

Hurdles and Hindrances in Livestock and Pastoral Farming in Anjaw District, Arunachal Pradesh

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The beautiful land of Tawrah Mishmi, Kaman Mishmi, and Meyor tribes of Arunachal Pradesh situated on the north-eastern tip of India. Anjaw district was bifurcated from Lohit district on 16th February 2004 with its headquarter at Hawai at an altitude of 1296m above sea level. It is bounded on the north by China, on the west by Lower Dibang valley and Lohit district, on the south by Changlang district and on the east by Myanmar. It is the eastern most district in India. Geographically the district has a total area of 11,402 sq. km with 64.64% of forest area. The actual rainfall in the district was 1238.4 mm in the year 21-22. According to 2011 census the district has a total no of 4180 households with a population of 21167 (Anon, 2011). The animal population as per March, 2023: Mithun- 9758; Cattle-1380; Pig- 5109; Goat- 961; Poultry- 14545 and Duck- 110 in number (Anon). Arunachal Pradesh is witnessing a decline in livestock numbers and milk productivity, which indirectly affects districts like Anjaw. Livestock and pastoral farming in Anjaw is emerging from traditional patterns toward a more structured, scientifically guided approach. The KVK's pivotal role in distributing improved breeds, providing training on feed formulation and promoting IFS models is shaping this transformation. However, limited infrastructure, climatic hurdles and transportation challenges still pose serious constraints.

Livestock and pastoral farming in Anjaw district face challenges including:

Transport Challenges & Remoteness

- **Geographic Isolation:** Anjaw is one of India's most remote districts, with limited transportation infrastructure. This makes importing livestock feed expensive, delays supply chains and limits access to quality input. The district is extremely isolated due to its distance from major urban centers. The nearest town with better connectivity is Tezu (in Lohit district), but

even reaching Tezu requires long travel over difficult terrain.

- **Terrain and Accessibility:** The rugged terrain and poor roads further exacerbate logistics, especially during the rainy season when feed scarcity spikes. Road connectivity is limited, with frequent landslides, poor bridges, and river crossings. Air connectivity is minimal and mostly through military/temporary helipads.
- **Altitude Variation:** Elevation ranges from around 1,200 meters to over 4,000 meters, giving rise to different climatic zones. Lower valleys are warm and humid, while higher altitudes are cold and snowy. Extreme cold and heavy snowfall in higher reaches make habitation, agriculture, and livestock rearing difficult. Mithun, yak, and goat thrive in higher altitudes, while pig and poultry are reared in lower areas.
- **Seismic & Landslide Prone:** The hilly terrain is geologically fragile, prone to landslides, earthquakes, and erosion. Rugged altitudinal variation hinders road construction. Many villages remain cut off during landslides or heavy snowfall. High cost of building infrastructure like schools, hospitals, and markets in remote altitudes. High-altitude regions prone to avalanches and earthquakes. Altitudinal variation creates micro-climatic hazards, making disaster management harder.
- **Dense Forest Cover:** Much of the district is covered with thick subtropical and temperate forests, limiting large-scale settlement and agriculture. Lower valleys (Lohit, Dalai rivers) prone to floods and landslides. Seasonal migration of livestock adds pressure on forests.

High Costs and Feed Scarcity

- **Unavailability of Feed Inputs:** Feed often represents the highest input cost, with scarce availability and steep prices due to remoteness. Transportation of inputs (fertilizers, seeds) and produce is difficult across varying

terrain. Scarcity of fodder in high regions, especially in winter, creates stress for animals.

- **Seasonal Shortages:** Heavy and prolonged monsoon rains disrupt the availability of both concentrated and local feed ingredients. Knowledge gaps in nutrition and management. Scarcity of fodder in high regions, especially in winter, creates stress for animals.
- **Limited Awareness:** Farmers often lack technical know-how in scientific feeding, balanced rations, and nutritional principles. Short growing season in high-altitude villages limits crop diversity. Steep slopes and erosion-prone soil at higher altitudes reduce cultivable land.
- **Lacuna in adoption of Best Practices:** Traditional methods dominate, leading to inefficient production and health outcomes. Different crops are suited to different altitudes; lack of uniformity creates challenges for planning.

Restricted Access to Services and Inputs

- **Veterinary Services:** Challenges persist in reaching veterinary health, disease prevention, and medication in remote areas. Along with shortage of field staffs and doctors at block level. There is also lack of availability of veterinary medicines in the local market.
- **Institutional Delays:** Subsidies, banking services, and scheme disbursement face bureaucratic delays, hindering timely support. Limited connectivity facilities at different altitudes creates creating awareness and broadcasting different government schemes.

Environmental Obstacles

- **Frequent Adverse Weather:** Heavy rain, potential landslides, and harsh winters disrupt livestock rearing schedules and grazing practices. Villages at lower altitudes have better access to markets and services compared to remote high-altitude settlements. Food security is threatened due to short agricultural season and adverse weather condition.
- **Soil Instability and Erosion:** Farming lands, including grazing areas, are affected by top-soil erosion due to rainfall and landslides. Unequal development between valleys and high mountains creates livelihood imbalance.

Holistic Strategy for Innovations & Interventions:

Promoting Locally Available Feed

- **Alternative Feeds:** Creating local fodder sources in Anjaw district is very important, because the district faces problems like rugged terrain, difficult transport, and fodder scarcity for livestock (especially mithun,

cattle, poultry and goats). Programmes now explored locally available feed alternatives like fermented banana psuedo stem, and drumstick (moringa) cultivation to feed livestock (pigs, ruminants, poultry). Planting fodder trees on field bunds and terrace risers to be implemented. Promotion of controlled lopping of naturally available fodder trees like oak, bamboo leaves, ficus species are to be considered.

