NIANP
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- Balanced diet provides the nutrients for optimum health and production in dairy cows.
- Principal feed / nutrient resources are green fodder, dry fodder, concentrate mixture, mineral and vitamin supplements and potable water.
- Green fodder is the key for optimum production. It is a major source of dry matter, fibre and energy.
- Fodder based farming is more economical.
- Broadly green fodder resources fall in three broad categories- cereals, legumes and tree leaves.
- Feeding chaffed fodder reduces the wastage and improves the digestion and milk production.
- Dry fodder contributes major bulk to the fodder and increase the milk fat in high producing animals.
- Dry fodder resources include- paddy, wheat, ragi and jowar.
- Dry fodder is low in nutritive value especially the protein. Its nutritive value is increased by urea treatment.
- Dry fodder enrichment/ Urea treatment: Urea enrichment of dry fodder is done @ 2%. It can be sealed air tight and stored for 2-3 weeks for enhanced digestibility of straw. In brief, take polythene sheet and spread it over, to transfer 10 kg of chaffed straw. Dissolve 200g urea, 400 gm molasses/ jaggery in 3 liters of water, mix and sprinkle the solution with a rose can over 10 kg of chaffed straw. The treated straw is sealed in air tight bag and should be fed after 2-3 weeks of storage. Urea treated straw is similar to medium quality green fodder.
- The urea treated straw should be introduced gradually in feeding of ruminants.
- Calf should not be feed with urea treated straw.
- Feeding the urea treated straw in lactating animal increases the milk yield and reduce the concentrate requirement.



Sugar solution, urea & water



Preparing Urea solution



Spraying



Feeding

- Non-conventional or alternative dry fodder resources include Maize cobb & sheath, sugarcane trash, areca sheath, groundnut haulms and sunflower head.

Composition of Dairy Concentrate Mixture

Ingredient	Range (%)
Cereal grains (Maize/jowar/bajra/wheat/broken rice)	20-30
Grain by-products (Rice bran, wheat bran/rice polish/gram chunni)	0-35
Oil cakes (Groundnut cake / soybean / cottonseed meal)	15-35
Molasses / jaggery	0-10
Urea	-
Common salt	0.5-1
Calcite	0.5-2
Mineral mixture and other supplements	1-2.5

Concentrate Mixture Formula - High Yielding Cows

Ingredient	I	II	III	IV
Yellow maize grain	40	-	25	-
Broken rice / wheat grain	-	30	10	7
Jowar grain	-	15	7	30
Wheat / rice bran	20	15	15	-
Gram chunni	-	-	-	15
Groundnut cake	15	15	10	12
Coconut cake	02.50	7.50	10.50	-
Cotton seed cake	20	15	10	15
Molasses / Jaggery	-	-	10	8
Mineral mixture	2	2	2	2
Common salt	0.50	0.50	0.50	0.50
Total	100	100	100	100
Use at least 5-6 ingredients in a mixture for better quality				

Supplements:

Supplementation of most limiting micronutrient through area-specific mineral mixture @ 35-40 g / day to dairy animals having reproductive problems and mastitis. It improves overall health and reproductive efficiency of dairy animals.

- ICAR-NIANP, developed specific mineral mixture for sheep and goat. It is fed @ 5 gm per young one, 10 gm per adult sheep and goat. It improves the growth and immunity and reduce the lamb mortality.
- Water is the most important nutrient for dairy cattle. Dairy cattle need free access to a clean, quality source of water for optimal production. Animal require 3-4 litre water for each kg dry matter consumed. Additionally, 3 litre of water is required per kg of milk produced.
- Never offer water with concentrate mixture or immediately after feeding concentrate mixture. Water is offered after 2 hours of eating concentrate feed.
- In addition to drinking, dairy animal met the requirement of water by consuming feed that contains water, as well as from metabolism.
- Practical guidelines / thumb rule for ration balancing
 - Good quality green fodder (35 kg) and dry fodder (2 kg) can support milk yield up to 5 lit/ day/animal). Good quality green fodder (35 kg), dry fodder (3 kg) with legumes (5 kg) can support milk yield (8 lit/ day/animal). Concentrate mixture with green and/or dry fodder will be required for medium and high milk yielders (> 8-10 lit/day).
 - As the milk yield increases (>10 kg/day/animal), proportion of concentrate will increase in the diet. However, to maintain rumen function, minimum of 25% of dry matter must be supplied with fodder only.
 - As a thumb rule, for body maintenance 1.5 kg (cow) and 1.6 kg (buffalo) of concentrate mixture is required. For every 3 kg milk production additional 1.2 kg (cow) and 1.3 kg (buffalo) concentrate mixture is required. Remaining nutrient requirement should be met with green fodder and dry fodder.
 - Fresh 10 kg cereal or cultivated green fodder (DM 20%), or 5 kg fresh legume green fodder (DM 20%) is equivalent to 1 kg concentrate mixture (CP 18%, 68% TDN) and 1 kg dry fodder.
 - Feed both fodder (chaffed) and concentrate mixture as total mixed ration (TMR). This will prevent rumen acidosis, and improve feed utilization.

- **Calf Nutrition:** Colostrum is important for better immunity and growth of new born calf. It is fed @ 1/10th of birth weight till 4th day (2-3 lit / day). From 4th day - 15 days of age, whole milk is fed @ 1/10th of body weight. From 15 day - 25 days, milk @ 1/15th of body weight. A small quantity (50 gm) of calf starter can be fed along with the milk. From 25th days onwards, milk is offered @ 1/25th of body weight. Feed 100 gm calf starter. The quantity of calf starter should be increased gradually as per body weight and growth rate (Approx. 50 gm/week).
- **Heifer nutrition:** Offer leafy green fodder in their early life (after 25 days age) for the faster development of rumen. Stop feeding milk after 60 days of age. Increase the quantity of green fodder and concentrate mixture. Heifers prefer green hay. Hay prepared from legume fodders are most preferred to replace concentrate mixture. Good quality mineral mixture should be supplemented to heifers along with concentrate mixture.
- **Pregnant animal nutrition:** After six months of pregnancy, the growth of fetus increases. Additional quantity of concentrate mixture is recommended for pregnant cattle (1-1.3 kg/ d) and buffaloes (1.3-1.5 kg/ d) to support the growth of fetus during the last 3 months of gestation. Three weeks before calving change from more fiber diet to more concentrate diet for rumen adaptation. Feed mixture of 700 gm crushed maize, 300 gm oil cake per day. Feed 50 gm Anionic Mineral Mixture per day (100 gm mixture contain CaCl₂: 40.7 gm, MgCl₂: 33.3 gm, NaCl: 19.3 gm, CaHPO₄: 6.7 gm).
- **Nutrition of lactating animal:** After calving dry matter intake is reduced and milk yield increases. So, the animal losses body weight after calving. Animal must regain lost body weight within 60 days of calving to prevent post-partum anestrus. Increase maize grain in ration to meet the energy requirement (1 kg /day/animal).

Minimum 25 % of dry matter intake should be met through good quality greens, legume forages, good quality hay. Increase frequency of feeding (3-4 times a day). Increase bypass protein in diet, Feed bypass fat (80-100 g/day). Increase Ca in diet by adding 1% calcite powder in concentrate mixture. Feed Propylene glycol: 100 gm/day; Niacin vitamin: 2 gm/ day. Supplemental niacin given to cows in early lactation reduce the rate of fat mobilization, decrease the concentration of ketones in blood and increase blood glucose level.

Fodder First-Concentrate Next-Supplement Follow

Feed Good & Get Good



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