



Warta Pengabdian Andalas

Jurnal Ilmiah Pengembangan dan Penerapan Ipteks

ISSN (Print) 0854-655X | ISSN (Online) 2797-1600

Improvement of Maintenance Management and Multiplication of Stingless Bee Colonies at Bangun Sejahtera Indonesia (BSI) Mandiri Beekeepers

Simel Sowmen^{1*}, Rusdimansyah², Zahlul Ikhsan³

¹Departement of Nutrition and Feed Technology, Faculty of Animal Science, Universitas Andalas, Limau Manis, Padang, Indonesia, 25163

²Departement of Animal Production Technology, Faculty of Animal Science, Universitas Andalas, Limau Manis, Padang, Indonesia, 25163

³Departemen of Agrotechnology, Faculty of Agriculture, Universitas Andalas, Kampus 3, Dharmasraya, Indonesia, 34179

*Corresponding author: simelsowmen@ansci.unand.ac.id

Submitted: December 9, 2025

Accepted: April 1, 2026

Published: June 30, 2026

ABSTRACT

This community service activity aims to enhance the capacity of beekeepers in colony management and methods for propagating galo-galo bee colonies within the Bangun Sejahtera Indonesia (BSI) honey bee cultivation group. The background to this activity is the high rate of extinction of partner galo-galo colonies. The high rate of colony collapse has a significant impact on the economy of beekeepers, a decline in their honey production, as well as ecological consequences in the surrounding area, including a decline in pollinators. The activity was carried out through training, which began with an information session on factors that support colony survival, such as sufficient plant vegetation, anticipation of predator attacks, and optimal colony maintenance management. The main achievement of this activity was that approximately 60% of the ten trap boxes installed during training were successfully colonized by new galo-galo colonies within four weeks. This result demonstrates that the training improved beekeepers' knowledge and skills in caring for colonies and installing trap boxes, which directly increased the number of colonies owned by beekeepers. Additionally, the success of colony acquisition through trap boxes can reduce the felling of trees where galo-galo nest in the wild, one tree for one colony.

Keywords: bee traps, beekeeping management, community service, colony propagation, galo-galo

INTRODUCTION

West Sumatra has great potential for the development of Galo-galo cultivation, as reflected in the identification of at least 18 species from five genera (Herwina et al., 2021). However, cultivation development faces challenges such as pest and predator attacks. A total of 17 types of pests have been recorded as threatening Galo-galo colonies (Janra et al., 2021). The productivity of colonies in local farmers averages around 300 grams of honey per month (Ediset et al., 2024), and the success of cultivation is greatly influenced by the availability of natural food around the hive (Sowmen et al., 2022). Because *Heterotrigona itama*'s foraging range is limited to a radius of 500 meters (Rusdimansyah et al., 2024), the selection of a cultivation location is an important aspect. In addition, bee species play a major role in determining product quality, including physicochemical properties,

antioxidant and antimicrobial activity, and honey microbiota composition (Melia et al., 2024).

The Galo-galo Honey Bee Cultivation Group Bangun Sejahtera Indonesia (BSI) is located in Balai Gadang Village, Padang City. The group was formed in response to the awareness of the importance of forest conservation and the economic and ecological potential of Galo-galo cultivation. The partner location was chosen because it has excellent potential for the development of bee farming, both in terms of the availability of natural vegetation that serves as a food source for bees and environmental conditions that support the survival of Galo-galo. In addition, the involvement of the local community in the formation of this group demonstrates the community's awareness of the importance of preserving the forest.

At the end of 2024, this group received assistance in the form of 200 colonies of stingless honey bees (Galo galo) of the *Heterotrigona itama* species from the CSR program of Bank Syariah Indonesia's West Sumatra Branch, accompanied by the Faculty of Economics and Business at UIN Imam Bonjol. Due to a lack of technical assistance in cultivation, honey production has not been maximized, and several colonies have died out. Although some colonies have died out, the remaining colonies are still able to produce honey, albeit with distinctive organoleptic characteristics such as a sour taste and high-water content, which makes it prone to fermentation (Esa et al., 2022). Academic support for the Galo-Galo BSI Honey Bee Cultivation Group is provided through the implementation of Community Service Activities under the Community-Based Empowerment Scheme for 2025.