- **On-site Training:** Farmers are being taught how to formulate least-cost, balanced rations using local ingredients, including Salt mineral licking block (SMLB), high-energy mineral block (HELMB) preparation. Rice followed by fodder legumes to enrich soil and provide fodder to be adopted. Grass grown on bunds for both erosion control and fodder are to be initiated. Encouraging for fodder banks near villages using community land. Krishi Vigyan Kendra (KVK) has been promoting alternative feeds such as fermented banana psuedo stem and drumstick-based feed to address scarcity and reduce costs.

Integrated Farming Systems

- **Agri-Horti-Livestock Integration:** To tackle this, Integrated Farming Systems (IFS) combining livestock, agriculture, horticulture, agroforestry are to be promoted for diversifying income generation and reduce risk. Since Anjaw has unique geographic, climatic and socio-cultural conditions, an IFS approach can help tackle fodder scarcity, altitude variation, isolation and livelihood security. Considering the altitude difference, in low altitude (600–1200 m): rice, maize, millet, ginger, turmeric, whereas in mid-altitude (1200–2500 m): maize, buckwheat, upland rice, vegetables (cabbage, pea, beans) and in high altitude (>2500 m): barley, potato, millet can be taken care of for cultivation depending upon the preference of the locals and market demand.
- **Value Enhancement:** The integration allows using crop by-products as feed and generates multiple income streams from one land area. Micro-zone-based IFS models (low, mid, high altitude) with strong focus on Mithun + Horticulture + Fishery + Agroforestry, while promoting fodder banks and value addition (ginger, cardamom, kiwi processing) are to be adopted.

Improved Livestock Breeding and Health

- **Enhanced Livestock Breed:** Improved livestock of poultry, piggery and goaterly have been introduced by KVK for improving the performance and productivity of livestock in Anjaw district. The Kalinga Brown and Sonali poultry breed has been introduced as a dual-

purpose bird. It significantly outperforms local birds in growth, egg production, and feed conversion efficiency. Vanaraja breed of poultry has been found popular in bordering areas (vill- Kaho, Kibithu, Chota Kundan) for meat-purpose as reported by KVK. These breeds are more productive and cost-efficient. For piggery, Hampshire cross breed is known for its good body quality, fast growers, good tempered and high-quality meat production. In case of goatery, Assam Hill Goat breed has been found to perform well in Anjaw. These goats are predominantly of meat type producing good quality meat and also well known for their high prolificacy, fertility and fecundity coupled with high percentage of twinning and even triplet or quadruplet kiddings.

- **Training:** Farmers receive training on improved breed rearing, housing, feeding, vaccination, and forming grower associations. Training focuses on linking livestock with horticultural crops like large cardamom and oranges for sustainable, diversified income. KVK also conducted programmes teaching, poultry, piggery, goatery, duck farming and the use of local herbs in livestock health, aiming to diversify income sources and promotion of natural farming practices.

Livelihood Promotion & Scheme Integration

- **Model Village Interventions:** Under the State Rural Livelihood Mission (ArSRLM), the district administration and KVK under tribal sub plan (TSP) are implementing Model Village Project in border villages such as Kaho, Kibithoo, Musai and Chaglahagom. Through the Model Village project, cattle rearing, backyard poultry, kitchen gardens, fish ponds, and protected cultivation are being integrated into livelihood options. Vikshit Krishi Sankalp Abhiyan (VKSA) guided by KVK along with District Agriculture, Horticulture, ArSRLM has motivated and created a huge awareness among the remotest area villagers.
- **Institutional Support:** District-level monitoring (DLMC) has flagged livestock farming constraints and advocated for tech-driven implementations and fund allocations e.g., integrated farming models under vibrant village programme (VVP). The KVK has taken initiatives under the tribal sub plan VVP, they distributed improved poultry breeds like Vanaraja, Kalinga Brown, Sonali and piglets – Hampshire cross breed with supportive medicines to all the interested

farmers, aiming to boost diversified livelihood opportunities along with saplings of horticulture crops like- plum, pomegranate, kiwi for orchard development programme under TSP project. Several other programmes have also been taken up and implemented throughout the district by KVK under on farm testing and front line demonstrations throughout the district.

Conclusion

Livestock and pastoral farming in Anjaw faces multifaceted constraints rooted in geography, infrastructure and knowledge gaps. Encouragingly, KVK-led innovations and government-supported integrated systems are helping local farmers overcome these barriers. While altitude variation in Anjaw gives it rich biodiversity and potential for diverse farming, it also leads to climatic hardships, poor connectivity, fodder scarcity, disaster risk and unequal development. Anjaw district is seeing multifaceted progress: from livelihood-focused interventions and core rural infrastructure upgrades to tourism-enabling developments via the Vibrant Villages Programme and integrated farming models spearheaded by KVK and district administration. These initiatives collectively aim to revitalize, boosting livelihood, connectivity and security not only for the border communities but also the habitat of the district directly or indirectly. Livestock and pastoral farming in Anjaw faces intertwined challenges logistics, feed, breed productivity and market access. Promising interventions like alternative feed, improved breeds and integrated farming systems have shown early success. However, infrastructure development, veterinary outreach, marketing frameworks and greater institutional support are critical to ensure long-term sustainability.

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