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SUSTAINABLE ANIMAL AND AQUATIC FOODS

Training farmers on cattle breeds, breeding management and artificial insemination by trainees in Chieng Mai and Phu Yen communes, Son La province

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Training Report



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Background and training objectives

The CGIAR Sustainable Animal and Aquatic Foods (SAAF) Science Program is supporting the development of more productive, inclusive, and sustainable livestock value chains in Son La province, with a particular focus on improving cattle genetics, animal health, and market opportunities for smallholder farmers. Strengthening farmers' access to and adoption of improved breeding services is an important component of this assignment. In particular, the project is supporting the establishment and strengthening of local cattle artificial insemination (AI) service provider cooperatives and groups and veterinary networks that can provide farmers with accessible and reliable breeding and reproductive health services.

The farmer training activities built on experiences and lessons learned from the SAPLING project (Marshall and Huyen 2024, 2025) and the establishment and field support of the new cattle AI service provider cooperative in Chieng Mai commune under the SAAF program (Marshall and Huyen 2026a). These activities demonstrated that strengthening the availability of AI services alone is not sufficient to increase adoption. Farmers also need to understand the benefits of improved breeding, recognize cows in heat at the appropriate time, and understand when and why to contact an AI service provider. At the same time, local AI service providers and veterinary workers need the confidence and communication skills to explain technical information to farmers in practical and easily understandable ways.

To address these needs, the SAAF program first organized a Training of Trainers (ToT) course on cattle breeds, breeding management, reproductive management, and the benefits of artificial insemination on 2 June 2026 in Son La province (Marshall and Huyen 2026b). The ToT brought together members of cattle AI service provider cooperatives, veterinary workers at provincial and commune levels, and other local livestock service personnel. The training strengthened participants' technical knowledge as well as their skills in communicating and facilitating training for farmers.

Following the ToT, the SAAF program supported the trained participants to organize and deliver farmer-level training courses in Chieng Mai and Phu Yen communes. These farmer trainings were designed as a practical step in transferring knowledge from technical experts to local service providers and, subsequently, to cattle farmers. The training focused particularly on cattle breed selection, breeding management, reproductive management, the

advantages of AI, and practical identification of estrus (heat) in breeding cows. Strengthening farmers' ability to recognize heat signs and contact AI technicians at the appropriate time was considered particularly important for improving the effectiveness and adoption of AI services.

The farmer training also provided an opportunity to introduce the local AI service provider cooperative members directly to farmers and strengthen relationships between farmers and local breeding service providers. In this way, the activity linked technical knowledge transfer with the development of a locally available breeding service system, helping to create conditions for continued farmer support beyond individual project activities.

Training objectives

- Improve farmers' knowledge of cattle breeds and breeding management, including the importance of selecting appropriate breeding cows and using suitable breeding strategies to improve cattle productivity and offspring quality;

- Increase farmers' understanding of the advantages of artificial insemination, particularly its potential contribution to genetic improvement, improved growth and physical characteristics of calves, and increased economic value of cattle;

- Improve farmers' practical knowledge of reproductive management, and strengthen farmers' ability to identify cows in heat, including commonly observable behavioral and physical signs, so that AI technicians can be contacted in a timely manner and the likelihood of successful insemination can be improved;

- Strengthen the capacity and confidence of trained AI service providers and veterinary workers to deliver farmer training, enabling them to communicate technical knowledge in simple, practical, and locally appropriate ways;

- Strengthen the linkage and trust between farmers and local AI service providers, thereby improving farmers' access to breeding and reproductive services and creating a foundation for continued use of AI services at the commune level; and

- Contribute to more sustainable local technical and knowledge-transfer systems by enabling trained AI service providers and veterinary workers to continue providing breeding advice, farmer education, and basic reproductive management support beyond the direct involvement of the project.

The training was designed as part of a training cascade and local service-development approach: technical experts train local trainers and service providers; trained participants then train farmers; and the strengthened relationship between farmers and local AI service providers supports continued access to improved breeding services. This approach is expected to contribute to wider adoption of improved breeding practices, better use of AI services, and gradual improvement of cattle genetics and productivity in the Son La province.

Training content details

The farmer training courses covered four main technical topics, selected to provide farmers with practical knowledge for improving cattle breeding management and making better use of artificial insemination (AI) services. The training content was designed to be relevant to farmers' day-to-day breeding decisions, with particular emphasis on breed selection, the benefits of AI, accurate heat detection and appropriate timing of insemination, and appropriate management of calving and difficult births.

