

STRENGTHENING KLANCENG HONEY PRODUCTION THROUGH TECHNICAL ASSISTANCE FOR COLONY SUPERVISION IN THE ASSISTED VILLAGES OF KAMPUNG ZAKAT

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Article History

Submission : 15/05/2026

Revised : 07/07/2026

Accepted : 10/08/2026

Abstract

Sooko Village, Sooko District, Ponorogo Regency, is one of the Kampung Zakat-assisted villages with natural potential for developing stingless bee cultivation. This type of bee produces honey with high economic and nutritional value; however, its management requires technical skills, colony supervision, and continuous evaluation to improve productivity. This activity aims to enhance community knowledge, skills, and awareness of stingless bee cultivation through technical assistance and a colony-monitoring system. This study used a descriptive qualitative approach with a participatory method. The data consisted of primary and secondary data obtained from the activity site in Sooko Village, Sooko District, Ponorogo Regency, from March to May 2025. Data sources included farmer groups, community leaders, students as facilitators, and supporting activity documents. Data were collected through participatory observation, in-depth interviews, documentation, and focus group discussions. The data were analyzed through data reduction, data presentation, and conclusion drawing. The results show that technical assistance improved the community's ability to manage colonies, identify problems, implement independent corrective actions, use home yards, and collectively develop honey-based enterprises. The monitoring system also encouraged a culture of evaluation in cultivation practices. This activity concludes that a participatory approach can strengthen local capacity, community collaboration, and economic independence through sustainable cultivation of stingless bees.

Keywords: Cultivation; Evaluation; Community Empowerment; Monitoring; Stingless Bee.



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INTRODUCTION

Indonesia is a tropical country with high biodiversity, including a wealth of animal and plant resources that can be used to develop productive businesses based on local potential. One of the leading commodities being considered as an alternative source of income for the community is honey produced by bees. Honey has long been known for its health benefits and economic value. In this context, the klanceng bee (*Trigona sp.*), a type of stingless bee, is one of the local bee species with the potential for widespread cultivation. In addition to being safer because they do not sting, klanceng bees produce honey with higher nutritional content and exhibit strong antimicrobial properties. Klanceng honey is also known as a superior product with high market value, although its yield is relatively lower than that of other bee types (Ariyanto et al., 2021).

Klanceng bee cultivation does not require large land areas or complicated equipment, so it is well-suited for rural areas, including Sooko Village, Sooko District, Ponorogo Regency. This village has supportive geographical and ecological conditions, including abundant flowering vegetation and a relatively calm environment, making it an ideal habitat for klanceng bees. Most people in Sooko Village make a living as farmers, with yard land that has potential for bee cultivation. However, this potential has not been optimized due to the community's limited technical knowledge of how to cultivate it. In fact, with proper management, klanceng bees are not only a source of consumer products but also capable of increasing income and encouraging the formation of beekeeping-based business groups (Ariyanto et al., 2021).

Various previous studies have shown that the success of klanceng bee cultivation is largely determined by farmers' ability to carry out colony management, pest and disease control, and hygienic harvest handling. A study entitled "Community Empowerment through Klanceng Bee Cultivation Training for Economic Resilience and Environmental Conservation" shows that Klanceng bee cultivation training can increase public understanding and interest in stingless bee farming as an alternative for economic and environmental conservation efforts. As a result, participants experienced an increase in comprehension scores from 51.05 to 83.6 and showed high interest with an average of 4.3 on a scale of 5 (Arsyad et al., 2025). Another research is entitled "Klanceng Bee Cultivation Companions as Tourist Attractions in the Mount Tirah Area, Semang Hamlet, Gempolan Village, Kerjo, Karanganyar". This activity is carried out using a Participatory Rural Appraisal (PRA) approach, which actively involves the community in planning and evaluation.

The results show that Klanceng bee cultivation not only has economic value through the sale of honey but also has the potential to become a new tourist attraction and a means of environmental education. Planting flowering plants as a source of bee feed is also carried out to support bee productivity and the sustainability of community businesses. This research emphasizes the importance of synergy

among environmental conservation, economic empowerment, and local tourism development, with a focus on community participation (Darsowiyono et al., 2022).

