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Assessment on profitable animal husbandry practices in KVK adopted village of Rajkot district

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Abstract

Livestock production serves as a primary source of income for all livestock owners, encompassing various ventures. Animal husbandry practices, with a particular emphasis on nutrition, play a pivotal role in ensuring optimal animal production and reproduction. In buffalo rearing among rural farmers in the adopted village of Rajkot district, it has been observed that inadequate nutrition significantly contributes to low live weight, infertility, and diminished milk yields. Addressing these issues, a technology demonstration was conducted, focusing on the feeding regimen of combining fodder with concentrate and mineral mixture for buffalo. This initiative aimed to enhance the overall well-being of the livestock and improve the economic prospects for the rural farmers. The identification of low milk production in buffalo was carried out using the Participatory Rural Appraisal (PRA) method in the adopted rural village of Rajkot district, Gujarat. Over the period of three years (2015-2017), three different treatments were tested. Among these, Treatment-3 (T₃) emerged as the most beneficial, showcasing positive outcomes in terms of daily milk production (kg/day), milk production per unit, net return (profit) in Rs./local buffalo breed, and a higher benefit-cost ratio (BCR). The feeding method involving a combination of fodder, concentrate, and mineral mixture is recommended to be implemented on a larger scale for improved growth and increased livestock production. The success of implementing these feeding practices in the rural adopted village can be attributed to the exhaustive efforts made by KVK Pipalia. The dissemination of knowledge and effective technology transfer was achieved through various means, including trainings, field-level demonstrations (FLDs), on-farm trials (OFTs), and other extension activities such as field visits, diagnostic visits, and animal health camps. These efforts collectively aim to elevate animal production and enhance the income of dairy farmers in the region.

Keywords: KVK, Animal husbandry, mineral mixture feeding, rural village

Introduction

Livestock production is a cornerstone of livelihood security for the majority of the rural population, playing a crucial role in the socio-economic structure of our country. The contribution of the livestock sector to agriculture and allied sectors surpasses 25%, constituting 4.1% of the total GDP of the nation. In Gujarat, the abundant wealth of domestic livestock significantly contributes to the state's economy. Notably, the buffalo population witnessed an increase of over 9% in the year 2017-18, with buffaloes contributing approximately 51% to the total milk production of the state. To promote profitable animal husbandry practices among villagers, both central and state government organizations have undertaken various initiatives. KVK Pipalia has been instrumental in playing a pivotal role in promoting scientific, profitable, successful, and effective animal husbandry practices in the adopted villages of Rajkot district.

In particular, the local buffalo breed, such as Jaffarabadi, exhibits higher milk yield and fat percentage compared to other nondescript breeds. However, dairy farmers in Rajkot district often maintain their buffaloes on cereal straw and locally available grasses, which may lack sufficient nutritional elements. Additionally, there is a prevalent lack of knowledge concerning breeding, feeding, and

management practices in buffalo rearing. The narrative details the success story of a KVK operational village, where full intervention by KVK scientists has led to profitable dairying. Despite challenges in nutritional practices and management, the concerted efforts of KVK have resulted in positive outcomes, paving the way for improved livelihoods and economic prosperity for dairy farmers in the region.

Perceiving of the problem

In Rajkot district, dairy farmers predominantly raise Jaffarabadi buffaloes and Gir cows to optimize milk yield. The Jaffarabadi buffaloes exhibit an average milk yield ranging from 6 to 7 liters per day. Farmers typically sustain their livestock on dry serial fodder and limited green fodder, which is available only fleetingly during the monsoon season. However, during the dry months, particularly in the summer, the maintenance of cattle and buffalo for milk production poses challenges due to reduced milk output, heightened care requirements, increased costs, and relatively lower compensation.

Recognizing these challenges, KVK scientists have undertaken an intensive effort to in still successful animal husbandry practices in the adopted village. This includes implementing sound breeding, feeding, and management

practices, which prove beneficial for rural dairy farmers engaged in buffalo rearing. Through these interventions, the aim is to address the seasonal variations in fodder availability and optimize milk production, thereby alleviating the challenges faced by dairy farmers during the dry months.

Intensive efforts made by KVK, Pipalia

Krishi Vigyan Kendra, affiliated with Junagadh Agricultural University and located in Pipalia, Di-Rajkot, Gujarat, plays a pivotal role in the upliftment of rural farmers, particularly in agriculture and allied sectors like animal husbandry, horticulture, and home science. Subject matter specialists in each field provide expert guidance to ensure comprehensive development. The primary objective is to enhance net profits and minimize production costs in both livestock enterprises and agriculture. Through the application of Participatory Rural Appraisal (PRA) methods, a total of 11 rural villages in Rajkot district, Gujarat, were selected for targeted interventions. In these villages, the dairy sector emerges as a significant source of employment. Krishi Vigyan Kendra (KVK) conducts various extension activities, including off-campus training sessions conducted

at farmers' doorsteps, on-campus training at KVK, diagnostic visits addressing animal health concerns, scientists' visits to livestock owners' houses, and frequent telephonic guidance on scientific animal husbandry.