Topic 1. Beef cattle breeds and breeding management

This topic introduced farmers to common beef cattle breeds and breed characteristics relevant to beef production in smallholder conditions in Son La. It also provided basic guidance on breeding management and breed selection, with emphasis on choosing appropriate breeding animals to improve herd productivity and gradually improve the genetic quality of local cattle populations.

Topic 2. Benefits of artificial insemination

This topic explained the main benefits of AI compared with natural mating, including opportunities to access improved genetics and support systematic herd improvement. The discussion also highlighted the importance of timely access to reliable AI services and the role of local AI service providers in supporting farmers' breeding decisions and implementation.

Topic 3. Heat detection and appropriate timing of insemination

This topic focused on one of the most important practical factors affecting the success of AI: the ability of farmers to recognize signs of estrus and identify the appropriate time to contact AI service providers. Farmers were introduced to common signs of heat and the importance of timely communication with AI technicians. The topic was particularly emphasized because difficulties in heat detection and inappropriate timing of insemination were identified as important constraints to wider adoption and effective use of AI services.

Topic 4. Calving assistance and management of difficult births

This topic provided farmers with basic knowledge of normal calving and appropriate methods of assisting cows during calving. It also introduced common situations involving difficult births and emphasized the importance of recognizing when intervention or support from trained livestock or veterinary service providers is required. The topic aimed to improve farmers' preparedness for calving and reduce risks to both cows and calves.

The farmer training courses were delivered by trainees who had previously participated in the ToT on cattle breeds, breeding management and the benefits of AI. This approach was intended to strengthen local capacity for knowledge transfer and establish a practical training cascade in which trained local service providers and commune-level personnel can continue to communicate technical knowledge to farmers.

In Chieng Mai commune, the training was delivered by:

A commune officer, Chieng Mai Commune People's Committee;

A member of the Chieng Mai Cattle AI Service Provider Group; and

A member of the Chieng Mai Cattle AI Service Provider Group.

In Phu Yen commune, the training was delivered by:

A commune veterinary officer, Phu Yen Commune People's Committee;

A member of the Phu Yen Cattle AI Service Provider Group; and

A member of the Phu Yen Cattle AI Service Provider Group.

The farmer training courses were supported by experts from the Vietnam Institute of Animal and Veterinary Sciences (VIAVS), including Assoc. Prof. Dr. Le Thi Thanh Huyen and Mr. Tran Son Ha, with logistical support from Mr. Le Tien Dung.

Before the farmer training courses were delivered, the trainees and VIAVS experts jointly reviewed and agreed on the main presentation contents and supporting illustrations. Practical examples and illustrations were drawn from results and experiences of the SAPLING and Li Chan projects in Son La province, where appropriate. The team also discussed common questions, concerns and practical issues that farmers might raise during the training. This preparatory process helped the trainees consolidate their technical understanding, build confidence in delivering the sessions, and adapt the training content to farmers' practical needs and local conditions.



A member of the AI service provider cooperative in Chieng Mai gives a lecture (photo: VIAVS/Dzung).



A commune veterinary worker in Phu Yen gives a lecture (photo: VIAVS/Dzung).

Participants

A total of 59 participants attended the two farmer training courses, including 30 farmers from villages in Chieng Mai commune and 29 farmers from villages in Phu Yen commune. Overall, 54% of the participants were men and 46% were women. Among the participants, six were village veterinary workers, who participated alongside farmers and could further support the application and dissemination of the training knowledge at village level.

Table 1: Summary of farmers participating in the training courses in Chieng Mai and Phu Yen communes, by village and sex

Commune	Village	Male	Female	Total
Chieng Mai	Puốn Vạy	7	0	7
	Buốt Văn	5	1	6
	Dăm Puốn	0	9	9
	Cơi Pòn	4	0	4
	Cơi Quỳnh	1	0	1
	Hợp Nhất	1	0	1
	Mường Mụa	1	0	1
Chieng Mai total		**19**	**11**	**30**
Phu Yen	Giáo / Giao	0	6	6
	Huy Tường 1 & 2	3	5	8
	Ban	4	0	4
	Lềm	4	2	6
	Dèm	2	0	2
	Búc Mo / Mo / Tọ Thượng	0	3	3
	Lò Lìu	1	0	1
Phu Yen total		**13**	**16**	**29**
Grand total		**32**	**27**	**59**

Key outcomes and learnings

The farmer training courses in Chieng Mai and Phu Yen generated active discussion and provided an opportunity for farmers to share their existing livestock management practices, concerns and experiences with cattle breeding. The discussions showed that farmers were interested in improving cattle genetics and increasing the value of their herds, but several technical and practical concerns had limited their adoption of improved breeding and AI. The training transferred technical knowledge, cleared up misconceptions, and connected farmers with local AI service providers.

