

Feeding Of Farm Animals During Scarcity

P. K. Singh* and Chandramoni

Department of Animal Nutrition

Bihar Veterinary College, Patna-800014, India

* Corresponding author: E-mail: pankajvet@indiatimes.com, Contact: +91-9470017673

Introduction:

Scarcity of feed resources is a common problem limiting the animal production. Various natural calamities like floods, droughts and cyclone produces scarcity of foods and feeds. Among all, flood is the major devastating natural calamity leading to a heavy loss of vegetation. On an average about 50-60 percent of the cropped area in flood affected area remain submerged and it takes at least a minimum of 30 days to bring the field for cultivation purposes. Different kinds of damages caused by floods can be categorized as follows:

1. Loss of standing crops due to submerging in flood water.
2. Damage of stored dry roughage due to water soaking followed by fungal growth causing loss of digestible nutrients.
3. Washing away of dry roughage stored in open space by aggressive currents of flood water.
4. Damage of stored food grains by water soaking followed by fungal growth resulting in loss of nutrients and production of harmful/toxic metabolites.
5. Pollution of water with dung, urine, debris and other wastes.

On the other hand, drought causes a different type of loss where there is no or limited growth of plants. In such condition, there is an acute shortage of feeds and fodder in flood affected areas. Therefore, there is a need to formulate feeding strategy for maintenance of animals to ensure its survival during and after flood. Feeding strategies during scarcity depend on the specific conditions prevailing in any particular area. In general the farmer has to make decisions based on economics, knowledge of nutrition, the availability of feed resources and his calculated guess on the length of the drought.

Feeding technologies to be used during and after flood

1. Complete feed blocks
2. Urea molasses mineral block licks
3. Urea treatment of straws
4. Use of dry and fallen tree leaves
5. Use of conventional and unconventional feeds

1. Complete feed block (CFB):

Complete feed block is composed of forage, concentrate and other supplementary nutrients in desired proportions capable to fulfil nutrient requirement of an animal. The CFBs can be used during flood situations due to easy transport. Complete feed system is advantageous against conventional system of feeding by reduced labour cost, maintenance of uniform roughage concentrate ratio, uniform feed intake favouring uniform supply of nutrients and maintenance of rumen environment. This system of feeding is well suited to our country as it helps utilizing locally available crop residues, agro-industrial by products and non-conventional feeds. Minimizing feed cost and labour cost and maximizing production is the need of time and can be achieved by complete feed system. This system is economical and efficient as it allows inclusions of low cost Agro industrial byproducts and low quality crop residues with their efficient utilization. Complete feed supplies readymade, balanced, low cost ration for ruminants for the benefit of landless labourers and small farmers.

The CFBs were found to be very nutritious, easily digestible and handy to transport. The blocks were made of proportionate mixture of wheat bran, rice, bran mustard, groundnut cakes, one percent urea, molasses, minerals and salt. The blocks have dimension of 0.5 cubic feet containing about 13% proteins and 50 to 55% total digestible nutrients. The nutritive value is 33% higher than common feed. The machine costs about 3.5 lakhs.

Advantages of Complete Feed Blocks:

The blocks can be prepared in the surplus season and can be fed during scarcity and or transported to the deficit region for feeding of animals to save heavy loss of livestock. Different types of feed blocks *i.e.*, for maintenance, growth and lactation can be formulated. Major advantages of complete feed block are:

- Balanced and adequate intake of concentrate and roughage for better animal production.
- Prepared feed blocks require one third space as compared to mash form.
- Reduced loss of valuable dry matter, as left over feed/ wastages.
- The palatability, voluntary intake and nutrient utilization of low-grade roughage are increased.

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- Transportation of such blocks is easier and trouble free.
- May be used as a carrier of several chemicals and prophylactic medicines.
- Unpalatable feed ingredients which are otherwise safe, but not consumed by the animals can be incorporated in the CFB.
- Increased use of un-conventional feedstuffs, thereby feeding cost would be alleviated.

