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SUSTAINABLE ANIMAL AND AQUATIC FOODS

Establishing and supporting a new cattle artificial insemination service provider cooperative in Phu Yen commune, Son La province

22 October 2026

Activity report



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Suggested citation: Marshall, K. and Huyen, L.T.T. 2026. Establishing and supporting a new cattle artificial insemination service provider cooperative in Phu Yen commune, Son La province. Nairobi, Kenya: ILRI.

Cover photo: VIAVS/Le Thi Thanh Huyen.

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Disclaimers: This publication has been prepared as an output of the CGIAR Sustainable Animal and Aquatic Foods (SAAF) Science Program. Any views and opinions expressed in this publication are those of the author(s) and are not necessarily representative of or endorsed by the CGIAR System Organization.

Acknowledgements: This work was conducted as part of the CGIAR Sustainable Animal and Aquatic Foods (SAAF) Science Program. CGIAR research is supported by contributions to the CGIAR Trust Fund. CGIAR is a global research partnership for a food-secure future dedicated to transforming food, land, and water systems in a climate crisis.

Background and objectives

The CGIAR Sustainable Animal and Aquatic Foods (SAAF) Science Program is working in Son La province, northwest Vietnam, to strengthen beef cattle and pig value chains through integrated technical, institutional, and market-oriented interventions. The program focuses on improving farmers' access to essential production inputs and services, including improved cattle genetics through artificial insemination (AI), animal health services, and appropriate animal nutrition. In parallel, it promotes more inclusive and efficient market systems by supporting collective action, farmer organizations, and stronger linkages among value-chain actors, with particular attention to gender equality and women's empowerment. The program is led by the International Livestock Research Institute (ILRI) and the Alliance of Bioversity International and CIAT (ABC), in collaboration with national and local partners.

The development of local AI services is particularly relevant given recent changes in the cattle market. After a prolonged period of low cattle prices during 2024–2025, which contributed to herd reductions and constrained farmers' investment in cattle production, prices began to recover in late 2025. Improving market conditions have encouraged renewed interest in herd rebuilding and genetic improvement. Demand for reliable and timely AI services is therefore expected to increase, particularly in communes with relatively large cattle populations but limited access to trained AI technicians (Marshall and Huyen 2025).

Following the administrative restructuring of communes in Son La province and building on the positive experience of the SAPLING project (Marshall and Huyen 2024, 2025), SAAF identified opportunities to expand the cattle AI service provider cooperative model into additional areas. The establishment of a new service provider group in Chieng Mai showed the potential of strengthening locally based AI services through practical training, technical mentoring, and collaboration with experienced service providers (Marshall and Huyen 2026a).

Figure 1 presents the communes targeted by the project in Son La province.