Based on these issues, support from the academic community is necessary to establish a strong scientific and technical foundation for the development of a sustainable, science-based cultivation system. To support a sustainable stingless bee cultivation system, it is necessary to implement effective maintenance management and colony propagation through the installation of bee trap boxes, thereby enhancing environmental sustainability.

METHOD

This activity was carried out in early October 2025 at the Galo-galo breeding unit of the Bangun Sejahtera Indonesia (BSI) Mandiri group located in Balai Gadang Village, Padang City. The methods used in this training activity consisted of several stages, namely socialization, training, practice, mentoring, and evaluation.

Socialization

This initial stage aimed to provide partners and all group members with an understanding of the community service program. At this stage, the community service team held a meeting with the BSI galo-galo bee breeding group to explain the program's objectives, benefits, and implementation plan.

Training

These training topics are related to stingless bee management and encompass essential aspects that must be considered to ensure the sustainability of stingless bee farming. The training also covers the need to ensure an optimal supply of plant vegetation for food, the problem of predator attacks, and the necessity of multiplying colonies in an ideal manner to support environmental sustainability.

Practical

The practical activities begin with checking the colonies around the partner's cultivation site, followed by the preparation and installation of bee trap boxes at the cultivation site.

Assistance and Evaluation

The training results will be evaluated in stages to observe the development of the partner's bee colonies and the results of installing trap boxes at the partner's site.

This activity was attended by thirty-eight participants. During the training, ten traps were set up, and evaluations were conducted weekly, starting from the first week after trap installation through the fourth week. The success of the trap installation was indicated by the presence of stingless bee colonies inside the trap boxes.

RESULTS AND DISCUSSION

This Socialization and Training

This community service activity began with the presentation of the community service program plan to be implemented by the community service team, aiming to find solutions to problems in the galo-galo bee farming business of partners. This was followed by training on topics including maintenance management and the propagation of stingless bee colonies (Galo-galo). The training activity began with an intensive lecture on gallo-gallo cultivation management, focusing on important aspects that support the survival of the colony. Important points to note include the need to ensure an optimal supply of bee forage plants, the problem of predator attacks, and the necessity of multiplying colonies in an ideal manner to support environmental sustainability. This briefing is illustrated in Figure 1 below.



Figure.1 Extension on galo-galo maintenance management

Following the briefing session, the training continued with practical exercises. The practical exercises began with an inspection of the galo-galo colonies at the partner's farming site, where several dead colonies were found. Based on the observations, three dead colonies were identified, caused by predator attacks. Predators attacking the colonies at the location included ants and Black Soldier Fly (BSF) larvae (Figure 2).



Figure 2. BSF larvae dominating the galo-galo colony box

Following this discovery, the activity continued with a practice session on saving the colony from predator attacks (Figure 3).



Figure 3. Practice of saving colonies attacked by predators

The next activity involves preparing and installing bee trap boxes, as illustrated in Figure 4 below.



Figure 4. Preparation and installation of bee trap boxes

The use of bee trap boxes at this galo-galo cultivation site is expected to provide an alternative for farmers, preventing them from disturbing natural bee colonies by cutting down trees, thereby preserving the environment. During this community service activity, the galo-galo farmers were very enthusiastic about receiving the materials and participating in all the practical activities. They are fully committed to participating in all upcoming activities as part of this Community Service Program.

The training activity ended with a group photo of all beekeepers, the community service team, and students.



Figure 5. Group photo with training participants

An evaluation conducted four weeks after the installation of ten bee traps at the training site found that approximately 60% of the traps had been successfully colonized by galo-galo colonies, which can be developed into new colonies within the BSI group.

