

RESEARCH PAPER

Feeding the Herd: Challenges and Interventions Perceived by Cattle Farmers in Eastern part of Bihar

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ABSTRACT

The study examined the perceptions of cattle farmers regarding feed accessibility and feeding-related adaptation strategies across four districts of Eastern Bihar—Bhagalpur, Banka, Khagaria, and Katihar. The results revealed significant variation in farmers' perceived accessibility of feed resources. Dry fodder, primarily in the form of crop residues, was considered readily available and widely used. However, green fodder, concentrate feeds, and access to communal grazing lands were perceived to be limited due to seasonal variability, land scarcity, and declining common property resources. Traditional adaptation strategies—such as feeding crop residues, reducing feed to non-productive animals, and peer-to-peer sharing—were common, whereas scientifically recommended practices, including mineral supplementation and fodder crop cultivation, showed low adoption. These findings indicate a critical knowledge and resource gap between awareness and adoption of improved feeding practices. The study emphasized the need for targeted interventions such as decentralized fodder banks, strengthened extension delivery systems, and sustainable feeding strategies to enhance livestock productivity and resilience in flood- and drought-prone regions of Bihar.

HIGHLIGHTS

- ① Limited access to quality feed and scientific practices constrains livestock productivity in Eastern Bihar, demanding climate-resilient and locally adapted feeding solutions.
- ① Traditional, low-cost feeding remains prevalent, indicating significant gaps in farmer awareness, resource access, and veterinary-extension outreach.
- ① Green fodder and grazing scarcity—particularly in Banka—calls for integrated land-use planning and year-round fodder development strategies.
- ① Low adoption of mineral mixtures and fodder cultivation signals the need for targeted subsidies, training, and infrastructure to modernise cattle feeding practices.

Keywords: Bihar, feed accessibility, cattle farmers, fodder scarcity, feeding adaptation, dry fodder, green fodder, intervention strategies, livestock nutrition

Agriculture and animal husbandry are culturally, religiously, and economically interconnected within the complex structure of human society, as mixed farming and livestock rearing constitute a crucial aspect of rural existence (Dagar, 2017). Livestock play a vital role in the food security and risk mitigation strategies of farm households (Sastry, 2000; Misra, 2006). However, achieving optimal livestock productivity depends significantly on

the availability of balanced and adequate feed resources. India continues to face a substantial deficit in feed resources, with shortages estimated at approximately 35–40% for green fodder and

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around 40% for concentrate feed, especially in the summer (Kumar *et al.* 2013). Cattle and buffaloes are frequently nourished with fodder sourced from cultivated areas, supplemented minimally by gathered grasses and top feeds (Shashikala *et al.* 2017). Farmers grow or harvest fodder crops by cutting the green plants and feeding them fresh, preserving them in anaerobic conditions, or drying them out to feed animals. Sorghum (2.6 million hectares) and Egyptian clover (1.9 million hectares) make up about 54% of the total area of cultivated fodder in the *kharif* and *rabi* seasons, respectively (Dagar, 2017). Farmers are growing a lot of grasses and legumes, such as hybrid Napier, guinea grass, paragrass, velvet bean, stylo, and others. The country is currently short by 35.6% of green fodder, 10.95% of dry fodder, and 44% of concentrate feed materials (IGFRI Vision, 2050). To make up for the shortfall, the supply of green forage needs to grow by 1.69% each year. However, the area used for cultivated fodder only makes up 4% of the total cultivated land (8.4 million ha) in the country and has not changed in the last few decades. (Dagar, 2017; Halli *et al.* 2018; Meena *et al.* 2018). While several studies have documented national and regional feed deficits, there is limited district-level empirical evidence on farmers' perception of feed accessibility and their adaptive responses under climatic stress conditions, particularly in Eastern Bihar. Therefore, the present study aims to assess farmers' perception of feed accessibility across different feed types by analyzing feeding-related adaptation strategies under drought and flood conditions.

