

EDUCATING CATTLE FARMERS TO SUSTAINABLY INCREASE THEIR INCOME IN SOUTHEAST ACEH

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Abstract

Cattle farming is one area with great potential to boost the local economy in Southeast Aceh, especially in Ketambe District. However, many farmers still face various problems, including a lack of knowledge in animal care management, feeding their cattle improperly, poor disease control, and limited skills in managing their business and marketing their livestock products. This situation results in low productivity and income for the farmers, so ongoing education programs are needed. This community service activity aims to improve the knowledge, skills, and capacity of 60 beef cattle farmers in Ketambe District, Southeast Aceh, so they can apply good farming practices and develop their livestock businesses sustainably. The methods used in this activity include counseling, training, and mentoring. Counseling is done by providing information about beef cattle maintenance management, feed formulation, animal health, reproduction, and business management. Training focuses on skills in making alternative feed, implementing biosecurity, and recording farm business activities, while mentoring aims to ensure the application of technology and business management among farmers. The results of the activities are evaluated through observation and comparing the participants' understanding before and after the activities. The results of the activity showed an increase in farmers' knowledge and skills regarding the management of beef cattle, the use of local feed resources, disease prevention efforts, and business record-keeping. In addition, farmers started to adopt more efficient farming practices, which could boost livestock productivity, reduce production costs, and strengthen the sustainability of their farms. The level of enthusiasm and active participation from all participants during this activity was a clear sign of the program's success.

Keywords: Farmers, education, income, sustainability, Southeast Aceh.

INTRODUCTION

The livestock sub-sector is an important part of supporting the economic development of rural communities in Indonesia. Cattle farming not only serves as a source of animal protein but also provides income, family savings, and helps community food security. Southeast Aceh Regency is known as one of the areas in Aceh Province with great potential for beef cattle farming. This area has plenty of fodder land, abundant natural resources, and most of its population works in agriculture and livestock. Ketambe District is one of the centers for beef cattle farming in Southeast Aceh Regency. Southeast Aceh Regency is a regency that consists of mountainous areas and river flows (Kartono and Husaini, 2023). Beef cattle businesses in Ketambe District are usually managed as a home industry, with farmers typically owning between two and five cows. For the majority of people there, livestock farming serves as a

source of extra income, family savings, and an economic asset that can be sold anytime to cover household needs, education costs, and other social needs.

This situation shows that beef cattle farming plays a significant role in strengthening the economic resilience of rural communities. Even though it has great potential, the development of beef cattle farming in Ketambe District still faces many challenges. Most livestock management systems are still traditional, where farmers rely on inherited experience without adequate support from modern farming technology. Another problem farmers face is that feed management is still inadequate for the nutritional needs of the livestock. The feed provided generally consists of natural forage without supplements like concentrates or the use of feed processing technology such as fermentation or silage. This affects the growth of cattle, which is less than optimal, especially during the dry season when the availability of forage decreases. Another challenge is the limited access to marketing. Cattle sales still depend on middlemen, so farmers' bargaining power is relatively low.

Information about market prices, marketing networks, and business partnership opportunities is still very limited. This situation affects the low added value received by farmers, even though demand for beef continues to rise. Given this situation, community service activities are needed in the form of education and guidance for beef cattle farmers so they can improve their knowledge, skills, and business management abilities, allowing productivity and farmers' income to increase sustainably.

METHOD

The community service activity was carried out in Ketambe, Southeast Aceh Regency, Aceh Province. Community service activities were carried out from March to April 2026. This location was chosen because it has significant potential for developing beef cattle farming, supported by natural resources such as forage land for livestock feed, as well as the high enthusiasm of the local community for raising beef cattle as a way to increase family income. The activity involved the existing beef cattle farmer groups in Ketambe Subdistrict, with a total of around 60 participants. Most of the farmers still use traditional farming methods with small to medium-sized operations. Some of the main challenges they face include a lack of knowledge about livestock management, consistent provision of quality feed, disease control, reproductive management, and keeping systematic records of their farming activities.

Therefore, the education and mentoring program is aimed at improving farmers' ability to adopt simple, effective, and sustainable livestock technologies. The activities are carried out using a participatory approach through adult education (andragogy), so farmers not only gain knowledge, but also skills in managing livestock businesses in a sustainable way. The process includes initial observation, counseling, training, mentoring, and evaluation. The extension stage aims to expand the knowledge and understanding of farmers in managing beef cattle businesses to be more productive and sustainable. The extension process is carried out through interactive lectures, group discussions, and Q&A sessions, using presentation media, leaflets, and training modules. The outreach material covers:

- ✓ Cattle maintenance management, including barn systems, barn cleanliness, daily care management, and applying animal welfare principles.
- ✓ Quality feed, including the nutritional needs of beef cattle based on their growth stage, using superior grass, agricultural waste, concentrates, and strategies for providing feed during the dry season.

- ✓ Disease prevention, which includes implementing biosecurity, barn area sanitation, vaccination programs, parasite control, early disease detection, and preventive steps for contagious diseases.
- ✓ Reproduction management, including recognizing estrus signs, the right timing for insemination, pregnancy checks, care for pregnant cows, and raising calves.
- ✓ Livestock business analysis, covering production cost calculations, income, profit, break-even analysis, and strategies to improve business efficiency to increase farmers' income.

After conducting the counseling, the activity continued with practical training so that farmers could apply the material they had learned. The training was carried out directly using demonstration and hands-on practice in the field. The training material includes:

- ✓ Formulating feed rations for beef cattle that match their nutritional needs, using local feed ingredients available nearby.
- ✓ Making silage as a technology to preserve forage and ensure feed availability.
- ✓ Producing fermented feed using agricultural waste like rice straw, corn stalks, and bran, with the help of fermentation microorganisms to improve nutritional content.
- ✓ Keeping livestock business records, including the number of cattle, weight growth, maintenance costs, feed usage, reproductive aspects, animal health, and sales results.

