

EMPOWERING GOAT FARMERS THROUGH FEED TECHNOLOGY AND ANIMAL HEALTH PRACTICES TO SUPPORT A LIVESTOCK-BASED AGRO-TOURISM VILLAGE

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Abstract. Carangwulung Village, Wonosalam District, Jombang Regency, has significant potential for goat farming development but still faces various obstacles related to feed management, livestock health, and optimizing the village's potential as an edu-agrotourism village. This community service activity aims to increase the capacity of livestock farmers through livestock health education, feed and silage technology training, demonstrations of udder health examinations using the California Mastitis Test (CMT), and training in developing an edu-agrotourism-based livestock village by providing training in preparing livestock-based tour packages. This activity was held on December 20-21, 2025, targeting the Anjasmoro Valley Farmers Group and collaborating with TernakPark Wonosalam. The methods used included counselling, demonstrations, field practice, and evaluation using pre- and post-tests. A total of 31 participants took part in this activity. The evaluation results showed an increase in the average score of participants from 73.15 in the pre-test to 81.92 in the post-test. Most participants had never attended livestock training before, so this activity had a positive impact on increasing the knowledge and skills of the farmers. This program also increases community awareness of the opportunities for developing edu-agrotourism-based livestock villages as an alternative way to boost the local economy. This community service activity contributes to improving the capacity of livestock farmers and supports sustainable livestock development through a fostered village scheme in the Wonosalam region. This activity also supports Sustainable Development Goal (SDG) 2: Zero Hunger through agricultural development and household food security.

Keywords: disease, edu-agrotourism, feed technology, goat farming

Abstrak. Desa Carangwulung, Kecamatan Wonosalam, Kabupaten Jombang memiliki potensi pengembangan peternakan kambing yang cukup besar, namun masih menghadapi berbagai kendala terkait manajemen pakan, kesehatan ternak serta optimalisasi potensi desa sebagai desa edu-agrowisata. Kegiatan pengabdian kepada masyarakat ini bertujuan untuk meningkatkan kapasitas peternak melalui penyuluhan kesehatan ternak, pelatihan teknologi pakan dan silase, demonstrasi pemeriksaan kesehatan ambung menggunakan California Mastitis Test (CMT), dan pelatihan pengembangan desa peternakan berbasis edu-agrowisata dengan memberikan pelatihan penyusunan paket wisata berbasis peternakan. Kegiatan ini dilaksanakan pada tanggal 20-21 Desember 2025, menargetkan Kelompok Peternak Anjasmoro Valley dan bekerja sama dengan TernakPark Wonosalam. Metode yang digunakan meliputi penyuluhan, demonstrasi, praktik lapangan, dan evaluasi menggunakan pre-test dan post-test. Sebanyak 31 peserta mengikuti kegiatan ini. Hasil evaluasi menunjukkan peningkatan nilai rata-rata peserta dari 73,15 pada pre-test menjadi 81,92 pada post-test. Sebagian besar peserta belum pernah mengikuti pelatihan peternakan sebelumnya, sehingga kegiatan ini berdampak positif pada peningkatan pengetahuan dan keterampilan para peternak. Program ini juga meningkatkan pemahaman masyarakat tentang peluang pengembangan desa peternakan berbasis edu-agrowisata sebagai cara alternatif untuk meningkatkan perekonomian lokal. Kegiatan pengabdian masyarakat ini berkontribusi pada peningkatan kapasitas peternak dan mendukung pembangunan peternakan berkelanjutan dengan skema desa binaan di wilayah Wonosalam. Kegiatan ini juga mendukung Sustainable Development Goals (SDG), yaitu SDG 2: Tanpa Kelaparan melalui pembangunan pertanian dan ketahanan pangan rumah tangga.

Kata Kunci: edu-agrowisata, penyakit, peternakan kambing, teknologi pakan

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INTRODUCTION

Goat farming is a livestock subsector that plays a significant role in increasing the income of rural communities, owing to the animals' high adaptability, relatively rapid reproductive cycles, and lower capital requirements compared to large livestock (Randu et al., 2022). Goats also yield various economically valuable products such as meat, milk, organic fertilizer, and processed goods, which can support both household food security and the livelihoods of farmers (FAO, 2023). In East Java, goat farming has developed quite rapidly, serving as a key source of income for rural populations. Beyond its economic aspects, goat farming also holds potential as a medium for education, environmental conservation, and community empowerment (Haryanto et al., 2024).