The research entitled "Trigona sp. Efforts to Increase the Productivity of the People of Tretes Hamlet Around KHDTK Punjon Hill". This program aims to increase residents' economic productivity by utilizing vacant land and reducing dependence on the exploitation of forest areas. Through training and socialization involving PKK women, the community is invited to understand cultivation techniques, colony care, and the potential selling value of Klanceng honey. The results of the activity show that Klanceng bee cultivation is easy to apply in residential environments, has high economic value, and encourages collective awareness to maintain forest sustainability through environmentally friendly productive activities (Wibowo et al., 2022). Nanndo's research, titled "Trigona Bee Cultivation Training for Youth in Wonosalam Village, Wonosalam District," explained that the training is a form of community service aimed at improving entrepreneurial knowledge and technical cultivation skills. The training includes material on entrepreneurship, cultivation techniques, as well as hands-on practices such as colony removal and honey harvesting. The results of the activity showed the participants' high enthusiasm and their readiness to cultivate Trigona bees independently. This activity is also considered to have the potential to support Wonosalam Village in becoming a competitive Trigona bee agrotourism area (Yannuansa et al., 2021).

The uniqueness of this research lies in the application of a participatory approach to technical assistance for klanceng bee cultivation, which not only provides training but also actively involves the community in the post-training technical monitoring process. Monitoring is conducted across various key aspects of cultivation, including colony stability, stump cleanliness, honey production, and colony adaptation to the surrounding environment. This process allows the community not only to become recipients of information but also to be active actors in identifying problems and nurturing solutions. This is expected to foster a sense of ownership of the program and build local capacity in managing the beekeeping business independently and competitively.

The purpose of this research is to find out the extent to which the technical assistance and monitoring program of Klanceng bee cultivation can increase the knowledge, skills, and independence of the community in Sooko Village. This research also aims to prove that continuous technical monitoring can be an effective strategy in maintaining the quality of honey production and preventing cultivation failures. Furthermore, this activity is expected to serve as a model for the economic empowerment of village communities based on agroecology, one that can be replicated in other areas with similar conditions. This activity strengthens independent and sustainable local economic development through data-based cultivation and evaluation systems (Dewantari & Suranjaya, 2019).

METHOD

This community service activity employs a descriptive qualitative research approach with a participatory action research component. This approach was chosen because it bridges the interaction between facilitators and the community directly in the local context, while positioning the community not only as an object but also as an active subject involved in each stage of the activity. The participatory approach is relevant to empowerment because it enables bidirectional, reflective, and sustainable knowledge transfer. The activity was implemented in Sooko Village, Sooko District, Ponorogo Regency, which has ideal geographical and ecological conditions for the development of klanceng bee cultivation. The activity was carried out over three months, from March to May 2025, and included the preparation, implementation, and evaluation phases. This location was chosen because it has great potential in bee cultivation, but the surrounding community has not optimally utilized it.

The subjects in this study are the people of Sooko Village who participate in the mentoring program, particularly farmer groups and individuals who have started klanceng bee cultivation. In addition, key informants in this study also include community leaders, village officials, and students involved as program facilitators. To obtain comprehensive data, several data collection techniques were used, including participatory observation conducted directly by the facilitator team during the activity to record interaction dynamics, cultivation practices, colony adaptation patterns, and community responses to technical monitoring. Then, in-depth interviews were conducted with 23 participants, focusing on their experiences, prior knowledge, perceptions of the program, and challenges encountered in beekeeping practices. Furthermore, documentation was carried out, including photos of training activities, direct field practice, the honey harvesting process, and production results. In addition, evaluation forms, attendance records, and short videos were collected as visual evidence of the program. Moreover, the Focus Group Discussion was held twice: in the middle and at the end of the program. The participants of the FGD consisted of representatives of farmer groups, facilitators, and community leaders. The purpose of the FGD is to evaluate the program's success, identify field-level obstacles, and formulate strategies to support its sustainability.

The collected data was analyzed using the qualitative data analysis method of the Miles and Huberman model, through three main stages: (1) data reduction, which is filtering important and relevant information from all sources; (2) the presentation of data in the form of narratives and thematic matrices; and (3) drawing conclusions based on findings that are repeated or have patterns. To maintain the validity of the data, the triangulation technique of sources and methods is used, namely by comparing the results of interviews, observations, and documentation from various informants' perspectives, as well as across data collection techniques. With this approach, it is hoped that the service's results can accurately reflect social and technical realities and provide a comprehensive picture of the effectiveness of technical

assistance and monitoring of klanceng bee cultivation in increasing the capacity and independence of the people of Sooko Village.

