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# Exploring Dairy Farming Practices and Perceived Constraints: A Study of Rajbanshi Farmers in Coochbehar

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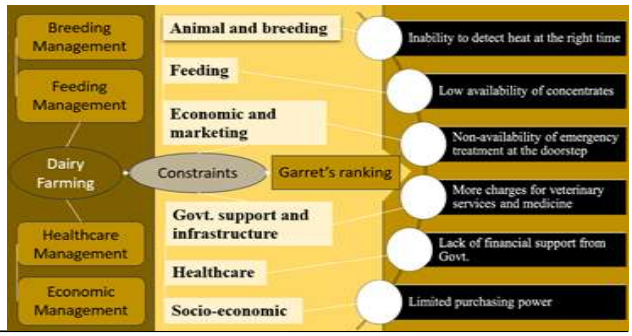
## HIGHLIGHTS

- Garrett ranking identifies and prioritizes constraints, offering a focused view on the most significant challenges faced by Rajbanshi farmers.
- Addressing the identified challenges including heat detection issues, limited concentrate availability etc. requires targeted intervention.
- Correlation analysis uncovers interconnected dynamics among constraints, providing a concise insight into the Rajbanshi dairy farming.

## GRAPHICAL ABSTRACT

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## ABSTRACT

*Introduction*: The Indian economy has historically been based primarily on agriculture, which provides a significant portion of the country's workforce with a means of subsistence. Dairy farming plays a vital role in the socio-economic life of rural communities and provides supplementary income to small and marginal farmers in India.

*Context*: Some of the existing problems of dairying in West Bengal are low productivity of dairy animals, non-descript and indigenous breeds, low profitability due to lack of infrastructure in milk procurement and processing.

*Objective*: For the Rajbanshi people who heavily depend on dairy farming activities, there is a need to explore dairy farming practices and perceived constraints to develop effective strategies and government interventions for sustainable dairy farming.

*Methods*: A total of 200 respondents were selected randomly having at least 50 percent income from dairy farming. The study explored dairy farming practices focusing on aspects such as breeding, feeding, healthcare and economic management. Garrett's ranking technique was used for ranking the constraints.

*Results & Discussion*: Inability to detect heat at the right time, low availability of concentrates, non-availability of emergency treatment at the doorstep, more charges for veterinary services and medicine, lack of financial support from Govt. and limited purchasing power.

*Significance*: Training is necessary to improve breeding practices and optimise reproductive efficiency. Ensuring a balanced diet for their animals and reducing the financial burden of expensive feed purchases from the market is crucial. Accessible veterinary services, affordable healthcare options, and government support programs are necessary to enhance farmers' financial capacity will enable them to invest in dairy farming and promote overall growth and sustainability in the sector.

The foundation of the Indian economy has historically rested upon agriculture, with a significant population depending on it for their livelihood *(Singh and Thakur, 2022).* Dairy farming is an important component of agriculture and impacts the socio-economic life of the rural community *(Anusha and Sharma, 2022)* and provides a supplementary income to small and marginal farmers *(Meena et al., 2009, Kumawat and Yadav, 2016)*. In the 1950s and 1960s, India relied heavily on milk imports. In that scenario, the country wanted to increase milk production to become self-sufficient. That led to Operation Flood in 1970. In 1998, India overtook the United States to become the world's largest (194.2 million tonnes) milk producer with 22 percent of world production *(Milk production in India, 2022).* According to the 20$^{th}$ *Livestock Census (2019),* India has a total livestock population of 535.78 million, a 4.60 percent increase from the previous livestock census in 2012. West Bengal has the highest growth rate of 23.32 percent. Instead of a growing population, low cattle productivity is a major concern for West Bengal. Poor nutrition stands out as a primary factor contributing to reduced milk production in animals *(Meena et al., 2016).* Despite having the highest number of milk producers globally, our milch animals exhibit remarkably low productivity due to the unavailability of a balanced ration for dairy animals (*Barman et al. 2022*). Presently, the dairy sector of West Bengal is facing several challenges. Some of the existing problems of dairying in West Bengal are low productivity of dairy animals, non-descript and indigenous breeds, low profitability, lack of infrastructure in milk procurement and processing *(Majumder et al., 2017).*

As per the 2011 census, almost 23 percent of the population of West Bengal were SCs and out of these SC populations, 18.40 percent were from the Rajbanshi community. Coochbehar district of West Bengal has the highest population of the Rajbanshi community and mostly depends on agriculture and allied activities. Under such conditions, the dairy sector of West Bengal needs infrastructural strategies, innovations, and rejuvenation to ensure the adoption of newer and scientific technologies to tackle these prevailing challenges.