Thus complete feed block is an important strategy for efficient utilization of agro-industrial by-products economic and sustainable livestock production.

2. Urea molasses mineral block licks

The urea molasses mineral block (UMMB) is a strategic feed supplement for ruminant animals. Molasses, urea and other ingredients are used in the manufacture of molasses/urea feeds that are prepared as blocks. Crop residues are deficient in fermentable nitrogen, energy and minerals. In absence of adequate quantity of green fodder in the diet, rumen microbes don't get nutrients supply for their own growth. As a result, digestibility of fibrous feed in the rumen is affected. As ruminants can synthesize protein from non-protein nitrogen, UMMB supplementation delivers urea and energy in small doses on continuous basis. These preparations are an excellent way of providing readily degradable protein and readily fermentable energy to ruminant animals, and they help increase the protein supply to the animal. The blocks can be made from a variety of components depending on their local availability, nutritive value, price, existing facilities for their use and their influence on the quality of blocks. They can also include specific components.

- Molasses provides fermentable substrate and various minerals and trace elements (but low amounts of phosphorous). Because of its pleasant taste and smell, it makes the block very attractive and palatable to animals
- Urea, which provides fermentable nitrogen, is the most important component of the block. Urea may increase the intake of straw and other low quality forages as well as their digestibility. The intake of urea must be limited to avoid toxicity problems but sufficient to maintain ammonia levels in the rumen consistently above 200 mg N/l for growth of microorganisms in the rumen and high rates of degradation of fibre.
- Wheat or rice bran has a multiple purpose in the blocks. It provides some key nutrients including fat, protein and phosphorus. It also acts as an absorbent for the moisture contained in molasses and gives structure to the block.
- Minerals may be added where appropriate. Common salt is generally added because this is often deficient in the diet and it is cheap. Calcium is supplied by molasses and by the gelling agent, calcium oxide or cement.
- A binder is necessary in order to solidify the blocks. Various products have been tried successfully: magnesium oxide, bentonite, calcium oxide, calcium hydroxide and cement. The use of cement has raised questions about possible negative effects on animals. Research on the use of cement or its by-product, cement kiln dust, as a mineral supplement have not shown adverse effects at levels of 1 to 3 per cent of the total diet dry matter. However, the USDA has restricted the use of cement kiln dust since it could cause a deposit of heavy metals in animal tissue.
- Various chemicals or drugs for the control of parasites or for manipulation of rumen fermentation can be added to the molasses blocks which can be an excellent carrier for these products.

UMMB developed by different private and government agencies are very helpful in saving life of animals during scarcity. NDDDB, Anand developed such licks containing Urea 15%, molasses 45%, mineral mixture 15%, cotton seed cake 10%, salt 8% calcite powder 4% and sodium bentonite 3%.

3. Urea treatment of straws

Potential sources of feeds for small livestock are by-products from both arable crops and agro-industrial processes. These can be valuable sources of nutrients for livestock, rich in both protein and energy. However, they are often low in nutritive value but rich in anti-nutritive factors. Many of the crop by-products (such as straws and stovers) are also extremely fibrous and more suitable for feeding to large ruminants (such as cattle and buffalo) rather than sheep and goats.

When straws form a large component of the diet, the rumen micro-organisms grow very slowly because of the low availability of either energy or protein. This in turn lowers the digestibility of straw still further, as it is only in the rumen that the straw will be digested. Straw digestibility is increased a little (although the amount of feeding value obtained from straw is still extremely low) if the rumen micro-organisms are provided with some readily available energy and protein, so that they are able to grow. The increased microbial population is then able to digest the straw to a slightly greater extent. This is the rationale behind either treating straw with urea (to provide nitrogen for the rumen microbes) or supplementing the diet with protein, urea or (preferably) both urea and molasses.