MATERIALS AND METHODS

The study was conducted in Eastern part of Bihar covering four districts- Khagaria and Katihar (Zone II) and Bhagalpur and Banka (Zone III A). A multistage sampling technique was adopted. Villages were selected purposively based on their prominence in cattle rearing and trading activities, followed by random selection of 60 farmers from each district, yielding a total sample size of 240 respondents. A five-point Likert scale (1 = Never to 5 = Always) was used to assess perceptions regarding feed accessibility and adaptation strategies. Weighted mean scores were computed to rank perceptions, while standard deviation (SD) was

used to assess variability. Data were analyzed using descriptive statistics, and comparative interpretation across districts was performed.

RESULTS AND DISCUSSION

The findings indicate that livestock feeding practices in the study area are predominantly influenced by resource constraints, climatic variability, and limited institutional support. While farmers demonstrate adaptive capacity through traditional coping mechanisms, the persistence of low productivity suggests inefficiencies in feed utilization and limited adoption of scientific feeding practices.

The comparative analysis of feed accessibility across districts (table 1) reveals a consistent pattern in the study area, wherein dry fodder emerged as the most accessible feed resource, while green fodder, concentrates, and grazing resources remained relatively constrained. The overall weighted mean score (3.14) indicates a moderate level of accessibility; however, this masks important inter-resource disparities.

Dry fodder recorded high perception across all districts (mean range: 3.53–3.70), with the overall mean of 3.63. This widespread availability is largely attributed to the dominance of cereal-based cropping systems in eastern Bihar, particularly rice and wheat, which generate substantial quantities of crop residues such as paddy straw and wheat straw (Singh *et al.* 2020; Kumar *et al.* 2020). Furthermore, the non-perishable nature and ease of storage of dry fodder enhance its year-round availability, making it a reliable feed source even under climatic stress (Rao *et al.* 2015; Raut *et al.* 2019). Similar findings across Bhagalpur, Banka, Khagaria, and Katihar suggest that dry fodder forms the backbone of livestock feeding systems in the region.

In contrast, green fodder accessibility was consistently perceived as low (overall mean: 3.05), with a majority of farmers reporting availability for less than six months annually. This seasonal limitation is associated with factors such as inadequate irrigation infrastructure, small and fragmented landholdings, and the prioritization of food crops over fodder crops (Kumar & Singh, 2019; Patel *et al.* 2020). Climatic vulnerabilities, including floods and waterlogging in districts like Bhagalpur and Khagaria, further restrict fodder cultivation and availability (Natarajan *et al.* 2021).

Table 1: Comparative perception of cattle farmers on accessibility of feed

Feed Resource	Mean Score						Perception Level
	Bhagalpur	Banka	Khagaria	Katihar	Overall	Weighted	
Dry fodder	3.53	3.68	3.61	3.70	3.63	3.43	+++
Green fodder	2.85	3.10	2.86	3.03	3.05	2.98	—
Concentrates	3.22	3.30	2.78	3.06	3.00	3.07	—
Grazing resources	3.03	2.50	3.06	3.05	2.91	2.91	—
District Weighted Mean	3.15	3.14	3.07	3.21	3.14	3.14	—

Notes: +++ **High Perception** (Mean > 3.00 with strong consistency); — **Low Perception** (Mean ≤ 3.00 or relatively weaker accessibility); Weighted mean score is the average across districts and overall study area.