Before implementing such strategies, it is important to explore dairy farming practices as well as constraints perceived by the Rajbanshi farmers involved in dairy farming to enable strategic planning and government intervention. Hence, the study was planned to explore dairy farming practices and to identify constraints that hinder the dairy farming of Rajbanshi farmers.

## METHODOLOGY

The study was conducted in Coochbehar district of West Bengal. Coochbehar district is located between 25°57'47" & 26°36'20" North Latitude; between 88°47'44" & 89°54'35" East Longitude. A multistage random sampling technique was used in the study. In the first stage, West Bengal was selected purposively because it contributes only 3 percent to the country's milk pool *(Livestock Census (2019)*. The per capita availability of milk in West Bengal is 165 g/day, which is much lower than the national per capita of 406 g/day *(NDDB, 2019-20).* In the next step, Coochbehar district was selected for the study where the majority population are Rajbanshi *(Population Census, 2011)*. Rajbanshi people have been granted the status of Scheduled Caste and the 2$^{nd}$ highest SC population in the country is also living in this state *(Barman, 2022 and Population Census, 2011).*

Coochbehar consists of five sub-divisions (Coochbehar Sadar, Mathabhanga, Mekhliganj, Tufanganj, and Dinhata) and twelve blocks (Coochbehar I, Coochbehar II, Haldibari, Matahbhanga I, Mathabhanga II, Dinhata I, Dinhata II, Mekhliganj, Sitai, Sitalkuchi, Tufanganj I, and Tufangamj II). Using simple random sampling techniques two subdivisions (Coochbehar Sadar and Dinhata) and subsequently, four blocks (Coochbehar I, Coochbehar II, Dinhata I, and Dinhata II) from selected sub-divisions were selected. A sample of 200 respondents who had at least 50 percent income from dairy husbandry was selected randomly from four blocks, with 50 respondents from each block.The dairy management practices were explored in different sub-sections viz., breeding, feeding, health care and economic management. The data were analysed using the frequency and percentage method. Garrett's ranking technique *(Garrett and Woodworth, 1969)* was used for ranking the constraints faced by the Rajbanshi dairy farmers. The collected ranking data was transformed into the score with the following formula:

$$\text{Percent position} = 100(R_{ij}-0.5)/N_j$$

Where $R_{ij}$ = Rank given for $i^{th}$ variable by $j^{th}$ respondents

$N_j$ = Number of variables ranked by $j^{th}$ respondents

To identify the constraints, an exhaustive literature review was conducted, complemented

by consultations with subject matter experts. The constraints were classified under sub-sections and presented to the respondents. The classification of sub-sections was done based on some aspects such as animal and breeding, feeding, economic and marketing, health, Govt. support and infrastructure, and socio-economic constraints. The respondents were asked to assign a rank for all the constraints according to the degree perceived by them.

For the collection of data, a structured interview schedule was prepared. Necessary care was taken to make the schedule clear, specific, complete, unambiguous, and comprehensive. The primary data were collected in the year 2022 from respondents by personal interview method.

