

INNOVATION IN SUPPLEMENTARY FEEDING TO INCREASE HONEY PRODUCTION OF GALO-GALO BEES IN BUKIK KANDUANG VILLAGE, X KOTO DIATAS SUBDISTRICT, SOLOK REGENCY, WEST SUMATRA PROVINCE

Ria Kasmeri, Zikra*, Elza Safitri, Nursyahra, Abizar, Erismar Amri, Fuji, Fadia Putri Oktavia, Rabi'a Soufia, Oktavia Zahara, Dimas Ariya Putra
Universitas PGRI Sumatera Barat
*Email: zikra.ikha@gmail.com

Abstract

This community service activity aimed to assist beekeepers in increasing galo-galo honey production in Bukik Kandang Village, X Koto Diatas Subdistrict, Solok Regency, West Sumatra, through supplementary feed innovation. Limited natural nectar sources during floral scarcity periods have reduced honey production and colony stability. The program was implemented through lectures, demonstrations, and collaborative practices to introduce the use of sugar syrup and bee feed as supplementary feed. Training on beekeeping management was also provided to support sustainable honey production. The supplementary feed was placed inside the hive to ensure continuous food availability. The activity improved community knowledge and skills in honey bee management and contributed to increased colony activity and honey production. This program supports the sustainability of community-based beekeeping and local economic improvement.

Keywords: galo-galo, supplementary feed, honey production, Bukik Kandang

Abstrak

Kegiatan pengabdian kepada masyarakat ini bertujuan untuk mendampingi peternak dalam meningkatkan produksi madu galo-galo di Desa Bukik Kandang, Kecamatan X Koto Diatas, Kabupaten Solok, Sumatera Barat, melalui inovasi pemberian pakan tambahan. Keterbatasan sumber nektar alami selama periode kelangkaan bunga telah menyebabkan penurunan produksi madu dan stabilitas koloni. Program ini dilaksanakan melalui metode ceramah, demonstrasi, serta praktik kolaboratif untuk mengintroduksi penggunaan sirup gula dan pakan lebah sebagai nutrisi tambahan. Pelatihan mengenai manajemen peternakan lebah juga diberikan guna mendukung produksi madu yang berkelanjutan. Pakan tambahan tersebut ditempatkan di dalam stup untuk memastikan ketersediaan pangan secara kontinu. Kegiatan ini terbukti meningkatkan pengetahuan dan keterampilan masyarakat dalam pengelolaan lebah madu, serta berkontribusi pada peningkatan aktivitas koloni dan produksi madu. Program ini mendukung keberlanjutan peternakan lebah berbasis masyarakat serta peningkatan ekonomi lokal.

Kata Kunci: galo-galo, pakan tambahan, produksi madu, Bukik Kandang

INTRODUCTION

Based on a survey conducted among honey bee farmers in Bukik Kandang Village, X Koto Diatas Subdistrict, Solok Regency, West Sumatra, it was found that beekeepers experience difficulties in obtaining alternative feed sources for honey bees during periods of floral scarcity. The unstable availability of feed causes a decline in bee foraging activity and directly affects low honey production. This condition is consistent with the findings of Wong et al., (2019), who stated that continuous availability of nectar and pollen is a key factor determining honey bee colony productivity.

The beekeeping community in Bukik Kandang Village is generally not yet economically productive, although they have a strong motivation to become entrepreneurs. Low economic productivity is reflected in the limited income generated from beekeeping activities, which are still considered a secondary occupation. Beekeepers tend to choose other jobs that provide faster income, such as farming or wage labor. This occupational shift is also influenced by frequent colony losses and low honey yields. According to Seeley (2007), colony stability and feed availability strongly influence the sustainability of small-scale beekeeping enterprises.

The number of beekeepers who continue to maintain honey bee colonies in this area has also declined. Initially, under the guidance of the Ministry of Forestry, beekeeper groups were spread across three villages, but currently only eight beekeepers remain in two villages. On the other hand, this area was previously selected as a pilot project for honey bee cultivation development in West Sumatra due to its strong natural resource potential and high community interest. This situation indicates a gap between regional potential and actual production outcomes. Klein et al. (2003) emphasized that areas with abundant floral resources should be able to support higher honey production if properly managed.

Another major problem faced by beekeepers in Bukik Kandung Village is the low amount of honey produced per colony at each harvest. The limited honey yield is closely related to the insufficient availability of nectar-producing plants that flower continuously throughout the year around the hive locations. The continuous presence of flowering plants is crucial for determining visitation rates and honey volume (Taha & Bayoumi, 2009).

