DAIRY CATTLE FEEDING – EVIDENCE BASED PRO-POOR INSTITUTIONAL APPROACH

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Introduction

The dependency of rural poor on livestock for their livelihood is quite substantial and this situation is likely to continue for the years to come. More than 90 % of cattle, buffaloes, sheep and goat are being reared in rural areas (GOI, 2006). Among the livestock, dairy cattle play a pivotal role in the livelihoods of the poor people especially those who are poor not only in land assets but also in literacy, access to infrastructure facilities, information and basically unskilled. These rural poor had no option but to take up dairy farming as a main occupation as it is the only enterprise which could provide regular income (Milk Money) serve as asset (moving bank). Dairy farming forms the second or third largest economic activity in the country (Parthasarathy Rao et al, 2004). Dairy farming basically a crop residue based enterprise is slowly getting transformed into external input based system where in the dairy farmers have to depend upon purchased inputs to rear cattle.

The importance of feeds and fodders in dairy farming needs no emphasis. With increase in the pressure on land due to urbanisation and industrialisation and decrease in the area under food crops coupled with increasing demand for milk and milk products the dependency on external or purchased inputs is increasing concomitantly putting pressure on the dairy farmers especially the resource poor. Efforts are being made to reduce the yawning gap between the requirement and availability of feeds and fodders which include technological interventions to increase the yields, bringing more area under fodder crops, conservation of feeds and fodders, improving the nutritive value of the poor quality roughages, formulation of balanced rations, feeding of unconventional feeds etc. But "fodder scarcity" is a challenging reality in most of the developing countries including India, where dairying is largely the avocation of the poor, especially women. This paper attempts to compare the common dairy farming systems, and the experiences of addressing the issue of fodder scarcity with special reference to the landless dairy farmers in Puducherry.

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Landless dairy farming:

The focus of this paper is on landless dairy farmers because of the following reasons:

1. Their contribution to milk bowl is quite substantial
2. Their increased dependency on dairy cattle for livelihood security.
3. Their share is about 60 % of the total dairy farmers

With increasing demand for milk and milk products both internal and external the participation of private or corporate sector entering into the system will be increasing thus threatening the livelihood security of the rural poor who are getting marginalised in the process. The issue is how to protect the interests of the poor dairy farmers and yet keep pace of increasing the milk production. This issue was very well highlighted by Henriksen (1998). Even the well acclaimed Operational Flood programme is not devoid of the criticism that it had marginalized the poor cattle owners especially the landless labourers (Verhagen, 1990). The institutions especially the government have a major role to play in formulating pro poor policies which requires an understanding of the dairy farming systems, which are dynamic in nature. Otherwise the expected high demand for livestock products is likely to result in a scenario with high concentration of animals in large scale industrialized production systems and marginalised small scale livestock producers (Chacko et al, 2008). In case of resource poor livestock owners the main purpose of rearing livestock is to minimise the risk rather than maximising the profit (Orskov, 2007). These differences in perceptions and priorities of livestock owners need to be appreciated and recognised before contemplating the development programmes (Rao et al, 1995).

Livestock rearing often is the only economic activity accessible to the poor people in developing countries as it does not require formal education or large amounts of capital and often no land ownership (Steinfeld et al 2006). The research clearly showed that the landless dairy farming have no other alternative but to continue to lead their life with dairy cattle supplementing their income through agricultural labour. A crossbred cow may appear and mean same for all the people who rear it .But the value of cow varies depending upon the context in which it is being reared. The value of cow to a family is negatively related to the family income, indicating thereby that a cow is more valuable to a landless family than to a small farmer family as the livelihood of the former depends to a great extent on the cow. This variation need to be taken into consideration while formulating policies of dairy development. Many researchers expressed their concern for these poor livestock keepers whose livelihoods depend upon livestock and the challenges these resource poor families face in rearing livestock (de Jong 1996, Ranjan, 1999, Garforth, 2001, Owen et al, 2005).

