

Original Paper

Study on the Identification of Cricket Cultivation Process as an Alternative for Economic Empowerment

Alfiati Perwitasari^{1*}, Zildjianita Priansyah², Jihan Khairunnisa Zahra³, Ivahzada Marella Edgina⁴, Muhammad Kausar⁵, Herry Wihasnanto⁶
^{1,2,3,4,5,6} Faculty of Economics, Krisnadwipayana University

Corresponding Author: Alfiati Perwitasari (alfiatiii04@gmail.com)

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Abstract

Community service activities in Babakanraden Village located in Cariu District, Bogor Regency, where nearly half of the population works as farmers and some residents cultivate crickets aim to strengthen local knowledge and skills related to cricket cultivation. Interviews revealed several key findings: male and female crickets can be distinguished by the number of tails; effective cricket habitats must use materials that are durable and resistant to being bitten; and crickets can be processed not only into flour but also into side dishes and community snacks. This activity has generated positive and empowering impacts for the village community. First, enhanced understanding of proper cultivation techniques equips residents with practical skills to improve productivity and quality. Second, recognizing crickets' potential as diversified food products creates opportunities for added-value processing, supporting micro-entrepreneurship and increasing household income potential. Overall, the program not only provides knowledge but also strengthens community empowerment through improved technical capacity and expanded economic opportunities.

Keywords: Cricket Cultivation, Community Empowerment, Local Economy, Business Diversification

JEL Classification: Q12, I13, O13

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1. Introduction

Indonesia is a tropical country with abundant biodiversity, including a high diversity of insect fauna. One insect with economic potential is the cricket, which in recent years has become a high-value commodity due to increasing market demand, particularly as bird and fish feed (Rizal & Prasetyo, 2021). This potential is supported by the easy-to-cultivate biological characteristics of crickets, their short life cycle, and high nutritional value, thus providing economic opportunities for rural communities (Setyawan, 2020).

Babakanraden Village in Cariu District, Bogor Regency, is one area that has begun to develop independent cricket cultivation. Geographically, the village's environment, still surrounded by agricultural and plantation areas, supports the natural habitat of various cricket species, such as *Gryllus mitratus*, *Gryllus bimaculatus*, and *Gryllus testasius* (Prabawati, 2020). Approximately 50% of the population works as farmers, and a small number have started cricket farming businesses, although it has not yet become their primary livelihood (Bogor, 2019). Despite the continued increase in national demand, the majority of crickets in the local market are still sourced from outside the region, resulting in relatively high prices (Kurniawan & Malik, 2022).

Ecologically, crickets can be found in rice fields, plantations, and sheltered areas such as rock crevices, between branches, or under leaves (Prabawati, 2020). However, in cultivation practices, several pests such as flies, caterpillars, geckos, rats, and ants pose a major challenge. Various preventative methods can be implemented, such as the use of light- and scent-based fly traps equipped with low voltage, making them safe for operators (Sudirman & Wibowo, 2023). The use of alternative feeds such as chicken concentrate and banana stems is also recommended to increase crickets' resistance to pests while reducing dependence on traditional feed (Hidayat, 2021).

The demand for crickets continues to rise in line with the growing trend of keeping songbirds. Crickets are a primary source of protein believed to improve the stamina and vocal quality of birds due to their protein, chitin, omega-3 fatty acids, and growth hormones (Faithful, 2022; Sulisty et al., 2020). Besides being used as bird food, crickets are also used as fish feed, cosmetic ingredients, and even in food products such as chips or ready-to-eat processed foods, a growing trend in the insect-based food industry (Rohimah & Putra, 2022).

Due to increasing market demand, the exploitation of crickets in the wild has intensified, disrupting the ecosystem's balance and making wild crickets increasingly difficult to obtain (Setyawan, 2020). This situation highlights the importance of developing structured, sustainable cricket cultivation that involves local communities. Community service activities focused on raising public awareness about cricket cultivation are a strategic step to increase public knowledge, provide solutions to cultivation challenges, and stimulate village economic growth. With a relatively high success rate and low capital requirements, cricket farming has the potential to be a promising alternative source of income for rural communities (Faithful, 2022; Rizal & Prasetyo, 2021).

2. Method

Program Location and Target

The location of the community service was in Babakanraden Village, Cariu District, Bogor Regency, and was accompanied by the local RT head named Mr. Adi.



Figure 1. Babakanraden Village

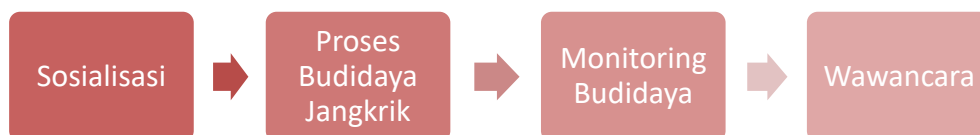
Execution time

Community service activities in the form of interviews were conducted on January 31, 2023. The activities were carried out in Babakan Kiara RT. 005 RW. 008, accompanied by the local RT, Mr. Adi. The activities were carried out in two sessions: the first session discussed the cricket cultivation process and the types of crickets cultivated. The second session discussed the presence of pests that hinder the cricket cultivation process. After the activities were completed, an interview session was conducted to examine the expectations and benefits of the implementation of community service activities.