RESULTS AND DISCUSSION

Results

The achievements of the Klanceng bee cultivation program are presented through several indicators that describe the processes, results, and follow-up of activities in the field. Various activities carried out, such as technical training, colony monitoring, focus group discussions, participatory interviews, and constraint inventory, show the development of knowledge, skills, and community awareness in managing klanceng bee cultivation. In addition, this activity demonstrates collaboration among students, the community, village leaders, and village officials to support the program's sustainability. Through the description of these achievements, it can be seen that the program not only focuses on improving technical capabilities but also encourages changes in economic mindset, evaluation culture, and follow-up planning to strengthen beekeeping groups independently.

Table 1. Achievements of the Implementation of the Klanceng Bee Cultivation Program and Its Follow-up

No	Achievement Indicators	Form of Activity	Concrete Results in the Field	Follow-Up/Action
1.	Increased technical knowledge	Klanceng bee cultivation training by student facilitators	Residents understand how to choose stup locations, divide colonies, and harvest honey hygienically	Residents began to apply cultivation techniques in their respective yards
2.	Colony monitoring and management	Regular visits, colony condition checks	Found high humidity problem causes colonies to die	Stup design improved, ventilation added, stup elevation improved
3.	Problem identification and resolution	Focus group discussions (FGDs)	The community is able to recognize the causes of the decrease in productivity	It was agreed to provide additional feed during the flower famine season
4.	Cross-party collaboration	Students act as facilitators and community partners	Build trust and support from community leaders and village officials	Planned formation of an independent beekeeping farmer group
5.	A change in economic mindset	Participatory dialogue & interviews	Residents see klanceng bees as an alternative venture, not just a hobby	Collective honey marketing discussion begins to be discussed by residents
6.	Culture of evaluation and sustainability	Periodic monitoring and recording of results	The community began to record the condition of the	A simple monitoring system based on group diaries will be

			colony, crop yields, and obstacles	developed
7.	Challenges of tools & market access	Inventory of obstacles with residents	Limitations of stups, harvesting tools, and access to honey distribution	Need synergy with agencies and partners for further training and tool assistance

Source: Results of Assisted Village Assistance, 2025

From the technical assistance activities conducted, several important findings were identified. First, technical training can increase residents' understanding of klanceng bee cultivation techniques, from location selection and colony maintenance to clean, hygienic harvesting. This can be seen in the community's enthusiasm and the emergence of real practices in their yards (Pertiwi et al., 2023). Second, the technical monitoring process allows for early detection of various problems in the colony. One of the important findings is the case of colony death due to excess moisture in the stup. From the joint evaluation, the agreed solution was to improve the stup's design by adding ventilation and avoiding waterlogging. Third, a participatory approach through FGDs and interviews has proven effective. Citizens can identify the source of the problem and devise their own solutions, indicating an increase in local capacity. Some residents have even begun to discuss honey marketing schemes collectively as a step towards sustainable business (Gusta et al., 2021). Fourth, the presence of students as facilitators fosters positive collaboration among the community, village officials, and companions. This encourages the formation of a more organized klanceng bee farmer group. Finally, although the program has shown positive results, there are still challenges, including limited tools and market access. Therefore, support from external partners is needed to strengthen post-leadership.

Discussion

The technical assistance program carried out in Sooko Village succeeded in providing the community with a basic understanding and skills in klanceng bee cultivation. Based on the results of observations and interviews, the community showed high enthusiasm for participating in training and field practice. Some residents even began applying the cultivation techniques that had been taught, such as colony management, placement of stups in strategic locations, and hygienic honey harvesting. Periodic technical monitoring enables the community and the facilitator team to detect problems early, such as pest infestations or declines in colony productivity. Through group discussions, participants were able to identify the factors causing the problem and design appropriate solutions, such as repairing the nest, relocating the stup, or providing additional feed during the flower famine season (Payung et al., 2024).