There has been a considerable amount of work done on the urea treatment of straw. The recommended treatment rate is 40 g urea/kg straw with the urea usually being added as a solution in water (40 g urea/l water) which is then sprinkled on the straw. The straw may then either be fed straight away, or ensiled to enable the urea to degrade the fibre to some extent. If the urea treated straw is fed straight away, then straw digestibility is increased by about 5 units, whereas if it is ensiled for ten days, the increase in digestibility is twice this. It should also be noted, when using this technology to improve the feeding value of straw for goats, that goats are extremely susceptible to urea toxicity and will die from urea toxicity at much lower dose rates than is the case with large ruminants such as cattle and buffalo. It is therefore important that if straw is treated with urea, the urea solution is dispersed

4. Use of dry and fallen tree leaves:

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Besides common fodder, shrubs and herbs like pipal, neem, mango, kathal, etc. other non-toxic tree leaves may also be fed to farm animals to supply part of their nutritional requirements. The availability of digestible protein for most of the green tree leaves is limited to 1-2% and energy equivalent to 10-15% of total digestible nutrients, on fresh basis containing about 15% dry matter. They are potential sources of much needed carotene, the source of vitamin A activity.

5. Use of conventional and unconventional feeds

The different kinds of conventional and unconventional feed stuffs for the preparation of rations of different categories for feeding of flood affected animals been listed below:

A. Crop residue:

Rice is the staple food for the people, the farmers of all the state cultivate paddy as the main cereal crop. After harvesting the grain from the crop, the left portion is known as straw. These straws are collected from the field by the farmers and stored after drying in big stock for feeding of animals. Paddy straw constitutes the basal roughage of cattle and buffaloes in different northeastern states of India. It is usually stored on wooden or bamboo platform raised over the ground. This is required to minimize spoilage in the heavy rainfall areas.

A. Sugarcane crop residue:

Sugarcane is cultivated in some part of India. After harvesting the sugar cane the green tops available as a waste can be used for the - feeding of cattle and buffaloes. Some quantity of cane tops is converted into hay at some places, while good quantity of it goes waste, which can be preserved by ensiling. Sugarcane trash mostly used as fuel for the preparation of jaggery, may also be use to supply part of the roughage requirement after chaffing and enriching with more palatable and nutritious feeds.

Bagasse is available in sugar factories and crushers after extraction of juice. A small quantity is also available with farmer during the process of jaggery preparation. Parity large proportion of bagasse is used as source of energy in the form of fuel for boilers. The palatability and nutritional value of bagasse for the livestock (cattle and buffaloes) are much better than the rice hull available from the huller rice mills and the latter may be used as fuel saving the former for the feeding in need during scarcity period.

B. Aquatic plants:

Several types of aquatic plants ate available in river, pond and other water logging areas may be used for the feeding of farm animals. Although the palatability of most of the aquatic plants is not good but the voluntary intake often exceeds 1 kg dry matter per 100 kg body weight in cattle and buffaloes. Besides supplying protein and energy they are rich sources of carotenes. So far the common aquatic plants tested for the feeding of farm animals are water hyacinth, aquatic spinach, stalks and leaves of lotus plant (*Neumbiull* sp.), water chestnut (*Trapa natans*), hydrilla, pistia, aquatic weeds and . They are available readily at most of the places during floods, which can be used in different forms for feeding of animals during scarcity.

Post flood feeding management:

- Animals should not be allowed to graze in water logged areas.
- Feeds to be protected form fungal contamination and wet feeds to be dried and fed.
- Provide clean drinking water to animals.
- 40-50g of salt per adult animal and 10-20g for small ruminants and calves to be provided daily through feed.
- Attempts need to be made to provide ready to eat feed blocks particularly to the pregnant and lactating animals.
- Requirement of energy may be met by providing crude molasses.
- Top feeds / tree leaves available in the area be provided to meet the dry matter requirement.

Planning for feeding of flood and drought affected animals:

Keeping in view of flood and drought situations, there is a need to establish feeds and fodder banks at non-affected areas. Ministry of Agriculture and Cooperation has a scheme with the name of Gramin Bhandaran Yojana. Similar programmes may be proposed for feeds and fodder to encourage farmers to contribute in such banks. These banks are necessary to meet the emergency needs of livestock during floods and other natural calamities.

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