Landless dairy farming is emerging as an important livestock farming system characterized by rearing one or two low productive cattle maintained exclusively on

grazing on common property lands or private land with little or no purchased inputs. The landless dairy farmers mostly derive their bread from working as agricultural labourers supplemented with income generated from cattle rearing. The contribution of landless dairy farmers to the national milk bowl is quite substantial (Shukla and Brahmankar, 1996, De Leeuw *et al.* 1999, Ahuja *et al.* 2000, Datta 2002). Realizing the potentiality of dairy cattle in improving the economy of resource poor people especially the landless, the Government of India has recognized dairying as an instrument of socio economic change. It is a boon for these families to own a cow or a buffalo (Candler and Kumar, 1998) and the ownership of this asset increases the confidence and self worth of women (Ramaswamy *et al*. 1999, Ramkumar and Rao 2007), whose contribution in cattle rearing is well recognized (Dhaka *et al*. 1995, Rangnekar *et al*. 1993, Patel 1993, Patel 1998, Bravo-Bauman 2000, Rao 2001, Ramkumar and Rao 2001). The surplus labour in these families can best be utilized in rearing dairy cattle thereby generating productive employment in the rural areas.

Cows are being reared by people who do not own land and farmers who own land of different sizes. There are differences among the various categories on different parameters of dairy farming. (Table 1).

Table 1. Differences in the Landless and Large Farmers on Various Parameters of Dairy Farming

Sl.No	Parameter	Landless	Marginal / Small	Large
01	Cow as a livelihood asset	to a great extent	to some extent	No
02	Dependency on external inputs such as fodders	Very high	Low	Very low
03	Purpose of Milk production	Subsistence/ Almost entirely for sale	Mostly for sale	Surplus only for sale
04	Milk consumption	Less, and only when cow is in milk	May purchase when cow is not in milk	Regularly consumes milk
05	Type of labour involved	Fully family labour	Family / hired	Fully hired labour
06	Cost of production	Low because opportunity cost is taken as zero	Depends on the type of labour	High because of cost on hired labour

07	Feed cost	Very high	Depends upon the availability of crop residues from the farm and of farm grown fodder	Very low
08	Quality of milk in terms of bacterial load	Very poor due to poor hygiene and sanitation	Good	Good
09	Life without a milking cow	Miserable	Affects the livelihood to some extent	Not an issue
10	To meet the exigencies	No alternative except to dispose of the cow	Depends upon the exigency and alternate assets including land	More options of assets. (Cow is not the only asset)

Change in approach:

Fodder scarcity is a well recognised problem and efforts were made in the past to address this problem through developing new technologies and fodder varieties met with limited success. The Fodder innovation project of ILRI during phase I (2003-06) also visualised fodder scarcity as scarcity of technical information on fodder production. It was amply clear during this phase technology is not the determining factor for success but the technical change which needs cooperation of various stakeholders associated with livestock development (Hall et al, 2008). This there is a paradigm shift in the approach in the second phase of the project from developing and promoting new technologies to focus on institutional approaches to address the fodder scarcity. At this stage RAGACOVAS entered in Phase II to plan and implement this project in a cluster of villages in Pondicherry, largely to benefit the poor who were landless women and members of Women Self Help Groups (WSHGs).

Diagnosis workshop with Stakeholders:

All stakeholders including members of the WSHGs and farmers owning cultivable lands were invited for a meeting to discuss about the fodder related problems. This was moderated by scientists of ILRI. This is organised basically to develop a common understanding about the fodder related problems in Pondicherry in the existing context and how to address these problems especially when the lands available for crop

production are shrinking, increasing demand for milk and milk products, prices of milk are not that remunerative and the lack of control by the government on input prices.

Context:

The present context could be explained by the following facts which were elicited during a diagnosis workshop.

1. Several institutions are involved in fodder related activities but fodder development is not a primary activity of any institution (Table 2).