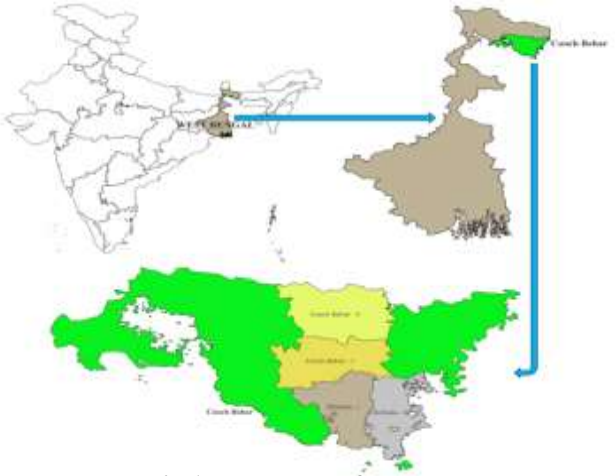

**Fig 1. The locale of the study**

## RESULTS

*Breeding management practices:* Table 1 demonstrates that 77.00 percent of dairy farm families preferred crossbred cattle, followed by 15.50 percent who preferred indigenous breeds and 7.50 percent who preferred exotic breeds. Most respondents (86.00%) relied more on "Bellowing and mucus discharge" for heat detection, followed by "Mucus discharge" (7.00%), "Frequent urination and restlessness" (4.50%), and "Ready to be mounted by another animal" (2.00). Three to five months after calving, the majority of dairy farm families (51%) bred female cattle, followed by two to three months (28%) and five months (21%) later. About 34.00 percent of dairy farm families did not use pregnancy diagnosis, compared to 66.00 percent who did. Prani Bondhu (88.64%) and qualified veterinarian (11.36%) performed the majority of the pregnancy diagnosis.

*Feeding management Practices:* Table 2 represents the feeding management practices followed by Rajbanshi dairy farmers. Stall-feeding was used by most dairy farmers (66.00%). It was found that 94.50 percent of dairy farmers were found to rely on pastures and other naturally occurring vegetation for their green fodder, while the remaining farmers farmed and bought their

**Table 1. Breeding management practices (N=200)**

| Breeding practices and types | No. | % |
|---|---|---|
| *Breed preference* | | |
| Crossbreds | 154 | 77.00 |
| Exotic breeds | 15 | 7.50 |
| Indigenous breeds | 31 | 15.50 |
| *Symptoms of heat detection* | | |
| Mucus discharge | 14 | 7.00 |
| Bellowing and mucus discharge | 173 | 86.00 |
| Frequent urination and restlessness | 9 | 4.50 |
| Ready to be mounted by another animal | 4 | 2.00 |
| *Breeding after calving* | | |
| 2-3 months | 56 | 28.00 |
| 3-5 months | 102 | 51.00 |
| After 5 months | 42 | 21.00 |
| *Performing pregnancy diagnosis of cattle* | | |
| Yes | 132 | 66.00 |
| No | 68 | 34.00 |
| *Pregnancy diagnosis was done by (out of 132)* | | |
| Own judgment | 0 | 0.00 |
| Qualified veterinarian | 15 | 11.36 |
| Prani Bondhu | 117 | 88.64 |

**Table 2. Feeding Management practices (N=200)**

| Feeding practices and types | No. | % |
|---|---|---|
| *Feeding system* | | |
| Stall feeding | 132 | 66.00 |
| Stall feeding + Grazing | 68 | 34.00 |
| *Source of green fodder* | | |
| Cultivated | 7 | 3.50 |
| Naturally grown vegetation/ pastures | 189 | 94.50 |
| Purchased from others | 4 | 2.00 |
| Type of fodder fed to animal | | |
| *Green* | | |
| Non-legume | 78 | 39.00 |
| Legume + non-legume | 147 | 73.50 |
| Not cultivating but feeding grasses from bunds or uncultivated lands | 170 | 85.00 |
| *Dry* | | |
| Paddy straw | 136 | 68.00 |
| Paddy straw +Wheat straw | 64 | 32.00 |
| Kinds of concentrate feeds | | |
| Prepared in home | 70 | 35.00 |
| Commercial cattle feed | 99 | 49.50 |
| Prepared in home + commercial cattle feed | 32 | 15.50 |

green fodder from others. To feed their animals, about 73.50 percent used both legumes and non-legume crops, while 39.00 percent used only non-legume crops. Additionally, it found that the majority (68.00%) of dairy farmers provided paddy straw to their animals as dry fodder, followed by 32.00% of dairy farmers who fed their animals both paddy straw and wheat straw. The majority of concentrate feed given to cattle was commercial (49.50%), while 35.00% of farm households gave their livestock home-prepared feed.