Increased understanding of farmers on breed selection and the potential of genetic improvement

Farmers in both communes expressed interest in raising larger and higher-performing cattle but were concerned about the suitability of improved breeds under local production conditions. In Chieng Mai, farmers explained that local cattle are valued because they are relatively adapted to local conditions, require fewer inputs and can make use of limited feed resources, including roadside grass, crop residues and other locally available feeds. Some farmers were therefore concerned that crossbred cattle would require more feed, be more difficult to manage, or be more susceptible to digestive problems.

The discussions helped farmers distinguish between different breeding objectives and the requirements of different cattle breeds. The experts also emphasized that breed choice should be matched with the production system, available feed resources and management conditions. In particular, the training introduced farmers to the potential use of suitable beef breeds for improving the genetic quality and growth performance of local cattle while maintaining adaptation to local conditions illustrated with results from previous projects (Li Chan and Chan Henh). Farmers also learned that not all improved breeds should be used for the same purpose: some are more appropriate for developing breeding cows, while others are primarily suitable for producing beef for market.

An important learning point was that maintaining only small local cattle as breeding animals can gradually reduce herd size and productive potential. The discussion highlighted the importance of selecting good-quality breeding females and using appropriate superior genetics to improve future generations. Farmers consequently showed greater interest in having access to quality breeding bulls or AI services when their cows come into heat.

Greater understanding of farmers on the benefits and practical value of AI

Before the training, some farmers had limited experience or no previous experience with AI. In Phu Yen, several farmers reported that they normally relied on natural mating with locally available bulls, while some had not previously known how AI services could be accessed. Farmers also expressed concerns that AI could increase calving difficulties, require more feed, or negatively affect the reproductive performance of cows.

The training provided practical explanations of the advantages of AI compared with direct mating. These included access to a wider range of improved genetics, reduced dependence on maintaining breeding bulls, reduced movement of animals between households and villages, and potentially lower risks associated with disease transmission through direct mating. Farmers also learned that AI provides an opportunity for trained technicians to observe and assess reproductive conditions, which can help identify problems that would otherwise remain unnoticed when cows are simply taken to a bull.

Farmers who had already used AI provided useful real-life examples. For example, one farmer in Phu Yen reported that his cow had been inseminated twice before becoming pregnant and subsequently produced a healthy calf, while the cow remained in good condition. Such farmer experiences helped make the technical explanations more relevant and credible to other participants.

The training also clarified that AI itself should not be considered the direct cause of difficult calving. The experts also explained that calving difficulties can occur under both natural mating and AI and can be associated with several factors, including the cow, the calf, breed, mating choice and management. The importance of selecting an appropriate sire for the individual cow was therefore emphasized.

Improved knowledge of farmers on heat detection and appropriate timing of AI

Heat detection emerged as one of the most important learning areas. Before the training, farmers had different practices for identifying heat and determining when to mate cows. Some reported taking a cow for mating as soon as they observed signs of heat, while others waited until the following day or even longer. Some farmers also reported that they were not always able to determine when a cow was pregnant or when it had returned to heat after calving.

Through questions, examples and explanations from the experts and trainers, farmers learned to recognize common signs of estrus, including increased activity, reduced feed intake, mounting or standing to be mounted by other cattle, vocalization and the presence of mucus discharge. More importantly, farmers learned that the timing of insemination is critical to AI success and that AI is not necessarily performed immediately when the first signs of heat are observed.

The discussion helped farmers understand why AI technicians may arrange to visit at a particular time rather than immediately after receiving a call. This was an important practical message for improving communication between farmers and AI service providers and for increasing successful insemination.

Better recognition of farmers on reproductive problems and the value of professional examination

Farmers in both communes reported cases in which cows did not become pregnant after mating, returned to heat after long intervals, or did not show obvious signs of heat for extended periods. These situations were often difficult for farmers to understand because, under natural mating, the cause of reproductive failure may not be readily identified.

