



Bottlenecks in Adoption of Feeding Practices for Dairy Animals in District Kapurthala

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ABSTRACT

The present study was undertaken to find out the bottlenecks in adoption of recommended feeding practices by dairy farmers in district Kapurthala. The data were collected through a questionnaire from a total of 200 dairy farmers. It was observed that 27.5 and 39.5 per cent of farmers were having animals between 1 to 5 and 6 to 10, respectively. On the other, 46.5 per cent farmers were keeping less than 5 lactating animals and 28 per cent were possessing between 6 to 10 lactating animals. Only 5.5 per cent farmers were keeping lactating animals more than 20. The present study revealed that poor knowledge about the nutritive value of feed ingredients (86.5%), high cost of raw feed ingredients (28%), shortage of skilled and committed labour (32.5%) were found to be major bottlenecks regarding adoption of cattle feed formulation technology at the dairy farm. Lack of awareness among dairy farmers (82%), regarding role of mineral mixture and its use followed by its non availability in villages (90%) were the main limitations in its adoption. Non availability of urea molasses mineral block (UMMB, 95%), Poor infrastructure available for milking lactating animals (92.5%), no knowledge about fodder preservation (95%) and lack of knowledge about disease symptoms (90%) were considered the major problems faced by the dairy farmers in the adoption of feeding practices in the district.

Key Words: Feed Preparation, Balanced Feeding, Silage, Hay Making.

INTRODUCTION

The technology transfer plays an important role in the development of agriculture and other subsidiary occupations. Transformation requires that dairy farmers need to be convinced to accept and change the existing package of non-recommended practices being followed by them. They need to be prepared mentally and emotionally to accept the new technologies with the continuous efforts of the government and other extension agencies. Extension system had played a crucial role in enhancing milk production in the country which needs no further emphasis. However, there still exists a wide gap between the technologies available with the research system and its adaptation at farmers' field particularly in the sphere of livestock feeding (Meena *et al* 2014). A large number of problems have been identified which are responsible for the low productivity in cattle and buffaloes as reported by the different categories of the dairy farmers (Sharma *et al* 2013b).

The feeding practices followed by the farmers were considered one of the major constraints identified in enhancing the margin of profit for farmers. Similarly, lack of green fodder throughout the year, lack of availability of good quality feed from market and poor knowledge of the farmers about the balanced feeding resulted in number of problems related to reproduction, diseases and milk yield. To enhance the milk production and to prevent the disease incidence, a number of feeding technologies has been identified and were disseminated amongst farmers through training courses, lectures and demonstrations laid by Krishi Vigyan Kendra. Sharma *et al* (2014a) reported that after acquiring the trainings, the knowledge level of the dairy farmers has increased in feeding practices and thus, 55 per cent of farmers have started making balanced ration at their own home and are reluctant to use readymade compound cattle feeds available in the market. At the same time, the use of mineral mixture (33.3%) and urea

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molasses mineral block (UMMB) lick (15.0%) has also increased whereas technology of silage making was not adopted by any dairy farmer. The point that needs special attention was that till now the introduction of new skills as well as techniques demonstrated through conducting vocational training programmes, practical, lectures, seminars etc. has met with only partial success as measured by the observed rate of adoption (Sharma *et al* 2014a). Hence, non adoption of new technologies and farming on traditional lines were the evident factors responsible for low profitability and economic losses in dairy farming as reported by Bilal *et al* (2008). Therefore, the specific objectives of the present study were to find out the bottlenecks in adoption of feeding practices for feeding of dairy animals by the dairy farmers of the area.

MATERIALS AND METHODS

Out of five blocks, 2 adjoining blocks to KVK, Kapurthala were selected. From each block, clusters of 10 villages and from each village 5 dairy farmers were selected. In addition to this, this paper is based on the data collected personally from 100 dairy farmers, who visited Krishi Vigyan Kendra, Kapurthala in order to get information, trainings, seminars, lectures etc. The data were collected through a questionnaire from a total of 200 dairy farmers. Data on the general background and about the adoption of various technologies like herd size, formulation of cattle feed at the dairy farm, use of mineral mixture, preparation of urea molasses mineral block (UMMB), balanced feeding of the animals, preservation of fodder for scarcity period such as hay and silage making, urea treatment of wheat straw followed by each dairy farmer in the sample have been collected by following interview method and classified by using frequency and percentage.