*Health management practices:* Results presented in Table 3 revealed that 98.50% of dairy farm families vaccinated their animals for F.M.D., 19.50% for H.S., 16.50% for B.Q., and 52.50% for Brucellosis. Infrequent deworming was practised by half of the dairy farm families (49.50%), deworming was not done at all by 36.00% of the dairy farm families, and regular deworming was done by 14.50% of the dairy farm families for milch animals. Only 22.00 percent of dairy farm families had clean (dry) sheds, compared to the majority (78.00%) of farm families who had dirty (wet) unhygienic sheds, housing, or standing places.

*Economic management practices:* Table 3 shows that the majority of farm families (72.50%) sold milk in local markets or villages, while 15.50% sold it to vendors or middlemen. It shows that the majority of respondents (29.00%) used credit facilities from private banks, while 27.00% did not use any kind of loan, and only from only 9.50 percent of the dairy farm families availed loans from Govt. banks.

*Animal and breeding related constraints:* Table 4 shows that among the animal and breeding related constraints, the major one was unable to detect heat at the right time, with an average Garrett mean score of 61.06. Low conception rate of A.I. was ranked second with Garrett mean score of 59.04. The third rank was given to lack of familiarity with scientific breeding practices with Garrett mean score of 58.69.

*Feeding related constraints:* Among the Feeding related constraints, it is shown in the Tble 4 that the major constraint was low availability of concentrates, with an average Garrett mean score of 45.62. Non-availability of green fodder around the year got the second rank, with a mean Garrett score of 40.83.

*Health related constraints***:** From health related constraints (table 5) the major constraint was non-availability of emergency treatment at the doorstep, with an average Garrett mean score of 49.18. The second rank was assigned to lack of understanding of prevalent contagious diseases, as well as their preventative and control methods (42.37).

**Table 3. Health management practices (N=200)**

| Health care practices and types | No. | % |
|---|---|---|
| *Vaccination for* | | |
| F.M.D. | 197 | 98.50 |
| H.S. | 39 | 19.50 |
| B.Q. | 33 | 16.50 |
| *Brucellosis* | 105 | 52.50 |
| *Frequency of deworming of milch animal* | | |
| Regular | 29 | 14.50 |
| Occasional | 99 | 49.50 |
| Not practised | 72 | 36.00 |
| *Hygienic state of shed /housing/standing place* | | |
| Clean (dry) | 44 | 22.00 |
| Dirty (wet) | 156 | 78.00 |
| *Primary veterinary health care is done by* | | |
| Farmer himself/ herself | 33 | 16.50 |
| Neighbour farmer | 69 | 34.50 |
| Prani Bondhu | 98 | 49.00 |
| Veterinarian | 0 | 0.00 |
| *Economic practices and types* | | |
| Selling of raw milk | | |
| Village/Local market | 145 | 72.5 |
| Home delivery | 4 | 2 |
| Municipality market | 20 | 10 |
| Vendor / Middleman | 31 | 15.5 |
| Dairy cooperatives | 0 | 0 |
| *Credit facilities availed from different sources* | | |
| Govt bank | 19 | 9.50 |
| Microfinance | 46 | 23.00 |
| Private bank | 58 | 29.00 |
| Noninstitutional source | 23 | 11.50 |
| Not availed | 54 | 27.00 |

*Economic and marketing related constraints:* From Table 4, among the economic and marketing related constraints, the major constraint was more charges for veterinary services and medicine, with an average Garrett mean score of 67.10. The second rank was given to high cost of crossbred animals with a mean score of 60.59.

*Govt. support and infrastructure related constraints:* Among the Govt. support and infrastructure related constraints, the major one was, lack of financial support from Govt, with an average Garrett mean score of 59.63.

*Socio-economic constraints:* It is shown in Table 4 that among the Socio-economic constraints, the first and foremost was limited purchasing power, with an average Garrett mean score of 58.70.