Activity Implementation Method

This community service activity was carried out in three stages, namely the preparation stage, the implementation stage and data collection from monitoring results after the activity was carried out. Preparation Stage: At this stage, coordination is carried out between the community service team of Krisnadwipayana University in preparing for the implementation of activities which include lecturers as resource persons, preparation of participants, time and place of activities to be held in Babakanraden Village.

Implementation Stage: The implementation of community service activities to identify the cricket cultivation process in Babakanraden Village, Cariu District, Bogor Regency is summarized in four stages. The program flowchart can be seen in the following figure:



Data collection stage: The data collection method in this activity was carried out through direct interviews with participants.

3. Results**Coordination Stage**

The coordination phase is a crucial part of preparing for community service activities. The team first communicates with the village and obtains permission from the local village head and sub-district head. Once permission is obtained, the community service participants and village officials agree on a schedule and technical implementation. This coordination ensures that the activities proceed according to plan, involve relevant parties, and meet community needs.

Program Implementation

The program was implemented on January 31, 2023, in Babakanraden Village, Cariu District, Bogor Regency, using an interview method with one of the cricket farmers, namely Mr. Adi. The interview was divided into two sessions. The first session discussed the cultivation process and the types of crickets raised. According to Mr. Adi, cricket cultivation does not require a large area because it can be done in an unused warehouse or in a box/box lined with dry leaves. The egg hatching process uses river sand media, and to separate the eggs from the sand, water is added so that the eggs float and can be easily separated. The type of crickets cultivated are wild crickets (Gryllidae), which are similar to grasshoppers.

The second session discussed the challenges of cricket farming, particularly pest attacks that often disrupt the growth process and sustainability of crickets. This issue presents a challenge that farmers must overcome to maintain productivity. Overall, the interviews indicated that cricket farming is relatively easy and has the potential to be a promising alternative business for the people of Babakanraden Village.



Figure 2. Cricket cage



Figure 3. Community Service Activities

The second stage involved sharing information about pests that hinder cricket cultivation. The problem faced was the large number of pests that attack the crickets being raised, such as ants and geckos. These ants and geckos can enter the cricket box through the edges. Therefore, farmers can address this by attaching duct tape upside down to trap the ants and geckos inside.

Data collection for this activity was conducted through direct interviews with cricket farmers. Some of the questions from the interviews are shown in Table 1.

Table 1. List of interview questions

Question
<i>How to differentiate between male and female crickets?</i>
<i>Can you use a box or any other available tool to house crickets?</i>
<i>What can crickets be processed into?</i>

From these questions, the breeder explained that there are several things that need to be considered, namely: To distinguish between female and male crickets, you can see the number of tails on the crickets. Female crickets have 3 (three) tails, while male crickets have 2 (two) tails.

For cricket housing, you can use materials that are resistant to damage by crickets, such as cardboard, plastic, wooden planks, plywood, and so on. Cage densities vary, but keep in mind that providing hiding places can increase the cage's capacity (Armasyah and Handayani, 2020), the cage size is 1.22 x 1.41 m and the height is 60 cm can accommodate as many as 500 grams of cricket eggs.

Crickets have the potential to partially replace soy flour and fish meal in broiler chicken feed. More than 1,900 insect species have been documented as a globally sustainable food source, compared to meat and seafood. Crickets are one such species, due to their high protein content and other nutrients needed by humans. Besides being used as flour, crickets are often served as a side dish or snack.(Armasyah & Handayani, 2020).

4. Discussion and Benefits

Cricket Cultivation Process in Babakanraden Village

Interview results indicate that cricket farming in Babakanraden Village is relatively easy and doesn't require extensive land. Farmers can utilize empty warehouses or simple boxes lined with dry leaves as a breeding medium for crickets. The egg hatching process uses river sand, with a simple separation method using water to float the eggs. This aligns with research by Armasyah and Handayani (2020), which found that the availability of appropriate media can increase cage capacity and cricket productivity.

Identification of Types of Cultivated Crickets

The community primarily cultivates wild crickets belonging to the Gryllidae family, a group of insects that are morphologically similar to grasshoppers due to their elongated bodies, strong hind legs, and ability to produce sound through stridulation (Prabawati, 2020). Wild crickets are widely preferred by local farmers because of their high adaptability to various environmental conditions, rapid reproductive cycles, and relatively simple maintenance requirements, making them suitable for small-scale rural cultivation (Rizal & Prasetyo, 2021).