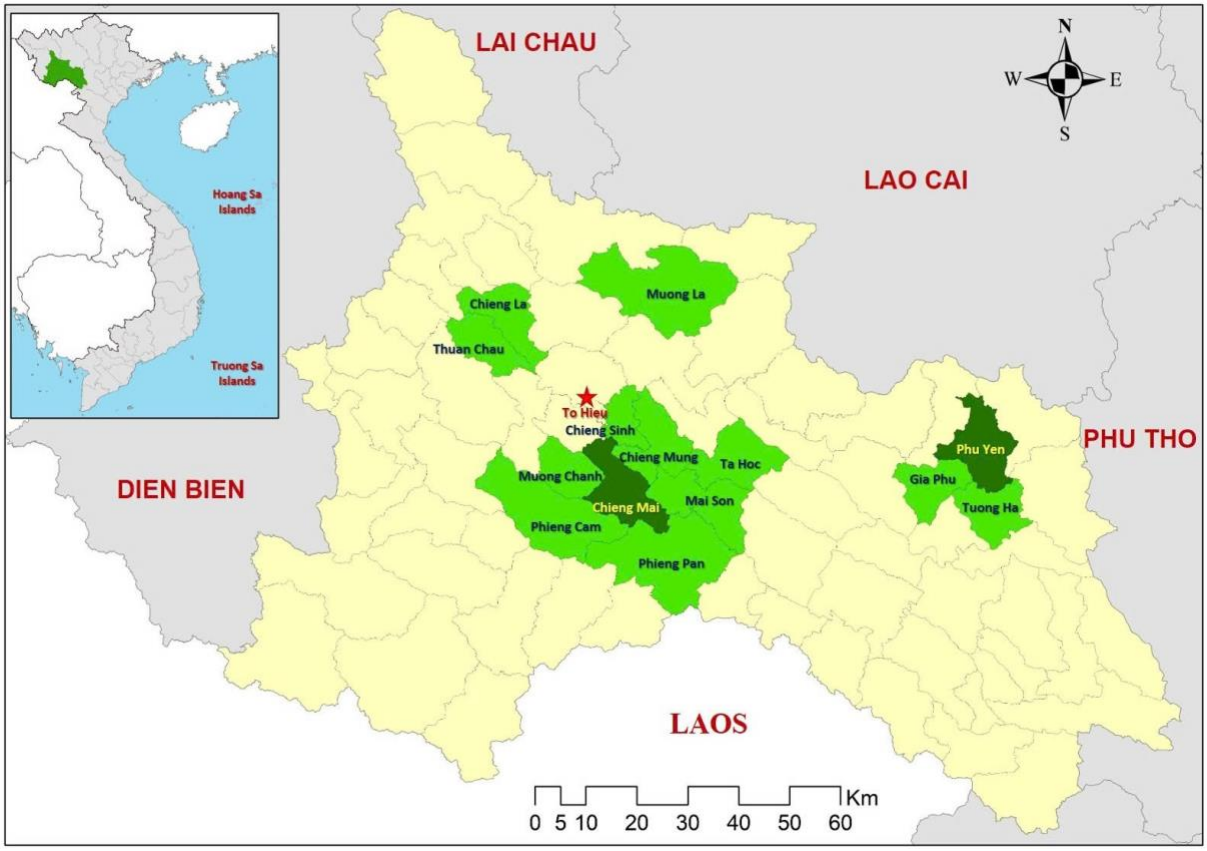

Figure 1: Map of study communes in Son La province, including Phu Yen commune (map by VIAVS, 2026)

Building on this context, the project identified Phu Yen commune as a potential location for establishing an additional cattle AI service provider group in response to the needs expressed by farmers, local veterinary personnel, and AI service providers. The proposed group would help improve farmers' access to breeding services and reproductive health support while strengthening local capacity to deliver these services on a more regular and sustainable basis.

Preparatory activities had already been undertaken to build the capacity of potential group members. In June 2026, participants joined training-of-trainers (ToT) activities on cattle breeds, breeding management, and the benefits of AI, together with the Chieng Mai AI service provider group (Marshall and Huyen 2026b). They subsequently participated in farmer training activities in September 2026, sharing knowledge on cattle breeds, breeding practices, and AI with local farmers (Marshall and Huyen 2026c). These activities laid the groundwork for local training and service delivery.

Following the farmer training activities, members of the Phu Yen AI service provider group received project support in the form of liquid nitrogen containers, AI guns, and a microscope to help them provide services and apply their training. The group's development was intended to combine equipment support with continued technical mentoring, practical coaching, and experience sharing. This approach would help members strengthen their technical competence, build confidence in managing reproductive cases, and develop a more reliable local breeding service.

The activity therefore focused on establishing and supporting a new cattle AI service provider group in Phu Yen commune, building on previous capacity development and the experience of the Chieng Mai and Mai Son cooperative groups. It also sought to identify opportunities for extending the model to other communes such as Thuan Chau commune. This should widen access to quality breeding services and support sustainable cattle production in Son La province.

The overall objective of the activity was to establish and strengthen a locally based cattle AI service provider group in Phu Yen commune and explore opportunities to expand AI service provision to neighboring communes in Son La province.

The specific objectives were to:

- Establish and operationalize a local cattle AI service provider group capable of delivering accessible and reliable AI and related reproductive health services to cattle farmers.

- Strengthen the technical capacity and confidence of group members through hands-on training, field-based mentoring, and continued technical coaching in AI procedures, reproductive examination and diagnosis, reproductive health management, and pregnancy diagnosis.

- Improve farmers' access to quality cattle genetics and breeding services by increasing the local availability of AI and providing guidance on appropriate breed selection and reproductive management.

- Strengthen the ability of service providers to identify and respond to reproductive problems through improved diagnostic skills, appropriate treatment and referral practices, and timely consultation with experienced technical specialists.