Table 2: Comparative Perception of Respondents on Feeding Adaptations During Fodder Scarcity (Drought & Flood)

Feed Resource	Mean Score						Perception Level
	Bhagalpur	Banka	Khagaria	Katihar	Overall	Weighted	
Feeding crop residues & tree leaves	3.43	3.23	3.56	3.46	3.42	3.42	+++
Reducing feeding to non-productive animals	3.08	3.41	3.23	3.20	3.23	3.23	+++
Mineral mixture supplementation	2.06	2.01	2.20	1.70	1.99	1.99	—
Cultivating fodder crops	2.96	3.53	3.53	3.46	3.37	3.37	+++
Sharing feed with peers	3.46	2.86	3.15	3.23	3.17	3.17	+++
Grazing on common lands	3.28	3.23	3.08	2.98	3.14	3.14	+++
Storing dry fodder	2.96	3.53	3.53	3.98	3.50	3.50	+++
Purchasing/borrowing green fodder/silage	3.48	3.18	3.08	3.01	3.19	3.19	+++
District Weighted Mean	3.08	3.12	3.17	3.12	3.12	3.12	—

Notes: +++ **High Perception** (Mean > 3.00 with strong consistency); — **Low Perception** (Mean ≤ 3.00 or relatively weaker accessibility); Weighted mean score is the average across districts and overall study area.

The limited adoption of improved fodder varieties such as hybrid Napier or berseem also contributes to this deficit (Patel *et al.* 2021).

The accessibility of concentrates exhibited mixed but generally low perception (overall mean: 3.00), particularly in Khagaria (2.78) and Katihar (3.06). While increasing market penetration and availability through farmer producer organizations (FPOs) and private dealers have improved access in some districts (Ali *et al.* 2022), high costs, price volatility, and weak rural supply chains continue to constrain their widespread use (FAO, 2020; Meena *et al.* 2019). Additionally, limited awareness regarding balanced feeding practices among smallholders further reduces demand for concentrate feeds (Kumar *et al.* 2017).

Similarly, grazing resources were perceived as the least accessible feed source (overall mean: 2.91). This

reflects the ongoing decline in common property resources due to land fragmentation, encroachment, and conversion to non-agricultural uses (Dey *et al.* 2018; Jodha, 2001). The shrinking availability of pasture lands has significantly constrained traditional open grazing systems, forcing farmers to increasingly rely on stall feeding or cut-and-carry systems (Sharma *et al.* 2019; Kumari & Singh, 2022). The comparative assessment of feeding adaptation strategies reveals that cattle farmers in the study area predominantly rely on low-cost, traditional, and community-based coping mechanisms, while the adoption of scientifically recommended practices remains limited (table 2). The overall weighted mean score (3.12) indicates a relatively high level of awareness of adaptation strategies, although variability exists across practices.

Among the adaptation strategies, feeding crop residues and tree leaves was consistently perceived as highly important (overall mean: 3.42), reflecting its role as a traditional and readily available coping mechanism during fodder scarcity. This practice is deeply embedded in local livestock systems due to its low cost and ease of access (Kumar *et al.* 2017; Kumar *et al.* 2019). Similarly, reducing feeding frequency for non-productive animals (mean: 3.23) was widely practiced, indicating farmers' prioritization of limited feed resources toward productive livestock. Although effective in the short term, such strategies may have long-term implications for animal health and welfare (Chander *et al.* 2013; Singh & Rai, 2018).

Farmers also demonstrated a strong inclination toward purchasing and storing dry fodder during the harvesting season (mean: 3.50), which emerged as one of the most preferred strategies. This proactive approach reflects an increasing awareness of fodder security and aligns with earlier findings emphasizing fodder storage as an effective drought preparedness measure (Singh *et al.* 2020). Additionally, cultivation of fodder crops (mean: 3.37) showed relatively high perception, particularly in Banka and Khagaria, suggesting a gradual shift toward more planned and resilient fodder management practices (Patel *et al.* 2022; Reddy *et al.* 2020).

Community-based strategies such as sharing feed resources with peers (mean: 3.17) and grazing on common lands (mean: 3.14) were also perceived positively, highlighting the role of social capital and collective resilience in managing feed scarcity (Thornton & Herrero, 2010; Birthal & Jha, 2005). Similarly, purchasing or borrowing green fodder or silage during lean periods (mean: 3.19) indicates farmers' adaptive responses through informal market mechanisms and social networks.