**Table 4. Constraints in Dairy Farming Perceived by the Rajbanshi Farmers**

| Major areas of constraints | Total score | Garrett mean score | Mean Rank |
|---|---|---|---|
| *Animal and breeding related constraints* | | | |
| Low production of the local breed | 8140 | 40.70 | VII |
| Repeat breeding | 6478 | 32.39 | IX |
| Unable to detect heat at the right time | 12212 | 61.06 | I |
| Lack of good breedable bulls | 8033 | 40.17 | VIII |
| Lack of A.I. centre | 10893 | 54.47 | V |
| Low conception rate of A.I. | 11807 | 59.04 | II |
| Lack of familiarity with scientific breeding practices | 11738 | 58.69 | III |
| Low knowledge about the right time for insemination | 11361 | 56.81 | IV |
| Lack of knowledge for caring for a new-born calf | 9350 | 46.75 | VI |
| *Feeding related constraints* | | | |
| Shortage of quality feed | 7277 | 36.83 | IV |
| Unavailability of dry fodder throughout the year | 7785 | 38.93 | III |
| Lack of pasture land | 6024 | 30.12 | VI |
| Non-availability of green fodder around the year | 8166 | 40.83 | II |
| Low availability of concentrates | 9124 | 45.62 | I |
| Insufficient knowledge about balanced feeding | 6215 | 31.08 | V |
| *Health related constraints* | | | |
| Lack of veterinary services in time | 4933 | 24.67 | VII |
| Non-availability of skilled veterinary personnel at the village level | 7817 | 39.10 | V |
| Occurrence of reproductive problems in milch animals | 8005 | 40.03 | III |
| Less availability of vaccines | 7984 | 39.92 | IV |
| Non-availability of emergency treatment at the doorstep | 9835 | 49.18 | I |
| Lack of understanding of prevalent contagious diseases, as well as their preventative and control methods | 8473 | 42.37 | II |
| Lack of knowledge about the vaccination schedule | 7560 | 37.8 | VI |
| *Economic and marketing related constraints* | | | |
| More charges for veterinary services and medicine | 13420 | 67.10 | I |
| High cost of crossbred animals | 12117 | 60.59 | II |
| High cost of concentrate feed | 9245 | 46.23 | V |
| High cost of mineral mixture | 5072 | 25.36 | VI |
| Absence of organised milk marketing facilities in the village | 9434 | 47.17 | IV |
| Non-remunerative price of milk and milk products | 11009 | 55.05 | III |
| Exploitation by the middle man | 8593 | 42.97 | V |
| *Govt. support and infrastructure related constraints* | | | |
| Poor dairy processing infrastructure | 10129 | 50.65 | IV |
| Lack of transport facilities | 5319 | 26.60 | VI |
| Lack of financial support from Govt. | 11926 | 59.63 | I |
| Lack of dairy-related schemes | 10989 | 54.95 | III |
| Lack of adequate credit facilities | 9455 | 47.28 | V |
| Lack of extension intervention in the village | 11469 | 57.35 | II |
| *Socio-economic constraints* | | | |
| Illiteracy | 11290 | 49.54 | III |
| Labour issue | 6915 | 52.95 | II |
| Non remunerative price of milk | 11420 | 39.96 | IV |
| Limited purchasing power | 10604 | 58.70 | I |

**Table 5. Correlation of constraints rank with income from dairy farming of the respondents**

| Constraints | Low vs medium | Low vs high | Medium vs high |
|---|---|---|---|
| Breeding and reproduction related constraints | 0.933** | 0.917** | 0.917** |
| Feeding related constraints | 0.943** | 0.771NS | 0.829* |
| Health management related constraints | 0.429NS | 0.714NS | 0.857* |
| Economic and marketing related constraints | 0.937** | 0.937** | 1.000** |
| Govt. support and infrastructure related constraints | 0.943** | 1.000** | 0.943** |
| Socio-economic constraints | 0.400NS | 0.800NS | 0.200NS |

Table 5 presents the correlation of perceived constraints rank with different levels of respondents' income from dairy farming. In the case of "Breeding and reproduction", "Economic and marketing", and "Govt. support and infrastructure" related constraints the correlation of ranks between different levels of income is statistically significant. When it comes to feeding-related constraints, the correlation between individuals belonging to low and high income groups is not statistically significant. Within health management related constraints, the correlation between low and medium or low and high levels of income is not significant. Under socio-economic constraints whether the respondents have low, medium, or high incomes, their perceptions on socio-economic constraints are not significantly correlated.

