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Developments In Feed Block Making

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In a country like India, where the animals are maintained mainly on crop remains or residues, it is important to see that the ration given to the dairy animals are complete in all sense. To get optimum production and maximum benefits from the farm animals you must ensure that the animals are in good health. And good health depends on the quality of food given to them.The complete feed block (CBF) technology helps the dairy farmers in providing balanced feed to the animals, thus increasing milk production and profit incurred from dairy farming. Apart from being an economically feasible technique, the feed block technology offers many other benefits like easy transportation, cheaper storage, easy handling, correcting multi-nutritional shortage and reduced cost. Moreover, you can store it for at least one year.

Feed block technology

The complete feed block technology comprises forage, concentrate and other essential supplements in appropriate quantity to fulfil the nutrient requirements of your animals. CBF is an intimate combination of processed ingredients that includes roughage and concentrate parts designed to be the only source of feed in compressed form. It can be of any shape – square, circular or quadrangular, depending on the kind of dye used in the machine. It is the CFB technology that makes dairy or livestock farming a profitable and viable business. Addition of tree leaves along with locally available agro-industrial-by-products in complete feeds lessens the dependence on costly concentrates. In addition, feeding crop residues in block form proves helpful for efficient utilization.

Components of CFB

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The major components of complete feed block technology are forage and concentrate that is added in different ratios, depending upon the level of production. The minor components include - micronutrients and feed additives. Forage comprises crop leftovers such as wheat, paddy straw, maize stover and sugarcane tops. In hilly regions, forest grasses and tree leaves are also used. The dairy animals should be introduced with the complete feed block technology slowly. In the beginning, you must give the feed in small amounts and once they get adapted to it, you can increase the quantity.

Advantages

There are many advantages of CFB technology and some of them are listed below:

- It fulfils the nutrient requirements of the animals in the best possible way.
- Quality feed is available all around the year.
- It is cost-effective.
- The locally available animal feed resources can be utilized.
- Easy and cheap to store.
- Provides added benefit of correcting a multi-nutritional deficiency in animals.
- Enhances the utilization of poor quality of roughages.
- Results in low methane emission from animals.
- Improved productivity.
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Various formula of feed blocks :

Ingredients	Per 100 Kg
Cereal	25 %
Wheat or rice bran	37 %
Oil cake	35 %
Mineral mixture	02 %
Salt	01 %
Total	100

Ingredients	Per 100 Kg
Mustard cake	25 %
Barley grain	10 %
Leucaena leaf meal	20 %
Wheat bran	32 %
Urea	01 %
Molasses	10 %
Mineral mixture	01 %
Common salt	01 %
Total	100

Urea-molasses Blocks

- The animals lick such blocks and meet part of their daily nutrient requirements.
- The level of urea used in these blocks is generally 10%, although higher levels have also been tried.
- The main problem with such blocks is the maintenance of consistency. If it is soft, the animal consumes more material which may result in toxicity. If it is hard, the animal may not get the required nutrients.
- Different binding materials have been tried such as quicklime, cement, dolomite, magnesium oxide and starch. Cement and calcium oxide appear to be good binding materials.
- National Dairy Development Board, Anand, has popularised the blocks. They are called 'Buffalo Chocolates'.

Urea-molasses-mineral blocks

- These can be prepared by hot process or cold process.

- The composition is as follows:

Molasses	45%
Urea	15
Min. mix	15
Cottonseed meal	10
Salt	8
Calcite powder	4
Sodium. Bentonite	3
Total	100

Size = 245 x 150 x 65 mm

Weight = 3 kg

New developments in the manufacture and utilization of feed blocks

The increasing popularity of multi-nutrient feed blocks

Since the early 1980s, the manufacture and utilization of multi-nutrient feed blocks as supplements for ruminant animals have increased considerably in developing countries. The work of Leng (1983) in Australia and India has been a catalyst for the promotion of this technology. After the adoption of new and simple technology based on a cold process that needs no or little equipment (Sansoucy, 1986), the blocks have been developed in more than 60 countries on all continents. The manufacture and use of blocks were reviewed recently in international meetings (IAEA, 1991; Cardozo and Birbe, 1994) and their potential and constraints were identified (Rajkomar, 1991). The degree of adoption at the farm level varies much with local conditions: characteristics of the basal diet, availability and cost of different ingredients, production systems, end-product prices and marketing capacity.

What is new in manufacturing?

At the artisanal level, the hot process has practically been abandoned for the benefits of the cold process, which does not need sophisticated equipment (such as a double-jacket boiler) nor much energy (no heating). When the cost of labour is low and the quantities of blocks

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required in the region are modest, or when they are made on the farm, the blocks are made by hand, otherwise, the concrete mixer is the most commonly used equipment for mixing the ingredients.

New binders have been tried. In particular, ordinary clay used at the level of 20 percent in Cambodia (Kayouli, 1994a) and in the United Republic of Tanzania (Preston, 1993) has proved to be efficient for making blocks that include 20 percent diluted molasses (Brix 55) or the scums from artisan production of syrup (Brix 20 to 23). The other ingredients were: 35 percent bran, 5 percent cement, 5 percent lime, 7.5 percent urea and 7.5 percent salt. Clay is first mixed with water (50 percent of the clay's dry weight or 25 percent of its wet weight) and then the lime, cement and salt are added. The urea is mixed with molasses and then added to the clay and other components.

Molasses may not always be available or it may be too expensive in certain countries or regions. For this reason, alternatives have been studied to manufacture blocks without or with little - about 10 percentmolasses (Hassoun and Bâ, 1991). In this case, urea and cement must be diluted in water. Bran is mixed in at the end, and additional water (30 to 60 percent of the total weight of the dry ingredients) is necessary as all ingredients are dry or have low moisture content (Table 1).

Scums (filter muds) from the sugar industry, at the level of 40 percent, have also been used to replace molasses in blocks in Trinidad and Tobago (Sansoucy and Neckles, 1992, unpublished data) and Grenada (Pérez, 1994). This allows for a substantial reduction in production costs as the scums can usually be obtained from the sugar factory free of charge.

The manufacture of multi-nutrient mini-blocks for rabbits was first suggested by Rena Pérez (1986, personal communication), and then by Cheeke and Raharjo (1988). These blocks are designed to replace the pellets that are commonly used in developed countries, but which are too costly to be manufactured in most developing countries (Pérez, 1990). They usually do not contain urea and can be formulated to include the forage component of the diet, thus making a complete feed (Table 2). The level of intake may be controlled by varying the hardness of the blocks by using various proportions of cement (Amici and Finzi, 1994).

Conclusions

The various studies recently undertaken in different parts of the world concerning the manufacture and utilization of multi-nutrient feed blocks have led to real progress in the technology and its use. The practicability of the cold process has been demonstrated. The feasibility of making blocks without molasses has opened up new possibilities for their use in more countries and regions. On-station experiments and on-farm observations have improved the available knowledge on the technology.