The training helped farmers recognize that poor reproductive performance can have different causes, including problems following calving, reproductive tract inflammation, ovarian problems and other reproductive disorders. Farmers learned that trained AI technicians can provide reproductive examination and identify conditions that may require treatment or further veterinary support.

This was an important shift in understanding: AI was presented as a way to deliver improved genetics and as an entry point for better reproductive management and technical support. Farmers were encouraged to seek professional assessment when cows repeatedly failed to conceive or showed abnormal reproductive patterns rather than relying only on repeated mating.

Increased awareness of farmers on the risks of inappropriate hormone use

The discussions revealed that some farmers had previously purchased and used reproductive hormones based on advice from other farmers or informal information, without knowing the reproductive stage of the animal or the appropriate treatment protocol. The experts and trainers explained that inducing or manipulating reproductive cycles without appropriate diagnosis may not improve conception and can create additional risks.

Farmers therefore gained a clearer understanding that reproductive hormones should not be used routinely or without professional assessment. The training encouraged farmers to consult trained technicians or veterinary personnel to determine the underlying reproductive problem and select an appropriate treatment protocol. This was particularly relevant for cows that failed to return to normal reproductive activity after calving or repeatedly failed to become pregnant.

Improved awareness of farmers on appropriate intervention during difficult calving

Difficult calving was another topic that generated considerable discussion because several farmers had already experienced cases requiring intervention. Some farmers described practices such as administering oxytocin, manually repositioning the calf or pulling the calf out with ropes.

The training helped farmers understand that intervention should be based on an assessment of the calving situation rather than immediate pulling or indiscriminate use of medication. Particular attention was given to identifying the position of the calf and determining whether assistance is actually required. The experts also highlighted the risks associated with inappropriate use of oxytocin, particularly when the animal is already exhausted or when the underlying problem has not been properly identified.

Farmers consequently gained a clearer understanding that difficult calving requires careful assessment and, where necessary, timely support from trained livestock or veterinary personnel. This knowledge is important for reducing avoidable risks to both the cow and calf.

Strengthened farmer and AI service provider linkages

The training also provided a practical opportunity to introduce local AI service providers directly to farmers. In both communes, AI group members participated as trainers and discussed farmers' practical questions about AI costs, repeat insemination, timing of service, difficult calving and access to technical assistance. This direct interaction helped farmers better understand what services are available locally and how to contact AI technicians when cows show signs of heat. At the same time, it enabled AI service providers to better understand farmers' concerns and information gaps. The approach therefore contributed to building trust and improving communication between farmers and local livestock service providers.

In addition, following the training, the project provided AI equipment to members of the local AI service provider groups. This combination of training, technical mentoring, farmer awareness and equipment support strengthens the foundation for continued delivery of AI services at commune level.

The two farmer training courses showed that farmers are interested in improving cattle productivity and genetic quality but require practical, locally relevant information to make informed breeding decisions. The discussions showed that several concerns, particularly those related to the suitability of crossbred cattle, difficult calving, reproductive performance and the use of hormones, were partly based on limited technical information or individual experiences. The training helped address these concerns through direct discussion, practical examples and explanations from local veterinary workers and AI service providers, confirmed by technical experts. Farmers

gained a better understanding of the relationship between breed selection, nutrition and management, reproductive performance and AI success, while also becoming more aware of when professional technical support is needed.

Beyond increased knowledge, an important outcome was greater recognition of the value of reliable local AI and reproductive services. The training cascade from VIAVS experts to local trainees and then to farmers, combined with the provision of AI equipment and continued technical support, provides a practical mechanism for sustaining knowledge transfer and strengthening local cattle breeding services in Chieng Mai and Phu Yen.



Farmers discuss with trainers and experts during the training course in Chieng Mai (photo: VIAVS/Dzung).



Farmers discuss with trainers and experts during the training course in Phu Yen (photo: VIAVS/Dzung).

Feedback from farmers after training courses

At the end of each farmer training course, participants were invited to evaluate the trainers and the training experience using a structured feedback form. The evaluation covered 12 criteria, using a five-point scale: 1 = Very poor, 2 = Poor, 3 = Fair, 4 = Good, and 5 = Very good. The criteria assessed the clarity and relevance of the training content, trainers' communication and technical explanation, use of practical examples, facilitation of discussion and practice, trainers' confidence and mastery of the subject, responsiveness to farmers' questions, farmers' perceived confidence to apply the knowledge gained, overall satisfaction, and willingness to participate in future training sessions.

