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Constraints in adoption of improved management practices by Pandharpuri buffalo owners in the Pandharpur tehsil of Maharashtra

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Abstract

The present study entitled “Constraints in Adoption of Improved Management Practices by Pandharpuri Buffalo Owners in the Pandharpur Tehsil of Maharashtra” was conducted at village under Pandharpur tehsil from May 2023 to November 2023. A total of 250 Pandharpuri buffalo owners from Pandharpur Tehsil were randomly selected and data were collected using a pre-tested questionnaire. Respondents were categorized into four groups based on herd size (<5, 5–10, 10–20, and >20 buffaloes).

The study revealed that Pandharpuri buffalo owners faced several constraints in the adoption of improved management practices. The major technical constraints included non-availability of improved buffalo breeds in the local market, absence of progeny-tested breeding bulls and lack of improved fodder seed. Infrastructural constraints such as inadequate irrigation and drinking water facilities were also reported by the respondents. Economic constraints were evident in terms of inadequate and untimely availability of institutional credit along with cumbersome loan procedures. Furthermore, lack of effective extension services and poor technical knowledge among farmers significantly limited the adoption of scientific practices. A substantial proportion of respondents (87.2%) also reported non-remunerative prices for milk as a major constraint, which adversely affected their motivation to adopt improved management practices.

Keywords: Pandharpuri buffalo, constraints, management practices, Pandharpur tehsil, Solapur

Introduction

Livestock plays a vital role in the rural economy of India by providing employment, income, and nutritional security to farming households. Among livestock species, buffaloes contribute significantly to milk production, accounting for a major share of total milk output in the country. In Maharashtra, the Pandharpuri buffalo is an important indigenous breed known for its adaptability to local climatic conditions and its contribution to the livelihood of small and marginal farmers.

Scientific management practices related to feeding, breeding, housing and health care are essential for improving the productivity and profitability of buffalo rearing. However, despite the availability of improved technologies and management interventions, their adoption among farmers remains limited. The gap between recommended practices and their actual adoption is often attributed to various constraints faced by farmers at the field level.

These constraints may be economic, technical, infrastructural or institutional in nature. Factors such as high cost of inputs, lack of access to quality breeding services, inadequate veterinary and extension support and poor market returns for milk can significantly hinder the adoption of improved practices. Understanding these constraints is crucial for designing effective extension strategies and policy interventions aimed at enhancing the productivity of buffalo farming.

In this context, the present study was undertaken to identify and analyze the constraints faced by Pandharpuri buffalo owners in the adoption of improved management practices in the Pandharpur region of Maharashtra.

Materials and Methods

Study Area

The present study was conducted in Pandharpur Tahsil of Solapur district, Maharashtra, the native tract of the Pandharpuri buffalo. The region is characterized by a hot

and semi-arid climate with an average annual rainfall of approximately 583 mm. Pandharpur Tahsil was purposively selected due to its high population density of Pandharpuri buffaloes.

Sampling Procedure

A total of 250 Pandharpuri buffalo owners were selected through stratified random sampling. Respondents were categorized into four groups based on herd size:

- **Group I:** < 5 buffaloes
- **Group II:** 5–10 buffaloes
- **Group III:** 10–20 buffaloes
- **Group IV:** > 20 buffaloes

Data Collection

Data were collected during May 2023 to November 2023 using a pre-tested structured interview schedule. Personal interviews were conducted to obtain information on socio-economic characteristics and management practices, including feeding, breeding, housing, milking, calf rearing and health care. Wherever necessary, respondents were revisited to verify incomplete or inconsistent information.

Constraints Faced by Dairy Farmers while adopting improved Management Practices

This part of the present study involved selected buffalo owners, with data collected through interviews and questionnaires. The research aimed to identify constraints related to breeding, feeding, housing, milking, calf management, health care, and disease prevention. Owners were questioned about difficulties in these areas, with perceived constraints measured by a scale developed by Sharma (1980) ^[11].

$$\text{Level of Constraint} = \frac{\text{No. of farmers facing constraints}}{\text{Total number of respondents}} \times 100$$

Statistical Analysis

The statistical measures, such as the percentage, mean, standard error, have been used (Snedecor and coehran, 1994) ^[10].

Results and Discussion

Constraints and difficulties faced by the Pandharpuri buffalo owners in adoption of improved management practices

Numerous constraints impede farmers from fully adopting improved practices. This study investigates the challenges faced by dairy farmers in areas like breeding, feeding, housing, milking, calf management, health care, and disease prevention. The findings regarding the difficulties experienced by 250 Pandharpuri buffalo owners are detailed in tables 1 to 5.