Sustainable livestock farming requires continuous improvements in feed technology, animal health management, husbandry practices, and farmers' knowledge and skills (Suwarno, 2026). Proper feed management and effective animal health practices are essential for maintaining livestock productivity, ensuring animal welfare, and supporting the long-term sustainability of livestock enterprises (Vlaicu et al., 2024). Therefore, capacity-building initiatives that provide farmers with practical knowledge and technical skills are important for improving livestock management and strengthening rural livelihoods (Rana et al., 2025).

One promising approach to rural development is livestock-based educational agro-tourism (edu-agrotourism), which integrates livestock farming, educational activities, and tourism to provide visitors with practical learning experiences (Jumiyati & Frimawaty, 2023). Through this concept, livestock farms can serve not only as production sites but also as educational destinations where visitors learn about animal husbandry, feed preparation, livestock health, and sustainable farming practices (Ruiz Morales et al., 2024). This approach can increase the added value of livestock enterprises, create new economic opportunities, strengthen community participation, and preserve the cultural heritage of rural communities (Rahmani et al., 2023). Consequently, integrating livestock production with educational tourism offers an opportunity to promote sustainable agriculture while supporting local economic development.

Wonosalam, located in Jombang Regency, East Java, has considerable potential for developing livestock farming and nature-based tourism. Carangwulung Village has an active goat-farming community that could support the development of livestock-based educational tourism. However, farmers continue to face challenges related to animal health, feed management, and the application of appropriate livestock production technologies (Akintan et al., 2024). In addition, the potential integration of goat farming with educational tourism has not been fully optimized. These challenges highlight the need for community empowerment through education, practical training, and ongoing assistance. Improving farmers' knowledge and skills while introducing the edu-agrotourism concept could help strengthen livestock productivity, promote animal welfare, and support sustainable local economic development (Yodfiatfinda, & Safitri, 2024).

Preliminary survey findings indicate that farmers in the Anjasmoro Valley Livestock Group (Wonosalam, Jombang) and TernakPark have limited knowledge of livestock feed management and animal health maintenance. Most farmers have never participated in formal livestock training, highlighting the need for practical education, training, and continuous mentoring to improve their livestock management skills (Mukasa et al., 2025). These initiatives are expected to support better animal welfare, livestock productivity, and sustainable farming practices.

Furthermore, the development of an educational agro-tourism (edu-agrotourism) livestock village offers opportunities to integrate livestock farming with community-based tourism and local economic development. This initiative aligns with the Sustainable Development Goals (SDGs), particularly SDGs 1, 2, 4, 8, and 17 (Nurhidayati, 2026).

Therefore, this community service program aims to improve farmers' knowledge and skills in goat feeding technologies, silage production, and livestock health management. Activities include educational outreach, practical training, demonstrations of the California Mastitis Test (CMT), and the introduction of the edu-agrotourism livestock village concept in Carangwulung Village, Wonosalam District, Jombang Regency. The program is expected to strengthen farmers' capacities while exploring opportunities for sustainable, community-based livestock tourism.

METHOD

This community service activity was conducted from December 20–21, 2025, employing a community-based participatory approach in collaboration with partners TernakPark (located in Wonosalam, Jombang) and the Anjasmoro Valley livestock group. A total of 31 participants all goat farmers from the Anjasmoro Valley group with an interest in developing their goat-rearing enterprises, took part in the full series of activities. This community-based participatory approach positions the farmers as the primary subjects in the processes of learning and technology transfer. It facilitates two-way interaction between the community service team and the participants, ensuring that the material provided is tailored to their specific needs in the field.



Source: Wonosalam Tourism

Figure 1. *Wonosalam District*

The activity is divided into three main stages: preparation, implementation, and evaluation. These stages of the community service activity include:

Preparation: The preparatory phase includes coordination with target and implementing partners, identification of the challenges faced by livestock farmers, development of training materials, and the provision of necessary facilities and infrastructure for the activities. Needs identification is carried out through preliminary discussions with farmer groups to determine the primary issues encountered in raising goats.

Livestock Health Education Phase: The outreach activity was conducted through lectures and interactive discussions covering goat health, disease prevention, livestock health management, and the importance of early disease detection. The material was presented using visual aids and group discussions, allowing participants to engage actively.

Feed Technology Training (Silage): Training on feed technology was conducted through demonstrations and hands-on practice in making silage as a method for preserving forage. Participants gained an understanding of raw material selection, the fermentation process, storage, and the use of silage as an alternative feed to ensure feed availability throughout the year.