- Promote the sustainability and potential expansion of the service provider model through collaboration with communal veterinary personnel, peer learning with established AI service provider groups, and exploration of opportunities to extend services to neighboring communes.

- Contribute to long-term cattle genetic improvement, productivity, and smallholder livelihoods by strengthening local breeding services and supporting farmers' adoption of appropriate breeding and reproductive management practices.

Key outcomes and learnings

Newly established Phu Yen cattle AI service provider cooperative group

The newly established cattle AI service provider group in Phu Yen commune comprises three members with complementary backgrounds and roles in veterinary services, AI service delivery, and farmer training.

- Mr. Chử Văn Tiến is a former commune veterinary officer who now works independently, providing cattle AI services. He has practical experience in livestock reproductive services and delivers AI services to local farmers. He was elected leader of the Phu Yen cattle AI service provider cooperative group.

- Ms. Nguyễn Thị Thúy Hậu is a commune veterinary officer in Thuận Châu. She links technical veterinary services, local livestock farmers, and commune-level institutions.

- Ms. Lò Thị Bay is a member of the AI service provider group who has previously participated in training and field-based technical support activities under the SAPLING project. Although she was unable to participate in the latest on-farm mentoring activities due to childbirth, her previous project involvement provides a foundation for her continued engagement in the group's development.

The three members agreed to establish the Phu Yen cattle AI service provider group following their participation in the Training of Trainers (ToT) course with the Chiềng Mai AI service provider group in June 2026 (Marshall and Huyen 2026b) and their subsequent delivery of farmer training on cattle breeds, breeding practices, and AI in September 2026 (Marshall and Huyen 2026c). These activities helped strengthen their technical knowledge, teaching capacity, and commitment to improving local access to breeding services.

Reproductive examination of breeding cows and synchronization

From 7 to 10 October 2026, VIAVS experts provided field-based technical guidance to the cattle AI service provider group in Phu Yen commune, Son La province, focusing on reproductive examination of breeding cows, assessment of reproductive status, and estrus synchronization. Approximately two weeks before the activity, members of Phu Yen cattle AI service provider group visited local villages to identify cows potentially suitable for reproductive examination and synchronization, in consultation with farmers who agreed to participate. The field activity combined practical examination of selected cows with technical discussions and coaching to strengthen members' diagnostic skills and confidence in providing breeding services.

Reproductive examination and selection of cows for synchronization:

A total of 26 breeding cows were examined across six villages: Ban village (5 cows), Lem (2), Cu (7), Puoi (3), Giao (6), and Van Coi (3). Following examination, 7 cows were pregnant; 2 cows were under conditions of uterine inflammation, a persistent corpus luteum, underdeveloped ovaries, an ovarian cyst, and reduced uterine tone; and 17 cows were selected for intervention. Of these, 15 received a CIDR device and GnRH treatment as part of the synchronization protocol, while two received GnRH and were inseminated. The interventions provided an opportunity for group members to practice reproductive examination and observe how findings from the examination informed decisions on subsequent reproductive management.

Improved understanding of pregnancy diagnosis and reproductive status: The activity showed that reproductive examination remained a challenging skill for the group members, particularly when estimating the stage of pregnancy and distinguishing normal reproductive conditions from abnormalities. Members explained that their previous examinations had generally focused on determining whether a cow was pregnant, particularly in cases involving repeated unsuccessful insemination. They had less experience in estimating pregnancy duration or identifying specific reproductive disorders. During the field sessions, VIAVS experts Trần Sơn Hà and Nguyễn Huy Huân demonstrated how to assess pregnancy stage by examining the uterus and identifying relevant anatomical and pregnancy-related signs. Through guided practice and discussion, members gradually improved their understanding of how pregnancy-related findings change as gestation progresses.

The experts also emphasized that pregnancy diagnosis requires careful interpretation and practical experience. A cow may be pregnant but still be at risk of pregnancy loss, and reproductive findings should be interpreted alongside the animal's history and condition. Importantly, cows should be examined before AI to avoid inseminating animals that are already pregnant. Inappropriate manipulation of the reproductive tract during insemination may increase the risk of pregnancy loss or premature calving. These discussions showed that accurate diagnosis and careful handling are part of responsible AI service provision.