## DISCUSSION

*Breeding Management practices:* The preference for crossbred cattle among dairy farm families suggests a practical inclination toward higher milk production, aligning with the findings of Malsawmdawngliana and Rahman, (2016). This choice reflects the economic considerations driving the selection of cattle breeds. The predominant reliance on behavioural indicators such as "Bellowing and mucus discharge" for heat detection (86.00%) is similar to the findings of Prajapati et al. (2015). The timing of breeding decisions aligns with the natural reproductive cycle, with a majority (51%) opting for breeding three to five months after calving, consistent with the findings of Malsawmdawngliana and Rahman (2016). However, the relatively low utilization of pregnancy diagnosis (34.00%) may indicate a potential area for improvement in reproductive management practices. Prajapati et al. (2015) and Yadav et al. (2009) both reported similar results. The involvement of Prani Bondhu (local inseminators) and qualified veterinarians in pregnancy diagnosis is in line with Sabapara et al. (2010), showcasing a combination of local expertise and professional veterinary services in reproductive healthcare. This highlights the importance of collaborative efforts in implementing effective reproductive management strategies on dairy farms.

*Feeding Management Practices:* Stall-feeding was used by the vast majority of dairy farmers (66.00%). Sabapara et al. (2010) and Kumar et al. (2019) both reported a similar result. It was found that 94.50 percent of dairy farmers were found to rely on pastures and other naturally occurring vegetation for their green fodder, while the remaining farmers farmed and bought their green fodder from others. As feed for their animals, about 73.50 percent used both legumes and non-legume crops, while 39.00 percent used only non-legume crops. Additionally, it found that the majority (68.00%) of dairy farmers provided paddy straw to their animals as dry fodder, followed by 32.00% of dairy farmers who fed their animals both paddy straw and wheat straw. Kumar et al. (2019), Tudu and Roy (2015), Yadav and Nagar (2021) found comparable findings in their studies. The study area's extensive rice cultivation may be the cause of its availability. The majority of concentrate feed given to cattle was commercial (49.50%), while 35.00% of farm households gave their livestock home-prepared feed.

*Health Management practices:* The high vaccination rate for F.M.D. is a positive aspect, suggesting a widespread awareness of its significance. However, the significantly lower vaccination rates for other diseases like H.S., B.Q., and Brucellosis raise concerns about potential disease outbreaks and the need for targeted vaccination campaigns. The observed irregularities in deworming practices are noteworthy, with almost half of the dairy farm families practising infrequent deworming and a considerable portion neglecting deworming. Sabapara et al. (2010) and Sharma et al. (2014) reported similar findings.

*Economic management practices:* The majority of farm families sold milk in local markets or villages, which reflects issues with the processing and transportation infrastructure, which may be preventing

access to bigger markets. The low participation in government-sponsored loans points to the need for greater awareness and outreach about the resources the government has available for supporting dairy farmers.

*Animal and breeding related constraints:* The major one was unable to detect heat at the right time. This can lead to missed opportunities for successful breeding and reduced reproductive efficiency. The probable reason behind the constraints might be that the farmers lacked knowledge about the symptoms of heat. Low conception rate of A.I. was ranked second. The result is similar to the study of Murai and Singh (2011) and Eqbal et al., (2013). This could be due to inadequate knowledge and skill in performing A.I., resulting in multiple insemination attempts. The third rank was given to lack of familiarity with scientific breeding practices. It indicates the need for Rajbanshi dairy farmers to adopt improved and modern dairy farming practices.