California Mastitis Test (CMT) Demonstration: A demonstration was conducted to enhance farmers' skills in detecting subclinical mastitis using the California Mastitis Test (CMT) method. Participants were provided with instructions on milk sampling procedures, the use of CMT reagents, the interpretation of results, and measures for preventing mastitis.

Training on the Development of Edu-Agrotourism Villages: Material on the development of livestock-based villages, incorporating edu-agrotourism, was presented to enhance participants' understanding of the potential for integrating the livestock sector with educational tourism. The content covered the concept of edu-agrotourism, including training on how to design livestock-based tourism packages as well as opportunities for increasing community income.

Evaluation: The evaluation of the activity is conducted using pre-test and post-test methods to measure the increase in participants' knowledge. The pre-test is administered before the material is presented, while the post-test is carried out after the entire series of activities has been completed. The evaluation instrument consists of questions concerning livestock health, feed management, disease detection, and the development of educational agrotourism. The evaluation data were analyzed descriptively using mean values and standard deviations to determine changes in the participants' level of knowledge before and after the activity.

In addition to quantitative evaluation, a qualitative assessment was also conducted through discussions and participant feedback regarding the implementation of the activity. The evaluation results serve as a basis for improving and developing future livestock farmer assistance programs.

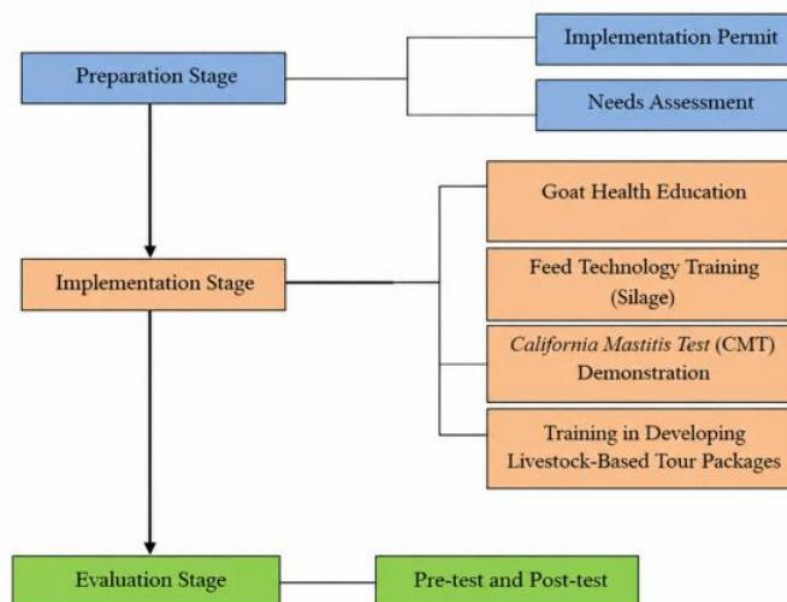


Figure 2. *Stages of activity implementation*

RESULT AND DISCUSSION

This community service initiative is carried out as part of a village development project in Carangwulung, Wonosalam District, Jombang Regency.

Participant Characteristics

A total of 31 participants attended the program. The participant profile recorded in the original activity report indicated that 94% were men and 6% were women. Educational attainment was reported as senior high school (52%), junior high school (28%), and elementary school (17%); these percentages total 97%, likely because of rounding or an unreported category, and should be checked against the original participant records before publication. Most participants had more than three years of goat-farming experience, and 55% had not previously attended livestock training (FAO, 2023).

Training Needs

Survey results indicate that livestock health is the topic most requested by participants (45%), followed by feed and nutrition (23%), as shown in Table 1. This suggests that animal health remains a primary concern for livestock farmers. This aligns with the WOAHA (2023) perspective, which identifies the enhancement of farmers' capacity in animal health as a key strategy for disease control and the improvement of livestock productivity.



Figure 3. *Presentation of education and training*

Feed Technology Training

Silage training provides farmers with knowledge on forage preservation techniques, ensuring the availability of feed throughout the year. Silage technology enhances feed efficiency and supports livestock productivity (FAO, 2023). Effective feed management is a crucial factor in maintaining livestock health and improving production performance. Suwarno (2026) states that optimal livestock health is inseparable from the quality and adequacy of feed.