Developing skills in ovarian examination and identification of reproductive disorders: A major learning focus was the assessment of ovarian activity and the identification of structures associated with the reproductive cycle, including developing follicles, normal cyclic corpora lutea, persistent corpora lutea, and ovarian cysts. The experts explained that cows failing to conceive after repeated inseminations may have several possible causes, including problems with insemination technique or semen handling, as well as reproductive abnormalities. Cows that do not return to heat for an extended period, or that repeatedly show signs of estrus without conceiving, may require further examination to identify the underlying cause.

Through practical demonstrations, members were introduced to the differences between inactive ovaries and ovaries showing reproductive activity, as well as the importance of distinguishing normal cyclic structures from persistent corpora lutea and ovarian cysts. The experts explained that these conditions may require different treatment approaches. Therefore, treatment should be based on an appropriate examination and diagnosis rather than the routine use of a single hormone protocol for all reproductive problems.

The discussion also drew on the experience of cooperative group leader Chử Văn Tiến, who shared an approach he had used in cases involving repeated reproductive failure and abnormal vaginal discharge. This exchange allowed the experts to discuss the limitations of treating animals based only on observed symptoms and the importance of confirming the likely cause before selecting a treatment protocol. The activity also helped identify

specific technical areas where members would benefit from further supervised practice, particularly in recognizing ovarian structures and distinguishing among reproductive disorders.

Strengthening knowledge of hormone use and synchronization protocols: The activity reinforced the principle that estrus synchronization and hormonal treatment should follow an appropriate reproductive assessment. VIAVS experts explained that different reproductive conditions require different treatment protocols and that the timing and selection of hormones should be based on the animal's reproductive status. Indiscriminate hormone use may be ineffective, increase farmers' costs, and delay the identification and treatment of underlying reproductive problems.

The field sessions also showed the need to re-examine cows following synchronization treatment to assess ovarian responses and determine appropriate next steps. The experts planned to use subsequent examinations of treated cows as further learning opportunities, enabling members to observe developing follicles and cyclic corpora lutea and improve their ability to interpret ovarian findings. This follow-up approach is particularly important because some reproductive structures and conditions cannot be confidently distinguished during a single examination, and diagnostic competence develops through repeated practice under expert supervision.

Improved awareness of safe examination and service delivery: Practical guidance emphasized gentle and systematic examination, progressing from the cervix and uterine body to the uterine horns and ovaries. Members were advised to avoid forceful or unnecessary manipulation when locating reproductive structures, particularly when pregnancy was suspected. The experts also stressed the need for caution when interpreting abnormal uterine findings. For example, where the uterine horns appeared asymmetrical or had reduced motility or unusual consistency, a repeat examination after approximately one week was recommended rather than proceeding immediately with hormone treatment that could jeopardize a pregnancy.

Key learning and implications: The activity provided the Phu Yen AI service provider group with its first closely supervised opportunity to strengthen reproductive examination skills under field conditions. It helped members recognize that effective AI services involve more than insemination technique: they also require reliable pregnancy diagnosis, assessment of ovarian activity, identification of reproductive problems, appropriate selection of hormone protocols, and careful follow-up. The activity also revealed continuing gaps in members' ability to distinguish ovarian structures and diagnose specific reproductive disorders, indicating that further hands-on coaching is necessary.

The experience supports a practical capacity-building approach in which field examination, expert demonstration, discussion of real cases, and follow-up assessment are combined to reinforce learning. Continued mentoring by VIAVS experts is important to help group members translate these initial learning gains into more accurate diagnosis, safer reproductive management, and more reliable AI services for cattle farmers in Phu Yen and potentially neighboring communes (e.g., Thuan Chau commune).







Reproductive tract examination, hormone injection, CIDR insertion, and other technical guidance on hormone use (photo: VIAVS/Le Thi Thanh Huyen).

Heat detection in cows and AI performance

From 15 to 19 October 2026, the VIAVS technical team, comprising Dr. Le Thi Thanh Huyen, Mr. Le Tien Dung, Mr. Tran Son Ha, and Mr. Nguyen Huy Huan, worked with the local cattle artificial insemination (AI) service provider group to implement estrus synchronization, monitor heat signs and conduct AI in selected breeding cows. The activity aimed to strengthen the group's practical capacity to apply hormonal protocols, identify the optimal timing for insemination and improve access to reproductive services for local cattle farmers.