Overall, farmers in Chieng Mai gave very positive feedback to all three trainers, with average scores ranging from 4.80 to 4.97 across the 12 criteria. The overall average scores were 4.93, 4.86, and 4.86, indicating a consistently high level of satisfaction with the training delivery. The trainer with the highest overall average score (4.93) received particularly strong ratings for explaining technical knowledge clearly, using practical examples relevant to farmers, and facilitating discussion and exchange. Farmers particularly appreciated the trainers' ability to explain technical issues clearly, facilitate discussion, and respond to questions. A member of the AI service provider cooperative received especially positive feedback on overall satisfaction and participants' willingness to attend future training delivered by him. These results indicate that the farmer training in Chieng Mai was well received and that the local trainers were generally able to communicate technical information in a way that farmers considered understandable and relevant to their practical needs.

The training in Phu Yen also received very positive feedback. The overall average scores were 4.90 and 4.78 across the 12 assessment criteria. One trainer received particularly strong ratings for allowing sufficient time for questions and issues raised by farmers, encouraging discussion and exchange, demonstrating confidence and mastery of the training content, and ensuring that the content was relevant to farmers' practical needs. The feedback indicates that the trainer's delivery was considered good by participants, while suggesting opportunities to further strengthen the use of practical examples and confidence in presentation.

Across both communes, the feedback scores indicate a high level of farmer satisfaction with the training and the performance of the local trainers. The particularly high scores for clarity of presentation, relevance to farmers' needs, opportunities for discussion, and confidence to apply the knowledge gained suggest that the training approach was well aligned with the practical learning needs of cattle farmers.

The results also provide encouraging evidence for the ToT approach adopted by the project. Local commune staff and AI service providers who participated in the ToT were able to subsequently deliver farmer training with strong participant acceptance. This shows the potential for local livestock service providers and commune-level personnel to act as continuing sources of technical information and farmer support beyond individual project training events.

The feedback also points to areas for improvement. Future training could further strengthen the use of locally relevant practical examples, farmer case studies, demonstrations and interactive exercises, particularly for trainers who are still developing their confidence and facilitation skills. Continued mentoring by VIAVS experts and opportunities for local trainers to conduct further farmer training would help consolidate these skills and improve the sustainability of the local training cascade.





The project hands over AI equipment to the AI service provider cooperatives in Chieng Mai and Phu Yen communes at the end of the training (photo: VIAVS/Dzung).

Next steps

The SAAF program will continue to provide technical mentoring and follow-up support to members of the cattle AI service provider group and to a veterinary officer in Phu Yen commune. This support will focus on helping trainees and cooperative members translate the knowledge and skills gained through the training and field-based coaching into regular service delivery. Similar technical support and training activities will also be extended to Thuan Chau commune, with the aim of gradually expanding access to reliable and quality breeding services in additional cattle-producing areas of Son La province.

The project will continue to collect the records of the performance of AI service providers, including the number of farmers served, animals examined and inseminated, and practical challenges encountered during service delivery. These records will provide useful evidence for assessing the development of the local AI service system and identifying areas where further technical or organizational support is needed from local authorities.

Regular communication and experience sharing among AI service provider groups will also be encouraged. The cooperative groups should organize common meetings periodically, or maintain regular communication through a Zalo group when face-to-face meetings are not practical. These exchanges will provide opportunities for members to share field experiences, discuss difficult cases, identify solutions to common service-delivery problems, and learn from each other. The Zalo group can also be used to seek timely technical advice from VIAVS experts, particularly for reproductive examination, synchronization, hormone use, pregnancy diagnosis, semen handling, and other cases requiring additional technical confirmation.

The existing Mai Son AI service provider group will continue to play an important peer-support role for the newly established groups. Where appropriate, experienced members can share practical experience, provide advice on service organization, and support access to semen, liquid nitrogen, medicines, and other necessary materials. This peer-to-peer support is expected to reduce the initial constraints faced by newly established groups and strengthen linkages among local livestock service providers.

The project will also continue to strengthen the linkage between AI service providers, communal veterinary officers, and farmers. Communal veterinary officers can help connect service providers with farmers, identify reproductive problems requiring professional attention, and support the dissemination of information on improved breeding and reproductive management and share policy updates with the community.