2. Area under green fodder is very less and it is rather decreasing drastically over the years to due to increased urbanisation and industrialisation.

3. Landless dairy farming system* is predominant in Pondicherry region.

4. More than 90 % of the SHGs formed comprise of women and most of them opt for dairy cattle rearing as their income generating activity for the obvious reasons of i. They presume dairy cattle rearing do not require training ii. Can get income from the day one if the cow purchased is in milk iii. Cow is an asset which is useful for pledging (or sale) in emergency iv. Timings to work on cattle are flexible to the Women v. ready market for milk (DCS) in the village itself.

5. The average milk production per family is about 5 to 6 litres per day and usually the entire milk is converted into cash by selling it to DCS. The milk consumption per family is about 200 ml per day provided the cow is in milk. The milk consumption is almost nil if the cow is not in production especially in poor families.

6. Compound cattle feed manufactured and supplied by PONLAIT is usually purchased by all the members of DCS as it is available in the DCS on credit and that too on subsidy right in the village itself. The feed ingredients like oil cakes, wheat/rice bran, Chilka of pulses are available in the local markets. Paddy straw is scarce in Pondicherry as the area under rice is decreasing and the cattle owners depend upon adjoining Tamil Nadu areas. Green fodder is neither available for sale nor the cattle owners have the tendency to feed it on a regular basis.

Table 2 Institutions associated with fodder development activities in Pondicherry

Sl.No	Institutions	Fodder related activities
01	Dept of Agriculture	Subsidy to fodder growers @Rs.5,000/ per acre
02	Dept. of Animal Husbandry	Subsidy to Milk producer members @ 50 paise per kg green fodder for those who purchased from the DCS
03	Milk Union (PONLAIT)	Supply of Hybrid Napier fodder slips, supply of compound cattle feed to member producers
04	Krishi Vigyan Kendra (PKKVK)	Supply of Hybrid Napier fodder slips, Training of farmers
05	DRDA	Formation SHGs, Assisting them in purchase of dairy cows with 50% subsidy
06	MSSRF	Training of dairy cattle owners
07	RAGACOVAS	Fodder demonstration plots, training of cattle owners

There are basically three types of people involved or associated with fodder production / consumption in the villages (Table 3):

1. Land owners with cattle
2. Landless cattle owners
3. Land owners with out cattle.

Table 3 : Characteristics of different types of people associated with fodder production.

Characteristics	Land owners with cattle	Landless cattle owners	Land owners without cattle
Number of people	Less	Very high	Very less
Dependency on Cattle rearing	To some extent	To a great extent	Nil
Utility of Fodder	Milk Production Sale if excess	Milk production	For sale
Potentiality	Potential as surplus fodder producer need to be explored	Potential buyer of fodder	Potential seller of fodder
Purpose of cattle rearing	To meet the domestic requirement of milk	To earn income through sale of milk	NR

Main issues discussed during the two day workshop were

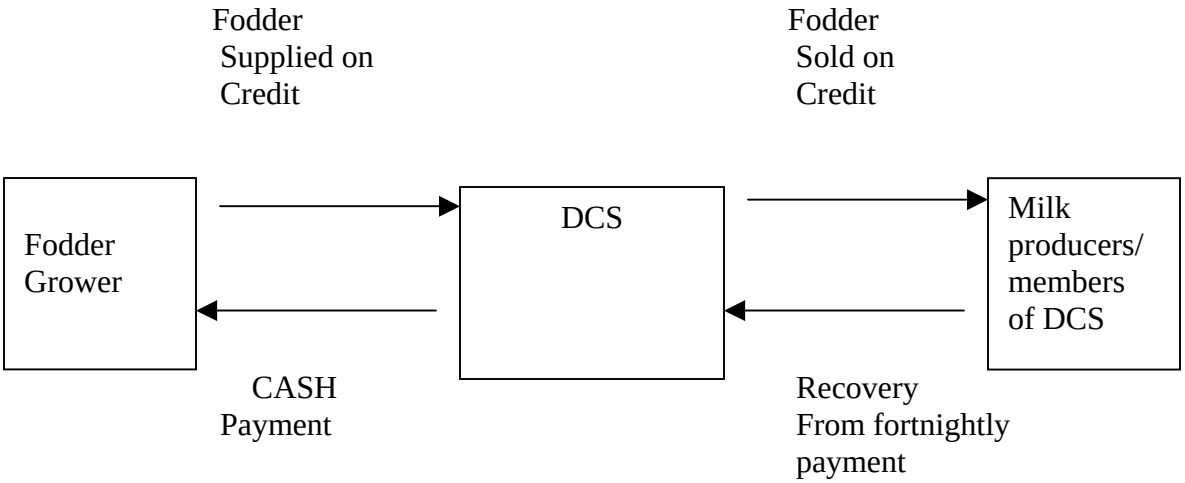
1. There is no policy on fodder development.
2. Increased urbanisation and industrialisation coupled with replacement of food crops with non food crops resulting in shortage of feeds and fodders.