CONCLUSION

The conclusion of the training activities on colony maintenance and propagation management for the Bangun Sejahtera Indonesia (BSI) galo-galo beekeepers group was that it was carried out successfully with the active participation of the group leader, farmers, the service team, and students. The galo-galo beekeepers gained additional knowledge about galo-galo predators and how to prepare and install bee trap boxes. There was a 60% increase in the number of new colonies relative to the number of trap boxes installed. The next step is to increase the productivity of stingless bee colonies by improving the vegetation of forage plants.

ACKNOWLEDGEMENTS

This community service activity is funded by the Directorate of Research and Community Service, Directorate General of Research and Development, Ministry of Higher Education, Science, and Technology. Community-Based Empowerment Scheme. 2025. Contract number 155/C3/DT.05.00/PM-BATCH II/2025.

REFERENCES

- Esa NEF, Ansari MNM, Razak SIA, Ismail NI, Jusoh N, Zawawi NA, et al. A Review on Recent Progress of Stingless Bee Honey and Its Hydrogel-Based Compound for Wound Care Management. *Molecules* [Internet]. 2022;27(10):1–20. Available from: <https://doi.org/10.3390/molecules27103080>
- Ediset, Rusdimansyah, Ismet, Saputra D adu, Anas A. Pemberdayaan Masyarakat Melalui Budidaya Madu Galo Galo (*Trigona* Sp) Dan Pendirian Taman Tanaman Obat di Keluarga Di Nagari Tiumang Kabupaten Dharmasraya. *J Hilirisasi IPTEKS*. 2024;7(4):473–87
- Herwina H, Salmah S, Jasmi, Yaherwandi, Mairawita, Janra MN, Rusdimansyah, et al. West sumatran stingless bees (Hymenoptera: Apidae: Meliponini): What can be told from its local distribution. *IOP Conf Ser Earth Environ Sci* [Internet]. 2021;757(1). Available from: <https://doi.org/10.1088/1755-1315/757/1/012084>
- Janra M, Herwina H, Salmah S, Rusdimansyah, Jasmi. Identifikasi Potensi Predator dan Hama pada Peternakan Kelulut (Hymenoptera; Apidae; Meliponini; Tetragonula, Lepidotrigona) melalui Pengamatan Cepat di Kabupaten Padang Pariaman, Sumatera Barat. *J Sumberd Hayati* [Internet]. 2021;6(2):67–74. Available from: <https://doi.org/10.29244/jsdh.6.2.67-74>.
- Melia S, Juliyarsi I, Kurnia YF, Aritonang SN, Rusdimansyah R, Sukma A, et al. Profile of stingless bee honey and microbiota produced in West Sumatra, Indonesia, by several species (Apidae, Meliponinae). *Vet World* [Internet]. 2024b;17(4):785–95. Available from: <https://doi.org/10.14202/vetworld.2024.785-795>
- Rusdimansyah R, Khasrad K, Jaswandi J, Rusfidra R, Aulia D. Heterotrigona itama workers bees homing ability as the basis for colony placement. *Biodiversitas* [Internet]. 2024;25(6):2478–83. Available from: <https://doi.org/10.13057/biodiv/d250616>

Sowmen S, Rusdimansyah, Martaguri I, Aini Q, Mardhiyetti, Sriagtula R. PKM Introduksi Vegetasi Tanaman Pakan Lebah dan Potensi Budidaya Lebah Tanpa Sengat (Galo-Galo) di Jorong Rimbo Janduang, Nagari Lingkuang Aua, Kecamatan Pasaman, Kabupaten Pasaman Barat. Warta Pengabdian Andalas [Internet]. 2022;29(3):239–44. Available from: <https://doi.org/10.25077/jwa.29.3.239-244.2022>

@2026 Sowmen et al.

This is an open access article licensed under the terms of a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (<http://creativecommons.org/licenses/by-nc-sa/4.0>).