Through these follow-up activities, the SAAF program will gradually move from one-off training toward a more continuous training-mentoring-practice-peer learning approach that targets AI service providers, farmers as users of breeding services, and communal officers as supportive actors who can facilitate linkages among farmers, local institutions, and services. The longer-term objective is to strengthen the capacity and confidence of local AI service providers, improve the continuity and quality of breeding services, promote wider adoption of appropriate AI and improved breeding practices, and improve farmers' knowledge and awareness of improved cattle breeding and reproductive management. Together, these efforts are expected to contribute to improved cattle genetics and

productivity, stronger local livestock service systems, and more sustainable livestock value chains in the project target areas.

Challenges and recommendations

Continued technical support is needed for local trainers

Although the trainees demonstrated good progress in delivering farmer training, some still required support from VIAVS trainers when preparing presentation materials and responding to specific technical questions raised by farmers. This is particularly relevant for topics involving reproductive disorders, hormone use, pregnancy diagnosis, breed selection, and difficult calving.

The ToT approach should be followed by continued mentoring rather than ending after the initial training. VIAVS experts should provide templates, key technical messages, practical case examples, and periodic technical review of training materials. A simple mechanism for trainees to consult experts through Zalo or other communication channels should also be maintained so that technical questions arising during farmer training or field service can be discussed and confirmed promptly.

Temporary limitations in the participation of young female AI service providers

Two young female members of the AI service providers in Chieng Mai and in Phu Yen groups were pregnant and gave birth around the period of the training and field-based AI support activities. As a result, they were not able to participate fully in some field activities during this period. This temporarily reduced the number of active members available for service delivery and practical learning.

The cooperative model should maintain sufficient flexibility in task allocation so that temporary personal or family-related constraints do not interrupt service provision. Where possible, groups should maintain collaboration with nearby AI service providers. The experience also highlights the importance of ensuring that women who have received technical training remain connected to the groups and can resume their service roles when their circumstances permit.

Appropriate group size and backup arrangements are important

The experience indicates that a group of approximately three AI service providers can provide a practical basis for delivering breeding services within a commune, provided that members have clearly defined responsibilities and geographic coverage and do not compete directly with each other. At the same time, the temporary unavailability of one member demonstrated the importance of having backup arrangements. With two active members, the group can continue operating, but additional support from communal veterinary workers or neighboring AI service providers may be required, particularly when service demand increases or farmers are located in remote areas.

Each group should maintain at least two active members capable of providing core services, while establishing a clear backup and referral mechanism with communal veterinary officers and neighboring AI groups. Geographic allocation of service areas should also be reviewed periodically according to cattle population, farmer demand, travel distance, and the availability of individual technicians.

Travel distance can limit participation in training and technical exchange

Some trainees and local livestock service providers had to travel relatively long distances to attend training activities. Travel requirements may reduce participation, particularly for participants who have ongoing veterinary or livestock service responsibilities in their communes.

Where appropriate, future training should combine centralized face-to-face sessions with commune-level or village-level practical sessions. Online communication through Zalo can complement face-to-face activities for follow-up discussions and technical consultation.

Farmer adoption of AI remains dependent on awareness, recording and timely service availability

The farmer training activities showed that some farmers still have limited understanding of heat detection, appropriate timing of AI, breed suitability, reproductive problems, and the risks associated with inappropriate hormone use. In remote areas, farmers may also have difficulty contacting AI technicians when cows are in heat. These factors can reduce the effectiveness of AI services even when trained service providers are available.

Training should use simple, locally relevant examples and focus on practical recognition of heat signs, when to contact technicians, selection of appropriate genetics, and when reproductive examination is needed. AI service providers should also maintain clear communication channels with farmers so that services can be mobilized promptly when cows are ready for insemination. In the longer term, systematic breeding records maintained by both farmers and AI service providers should be encouraged. Records of individual cows, including identification, calving dates, heat occurrence, AI dates, semen/breed used, pregnancy results, and subsequent calving performance, can help farmers and technicians better monitor reproductive status, identify repeated breeding or delayed conception, improve the timing and follow-up of AI services, and support more informed breeding decisions. Over time, the accumulation of such records can also provide a practical evidence base for evaluating AI performance, improving breeding management, and guiding cattle genetic improvement at farm and commune levels.

The experience suggests that developing local cattle AI services takes continuous capacity building and service development. Continued technical mentoring, peer-to-peer learning, simple service monitoring, collaboration among AI groups and communal veterinary workers, and regular farmer awareness activities will be important for maintaining service quality and expanding access. The combination of local trainers, experienced peer groups, communal veterinary support, and VIAVS technical backstopping provides a practical foundation for gradually scaling the model to additional communes in Son La province.

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