In addition to wild Gryllidae crickets, several more specific species *Gryllus mitratus* (clering cricket), *Gryllus bimaculatus* (necklace cricket), and *Gryllus testasius* (cendawang cricket) have been identified as having significant potential for development, particularly because they exhibit faster growth, larger body size, and higher protein content compared to common wild crickets (Sulistyo et al., 2020). These species are also known to have more stable population growth under controlled cultivation, which is advantageous for commercial production.

The availability of diverse cricket species opens opportunities for product diversification that can better meet the needs of the expanding market. Different species may be targeted for different purposes for example, *Gryllus bimaculatus* is often used as premium bird feed due to its larger size and nutritional density, while *Gryllus mitratus* is commonly used for fish feed or processed into powdered protein products (Rohimah & Putra, 2022). This diversification not only enhances economic resilience but also allows farmers to optimize cultivation based on species-specific characteristics and market demand trends.

Pest Problems in Cricket Cultivation

One of the main obstacles faced by farmers is pest infestation, such as ants, lizards, rats, and flies. These pests disrupt the growth and survival of crickets. Local farmers address this problem with simple methods, such as attaching reversed duct tape to the edges of the box to trap pests or using low-voltage fly repellent devices. These pest prevention efforts are crucial because they determine the success of the cultivation.

Economic Potential and Benefits of Cricket Cultivation

Cricket farming offers substantial economic potential, especially for rural communities with limited access to conventional livestock resources. As a fast-growing commodity, crickets are widely valued not only as feed for songbirds but also as raw materials for various processed products such as cricket flour, protein powder, side dishes, and healthy snacks (Rohimah & Putra, 2022). Due to their high protein content often exceeding 55% of dry weight crickets are increasingly recognized as an alternative sustainable food source capable of supporting future food security initiatives (Nugroho et al., 2023).

The rising popularity of songbird hobbies in Indonesia significantly drives the demand for crickets, positioning cricket farming as a highly market-responsive agribusiness (Kurniawan & Malik, 2022). Many breeders report that crickets can be harvested within a relatively short production cycle of 28–35 days, enabling continuous income rotation and low operational risk (Setiawan & Ardiansyah, 2023). Additionally, cricket farming requires minimal space and capital, making it accessible for small-scale farmers and encouraging entrepreneurship in rural settings.

From a socioeconomic perspective, cricket cultivation contributes to job creation, income diversification, and local economic development. The ability of crickets to convert feed efficiently into biomass also makes them an environmentally friendly livestock option with low carbon emissions and minimal waste (Wiratama et al., 2023). With the increasing demand for sustainable protein sources and the expansion of markets for both feed and processed food products, cricket farming stands as a promising livelihood opportunity for rural communities.

5. Conclusion

This community service activity provides substantial benefits to the residents of Babakanraden Village, particularly by enhancing their understanding of the practical and relatively simple processes involved in cricket cultivation. Through demonstrations, discussions, and hands-on observations, community members gain clearer insights into essential aspects of cricket farming such as identifying male and female crickets, selecting appropriate cage materials, managing pests, and choosing safe alternative feeds. This increased knowledge reduces the learning curve for beginners and helps potential farmers feel more confident in starting their own cultivation efforts. In addition, the activity highlights that crickets have a high survival rate, short cultivation cycle, and low maintenance cost, making them suitable for small-scale household farming.

From an economic perspective, the introduction of cricket cultivation offers promising opportunities to improve community income and expand rural employment. Because crickets are in high demand especially as feed for songbirds, fish, and other animals local production can reduce dependence on external suppliers and allow village residents to earn profits from direct sales. A single production cycle can generate marketable quantities within weeks, opening the possibility for continuous income streams. Moreover, value-added processing, such as turning crickets into flour, snacks, or packaged feed, provides even greater potential for revenue diversification. These opportunities can stimulate micro-enterprises, involve more family members in production, and contribute to local economic resilience. Strengthening the link between technical knowledge and market opportunities ensures that the activity not only transfers skills but also supports measurable economic improvements for the community.

Recommendations

It is recommended that the Babakanraden Village community further strengthen their cricket cultivation capabilities through structured training programs, especially in pest management, feed optimization, and habitat preparation. To support this, collaboration with local agricultural extension officers, universities, and related government agencies can provide continuous guidance, technical assistance, and periodic monitoring. Additionally, diversification of processed cricket products such as cricket flour, seasoned snacks, and packaged animal feed should be encouraged to expand market reach and increase product value. Forming joint business groups or cooperatives

will also help streamline collective production, maintain consistent quality standards, and improve bargaining power in the marketplace. These groups can work closely with local government, MSME facilitators, and digital marketing platforms to develop branding, secure licenses, strengthen market access, and explore partnerships with bird-feed shops, aquaculture businesses, and local culinary entrepreneurs. With stronger institutional support and organized marketing strategies, the community will be better positioned to increase income and build a sustainable cricket-based rural enterprise.

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