In contrast, supplementation of feed additives such as mineral mixtures was consistently perceived as low (overall mean: 1.99 across districts), indicating a significant gap in awareness and adoption of scientifically recommended feeding practices. This may be attributed to limited access to veterinary extension services, lack of knowledge about balanced nutrition, and financial constraints among smallholder farmers (Patil *et al.* 2019; Chatterjee *et al.* 2022; Rao *et al.* 2019). The relatively lower perception of certain practices such as sharing feed

in some districts and reliance on communal grazing further reflects socio-economic barriers, resource scarcity, and institutional limitations (Kumar *et al.* 2021).

The findings indicate that cattle farming systems in eastern Bihar are shaped by uneven feed resource availability, where dependence on dry fodder remains high while access to nutritionally balanced and diverse feed resources is limited. Farmers demonstrate adaptive responses to fodder scarcity; however, these are primarily influenced by local resource availability and economic constraints, leading to a continued reliance on traditional practices. The comparatively low uptake of improved feeding interventions, particularly mineral supplementation and planned fodder cultivation, reflects constraints related to awareness, affordability, and service delivery mechanisms. This suggests that existing livestock management practices are influenced more by accessibility and feasibility considerations than by scientific recommendations, thereby limiting the scope for productivity enhancement within smallholder systems.

CONCLUSION

The study concludes that feed accessibility in Eastern Bihar is characterized by a paradox—adequate availability of dry fodder but significant deficits in green fodder, concentrates, and grazing resources. Farmers' adaptation strategies are largely reactive rather than preventive. While cost-effective practices such as feeding crop residues and reducing feed for non-productive animals are commonly employed, scientifically recommended practices such as the use of mineral mixtures and cultivation of fodder crops are less prevalent. The findings contribute to the understanding of climate adaptation in smallholder livestock systems, highlighting the interplay between resource constraints, traditional knowledge, and institutional gaps.

Bridging this gap require measures like strengthening last-mile veterinary and extension services, promoting fodder entrepreneurship and decentralized fodder banks, integrating fodder development into existing agricultural schemes, enhancing access to mineral mixtures through subsidies and awareness campaigns. Hence, government schemes should support

smallholder farmers with input subsidies, quality seed distribution, and training on dual-purpose crops to enhance green fodder production. Further, Community-managed fodder storage facilities can ensure year-round access to dry fodder and silage, particularly during climatic extremes. The subsidized distribution channels and integration with dairy cooperatives can improve availability and affordability of nutritionally balanced feed. Local governance mechanisms should be strengthened to conserve and regulate access to community pastures through land-use planning and legal safeguards. Regular training, on-farm demonstrations, and mobile advisory units can raise awareness on balanced feeding practices, especially targeting marginal and small farmers. Investment in climate-smart agriculture, including hydroponic fodder systems, drought-tolerant fodder varieties, and early warning systems for fodder scarcity, should be prioritized.

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Annexure

Table A-1: Perception of respondents on accessibility of feed in Bhagalpur district

Items	Not available at all	Less than 3 months	3-6 months	6-9 months	Round the year	Mean	S.D	Decision
Accessibility of dry fodder	2 (3.33)	9 (15.00)	18 (30.00)	17 (28.33)	14 (23.33)	3.53	1.11	High Perception
Accessibility to green fodder	5 (8.33)	17 (28.33)	28 (46.67)	4 (6.67)	6 (10.00)	2.85	1.05	Low Perception
Accessibility to concentrates	11 (18.33)	8 (13.33)	13 (21.67)	12 (20.00)	16 (26.67)	3.22	1.43	High Perception
Grazing in field/ pasture lands	10 (16.67)	4 (6.67)	13 (21.67)	9 (15.00)	24 (40.00)	3.03	1.81	Low Perception

Weighted average = 3.15.