It is thought appropriate to establish a fodder forum with representatives from all the stakeholder organisations including members of WSHG to chalk out a suitable programme to address the fodder scarcity in the selected villages. Although there were some linkages between the institutions involved in fodder development, these linkages were weak mainly because " Fodder development is everybody's subject but nobody's problem". It is also clear to the research team that there exists a good demand for green fodder and land owners are ready to grow fodder provided there is market for it. And milk producers including landless are ready to purchase green fodder. The research team was looking for a solution to link the fodder growers and fodder buyers and incidentally most of the fodder growers and buyers are members of a Dairy Cooperative Society (DCS) which is operating in the village collecting about 800 litres of milk everyday.

Several rounds of discussion with various stakeholders have yielded an Institutional arrangement to help the farmers to grow fodder, supply it to DCS in the village which in turn will sell it to Milk pourers on credit basis. The Secretary, DCS will deduct the amount from the milk bills of the milk pourers and the same will be paid to the fodder growers.

Fodder grower

Fodder buyer



ACTORS	ACTORS	ACTORS
Fodder grower	Secretary	Milk producers /
RAGACOVAS	Manager PONLAIT	WSHG members/
PONLAIT	Fodder growers	Members of DCS
DOA	Fodder buyers	

DCS has taken the responsibility of receiving the fodder in 10 kg bundles and sell to the milk pourers when they come to deliver the milk to the DCS. DCS in turn deducts the amount from the fodder buyers from the milk receipts and pay to the fodder growers. This arrangement has helped

1. Fodder growers to find an alternate profitable crop.
2. Fodder grower being a cattle owner is able to provide green fodder to his cattle.
3. Fodder grower has assured market in DCS with in the village itself
4. Milk pourers can get fodder at DCS on credit
5. Milk pourers can get good quality fodder instead of feeding poor quality grasses through grazing
6. DCS gets high procurement through increased milk production.

This arrangement worked well with two fodder growers, of course not smoothly. They did face problem of transportation from the fodder farm to the DCS and delay in getting the subsidy component for the fodder quantity they supplied to the DCS. This has dampened the enthusiasm of the other fellow farmers who initially agreed to grow fodder backed out of the project. Although this arrangement looks apparently very sound it did not work for the following constraints.

Constraints:

1. Difficulty in ascertaining the demand and supply of fodder as it varies from day to day (holidays less demand as the children of land less families tend the cattle in grazing on private lands or pormbok lands) season to season (more demand during rainy season as the cattle can not be taken out for grazing)

2. Continuous supply of fodder is difficult

3. Demand for first cut fodder is less as the CO_3 variety has thick stem which the cattle usually rejects.

4. Fodder growing also depends upon several factors like rains and at times failure of the crop itself. It takes at least 75 to 85 days from planting of fodder slips to first harvesting and later 60 to 70 days.