RESULTS AND DISCUSSION

Herd size

The data given in Table 1 showed that 27.5 per cent and 39.5 per cent dairy farmers were keeping up to 5 and 10 animals, respectively whereas 16.5per cent were having between 11 to 15 animals. Only 7.5per cent farmers kept more than 20 animals whereas 9.0 per cent were

possessing between 16 to 20 animals. Total number of lactating animals available with a dairy farmer revealed that 46.5 per cent farmers possessed less than 5 animals which showed that animals were being kept in order to meet the home consumption of milk. It was evident that only 5.5 per cent farmers were having lactating animals more than 20 number (Table 1). Furthermore, the high cost of a lactating buffalo and cross bred cow is reported to be a major constraint in increasing the herd size by dairy farmers. This observation was in line with that reported by Sharma *et al* (2013 a). Hence, it can be said that due to lack of technical guidance as well as other various constraints, dairy farmers were not increasing their dairy herd size.

Table 1. Herd size available with the farmers .

Parameter	Number	Percentage of farmers
A. Number of total animals		
i 1-5	55	27.5
ii 6-10	79	39.5
iii 11-15	33	16.5
iv 16-20	18	9.0
v >20	15	7.5
B. Number of lactating animals		
a. <5	93	46.5
b. 5-10	56	28.0
c. 11-15	26	13.0
d. 16-20	14	7.0
e. >20	11	5.5

Feed preparation at home

It was observed that the traditional method of feeding consisted of giving individual ingredients that were locally available in a fixed proportion. No attention was given to the different nutrient requirements of animals kept for different purposes. Such observations have been reported by Quddus (2012) that majority of the farmers did not follow the recommended feeding practices. Similarly, Sathiadhas *et al* (2003) were also of the view that about 54 per cent farmers fed their cattle with concentrate but the feeding of recommended ration was not followed by them. As a result of this, the animals are either underfed or overfed which leads to occurrence of reproductive problems, stunted growth, birth of deformed calves, night blindness, high calf mortality, poor milk yield, etc., in dairy animals.

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Table 2. Problems faced by the farmers in adopting feeding practices.

Sr. No.	Parameter	Number	Percentage
1. Cattle Feed Formulation			
a.	Non-availability of some feed ingredients.	83	41.5
b.	Poor knowledge about identification and nutritive composition of feed ingredients	173	86.5
c.	High cost of quality feed ingredients	56	28.0
d.	Lack of mixing and grinding facilities for cakes and small cereals in villages	160	80.0
e.	Shortage of skilled labour	65	32.5
f.	Poor storage facilities at the dairy farm	50	25.0
g.	Absence of weights and measures at the dairy farm	140	70.0
2. Use of Mineral Mixture			
a.	Lack of awareness about role of mineral mixture and its method of use.	164	82.0
b.	High cost of mineral mixture sold by private firms	150	75.0
c.	Non availability in the villages.	180	90.0
3. Preparation and use of UMMB			
a.	Unawareness about UMMB composition, benefits, precautions.	162	81.0
b.	Method of feeding	185	92.5
c.	Non availability	190	95.0
d.	No marketing network	160	80.0
4. Balanced Feeding of Animals			
a.	Non availability of good quality fodder seeds	120	60.0
b.	Non availability of green fodder throughout the year	60	30.0
c.	Small land holdings	164	82.0
d.	No knowledge about fodder preservation	190	95.0
e.	No knowledge about proper stage of forage harvesting	135	67.5
5. Marketing of milk			
a.	Low selling price of milk at the village level	120	60.0
b.	No knowledge about milk quality	135	67.5
c.	Poor infrastructure for milking lactating animals	185	92.5
d.	High incidence of mastitis	152	76.0
e.	Poor storage facilities at the village level.	140	70.0
f.	No knowledge about milk testing	150	75.0