Table A2: Perception of respondents on feeding related adaptations to combat scarcity of fodder during drought and flood condition in Bhagalpur district

Items	Never	Rarely	Sometimes	Often	Always	Mean	S.D	Decision
Feeding crop residues and tree leaves	12 (20.00)	2 (3.33)	15 (25.00)	10 (16.67)	21 (35.00)	3.43	1.49	High Perception
Reducing the frequency of feeding to non-productive animals	19 (31.67)	29 (48.33)	4 (6.67)	5 (8.33)	3 (5.00)	3.08	1.51	High Perception
Supplementing feed additives like: mineral mixtures	13 (21.67)	9 (15.00)	15 (25.00)	6 (10.00)	17 (28.33)	2.06	1.08	Low Perception
Cultivating fodder crops	17 (28.33)	5 (8.33)	14 (23.33)	11 (18.33)	13 (21.67)	2.96	1.51	Low Perception
Sharing of feed and other supplements from peers	13 (21.67)	2 (3.33)	17 (28.33)	6 (10.00)	22 (36.67)	3.46	1.54	High Perception
Grazing in public/ common lands	14 (23.33)	4 (6.67)	13 (21.67)	9 (15.00)	20 (33.33)	3.28	1.56	High Perception
Purchasing/ storing dry fodder during harvesting season	17 (28.33)	5 (8.33)	14 (23.33)	11 (18.33)	13 (21.67)	2.96	1.51	Low Perception
Purchasing/borrowing green fodder/ silage during lean season	11 (18.33)	2 (3.33)	14 (23.33)	13 (21.67)	20 (33.33)	3.48	1.45	High Perception

Weighted average = 3.08.

Table A3: Perception of respondents on accessibility of feed in Banka district

Items	Not available at all	Less than 3 months	3-6 months	6-9 months	Round the year	Mean	S.D	Decision
Accessibility of dry fodder	0 (0.0)	8 (13.33)	22 (36.67)	11 (18.33)	19 (31.67)	3.68	1.06	High Perception
Accessibility to green fodder	6 (10.00)	12 (20.00)	13 (21.67)	16 (26.67)	13 (21.67)	3.10	1.23	Low Perception
Accessibility to concentrates	8 (13.33)	9 (15.00)	21 (35.00)	13 (21.67)	9 (15.00)	3.30	1.29	High Perception
Grazing in field/ pasture lands	14 (23.33)	19 (31.67)	10 (16.67)	14 (23.33)	3 (5.00)	2.50	1.14	Low Perception

Weighted average = 3.14.

Table A4: Perception of respondents on feeding related adaptations to combat scarcity of fodder during drought and flood condition in Banka district

Items	Never	Rarely	Sometimes	Often	Always	Mean	S.D	Decision
Feeding crop residues and tree leaves	9 (15.00)	10 (16.67)	14 (23.33)	10 (16.67)	17 (28.33)	3.23	1.44	High Perception
Reducing the frequency of feeding to non-productive animals	19 (31.67)	26 (43.3)	8 (13.33)	5 (8.33)	2 (3.33)	3.41	1.27	High Perception
Supplementing feed additives like: mineral mixtures	6 (10.00)	8 (13.33)	16 (26.7)	17 (28.33)	13 (21.67)	2.01	0.94	Low Perception
Cultivating fodder crops	7 (11.67)	9 (15.0)	13 (21.67)	9 (15.00)	22 (36.66)	3.53	1.41	High Perception
Sharing of feed and other supplements from peers	13 (21.67)	17 (28.33)	7 (11.67)	11 (18.33)	12 (20.00)	2.86	1.46	Low Perception
Grazing in public/ common lands	9 (15.00)	10 (16.67)	14 (23.33)	10 (16.67)	17 (28.3)	3.23	1.44	High Perception
Purchasing/ storing dry fodder during harvesting season	7 (11.67)	9 (15.00)	10 (16.67)	12 (20.00)	22 (36.66)	3.53	1.41	High Perception
Purchasing/borrowing green fodder/ silage during lean season	13 (21.67)	7 (11.67)	11 (18.33)	12 (20.00)	17 (28.33)	3.18	1.53	High Perception

Weighted average = 3.12.