Implementation of the synchronization protocol and AI:

The protocol involved removing the controlled internal drug release (CIDR) device after eight days of placement and administering prostaglandin F2α (PGF2α) to induce corpus luteum regression and promote follicular development. According to the planned protocol, gonadotropin-releasing hormone (GnRH) was administered on the afternoon of the second day after CIDR removal and PGF2α injection to support follicular development and ovulation. AI was then scheduled for the following morning, with a repeat insemination in the afternoon to optimize the timing. Where cows displayed clear signs of estrus after CIDR removal and PGF2α administration, insemination was performed according to the conventional morning–afternoon rule.

CIDR devices were removed and PGF2α was administered to 16 cows from five villages: Ban, Lem, Cu, Puoi and Van Coi. However, one cow in Cu village was reportedly found to have lost its CIDR device early the following morning. The technical team suspected that the device might have been removed; in this case, the farmer declined the team's suggestion to reinsert it, expressing concerns about the difficulty of caring for a crossbred calf and the possible effects of CIDR use on the cow. This farmer wanted to see others apply AI first before following. This case showed the need to explain the purpose, procedures and expected benefits of reproductive interventions to farmers before treatment.

In total 15 cows were in heat and inseminated. One cow in Cu village was not brought in for GnRH administration because its owner considered the procedure too complicated. After discussion with the technical team, the farmer agreed to allow the cow to be mated naturally instead. This experience illustrated the need to adapt reproductive management advice to farmers' willingness and practical capacity to follow the recommended protocol.

Observed responses and AI performance:

Most cows selected for the CIDR-based synchronization protocol combined with hormonal treatment responded well. The team observed clear signs of estrus, including increased vocalization, reduced feed intake and visible estrus mucus discharge from the vagina. Follicular development was also reported to be satisfactory in all cows treated under the protocol. These observations indicate that the synchronization approach was practically applicable under the local conditions and helped the team identify suitable opportunities for insemination.

Key learnings:

First, practical coaching alongside the local AI service provider group helped translate theoretical knowledge of hormonal synchronization into field-based skills in heat detection and insemination timing.

Second, close observation of behavioral and physical signs of estrus remains essential, even when a synchronization protocol is used.

Third, farmers' understanding, confidence and willingness to participate influence whether the recommended procedures can be implemented consistently. Clear communication about the treatment process, animal care and expected benefits is therefore important.

Finally, systematic recording of treatments, heat signs, insemination dates and subsequent pregnancy outcomes should be strengthened to evaluate the effectiveness of the protocol and support continued improvement of the local AI service.



AI performance (photo: VIAVS/Le Thi Thanh Huyen).

Group discussions, experience sharing and lessons learned

Following each field visit involving reproductive examination, estrus synchronization, heat detection and AI, members of the local cattle AI service provider group held discussions with VIAVS experts to review AI service delivery, identify practical challenges, exchange technical experience and agree on follow-up activities. These

meetings linked hands-on field practice with technical guidance and strengthened the group's capacity to deliver reliable reproductive services to cattle farmers.

Current status of AI services and local challenges

Mr. Chử Văn Tiến reported that cattle farmers increasingly recognized the benefits of AI, particularly the improved appearance and faster growth of crossbred calves. He currently provided AI services to approximately 30–40 cows per month. However, the number of inseminations performed in 2026 had decreased by around 50% compared with previous years, mainly because low cattle prices led farmers to reduce their herd sizes. He estimated that approximately 40% of cattle-raising households in Mường Cơi, a neighboring commune of Phu Yen, used AI services.

Ms. Nguyễn Thị Thúy Hậu reported a much lower AI adoption rate in Phu Yen commune compared to Muong Coi commune. She attributed this partly to the prevalence of free-grazing systems, including cattle grazing in forest areas, which makes it more difficult for farmers to monitor reproductive status and arrange timely insemination. These differences show the need to tailor AI promotion and service delivery to local production systems and farmers' management practices.

The group identified several practical constraints affecting AI service delivery. Competition among service providers had put downward pressure on service fees, which had decreased from approximately VND 400,000 to VND 350,000 per insemination. Farmers also often had difficulty identifying the onset of estrus accurately, making it challenging to contact service providers at the appropriate time. In addition, difficult road access and the dispersed, small-scale nature of cattle farming increased travel time and the cost of providing services across the target area.