Response of Pandharpuri buffalo owner towards constraints faced in adoption of feeding practices

High concentrate and mineral mixture prices were found to be the biggest obstacles faced by the maximum number of farmers (80.4%), followed by summer water and fodder shortages (75.2%), ignorance of balanced rations (66.8%), high fodder purchase costs (63.2%), and silage issues

(16.8%). These results were consistent with Bhingare (2013) ^[4].

Response of Pandharpuri buffalo owners towards constraints faced in adoption of proper housing management

According to Table 2, the largest barrier to the implementation of housing methods was the high construction expenses that 84% of farmers had to deal with. High interest rates were cited by 79% of Pandharpuri buffalo owners as a barrier, followed by a lack of government schemes for building byre (78%), a lack of personal capital (78.00%), and inadequate ventilation (30.4%). Patel *et al.* (2023) ^[6], Awate *et al.* (2022) ^[2], Verma and Sastry (1996) ^[13], and Thiagarajan and Thomas (1990) ^[12] all provide support for these conclusions.

Response of Pandharpuri buffalo owners towards constraints faced in adoption of breeding management

According to Table 3, poor A.I. outcomes, a lack of pedigree (Pandharpuri) bulls for natural services (76.4%), a low conception rate in buffalo by AI (68.4%), and repeat breeding in buffaloes (20.8%) are the main causes of the limited adoption of breeding procedures.

Lack of faith in AI (16.8%), repeat breeding in buffaloes (20.8%), lack of timely AI facilities at village level (11.6%), lack of trained personnel for AI (6%), incapacity to identify heat symptoms in buffalo due to silent heat (4.8%), and ignorance of mating time (4%), in that order. These findings are consistent with those of Bidwe *et al.* (2009) ^[3] and Sharma and Gutam (2010) ^[11]. A.I. was not used by any dairy producers. The majority of dairy farmers in groups I and II, or 56.60 and 60.22 percent, respectively, exhibited poor breeding management indices. Important barriers to the adoption of breeding procedures included the lack of semen straw, the location of A.I. centers, the inadequate facilities at A.I. centers, and the lack of veterinary doctors at the clinic. These results are supported by Patel *et al.* (2022) ^[6], Awate *et al.* (2022) ^[2], and Amandeep Kaur *et al.* (2006) ^[1].

Response of Pandharpuri buffalo owners in constraints faced in adoption of selected milking management practices

Milk prices are not competitive (87.2%), people don't know how to make value-added dairy products (74.8%), there are no facilities for preserving milk (71.6%), people don't know when to use improved technology and the market (66.8%), problems with fat (38.8%), milking machines are expensive (31.6%), and the milk collection center is far away (8.4%). According to the answer, the main challenges were advanced technology and a lack of awareness of the relevant industry. These findings are supported by Patel *et al.* (2022) ^[6], Awate *et al.* (2022) ^[2], Satyanarayan and Jagadeeswary (2010) ^[9], and Ramamurthy and Sinha (1989) ^[8]. Farmers from large families with larger farm holdings (herd size two milch animals) showed a greater improvement in dairying status.

Constraints faced by Pandharpuri buffalo owners in health care and disease prevention

The chart shows that the largest proportion of farmers 84 percent experienced the limitation of insufficient

understanding of the importance of deworming. The respondents who lacked sufficient knowledge about the significance of vaccinations (75.2%) included those who were unaware of the isolation of sick animals (45.2%), the high cost of treatment (66.4%), the unavailability and high cost of medications and disinfectants (588.8%), and the lack of access to adequate veterinary services (396.6%). There were limitations because there were no provisions for testing various diseases on animals. Just 38.5% of farmers said that a labor shortage was the reason for the low uptake of these methods. These conclusions are supported by Patel *et al.* (2022) ^[6], Awate *et al.* (2022) ^[2], Kaur *et al.*, (2006) ^[5].

Supply of basic inputs

The major constraints and difficulties faced by the buffalo owners that perceived through the interviews of respondents were generalized sequentially under broad heads.

1. The local market is lacking in improved buffalo breeds.
2. Insufficient arable land to provide an adequate supply of fodder.
3. Insufficient irrigation infrastructure to produce green fodder.
4. The timely and adequate lack of improved fodder crop seed.
5. The absence of green fodder throughout the entire year.
6. The inability to obtain the concentrate mixture at a fair pace.
7. Inadequate infrastructure to provide buffaloes with clean drinking water.

Service facilities

1. The lack of a better or progeny-tested bull available for

breeding

2. A low rate of conception through artificial insemination in buffaloes and an inadequate supply of high-quality semen.
3. Expensive veterinary care and medications, as well as a lack of veterinarians in the area.
4. A lack of knowledge about the government's immunization program against buffalo diseases.
5. Insufficient technical advice on running a successful dairy business.