Evaluation data was analyzed using a quantitative descriptive approach through the percentage of pre-test and post-test score improvements, as well as qualitatively descriptive based on field observations and participant feedback. The evaluation results serve as a basis for assessing the effectiveness of educational programs in improving beef cattle farmers' abilities to develop productive and sustainable businesses.

RESULTS AND DISCUSSION



Figure 1. extension and training activities for farmers

Table 1. Partners' Baseline Conditions Before Education Implementation

No	Indicator	Basic Condition
1	Number of farmers	60 individuals
2	Total beef cattle ownership	186 animals
3	Average cattle ownership	3.1 animals per farmer
4	Farming system	70% semi-intensive; 30% simple intensive
5	Feed sources	Natural forage, field grass, simple agricultural waste
6	Supplementary feeding	Still limited and unmeasured
7	Livestock health management	Treatment is done if the livestock is sick,

		preventive measures are still low
8	Livestock business record keeping	Most have not kept records
9	Initial knowledge level	Low (25%), Medium (58%), High (17%) based on pre-test results
10	Main problems	Feed management is not yet optimal, reproductive knowledge is low, farm record-keeping is not applied, and access to livestock technology information is limited

The initial circumstances reveal that the community's beef cattle farming remains largely under the control of small-scale farmers who possess fairly restricted production abilities. In total, there are 60 farmers who together have 186 beef cattle, translating to an average of just 3.1 cattle per individual farmer. This level of ownership showcases a standard small-scale farming model in which livestock serves mainly as a supplementary means of household revenue rather than the main source of income. As a result, these farmers frequently encounter challenges regarding investment capital, the use of advanced technology, and overall production effectiveness.

The current production framework is defined by a composition of 70% semi-intensive management along with 30% straightforward intensive management. Semi-intensive systems typically integrate pasture grazing with feeding in stalls, which helps reduce production costs but leads to reliance on the availability of forage that varies with the seasons. Although this method works well in regional contexts, it frequently leads to variability in the quality and amount of feed during the year, which in turn impacts the productivity, growth rates, and reproduction effectiveness of cattle.

Feed resources primarily include wild forage, grass from fields, and basic agricultural by-products. Although these materials are commonly accessible and low-cost, the nutritional value they offer typically falls short of fulfilling the dietary needs of beef cattle, especially during phases of accelerated growth, gestation, and nursing. In addition, supplementary feeding is often inadequate and does not align with the established nutritional needs. This situation suggests that farmers have yet to adopt balanced feeding methods, which are crucial for enhancing feed conversion rates and overall animal performance.

The management of livestock health also demands considerable enhancement. Farmers usually apply treatments only when animals are already unwell, while preventive health measures, including regular vaccinations, deworming, hygiene practices, and biosecurity protocols, are often insufficient. This reactionary method heightens the chances of disease outbreaks, losses in production, and increased treatment expenses. Thus, it is essential to bolster farmers' knowledge of preventive animal health management to boost livestock productivity and sustainability.

Business management strategies are lacking, as the majority of farmers fail to keep production or financial records. The absence of effective record-keeping prevents farmers from accurately assessing their production effectiveness, calculating costs of production, tracking profitability, or making well-informed management choices. Documenting farm activities is a

key aspect of contemporary livestock management, as it underpins decision-making based on facts and promotes business growth.

The results from the initial assessment further show that just 17% of those surveyed had a high level of understanding, while 58% had a moderate understanding and 25% exhibited a low understanding. These results imply that most farmers still need significant skill development. The relatively large number of farmers with moderate knowledge indicates that extension services can enhance farmers' skills through hands-on training, demonstrations, and ongoing technical support (Muttaqinullah et al., 2026). The key identified limitations—including ineffective feed management, inadequate understanding of reproductive practices, absence of thorough farm record-keeping, and limited access to information on livestock technology are significantly interconnected. Poor feeding practices lead to decreased reproductive outcomes, whereas ineffective reproductive management results in lower calving rates and diminished herd productivity. Not having farm records hinders farmers from detecting production issues and assessing business performance. Moreover, a lack of access to technological information hampers the adoption of advanced livestock management techniques.

In summary, the initial evaluation indicates that beef cattle farming within the community has substantial growth potential, bolstered by the existing experience of farmers and the availability of local feed resources. Nonetheless, enhancements in technical knowledge, management capabilities, and access to suitable technologies are crucial for boosting productivity and ensuring sustainable income growth. Consequently, training and extension programs that emphasize proper feeding (Hadirin et al., 2024), reproductive management, preventive health care for animals, and thorough record-keeping are anticipated to significantly boost farmers' abilities and promote the long-term viability of beef cattle farming.

CONCLUSION

The implementation of this program had a positive impact on improving the capacity of beef cattle farmers in Ketambe District. The knowledge and skills of the farmers have improved compared to before the community service activities, and this is in line with the report by Qisthon et al. 2024. The results obtained include: A total of 60 farmers participated in all series of activities until completion. Farmers' knowledge of cattle care management increased significantly based on evaluations before and after the program. Farmers were able to produce fermented feed using local materials. Farmers realized the importance of recording production costs and business income. Farmers started adopting better barn sanitation practices. Farmers understood feeding techniques that match the animals' needs. Effective communication was established between the community service team and farmer groups as a basis for ongoing assistance. Through this activity, it is hoped that livestock productivity will increase, allowing farmers' income to grow sustainably.

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