Table A5: Perception of respondents on accessibility of feed in Khagaria district

Items	Not available at all	Less than 3 months	3-6 months	6-9 months	Round the year	Mean	S.D	Decision
Accessibility of dry fodder	1 (1.67)	16 (26.67)	11 (18.33)	12 (20.00)	20 (33.33)	3.61	1.20	High Perception
Accessibility to green fodder	15 (25.00)	17 (28.33)	7 (11.67)	8 (13.33)	13 (21.67)	2.86	1.54	Low Perception
Accessibility to concentrates	18 (30.00)	8 (13.33)	11 (18.33)	10 (16.67)	13 (21.67)	2.78	1.50	Low Perception
Grazing in field/ pasture lands	13 (21.67)	12 (20.00)	9 (15.00)	10 (16.67)	16 (26.66)	3.06	1.52	Low Perception

Weighted average = 3.07.

Table A6: Perception of respondents on feeding related adaptations to combat scarcity of fodder during drought and flood condition in Khagaria district

Items	Never	Rarely	Sometimes	Often	Always	Mean	S.D	Decision
Feeding crop residues and tree leaves	2 (3.33)	6 (10.00)	23 (38.33)	14 (23.33)	15 (25.00)	3.56	1.07	High Perception
Reducing the frequency of feeding to non-productive animals	21 (35.00)	23 (38.33)	4 (6.67)	7 (11.67)	5 (8.33)	3.23	1.39	High Perception
Supplementing feed additives like: mineral mixtures	9 (15.00)	10 (16.67)	12 (20.00)	14 (23.33)	15 (25.00)	2.20	1.27	Low Perception
Cultivating fodder crops	9 (15.00)	10 (16.67)	7 (11.67)	11 (18.33)	23 (38.33)	3.53	1.51	High Perception

Sharing of feed and other supplements from peers	13 (21.67)	7 (11.67)	12 (20.00)	15 (25.00)	13 (21.67)	3.15	1.47	Low Perception
Grazing in public/ common lands	14 (23.33)	7 (11.67)	12 (20.00)	14 (23.33)	13 (21.67)	3.08	1.47	Low Perception
Purchasing/ storing dry fodder during harvesting season	8 (13.33)	10 (16.67)	7 (11.67)	11 (18.33)	24 (40.00)	3.53	1.51	High Perception
Purchasing/borrowing green fodder/ silage during lean season	9 (15.00)	11 (18.33)	19 (31.67)	8 (13.33)	13 (21.67)	3.08	1.47	Low Perception

Weighted average = 3.17.

Table A7: Perception of respondents on accessibility of feed in Katihar district

Items	Not available at all	Less than 3 months	3-6 months	6-9 months	Round the year	Mean	S.D	Decision
Accessibility of dry fodder	2 (3.33)	14 (23.33)	11 (18.33)	12 (20.00)	21 (35.00)	3.70	1.18	High Perception
Accessibility to green fodder	9 (15.00)	14 (23.33)	12 (20.00)	13 (21.67)	12 (20.00)	3.03	1.62	Low Perception
Accessibility to concentrates	17 (28.33)	8 (13.33)	9 (15.00)	8 (13.33)	18 (30.00)	3.06	1.38	Low Perception
Grazing in field/ pasture lands	9 (15.00)	16 (26.67)	12 (20.00)	9 (15.00)	14 (23.33)	3.05	1.40	Low Perception

Weighted average = 3.21.

