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**S Karthikeyan**
Assistant Professor, Veterinary Clinical Complex Veterinary College and Research Institute, TANUVAS, Theni, Tamil Nadu, India

**Corresponding Author:**
**S Karthikeyan**
Assistant Professor, Veterinary Clinical Complex Veterinary College and Research Institute, TANUVAS, Theni, Tamil Nadu, India

# Perceived effectiveness of supply of concentrate cattle feed by different dairy service delivery systems in Namakkal district of Tamil Nadu

## S Karthikeyan

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**Abstract**
The present study was conducted in Namakkal District of Tamil Nadu to explore the perceived effectiveness of supply of concentrate cattle feed by different dairy service delivery systems. A total of 120 respondents were selected for the study by stratified proportionate random sampling method and the data were collected by personal interview method using pre-tested interview schedule. The respondents predominantly availed the concentrate cattle feed from dairy cooperatives (73.33%) followed by commercial cattle feed agencies (63.33%) and private integrators (45.00%). Based on the mean weighted score, the dairy farmers perceived the supply of concentrate cattle feed by the private integrators (267.28) in the Namakkal district was effective in terms of their regularity, timeliness, quality, quantity, type of feed and cost effectiveness followed by commercial cattle feed agencies (242.28) and dairy cooperatives (234.22).

**Keywords:** Dairy, concentrate, feed, agencies, cooperatives, private, commercial

## Introduction
India remains the world's largest milk producer, with national production projected to reach 216.5 million metric tons in 2025, maintaining steady growth due to rising demand and institutional support for the dairy sector. Tamil Nadu produces over 10 million tonnes of milk (2022-23), accounting for approximately 4.47% of total national production, with per capita milk availability rising from 316 g/day in 2019-20 to 369 g/day in 2022-23. In terms of industry scale, Tamil Nadu dairy sector was valued at INR 1,380.7 billion in 2024, with projections indicating a robust CAGR of 12.61% during 2025-2033. Nonetheless, the livestock sector contributes only ~13% to Tamil Nadu's agricultural GDP, which is relatively low compared to India's average (~30%).

With the rapid intensification of dairy production, the demand for concentrate cattle feed has increased substantially, as it directly influences milk yield, animal health and farm profitability. In this context, the supply of high-quality concentrate cattle feed to smallholder farmers becomes critical. The provision of concentrate feed to smallholder farmers is, however, largely mediated through different service delivery systems such as dairy cooperatives, private integrators, and commercial cattle feed agencies. The multiplicity of actors like dairy cooperatives, private integrators and feed agencies interact in complex ways to serve farmer demand. Cooperatives often embed feed supply into their institutional functions via local societies and union-level feed mills. Private integrators may internalize feed distribution to maintain milk procurement loyalty. Commercial feed agencies leverage market mechanisms to offer brand choice and flexible supply, albeit usually at full commercial pricing without subsidies or credit support.

The effectiveness of these systems is determined not only by their ability to ensure the timely and regular supply of feed but also by their capacity to provide quality products at an affordable cost.

Accordingly, this study aims to examine the perceived effectiveness of concentrate feed supply by different dairy service delivery systems in the Namakkal district of Tamil Nadu to provide actionable insights for enhancing feed access, dairy productivity, and farmer welfare.

## Materials and Methods

The study was undertaken in Namakkal district of Tamil Nadu state under the Salem District Co-operative Milk Producers Union, which is one of the largest milk procuring union of Tamil Nadu Cooperative Milk Producers Federation. Apart from cooperatives, various private diaries, vendors and cream separation units are also procuring milk from the farmers and offering dairy related services to them. All the four taluks of Namakkal district were purposively included for the study. For each taluk, the revenue villages which are having a female bovine population of above 1000 animals were listed out. From this list, one village from each taluk was randomly selected for the research study. Respondents were selected based on the criteria that the farmers should have milch animal either a cow or a buffalo in milking condition and availing services from different dairy service delivery systems aforementioned. A total of 30 respondents from each village were selected by using stratified proportionate random sampling method. Thus, a total of 120 respondents were selected for the study. The data were collected by personal interview method using a pre-tested interview schedule. The perceived effectiveness of different dairy service delivery systems for the supply of concentrate cattle feed was ascertained in terms of their regularity, timeliness, quality, quantity, type of feed and cost effectiveness. The scores were assigned on a three point continuum for the indicators in order to analyze their perceived effectiveness. Weighted score for each dairy service delivery system was calculated by assigning 3 for 'good', 2 for 'average' and 1 for 'poor' then multiply the per cent of observation by the respective score and finally adding the total observation.

## Results and Discussion

### A. Supply of concentrate cattle feed by different dairy service delivery systems

Results from the Table 1 shows that nearly three-fourth of the dairy farmers (73.33%) availed the supply of concentrate cattle feed from the dairy cooperatives. It was mainly due to the fact that the district cooperative milk union was having their own cattle feed manufacturing plant in their jurisdiction and they are mandated with the responsibility of preparing and supplying concentrate cattle feed to their member framers through their primary village dairy cooperative societies against demand.