In addition, the beekeeping management practices of local farmers are relatively weak. This is evident from the lack of efforts to maintain the environment around the hives, control pests, and provide supplementary feed during periods of declining natural feed availability. Poor colony management increases vulnerability to pest attacks and leads to reduced honey productivity. Omran et al. (2011) stated that inadequate colony management increases the risk of pest disturbances and decreases honey bee production performance.

Based on these conditions, the research problems are formulated as follows:

1. How can beekeepers understand that providing supplementary feed can overcome feed shortages during periods of floral scarcity?
2. How do beekeepers accept supplementary feeding technology innovations and how do these affect worker bee activity in nectar foraging and the expansion of honeycomb area?
3. How can supplementary feed alternatives as a strategy to anticipate floral scarcity be effectively disseminated to beekeepers in order to maximize honey production?

METHODS

The implementation of innovation and technological assistance proposed as a preventive measure during periods of floral scarcity is carried out through the provision of supplementary feed. The advantage of supplementary feeding is that it can increase honey bee activity and expand the number of honeycombs. The use of alternative supplementary feed is expected to increase honey production during floral scarcity periods in Bukik Kandung Village, X Koto Diatas Subdistrict, Solok Regency.

If this assistance program is implemented and well received by the beekeeping community, it will not only help control pest disturbances but also increase honey production from each colony. One of the main causes of low honey production is that nectar sources for bee colonies rely solely on flowering plants around the apiary. Supplementary feed materials that can be used include sugar syrup and bee feed. In addition to feed containers, water containers are also provided. Honey bees require water to regulate the temperature inside the hive. Distant water sources reduce worker bee efficiency.

The supplementary feeding was applied to five honey bee hives, each containing five comb frames (with eggs, larvae, and pupae). The feed used consisted of sugar and water solution as well as bee feed mixed with water, success were described qualitatively.



RESULTS AND DISCUSSION

The community engagement program conducted in Batu Gadang, Sungai Geringging, was supported by the Research and Community Service Institute (LPPM) of PGRI University of West Sumatra and implemented in alignment with the university's vision and mission, particularly in strengthening community-based economic potential through local resources. The implementation team provided guidance and training to the galo-galo honey business group in Nagari Bukik Kandung on innovative supplementary feeding strategies to enhance galo-galo honey production. The provision of supplementary feed and the utilization of natural forage resources are known to play a significant role in improving honeybee productivity, both in terms of the quantity and quality of honey produced (Rahman et al., 2020; Putra & Sari, 2021). The findings and directions of this program are presented as follows.

Table 1. Findings and Directions for Community Engagement Programs

No.	Findings	Directives of the Training
1.	Honeybee farming communities have not yet understood or used supplementary feed to increase the production of galo-galo honey.	Providing information on the types of supplementary feed to increase the production of galo-galo honey.
2.	Honeybee business groups are unaware of cultivated plants that can serve as natural bee feed. Provide information and training on cultivated plants that can be used as a natural food source for honeybees.	providing information and training on using supplementary feed to increase the production of galo-galo honey

Based on Table 1, it can be observed that the community engagement team provided information on the importance of vegetation surrounding the galo-galo bees' foraging areas, as well as plant species that have the potential to serve as sources of nectar and pollen. The sustainable availability of natural forage has been proven to increase honeybee foraging activity and to positively affect honey production (Widiastuti et al., 2019). Furthermore, the use of supplementary feed during periods of floral scarcity can help maintain the stability of galo-galo bee colonies (Yuliana & Hartono, 2022).

Following the implementation of this community engagement activity, it is expected that the community will be able to independently identify and manage natural forage resources for galo-galo bees, thereby encouraging the cultivation of bee forage plants in their surrounding environment. This effort is anticipated not only to contribute to increased galo-galo honey production but also to enhance community income and support sustainable local economic development (Sari et al., 2020). This community engagement program resulted in several outputs, including articles published in scientific journals and articles published in print media, as a form of dissemination of program outcomes and academic contribution to the wider community.

CONCLUSION

The community engagement program implemented in Batu Gadang, Sungai Geringging, successfully enhanced the knowledge and capacity of the galo-galo honey business group in Nagari Bukik Kandung regarding honeybee feed management through the utilization of natural forage and supplementary feeding. The guidance and training activities provided participants with an understanding of plant species that serve as sources of nectar and pollen, as well as the appropriate use of supplementary feed, particularly during periods of limited floral availability. This increased awareness is expected to contribute to improved honey production and quality, support the stability of galo-galo bee colonies, and promote the sustainability of beekeeping practices. Overall, the program had a positive impact on strengthening community-based economic development by optimizing local resources and is anticipated to enhance community income in a sustainable manner.

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