It was found that dairy farmers were using readymade cattle feed from the market along with homemade mixture of cereals and oil cakes. The adoption regarding formulation of balanced cattle feed (55%) at the dairy farm was probably due to the fact that since cereal grains are abundantly available with the farmers and are offered without any measurement neither by taking into account milk production of the animal nor state of health i.e. dry, pregnant, milking or growing etc. It was emphasized in the training courses that feeding of cereal alone is not of much help in increasing the milk yield and for this, adding of oilseed cakes, minerals and vitamins is essential. Hence, a large number of trainees started making compound feed at the dairy farms.

Regarding problems, 41.5 per cent farmers reported that some of the feed ingredients mentioned in the feed formulae were not available in the local market and 86.5 per cent farmers were ignorant about the identification of oilseed cakes and various other ingredients required for making balanced feed e.g. rice bran, rice polish de-oiled rice bran, wheat bran, maize gluten meal, soya flakes, mustard cake, de-oiled mustard cake etc (Table 2). Similarly, all of them were ignorant about the nutritive value of these feed ingredients, maximum or minimum inclusion in a ration, anti-nutritive factors present, cost and availability in the market. In addition to this, whenever a farmer purchased a small quantity of these ingredients from the market, the cost of compound cattle feed

became uneconomical due to the reason that the retailer sold these feed ingredients at a very high rate. Moreover, farmer has to incur expenditure for its transporting, grinding, mixing, packing etc. which discouraged farmers to make cattle feed at the house hold level particularly for a small farmers. On the other hand, large farmers possessed all the resources and did not face any constraint. Likewise, readymade cattle feed available in the market were found to be easily accessible to a farmers and that too on credit basis at least for 45 days. These findings were in close accordance with most of findings of Quddus (2012). It was thus evident from the discussion with the dairy farmers that technology should be easy, cost effective and minimum time consuming for its quite adaptation.

Use of mineral mixture

Feeds fed to animals are generally deficient in minerals. Straw used during lean period is especially a poor feed for animals. It is estimated that up to 70-80 per cent of the reproductive problems are mainly due to minerals deficiencies in animals. Hence, use of mineral mixture becomes imperative. It has been reported by Sharma *et al* (2014a) that by imparting training, the adoption of feeding mineral mixture reported by dairy farmers was sometimes (61.7%) and always (38.3%) indicating that lack of awareness was the main reason was non adoption of using mineral mixture in daily feeding schedule of animals. Therefore, lack of awareness emphasizes the findings of Gangil *et al* (2005) who suggested about the need for training the dairy farmers about basic knowledge of the diseases.

Contrary to this, emphasis was also given to formulate mineral mixture for use at own dairy farm and for selling to other farmers. No farmer took initiative and major constraints noticed were lack of confidence in purchasing the raw material required, mixing, packing labelling and marketing of the product (80%), low education level (middle, matric or graduate). Low educational level and non exposure to the market were considered the main reason for non adoption of manufacturing and selling the mineral mixture. This component is very important for the job creation point of view among the unemployed youth but the study

revealed that until or unless an individual is a needy, have finance, good personality and business background, it seems impossible to create job opportunities for unemployed youth. Moreover, in Punjab a youth does not want to work with his own hands rather seeks that some labourer should work for him and give the earning to him. Thus, it can be said that dignity of labour is missing among the young youth. This observation coincides with that reported by Rathod *et al* (2011) that majority of the farmers (74 %) opined that youth were not interested in carrying out dairy farming for their livelihood.

Preparation and use of urea molasses mineral block (UMMB) for feeding of animals

As the name suggests, the UMMB consists of urea, molasses, some proteins, minerals and binding agents. All the ingredients are made in the form of block by using binding agent. Sharma *et al* (2014a) reported that after acquiring training at the Krishi Vigyan Kendra, Kapurthala, 65 per cent of the dairy farmers started using this technology at their dairy farms but only 15 per cent were found using it regularly. In another study, Sharma *et al* (2014b) observed that dairy farmers who fed UMMB to the dairy animals, more than 80 per cent of them were fully satisfied with the effect of feeding of UMMB on the dry matter intake, milk yield and per cent milk fat but the availability of the UMMB licks was considered as the major constraint.