**Table 1:** Supply of concentrate cattle feed by different service delivery systems

| SL. No | Dairy Service Delivery Systems (N = 120) | Supply of Concentrate Cattle Feed | |
|---|---|---|---|
| | | Frequency | Per cent |
| 1 | Dairy Cooperatives | 88 | 73.33 |
| 2 | Private Integrators | 54 | 45.00 |
| 3 | Commercial Cattle Feed Agencies | 76 | 63.33 |

* Multiple response

Nearly two third (63.33%) of the respondents received supply of concentrate cattle feed from the commercial cattle feed agencies located in their respective areas. It was reported by the respondents that the dairy farmers were readily going to the commercial cattle feed agencies located nearby to their farm and procure concentrate cattle feed of their choice from the different brands available in the shop. It can also be inferred from the Table 1 that 45.00% of the dairy farmers had procured the concentrate cattle feed from the private integrators operating in their respective areas like Hatsun and Arokya, etc. Like the dairy cooperatives, the private integrators also used to supply their own concentrate cattle feed to the member farmers for maintaining optimum yield in their dairy animals and to retain the dairy farmers in the integration of private dairies.

Kaur and Singla (2024) [4] reported that Baani Milk Producer Company Limited (BMPCL) in Patiala, Punjab had tied up with Kansal Feed Industries Private Limited, Khanna for manufacturing and supply of all types of feeds to their member producers. Further, they also provided cattle feed to the main plant of BMPCL that was distributed to member producers through milk collection centres. Similarly, Singodia *et al.,* (2020) [7] also reported that livestock farmers purchased concentrate feed mainly from dairy co-operative (89.28%), commercial feed agencies (66.66%) and private integrators (46.87%). Rathod *et al.,* (2012) [2] also reported that the Gokul Dairy Cooperative Union in Maharashtra supplied balanced concentrate feed produced from its own feed processing plant at a reasonable price and good quality. Apart from two varieties of concentrate feeds, the union also supplied bypass protein feed for high yielding animals for minimizing the cost of milk production. Balasaheb (2008) [1] also revealed that 60% of the members of the dairy cooperative societies in Maharashtra received the supply of concentrate cattle feed up to medium level from Nashik district cooperative milk union. Morton and Miheso (2000) [5] also reported that the farmers of central Kenya used to obtain livestock feeds mainly from dairy cooperatives and private stockists.

### B. Perceived effectiveness of supply of concentrate cattle feed by different dairy service delivery systems

Only three service providers i.e., dairy co-operatives, private integrators and commercial cattle feed agencies who were supplying fodder seeds and slips to the dairy farmers in the study area were considered for the comparison and the results are presented as follows.

**Table 2:** Perceived effectiveness of commercial cattle feed agencies regarding the supply of concentrate cattle feed

| Sl. No. | Indicators | Commercial Cattle Feed Agencies (N=76) | | | | | | Weighted Score |
|---|---|---|---|---|---|---|---|---|
| | | Good | | Average | | Poor | | |
| | | F | % | F | % | F | % | |
| 1 | Regularity | 75 | 98.68 | 0 | 0.00 | 1 | 1.32 | 297.37 |
| 2 | Timeliness | 75 | 98.68 | 0 | 0.00 | 1 | 1.32 | 297.37 |
| 3 | Quality | 75 | 98.68 | 1 | 1.32 | 0 | 0.00 | 298.68 |
| 4 | Quantity | 75 | 98.68 | 1 | 1.32 | 0 | 0.00 | 298.68 |
| 5 | Type of feed | 75 | 98.68 | 1 | 1.32 | 0 | 0.00 | 298.68 |
| 6 | Cost effectiveness | 0 | 0.00 | 18 | 23.68 | 58 | 76.32 | 123.68 |

From the Table 2, it can be concluded that the dairy farmers perceived the supply of commercial cattle feed agencies was effective in terms of regularity (297.37), timeliness (297.37), quality (298.68), quantity (298.68) and type of feed (298.68) than other systems except their service was not considered cost effective (123.68). These agencies are located in the near vicinity of the dairy farmers and they have permanent building to stock, distribute and sell the concentrate feed. Hence, farmers can approach them throughout the year the year for purchase of concentrate feed and it will be provided

without any delay in time. These agencies usually stock pile different types of concentrate feed depending on the stage of production and farmers preference like mash, pellet, bye pass protein, bye pass fat, etc. The feed agencies operate mainly on commercial basis and the price of the concentrate feed bags are not subsidized like other dairy service provides; hence the farmers have to pay the full price for the concentrate cattle feed.

The results from the Table 3 indicates that the supply of dairy cooperatives was perceived as not regular, timely and cost effective by the dairy farmers and hence obtained less weighted scores of 199.98, 207.93 and 187.50 respectively. Though the feed was not supplied in adequate quantity (247.43) to the members, the members felt that the quality and type of feed supplied was not bad with a weighted score of 280.68 and 281.82 respectively.