Farmers actively seek solutions for animal husbandry problems, leading to a substantial footfall at KVK. These concerted efforts have resulted in significant progress in terms of creating awareness about scientific and profitable animal husbandry practices. The KVK's multifaceted approach has not only empowered farmers with knowledge but has also contributed to the overall advancement of rural communities in the region.

Materials and Methods

A concise overview of KVK's efforts in the adopted village concerning animal husbandry has been provided. In addition to these initiatives, a plethora of extension activities, including Krishi Mahotsav, Follow-up on Field Level Demonstrations (FLDs) and On-Farm Trials (OFTs), night meetings, exposures, exhibitions, seminars, shibirs, as well as monitoring and evaluation, were also meticulously executed.

Table 1: Training conducted for Animal Husbandry

Sr. No.	Type of the training	Topic of the training	Thematic area	No. of beneficiaries	Type of the participants
1.	Off campus	Pre-monsoon care in dairy animals	Disease management	34	Practicing farmers
2.	Off campus	Importance of AI to improve pedigree	Animal breeding management	54	Practicing farmers
3.	Off campus	Animal production and management	Animal management	50	Dairy farmer
4.	Off campus	Balanced feeding of livestock	Animal nutrition	32	Rural youth
5.	On campus	Vaccination and its importance	Animal health	30	Dairy women
6.	On campus	Diseases management of dairy animals	Diseases management	28	Dairy farmer
7.	On campus	Breed management of dairy animals	Breed management	35	Dairy farmer

Table 2: Scientist visit farmers including Diagnostic visit

Sr. No.	Purpose of the visit	No. of beneficiaries
1.	Information and advice regarding metabolic diseases in livestock	13
2.	Information and advice regarding anoestrus in animal	28
3.	Information and advice regarding measures for blood in milk of buffalo	17
4.	Information and advice regarding lameness in buffalo	20
5.	Information and advice regarding dermatitis in cattle	26
6.	Information and advice regarding anorexia and pain over mouth	32
7.	Information and advice regarding tick infestation	18
8.	Information and advice regarding mastitis	45

Table 3: Telephonic information to farmers

Information about different problems and remedies regarding animal science related problems to the villagers Total 68 telephonic messages to the villagers were from KVK scientists

Table 4: Front line demonstration and on farm trial

Sr. No.	FLD/OFT	Thematic area	Title	Objective	Impact/ follow-up
1.	OFT	Management of milch animal (Milk production)	Low milk production of buffalo	To refine the feeding practices and to test the effect of mineral mixture feeding and Dewormer bolus	Farmers had started to adopt the technologies with refinement
2.	FLD	Nutrition management	Mineral mixture feeding	To demonstrate the practice of area specific mineral mixture feeding	Livestock owners were encouraged through demonstration to perform the technologies at their own houses

Results and Discussions

Previously, farmers in the region were primarily raising

nondescript cattle and buffaloes for milk production. In an effort to enhance productivity, they were encouraged to

transition to animals with superior genetic potential and economic sustainability, such as pure buffalo breeds with proven records. The advantages of maintaining a pure buffalo breed, including higher milk yield and milk fat percentage, were emphasized. To facilitate this transition, financial support from Rajkot Dairy enabled farmers to acquire pure buffalo breeds, leading to a significant improvement in milk production.

The shift to pure buffalo breeds resulted in a notable increase in milk yield, with farmers now obtaining 7 liters per animal compared to the previous 3 liters per animal from nondescript breeds, representing a remarkable 233% increase, as illustrated in Table 1, 2, and 3. Buffalo husbandry in India is favoured due to the buffalo's efficient utilization of low-quality roughage, resistance to diseases, superior meat quality, and rich milk products. This approach not only brings benefits in terms of rearing superior germplasm for international trade but also instils interest

among dairy farmers to embrace buffalo farming as a self-employment and profitable livelihood. Farmers in the village were provided guidance on protective and curative measures against external parasitic infestations, along with proper care for their animals. Emphasis was placed on hygienic practices, including daily cleaning of the buyer and grooming of the animals. These efforts contributed to a decrease in tick infestation, a reduction in disease occurrences, and an overall increase in milk production from buffaloes.

KVK experts educated farmers on the importance of deworming and good dairy husbandry practices. This resulted in lower calf mortality, a decrease in the age of puberty, increased milk production, and enhanced net profit per animal. The comprehensive approach of providing knowledge and practical skills has positively impacted the overall well-being of livestock and the economic prosperity of the farmers in the adopted village.