5. Fodder supply to DCS depends upon the availability and wages of labour and the local transport.

6. The farmers who promised to grow fodder backed out as the payment by the DCS to the fodder growers was delayed due to non receipt of subsidy from the DAH.

In the process of addressing the fodder scarcity through the action research project the research team tried to solve several issues which emerge through participation and dialogue with several institutional representatives (Table 4). Experience of working in Nigeria to address the fodder scarcity through an innovative approach revealed that the interactions within the partnerships allowed to develop a clearer vision which has led to the strengthening of linkages, identification of constraints and realization of innovations. (de Haan *et al, 2006)*

Table 4: Issues and solutions arrived at by the FIP team

Sl.No	Issues	Solutions	process	Benefits
1.	Many institutions involved in fodder development : *but it is not a priority for any*	Establish a *fodder forum* to plan, implement and evaluate the programme	Dialogue with representatives of the institutions during a diagnosis workshop	Developed a common understanding of the fodder scarcity as an issue which needs to be addressed
2.	Farmers ready to grow fodder: *provided there is an assured market, WSHG* members are ready to buy provided it is available in the village	Selected few farmers to grow fodder with institutional support and market it through DCS	Interaction of fodder growers and WSHG members with fodder forum	Farmers can get remunerative price for their fodder. WSHG members get fodder at the DCS on credit PONLAIT gets more milk
3.	Irregular purchase of fodder and supply of fodder	Reasons for not buying fodder by WSHGs regularly were ascertained and necessary clarifications were provided.	Interaction of RAGACOVAS and PONLAIT officials with WSHG members	WSHG members realised the importance of regular feeding of fodder
4.	Delay in payment of subsidy component to the fodder growers	PONLAIT made the payment to the fodder growers although it has not received the subsidy amount from the DAH.	Discussion with PONLAIT officials	Improved the confidence of the fodder growers leading to other farmers to come forward to grow fodder
5.	Subsidy on fodder	Dispensed with subsidy and the	Discussion with WSHG members	Resuming fodder marketing system

		subsidy and the WSHG members agreed to buy fodder @ Re.1.00 per Kg instead of 50 paise earlier	WSHG members; Survey of the milk pourers by PONLAIT	marketing system
6.	Surplus fodder during holidays	Diverted to a nearby DCS	Discussion with secretary of a nearby DCS	Extending area of fodder market
7.	Low or nil demand for green fodder during rice harvesting season	Diverted the green fodder to nearby DCS	Discussion with secretary of a nearby DCS	Extending area of fodder market

Lessons learnt:

- Fodder is a complex issue with ramifications on other factors, but with appropriate institutional arrangements it is possible to meet the green fodder requirement of the landless through fodder cultivation by the the land owning farmers.
- Milk cooperative societies could be an important nodal point of green fodder sales.
- The landless cattle owners mentioned about the improvement of milk production in cows after feeding green fodder, but they are not happy about the weighing, testing and pricing by the DCS.
- Landless dairy farmers prefer grazing to buying green fodder for the obvious reasons of saving ready cash.
- Landless dairy farmers prefer feeding paddy straw during paddy harvesting season to green fodder feeding.
- Landless dairy farmers buy green fodder during rainy season (Oct- Dec) during which time the animals can not be sent out for grazing. In addition paddy straw is also not accessible to them.

CONCLUSION

Dairying, rearing 2-3 cows is important revenue for the landless and marginal farmers in India. Majority of these farmers are women and the money they earn from this directly benefits the family – as food, children's education, daughter's marriage, and treatment

expenses. The asset value of these animals gives a sense of confidence to face life amidst poverty among these women. However it is important to see ways of optimising milk production from the cattle they rear, with in the existing resource constraint situation. This warrants supports from all the institutions involved in promoting production, processing and utilisation of feed and fodder for augmenting livestock production. The present study is an effort in understanding the dynamics of institutional arrangement in making green fodder available to the landless poor dairy cattle owners which in fact benefited all the stakeholder institutions including the milk union.

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