Financial constraints

1. Inadequate and delayed loan supply via finance organizations, primarily banks.
2. A complicated procedure in order to obtain loans.
3. A disregard for lending money to farmers who are landless or in financial hardship.

General difficulties

1. There are not enough family labours available.
2. Insufficient resources for extension education.
3. Inadequate technical understanding of the enhanced management techniques.
4. The pricey supply of green fodder.
5. The milk producer receives an unpaid price.
6. Extremely high calf mortality from carelessness.
7. The farm's inadequate facilities for preserving and storing excess milk.
8. The dairy cooperative society refused to accept milk during the seasonal flush.
9. An irregular milk collection system operated by the cooperative dairy society.





Tables

Table 1: Constraints faced by Pandharpuri buffalo owners in adoption of selected feeding practices (N=250)

Sr. No.	Constraints	Frequency (N=250)	Rank	Percent
1.	High value of concentrates / Mineral mixture	201	I	80.04
2.	Scarcity / shortage of fodder and water during summer	188	II	75.02
3.	Lack of knowledge about balanced ration	167	III	66.08
4.	High cost of purchasing fodder	158	IV	63.02
5.	Non availability of improved fodder seed	134	V	53.06
6.	unavailability of concentrates and mineral mixtures in village	78	VI	31.02
7.	Inadequate knowledge for growing fodder crops round the year	49	VII	19.06
8.	Silage regarding problem	42	VIII	16.08
9.	Poor irrigation facility for growing crop	34	X	13.06

Table 2: Constraints faced by Pandharpuri buffalo owners in adoption of housing management (N250)

Sr. No.	Constraints	Frequency (N=250)	Rank	Percent
1.	High construction cost	210	I	84.00
2.	High interest rate	198	II	79.02
3.	Lack of Government scheme for construction of byre	195	III	78.00
4.	Lack of own capital	170	IV	68.00
5.	Lack of credit potential	162	V	64.08
6.	Lack of proper ventilation	76	VI	30.04

Table 3: Constraints faced by Pandharpuri buffalo owners in breeding management

Sr. No.	Constraints	Frequency (N=250)	Rank	Percent
1.	Lack of pedigree (Pandharpuri) bulls for natural services	192	I	76.8
2.	Poor conception rate in buffalo through AI	171	II	68.4
3.	Repeat breeding in buffaloes	52	III	20.8
4.	Lack of faith in AI	42	IV	16.8
5.	Unavailability of timely AI facility at village level	29	V	11.06
6.	Lack of trained persons for AI	15	VI	6.0
7.	Inability to detect heat symptoms in buffalo due to silent heat	12	VII	4.08
8.	Lack of knowledge about time of mating	10	VIII	4.0

Table 4: Constraints faced by Pandharpuri buffalo owners towards adoption of selected milking management practices

Sr. No.	Constraints	Frequency (N=250)	Rank	Percent
1.	Non remunerative price for milk	218	I	87.2
2.	Lack of knowledge in making value added dairy product	188	II	74.8
3.	Lack of preservation facility for milk	179	III	71.6
4.	Lack of knowledge about improved technology used and proper market	167	IV	66.8
5.	Ignorance about time of drying off	122	V	48.8
6.	Problems regarding the fat	97	VI	38.8
7.	High cost of milking machine	79	VIII	31.6
8.	Distantly located milk collection centre	21	IX	8.4

Table 5: Constraints faced by Pandharpuri buffalo owners in health care and disease prevention (N=250)

Sr. No.	Constraints	Frequency (N=250)	Rank	Percent
1.	Insufficient information about deworming importance	210	I	84
2.	Insufficient information about vaccination importance	188	II	75.2
3.	High cost of treatment	166	III	66.4
5.	Non availability and high cost of medicines / disinfectants	147	IV	58.8
4.	Lack of knowledge about isolation of sick animal	113	V	45.2
5.	Non-Availability of adequate Veterinary services	99	VI	39.6

Conclusion

The study revealed that Pandharpuri buffalo owners in Pandharpur tehsil face multiple constraints in adopting improved management practices across feeding, housing, breeding, milking and health care. Major constraints included high cost of concentrates and housing construction, scarcity of fodder and water, lack of pedigree breeding bulls and poor AI success, insufficient knowledge about balanced

feeding, vaccination and deworming, and inadequate veterinary and extension services. Non-remunerative milk price (87.2%) emerged as the most critical constraint, reducing farmers' motivation to adopt improved practices. Overall, economic, technical, infrastructural and institutional factors collectively limit the adoption of scientific management practices. Therefore, strengthening extension services, improving access to quality inputs and

credit and ensuring remunerative milk prices are essential to enhance productivity and sustainability of Pandharpuri buffalo rearing in the region.

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