Table 5: Methodology of on farm trial (Three Years)

Sr. No.	Treatment	No. of animals/Year	Duration	Procedure
1.	T ₁ - Routine farmer practices	15	60 days	6-8 kg/day dry fodder and 10-15 kg/day green fodder feeding
2.	T ₂ - Concentrate mixture	15	60 days	T ₁ +5 kg/animal/day concentrate mixture feeding
3.	T ₃ - Concentrate and Mineral Mixture	15	60 days	T ₁ +5 kg/animal/day concentrate mixture and 50 gm/animal/day mineral mixture feeding

Table 6: Result of on farm trial

Parameters	Treatments	Average milk production (kg/day)	Results of assessment	Feedback from the farmer
Milk production	T ₁	5.9	5 kg/animal/day concentrate mixture and 50 gm/animal/day mineral mixture feeding	Increased milk production after Concentrate and mineral mixture feeding
	T ₂	6.7		
	T ₃	7.2		

Table 7: Economic of on farm trial

Technology assessed	Average production per unit (L)	Average net return (Profit) in Rs./Buffalo	BC ratio
Milk production	5.9	18	1:1.16
	6.7	29.2	1:1.30
	7.2	32.6	1:1.34

Horizontal and Vertical spread

The demonstrated technologies involved the feeding of a concentrate mixture (5 kg/animal/day) in isolation and the feeding of a concentrate mixture (5 kg/animal/day) along with mineral mixture (50g/day/animal). Farmers readily embraced these innovative practices. Additionally, a new technology involving urea-treated fodder gained traction, with knowledge and adaptation spreading horizontally from one farmer to another. This successful on-farm trial of feeding technology witnessed widespread adoption by the entire village, marking a significant achievement. The impact was so pronounced that neighbouring villages expressed a demand for similar adoption, underscoring the effectiveness of Training of Trainers (TOT) facilitated by KVK scientists. This stands as a notable accomplishment in knowledge dissemination and technology adoption.

Notably, the farmers in the area not only embraced the technology themselves but also exhibited a keen interest in ensuring its continuity for future generations. Some livestock owners, possessing prior knowledge of urea treatment, took it upon themselves to educate fellow

farmers, contributing to the dissemination of valuable practices within the community. This collaborative and cascading approach has not only improved livestock management but has also strengthened the knowledge-sharing network among farmers in the region.

Conclusion

The study recognizes the existing knowledge levels of livestock farmers regarding the importance of sound breeding, feeding, and management practices, providing valuable insights for rural farmers. Among the three treatments considered, Treatment 3 (T₃) demonstrated significant benefits in terms of milk production (kg/day), milk production per unit, net return (profit) in Rs./Buffalo, and benefit-cost ratio (BCR). This aligns with findings reported by Akila *et al.* (2013) ^[1], reinforcing the efficacy of Treatment 3.

The feeding approach involving a concentrate mixture (5 kg/animal/day) along with mineral mixture is recommended for widespread implementation to enhance livestock growth and production. The potential for nearly a 10 percent

increase in net daily income per animal, through the widespread adoption of balanced feeding practices, holds promise for substantially improving the socio-economic status of individuals living below the poverty line. The ration balancing program, developed on known scientific principles, presents a unique and highly promising approach with the potential to significantly increase overall productivity in livestock farming.

Implications

Implementing feeding practices involving concentrate mixture and mineral mixture alongside routine farmer feeding practices can effectively address nutrition-related issues, proving highly beneficial for buffaloes by enhancing their production and reproduction capabilities. It is imperative to demonstrate these feeding technologies to rural dairy farmers in Rajkot district, with a view to implementing them on a larger scale for improved livestock growth and production. The success of such interventions requires a thorough understanding of local needs and opportunities, as emphasized by Gopal *et al.* (2010). Different organizations in the region have adopted various approaches, ranging from top-down to more participatory methods, adapting to changing system dynamics over time. The demonstrated success can serve as inspiration for other livestock owners, fostering a positive impact on the overall agricultural landscape.

The study acknowledges the existing knowledge levels of livestock farmers in terms of sound breeding, feeding, and management practices, providing valuable insights for dairy farmers. This demonstration serves as a guide for extension workers, showcasing an effective way to implement extension technology for their clients on Livestock Management Practices (LMP). Building on this foundation, extension personnel can identify potential trainees and counsellors among farmers, contributing to the dissemination of knowledge and skills. The study's findings are not only beneficial for the local region but also offer insights for the effective promotion of dairy farming in other areas, promoting eco-friendly and sustainable agricultural development.

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