The results show that the participatory approach to technical assistance is highly effective at building community awareness and skills. The active involvement of the community at every stage of activities creates a sense of belonging to the program, which is key to its sustainability in the future. Sooko Village has supportive natural conditions, but without proper assistance, this potential can not be

utilized to the fullest. This program has succeeded in bridging the gap in public knowledge about klanceng bee cultivation techniques. With systematic monitoring, the community can learn from processes and mistakes and apply continuous improvement in their cultivation. The success of this program also shows that community empowerment is not only about knowledge transfer but also long-term assistance that strengthens local capacity. Continuous technical monitoring efforts will create a data- and experience-based cultivation system, enabling the community to manage the honey business independently in the future (Dewantari & Suranjaya, 2019).

In addition to improving production and technical skills, this activity also helps change people's mindset regarding local economic potential. Previously, the people of Sooko Village focused more on conventional agriculture. However, after this program was running, many of them began to view klanceng bee cultivation as a promising alternative venture. This is reflected in the increasing interest among residents in using the yard land for bee cultivation. In fact, some residents have begun to discuss honey marketing plans collectively to increase the harvest's economic value (Yanuartati, 2021).

This mentoring activity also fosters strong collaboration among students, village officials, and the local community. Students not only play the role of facilitators but also serve as learning partners who understand local needs and potential. This collaboration is important for building trust and strengthening social ties during the program's implementation. The presence of students also motivates the community, especially the younger generation, to be actively involved in productive and innovative activities. This is an added value to community empowerment because it can encourage the regeneration of local resource-based business actors (Ariyanto et al., 2021).

The periodic monitoring process has a significant impact on maintaining the quality and productivity of cultivation. For example, there have been several cases of colony deaths due to excess moisture in the nest. Through joint evaluation, the community is directed to improve the design of the stup so that it has adequate ventilation and avoids waterlogging. The results of this corrective action showed increased colony durability and greater stability in honey production. This success is a lesson that monitoring is not just supervision, but an important part of risk management in Klanceng bee cultivation.

On the other hand, this program also reveals challenges that need to be overcome for business sustainability. Some of them are limitations of supporting tools, such as quality-stump boxes, harvesting equipment, and market access for honey products. Therefore, in the future, further synergy with related agencies or partner institutions is needed to provide support for facilities and infrastructure, as well as advanced training. That way, the community is not only able to produce, but also can manage the honey business from upstream to downstream independently and competitively (Payung et al., 2024).

Overall, the technical assistance and monitoring program for klanceng bee cultivation demonstrates that the right, participatory approach can transform the village's potential into a real economic force. The community not only gained new knowledge but also experienced a change in attitude and motivation in developing local resources. Monitoring that continues to be carried out in a structured manner and actively involves the community will strengthen a sustainable cultivation system. It is hoped that this model can be replicated in other villages with similar conditions as an agroecology-based economic empowerment strategy (Dewi et al., 2024).

Figure 1. Klanceng Honey Production Through Technical Assistance for Colony Supervision



Based on the results of the program implementation, it can be concluded that the development of honey bee cultivation has great potential as a sustainable community empowerment strategy across economic, social, and environmental dimensions. To continue growing the program's benefits, it is necessary to further strengthen capacity through training in colony maintenance, processing honey derivative products, and digital marketing. In addition, the consolidation of beekeeper groups needs to be facilitated through official institutions to facilitate access to assistance, financing, and cooperation with related parties. The development of a monitoring system based on field records is also important, serving as a basis for evaluating production and colony health in a sustainable manner. The success of this program shows that similar approaches can be replicated in other regions with supportive ecological and social conditions, while still adapting to local characteristics. Therefore, synergy among the community, local governments, related agencies, partner institutions, and universities is key to ensuring that this program is not only temporary but also part of an integrated and sustainable community empowerment ecosystem.

CONCLUSION

The technical assistance and monitoring program for klanceng bee cultivation in Sooko Village has been proven to increase the community's knowledge, skills, and awareness in managing local

potential independently and sustainably. Through training, mentoring, and routine monitoring, the community increasingly understands colony management techniques, hygienic honey harvesting, identification of cultivation obstacles, and efforts to improve problems such as pests and moisture. The participatory approach also strengthens collaboration between residents, students, and village officials, while encouraging the formation of small groups of beekeepers and joint marketing initiatives. Thus, this program not only increases the community's technical capacity but also builds a culture of evaluation and opens opportunities for the development of klanceng bee cultivation as an alternative business with economic value.

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