*Feeding related constraints:* The major constraint was low availability of concentrates. Concentrates are high-quality feed that can help to improve milk production. The Rajbanshi farmers mostly depended on purchasing concentrate at high prices from the market. The shortages of concentrates were caused by a lack of supplies in the local market, which resulted in high concentrate prices. Similarly, Biswas et al., (2005); Rachna et al., (2018) Kant et al., (2015) and Mahapatra et al., (2012) found that less availability and the high price of concentrate is a major constraint. Non-availability of green fodder around the year got the second rank. The reason for this might be that the respondents wanted to offer green fodder to their animals but were reluctant to cultivate green fodder in their fields. Similar findings were identified by Singh et al., (2017) Ashwar et al., (2017) and Gamit et al., (2020).

*Health related constraints:* Farmers faced challenges in promptly addressing health emergencies due to the unavailability of skilled veterinary services in their locality. The result is in line with the study of Singodia et al., (2019). There was a gap in disease management practices and the farmers might face difficulties in identifying and implementing appropriate preventive measures. A similar result was found by Patel et al., (2013).

*Economic and marketing related constraints:* The dairy farmers mentioned that they had to pay more charges for veterinary services and medicine. This might discourage farmers from seeking essential healthcare for their animals. The result is in accordance with the findings of Pathade (2017), Minhaj et al., (2018) and Smitha et al., (2019). The second constraint was high cost of crossbred animals because the price of high-yielding crossbreed cattle is very high, and affordability becomes a limitation for farmers aiming to improve their milk production potential. The result is associated with the study of Mahapatra et al., (2012).

*Govt. support and infrastructure related constraints:* The difficulties faced by farmers in obtaining credit or financial assistance from government agencies. Limited access to funds hinders investments in infrastructure, equipment, and technology, impeding farm development. A similar result was reported by Ponnusamy (2010) in coastal India. Contradicting to this Manhas and Sharma (2008) revealed that respondents identified infrastructure constraints as the most serious hindrance to dairying.

*Socio-economic constraints:* Insufficient income and high input costs restrict their ability to invest in essential resources, such as quality cattle, feed, and medicines, necessary for profitable dairy farming. It also hinders their ability to expand operations, upgrade infrastructure, and adopt modern farming practices. Lack of capital was a major issue for the respondents found in the study by Minhaj et al., (2018) and Patel et al., (2013). Similarly, Dey et al., (2011) in Darjeeling, West Bengal found that poverty was found to be the commonest obstacle.

*Correlation of constraints rank with Income:* The differences in income did not lead to significant variations in how the respondents perceived these constraints. When it comes to feeding-related constraints, the respondents who belonged to low- and high-income groups have relatively different perceptions of feeding-related constraints. Within health management related constraints, the variations in income levels among respondents strongly impact how they perceive health management related constraints. Under socio-economic constraints, the socio-economic challenges are perceived differently across income groups.

## CONCLUSION

The study explored dairy farming practices and analysed the perceived constraints faced by Rajbanshi dairy farmers in their daily operations. The study revealed that Rajbanshi dairy farmers prefer crossbred cattle. They frequently feed their animals in stalls and

provide them with paddy straw for dry and natural vegetation for green fodder. Local Prani Bondhus were significant in providing primary veterinary care, underscoring their importance in a situation where finding veterinarians is still a problem. To enhance breeding practises and maximise reproductive effectiveness, education and training programmes are required, particularly in the fields of animal health, nutrition, and heat detection. Steps should be taken to address the seasonal scarcity of green fodder and to increase the availability and affordability of concentrates, which are essential for maintaining the health and productivity of dairy animals. There is a need to establish accessible veterinary services, emergency treatment at the doorstep, and affordable healthcare options. High charges for veterinary services and medicine, as well as limited purchasing power, should be addressed through government support programs, particularly in the form of subsidies or low-interest loans. This research suggests a comprehensive strategy be implemented to address the current state of dairy farming in West Bengal by policy intervention for Rajbanshi dairy farmers.

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*Declaration of competing interest:*

The authors have no competing interests.

*Data availability:*

Data would be available on request.

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*Appendix: Supplementary data*

The supplementary data, table in jpeg format for online visibility to the readers are submitted as an appendix.

*Author's contribution:*

The first author conceptualised, designed, collected data, and prepared the manuscript. The second author supervised the entire study process. The third and fourth authors contributed to writing and editing. All authors read and approved the final manuscript to be held accountable for the work.

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