Technical guidance and experience sharing:

VIAVS experts provided practical recommendations to help group members address these challenges and improve the quality of their services.

The experts emphasized that maintaining an AI service career in Son La required considerable effort and persistence. They highlighted the importance of strict hygiene and aseptic practices during insemination, particularly the proper cleaning of equipment and careful handling during vaginal examination and insemination, to minimize the risk of reproductive tract infections. They also encouraged group members to conduct more reproductive examinations to develop their practical skills and improve their ability to recognize reproductive structures through palpation. The VIAVS team reaffirmed its willingness to provide remote technical advice by telephone when members encountered veterinary or AI-related problems in the field.

At the same time, it was emphasized that AI service providers should communicate the economic benefits of improved breeding more effectively to cattle farmers. In particular, they should explain how AI can produce crossbred calves with greater potential value and growth performance, which improves returns from cattle production. It was noted that the potential value of a pregnant cow, especially one carrying a calf resulting from AI, could be substantially higher than that of a non-pregnant cow. This comparison can help farmers understand the economic consequences of reproductive failure and the potential benefits of applying appropriate breeding technologies. AI providers need sound knowledge of cattle and buffalo management, reproductive health and disease diagnosis so that they can give appropriate advice and recommend practical solutions. For cows that failed to conceive after repeated insemination or natural mating, farmers should be encouraged to seek reproductive examination and appropriate treatment rather than immediately selling the animals for meat. Where clinically appropriate, veterinary interventions, including hormone treatment, may help address certain reproductive problems and reduce avoidable economic losses. Such decisions should be based on proper examination and professional assessment.

The experts also stressed semen storage and liquid nitrogen management. Insufficient liquid nitrogen can compromise semen quality and sperm viability, potentially reducing the likelihood of conception. AI service providers were therefore advised to check liquid nitrogen levels regularly and replenish supplies as necessary to maintain semen quality and improve service performance.

Broader technical discussions and future capacity development:

The group meetings also covered ovarian examination in cows, members' previous experience and difficulties in conducting reproductive examinations, practical lessons from Mr. Hà and Mr. Huân, and important considerations when examining breeding cows. Participants discussed the current status of cattle and buffalo production, relevant livestock policies and support programs, AI adoption rates, and the reasons for differences in uptake across localities. These exchanges helped identify areas where additional technical coaching and farmer awareness-raising would be beneficial.

Key lessons learned:

The discussions generated several important lessons for strengthening local AI services:

- Technical competence requires continuous practice and mentoring. Regular reproductive examinations, accurate heat detection, hygienic insemination and appropriate management of semen and liquid nitrogen are essential for service quality. The linkage with other AI cooperatives in Son La is helpful.

- Farmer awareness influences demand for AI. Farmers need clear, practical information about the potential benefits of crossbreeding, calf value, growth performance and the economic costs of reproductive failure. More training courses on breed selection, breeding and AI for farmers should be implemented at localities.

- Service delivery must reflect local conditions. Free-grazing practices, dispersed households, difficult access and price competition require locally adapted approaches to service provision and farmer engagement.

- Reproductive problems should be addressed through appropriate technical assessment. Timely examination and professional advice can help identify potential causes of repeated breeding failure and avoid premature disposal of potentially productive breeding cows.

- Ongoing institutional support is important for sustainability. Continued technical consultation with VIAVS, including remote advice when necessary, can help local service providers resolve field problems, build confidence and maintain service quality. Sharing experiences between AI cooperative groups in Son La is valuable.

The group meetings complemented the practical field activities by creating a forum for reflection, peer learning and problem-solving. Continued mentoring, improved farmer communication and systematic follow-up on AI service performance will be important for strengthening the group's capacity and supporting the wider adoption of AI in the target communes.



Discussion after fieldwork between cooperative members and experts (photo: VIAVS/Le Thi Thanh Huyen).

Next steps

The group's current service area includes Phu Yen, Mường Cơi, Gia Phu, and Mường Bang communes. Given the differences in AI adoption, grazing practices, accessibility and service demand across these areas, continued collaboration between the local service providers and VIAVS experts and with other AI cooperatives in Son La will be important for expanding access to reproductive services.

The next step is to explore out-scaling to Thuan Chau and other communes.

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We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund: www.cgiar.org/funders.

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