Later on, KVK imparted vocational trainings to the unemployed youth regarding preparation of UMMB but it was noticed that none of them could start the business of its preparation and selling. The major bottlenecks identified were unawareness among the dairy farmers about the UMMB, its importance and benefits. As a result, no one started its production. Moreover, the feed retailers too did not come forward for its sale stating that it requires time and energy to make the concept understandable to a dairy farmer which is not possible for them because they are marketing the products which either the farmer demands or veterinary doctor prescribes. Hence, it can be said that for a rural youth, it is extremely difficult to enter in the marketing, therefore, everyone is realizing on the cultivation of cereals

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in which the minimum support price (MSP) is guaranteed by the centre government.

Balanced feeding of the animals

Farmers can sustain the milk yield of 5-8 kg/d in dairy animals by only feeding green fodder provided the fodder offered should be a blend of leguminous and non leguminous fodder crops like Berseem + Oats, Maize+ Cowpeas etc. Further, supplementation of ration with 1kg. of concentrate mixture for every 2.5 kg of milk in case of buffalos and 3.0 kg of milk in case of cattle is required to get milk yield more than 8 kg. It was observed that farmers are not following the recommendations due to the fact that they grow the fodder crops in low fertile soils and moreover, no particular area is earmarked for fodder cultivation and did not grow more than one fodder in a season e.g. berseem during *rabi* and bajra during *kharif* are the major fodder crops, whereas oats along with berseem and cowpeas or guar along with *bajra* need to be fed so that energy + protein can be fed simultaneously. Some farmers (60 %) reported non availability of good quality fodder seeds timely in the market. Likewise 30 per cent farmers did not possess green fodder throughout the year, therefore, balanced feeding becomes difficult and farmers prefer to feed whatever is available at the farm.

Another recommendation is that each adult lactating animal should be fed at least 40 kg green fodder, 5-6 kg dry and 2-3 kg of concentrate mixture depending upon the milk production level. In the field, it was observed that there is no provision of weighing green and dry fodder at small dairy farms so feeding of a measured quantity of feed and fodder could not be adopted. Secondly, each farmer is procuring only one type of readymade cattle feed (Type 2) and is fed at the time of milking to the lactating animal but not to the dry or pregnant animal. The major observation noticed from the present study was that the trainings are regularly imparted to the farmers or unemployed youth whereas all the animal husbandry practices are undertaken at the dairy farm either by the hired labourer or farm women. Hence, a large gap is there in the recommendations and adoption of the technologies. In order to go for balanced feeding

of the dairy animals, following feeding technologies need be followed at the dairy farm:

Preservation of fodder for scarcity period

Farmers usually don't make planning for getting green fodder throughout the year. Moreover, due to less land holding, priority for fodder cultivation is low. Hence, there is a great scarcity during the months of May-June and October-November in a year. It has been suggested by research system that on a piece of one hectare area about 10-12 animals can be maintained by adopting suitable crop rotations. During a particular time of a season, when fodder availability is surplus, it can be conserved as hay and silage. Thus, problem of scarcity can be tackled by proper storage of fodder. In one of the study, Sharma *et al* (2014a) observed that no farmer adopted this technology in spite of the best efforts made by the KVK scientists.

The various constraints noticed were that farmers in the area were growing mainly Paddy-Potato-Muskmelon/Maize/Sunflower. Some of them are even purchasing wheat from the market for the home consumption. Similarly, dairy is being practiced by the small, landless farmers who cannot afford to preserve the green fodder as silage or hay. It is worth to mention that the dairy business in the cities or around cities is more remunerative than in the rural area due to difference in the selling rate of milk. In the cities, the rate is Rs. 40 to Rs.46/kg whereas in the villages it is around Rs. 22/- to Rs. 25/- kg. The huge margin is earned by the middleman who procures milk from the village and sells in the market. Further, in the cities, dairy farmers purchase daily green fodder mixed with wheat straw and directly feed to their animals whereas in the rural area, a farmer is growing a fodder crop, cut, transport, chaff, mix it with dry fodder and then offers to the dairy animals. All these operations require labour, time, energy and money.