Table A8: Perception of respondents on feeding related adaptation interventions to combat scarcity of fodder during drought and flood condition in Katihar district

Items	Never	Rarely	Sometimes	Often	Always	Mean	S.D	Decision
Feeding crop residues and tree leaves	3 (5.00)	12 (20.00)	15 (25.00)	14 (23.33)	16 (26.67)	3.46	1.22	High Perception
Reducing the frequency of feeding to non-productive animals	20 (33.33)	22 (36.67)	5 (8.33)	3 (5.00)	10 (16.67)	3.20	1.45	High Perception
Supplementing feed additives like: mineral mixtures	11 (18.33)	13 (21.67)	14 (23.33)	12 (20.00)	10 (16.67)	1.70	0.86	Low Perception
Cultivating fodder crops	6 (10.00)	15 (25.00)	8 (13.33)	7 (11.67)	24 (40.00)	3.46	1.47	High Perception
Sharing of feed and other supplements from peers	7 (11.67)	10 (16.67)	18 (30.00)	12 (20.00)	13 (21.67)	3.23	1.29	High Perception
Grazing in public/ common lands	16 (26.67)	8 (13.33)	10 (16.67)	12 (20.00)	14 (23.33)	2.98	1.53	Low Perception
Purchasing/ storing dry fodder during harvesting season	3 (5.00)	7 (11.67)	17 (28.33)	15 (25.00)	18 (30.00)	3.98	0.87	High Perception
Purchasing/borrowing green fodder/ silage during lean season	18 (30.0)	8 (13.33)	9 (15.00)	5 (8.33)	20 (33.33)	3.01	1.67	Low Perception

Weighted average = 3.12.

Table A9: Perception of respondents on feed accessibility of feed in the study area

Items	Not available at all	Less than 3 months	3-6 months	6-9 months	Round the year	Mean	S.D	Decision
Accessibility of dry fodder	2 (0.83)	47 (19.58)	62 (25.83)	55 (22.92)	74 (30.83)	3.63	1.13	High Perception
Accessibility to green fodder	36 (15.0)	59 (24.58)	58 (24.17)	43 (17.92)	44 (18.33)	3.05	1.46	Low Perception
Accessibility to concentrates	52 (21.66)	33 (13.75)	54 (22.50)	40 (16.67)	61 (25.42)	3.00	1.32	Low Perception
Grazing in field/ pasture lands	59 (24.58)	50 (20.83)	38 (15.83)	39 (16.25)	54 (22.50)	2.91	1.50	Low Perception

Weighted average = 3.14.

Table A10: Perception of respondents on feeding related adaptations to combat scarcity of fodder during drought and flood condition in the study area

Items	Never	Rarely	Sometimes	Often	Always	Mean	S.D	Decision
Feeding crop residues and tree leaves	26 (10.83)	32 (13.33)	65 (27.08)	48 (20.00)	69 (28.75)	3.42	1.32	High Perception
Reducing the frequency of feeding to non-productive animals	89 (37.08)	102 (42.50)	18 (7.50)	23 (9.58)	8 (3.33)	3.23	1.40	High Perception
Supplementing feed additives like: mineral mixtures	38 (15.83)	40 (16.67)	52 (21.67)	48 (20.00)	62 (25.83)	1.99	1.06	Low Perception
Cultivating fodder crops	39 (16.25)	38 (15.83)	45 (18.75)	35 (14.58)	83 (34.58)	3.37	1.49	High Perception
Sharing of feed and other supplements from peers	46 (19.16)	34 (14.17)	54 (22.50)	43 (17.92)	63 (26.25)	3.17	1.45	High Perception
Grazing in public/ common lands	53 (22.08)	31 (12.92)	48 (20.00)	44 (18.33)	64 (26.67)	3.14	1.50	High Perception
Purchasing/ storing dry fodder during harvesting season	33 (13.70)	23 (9.60)	55 (22.90)	48 (20.00)	81 (33.80)	3.50	1.39	High Perception
Purchasing/borrowing green fodder/ silage during lean season	39 (16.25)	30 (12.50)	51 (21.25)	50 (20.83)	70 (29.17)	3.19	1.50	High Perception

Weighted average = 3.12.