**Table 3:** Perceived effectiveness of dairy cooperatives regarding the supply of concentrate cattle feed

| SL. No. | Indicators | Dairy Cooperatives (N=88) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Good | | Average | | Poor | | Weighted Score |
| | | F | % | F | % | F | % | |
| 1 | Regularity | 27 | 30.68 | 34 | 38.63 | 27 | 30.68 | 199.98 |
| 2 | Timeliness | 34 | 38.63 | 27 | 30.68 | 27 | 30.68 | 207.93 |
| 3 | Quality | 74 | 84.09 | 11 | 12.50 | 3 | 3.41 | 280.68 |
| 4 | Quantity | 53 | 60.23 | 24 | 27.27 | 11 | 12.50 | 247.43 |
| 5 | Type of feed | 72 | 81.12 | 16 | 18.18 | 0 | 0.00 | 281.82 |
| 6 | Cost effectiveness | 16 | 18.18 | 45 | 51.14 | 27 | 30.68 | 187.50 |

Morton and Miheso (2000) [5] also reported that farmers in Kenya liked dairy cooperatives mainly because they offer feed on credit. However they are criticized mainly for their lack of variety, poor quality, high prices, disrespect or dishonesty on the part of the staff and lack of transparency in accounting. Private feed stores offer a far better service, including delivery of feed in some cases, but only offer credit in exceptional cases. Sharma (2001) [6] also reported that 88.14% of the respondents got adequate and regular supply of cattle feed; 90.00% expressed that the cost of feed was reasonable and nearly three fourth of the respondents expressed that they were getting good quality feed.

**Table 4:** Perceived effectiveness of private integrators regarding the supply of concentrate cattle feed

| Sl. No. | Indicators | Private Integrators (N=54) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Good | | Average | | Poor | | Weighted Score |
| | | F | % | F | % | F | % | |
| 1 | Regularity | 42 | 77.78 | 6 | 11.11 | 6 | 11.11 | 266.67 |
| 2 | Timeliness | 49 | 90.74 | 0 | 0.00 | 5 | 9.26 | 281.46 |
| 3 | Quality | 38 | 70.37 | 16 | 29.63 | 0 | 0.00 | 270.37 |
| 4 | Quantity | 49 | 90.74 | 5 | 9.26 | 0 | 0.00 | 290.74 |
| 5 | Type of feed | 44 | 81.48 | 5 | 9.26 | 5 | 9.26 | 272.22 |
| 6 | Cost effectiveness | 24 | 44.44 | 18 | 33.33 | 12 | 22.22 | 222.22 |

Based on the weighted scores calculated in the table 4, the supply of private integrators was perceived to be more cost effective (222.22) than other systems, but the quality (270.37) and type of feed (272.22) offered by them were not on par with that of dairy cooperatives and commercial cattle feed agencies. However, the members also felt that the concentrate feed was available to them regularly (266.67) in appropriate time (281.46) and also in sufficient quantity (290.74). Girma (2008) also stated that private service providers are good in their timeliness but poor in quality service than the public and cooperative sector in the feed supply services.

**Table 5:** Overall perceived effectiveness of supply of concentrate cattle feed by different dairy service delivery systems

| SL. No. | Dairy Service Delivery Systems | Weighted Mean Score | Rank |
|---|---|---|---|
| 1 | Dairy Cooperatives | 234.22 | III |
| 2 | Private Integrators | 267.28 | I |
| 3 | Commercial Cattle Feed Agencies | 242.28 | II |

Based on the weighted scores for each indicator regarding the supply of concentrate cattle feed, the weighted mean score for the selected three dairy service delivery systems were calculated and presented in the table 5. Overall it can be concluded that the supply of concentrate cattle feed by the private integrators were perceived as the best (267.28) followed by commercial cattle feed agencies (242.28) and dairy cooperatives (234.22).

## Conclusion

It can be concluded from the above stud that dairy cooperatives supplied concentrate feed to the majority of farmers owing to their own feed plants and institutional mandate. While valued for feed quality and type, their services were perceived as less regular, less timely, and not highly cost effective. Despite operating on a purely commercial basis and charging higher prices, commercial cattle feed agencies scored highest in regularity, timeliness, quality, quantity, and variety, making them the most reliable option for farmers prioritizing assured service and product diversity. Private dairies and integrators were acknowledged for cost effectiveness, regularity, and sufficient supply. However, they lagged behind cooperatives and agencies in terms of feed quality and product range, reflecting a trade-off between affordability and nutritional standards. No single delivery system m*et al*l farmer expectations. Policy efforts should focus on strengthening cooperative supply chains, fostering integrator-industry collaborations and ensuring transparency in commercial agency pricing alongside robust feed quality assurance measures can collectively enhance access to affordable, timely, and diverse concentrate feed, thereby sustaining dairy productivity and farmer livelihoods.

## Conflict of Interest

Not available

## Financial Support

Not available

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