Silage making

It was revealed by the dairy farmers (40.5%) during the survey that feeding of silage does not result in an increase in milk yield over the green fodder feeding. Moreover, silage preparation involves lot of labour for cutting and the chaffing

fodder, filling up in the silo pit, transportation of green fodder from field to the chaff cutter unit area and thus did not suit them to adopt in their dairy unit. In addition to this, land holding of the small farmers is less and thus they prefer to go for cash crops like vegetables. Other reasons reported by the participants were presented in Table 3.

Table 3. Constraints in adopting urea treatment of wheat straw, silage and hay making.

Sr.No.	Parameter	No. of farmers	Percentage
1.	Small holding	78	39.0
2.	Less number of animals	133	66.5
3.	Cropping system	72	36.0
4.	Labour intensive	136	68.0
5.	Not beneficial	51	25.5
6.	Uneconomical	32	16.0

Hay making

Hay making is one of the best methods of fodder storage. Green forages with 80–85 per cent dry matter preserve most of their nutrients so during hay making the moisture content of green forages is reduced to less than 15 per cent. It was observed from the study that dairy farmers were fully reluctant to use this technique at their dairy farms due to lack of space for cutting, drying and storing the dried hay. Moreover they were of the opinion that the rate of wheat straw is increasing day by day, it is better to store wheat straw rather than hay because wheat straw is made just after harvesting of the wheat crop with the help of straw reaper or thresher machine. It was, thus inferred that farmers in Punjab is more interested in mechanization rather than manual work. Moreover, most of the field operations are performed by the hired labour.

Urea treatment of straws

The method is perhaps the most economical method of improving the quality of straw used for animals where there is plenty of straw, medium to low animal production, and limited access to other supplements. Treated straw can be fed to growing, lactating, and pregnant cattle and buffalo. The treatment process involves use of 14 kg urea dissolved in 200 l of water is sprinkled on 300 kg. Wheat straw in 2 to 3 layers and this treated

material is covered with a polyethylene sheet, for hydrolysis of urea to take place, thereby resulting in more digestibility of wheat straw.

The cardinal factor that determines the economics and practicality of urea treatment is the method of storage. Covering the stack is important and can be achieved by using polythene sheets, empty urea bags stitched together, or even dried grass/leaves to keep it airtight. Cemented storage structures are ideal for urea treatment but not practised at the field conditions. Pits or mud structures are the other options available. The dairy farmers did not see any benefit in adopting this technique because it involves labour, time and money. Moreover, the beneficial effects are not visible to the farmers as claimed by the research scientists. Again educational level, age of the dairy farmer, economic situation, farming experience, linkages with the development departments etc play a crucial role in the adaptation of a particular technology. These findings were in agreement with those reported by Rathod *et al* (2011).

CONCLUSION

The study revealed that poor knowledge about the nutritive value of feed ingredients, high cost of raw feed materials, shortage of skilled and committed labour were found to be major bottlenecks regarding adoption of cattle feed formulation technology at dairy farm. Lack of awareness among dairy farmers (82 %) regarding role of mineral mixture and its use followed by non availability in villages were the main limitations for adoption of mineral mixture and UMMB. Dairy is being practiced by the small, landless farmers who cannot afford to preserve the green fodder as silage or hay. It is worth to mention that the dairy business in the cities or around cities is more remunerative than in the rural area due to difference in the selling rate of milk. In the cities, the rate is Rs. 40 to Rs.46/kg whereas in the villages it is around Rs. 22/- to Rs. 25/- kg. It was thus, inferred that educational level, age of the dairy farmer, economic situation, farming experience, linkages with the development departments etc. play a crucial role in the adaptation of a particular technology.

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