California Mastitis Test Demonstration

The California Mastitis Test (CMT) demonstration equips farmers with practical skills to detect subclinical mastitis. Early detection of mastitis can reduce economic losses and improve the quality of milk production. Enhancing farmers' ability to detect diseases is a vital component of strengthening animal health systems at the farm level (WOAH, 2023).



Figure 4. *California Mastitis Test (CMT)*

Edu-Agrotourism Training

Training on the development of livestock-based villages through educational agro-tourism (edu-agrotourism) provides communities with new insights into diversifying livestock enterprises and strengthening local economic potential. By integrating education, tourism, and animal husbandry, edu-agrotourism creates opportunities to develop innovative community-based businesses and generate additional sources of income (Rahmani et al., 2023). Goat farming offers considerable educational potential because visitors can gain firsthand experience in livestock management, feeding practices, animal health care, and livestock product

processing (Nurhidayati, 2026). These activities can enhance public understanding of sustainable livestock production while promoting local agricultural resources as educational attractions. Furthermore, involving farmers in the development and management of edu-agrotourism activities can strengthen their entrepreneurial skills, encourage collaboration among community members, and support the sustainable development of rural livelihoods (Salma et al., 2026).



Figure 5. *Feed technology training*

The emphasis on community involvement is consistent with Djuwendah et al. (2023), whose assessment of community-based agro-ecotourism in West Java considered sustainability across six dimensions and identified cooperation, community participation, and supporting facilities as relevant to sustainable development. The Carangwulung activity contributes at the capacity-building level by bringing farmers and a tourism partner together and introducing livestock-related educational content. However, unlike Djuwendah et al.'s multi-village sustainability assessment, this activity did not measure sustainability indices or tourism performance. The findings should therefore be viewed as an initial intervention, not evidence that a sustainable agro-tourism destination has already been established.

Jumiyati and Frimawaty (2024) discuss edu-agrotourism and agroforestry as approaches that connect education, community empowerment, and conservation in a rural context. The present program shares the educational and community-capacity-building orientation, but focuses specifically on goat-feed and animal-health practices. The comparison suggests that livestock-based educational activities may be most useful when they are linked to locally relevant production skills and developed collaboratively with community partners (Wilmer et al., 2025). To progress beyond an introductory training, Carangwulung would benefit from jointly designed visitor packages, clear animal-welfare and biosecurity procedures, trained guides, and simple indicators to monitor participation and local benefits.

Evaluation of Participants'

Knowledge The evaluation results show an increase in the participants' average score from 73.15 in the pre-test to 81.92 in the post-test (Figure 2). The standard deviation also decreased from 29.71 to 19.42, indicating a more uniform improvement in understanding among the participants. The improvement in learning outcomes demonstrates that the extension methods and field practice were effective in enhancing the farmers' knowledge. Participatory learning methods allow participants to gain direct, hands-on experience, making it easier for them to adopt new technologies (Jumiyati & Frimawaty, 2023).

Table 1. *Table of topics evaluated as needed by livestock farmers*

Required Topics	Number of People	Percentage (%)
Livestock health	14	45.2
Feed and nutrition	7	22.6
Livestock fattening	3	9.7

Required Topics	Number of People	Percentage (%)
Goat milk production	1	3.2
Barn/enclosure management	0	0.0
Development of goat-related tourism packages	0	0.0
Did not answer	6	19.3
Total	31	100

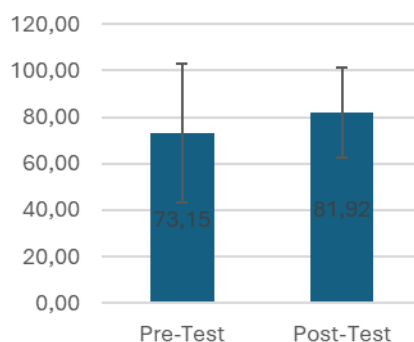


Figure 6. Comparison of pre-test and post-test scores

CONCLUSION

The community service program delivered training on goat health, silage-making, CMT screening, and the potential integration of livestock into educational agro-tourism for 31 participants in Carangwulung Village. The mean knowledge score increased from 73.15 to 81.92, while the standard deviation declined from 29.71 to 19.42. Animal health and feed management were the leading training needs identified by participants. These results indicate a positive immediate change in assessment scores, but do not establish long-term adoption, improved animal productivity, or increased tourism income. Follow-up mentoring should document the application of silage-making and health-monitoring practices and support the collaborative development of safe, animal-welfare-oriented educational visitor activities.

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