

Empowerment of Community Based Tourism Group in Bonjeruk Village through Training on Herbal Lotion Production

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Abstract:

*Bonjeruk Tourism Village in Central Lombok is rich in local biodiversity, including citronella (*Cymbopogon citratus*) and coconut-based products (VCO), which have high potential as herbal tourism commodities. However, the tourism awareness group (Pokdarwis) has not yet optimized these natural resources into standardized products. This community service program aims to strengthen the capacity of Pokdarwis through training on the production of standardized herbal anti-mosquito and UV-protective lotion. The activities included education on herbal formulation, hands-on production training, SOP development, branding, and introduction of product legality. A total of 22 participants attended the program. Pre- and post-assessment showed a significant increase in participants' knowledge, particularly regarding the benefits of herbal ingredients (from 45.45% to 68.18% in the "strongly agree" category), hygiene practices (13.64% to 40.91%), and confidence in independently producing herbal lotion (18.18% to 50%). Following the completion of the program, the Pokdarwis Bonjeruk and community members were able to independently conduct mass production of two raw materials (Virgin Coconut Oil/VCO and citronella oil) and herbal lotion. The products are actively used by local farmers and gardeners for daily outdoor activities, particularly for protection against ultraviolet exposure and mosquito bites. Furthermore, the products have been commercialized and sold to both domestic and international tourists. Positive feedback from foreign tourists indicates strong acceptance of the products' aroma, texture, and perceived benefits*

Keywords: Community Empowerment, Herbal Lotion, Pokdarwis, Citronella, Tourism Village, VCO

Introduction

Bonjeruk Tourism Village, located in Central Lombok, West Nusa Tenggara, is one of the leading community-based tourism destinations enriched with diverse local biodiversity.

Several herbal plants, including citronella (*Cymbopogon citratus*) and wresah/renggek (*Amomum dealbatum*), are abundantly available and traditionally used by the community. These natural resources have strong potential to be developed into high-value herbal products, particularly those suitable for tourists, such as mosquito repellent and UV-protective formulations (Rahmiati et al., 2024; Rislianti et al., 2021; Safitri et al., 2022; Saputra et al., 2020). As a community-based tourism destination, the Pokdarwis serves a strategic role in developing local products that reflect cultural identity and support sustainable tourism.

Despite this potential, Bonjeruk has yet to produce a flagship product that can serve as both a tourist souvenir and an economic driver for the community. Previous community service programs in Bonjeruk have focused on herbal education and practical fieldwork; however, product development and standardization remain limited (Arjita et al., 2022; Utami et al., 2023). Current herbal products are still produced using traditional methods without proper formulation, hygiene standards, branding, or product legality. Similar findings have been reported in other Indonesian tourism villages, where the absence of standard operating procedure (SOP)-based production and poor marketing strategies hinder product competitiveness (Nadhifah, 2024; Sari et al., 2024; Ua et al., 2023). Meanwhile, herbal-based mosquito repellent and sunscreen products are increasingly in demand as safer alternatives to synthetic chemicals. Citronella essential oil has strong repellent properties and potential photoprotective effects (Maria et al., 2023). Virgin coconut oil (VCO) is widely recognized for its moisturizing and skin barrier-protective functions (Varma et al., 2019). Lemongrass extract, and VCO contribute unique and complementary bioactivities for UV protection and mosquito repellency. Their combination, especially when formulated using advanced delivery systems provided synergistic benefits (Pradhan et al., 2021). Integrating these ingredients into a standardized herbal lotion represents an innovative and locally relevant solution for both community health and tourism development.

Previous community service initiatives in Bonjeruk Tourism Village have been implemented through a structured and sustainable multi-year empowerment roadmap. During the 2022–2023 period, the program focused on household waste management through the production of organic liquid fertilizer, which was subsequently utilized to support the cultivation of local herbal plants (Arjita et al., 2022). Building on this foundation, the 2023–2024 phase emphasized the development of herbal-based educational tourism through the establishment and management of a community herbal garden featuring locally relevant

species, including ginger varieties (*Zingiberaceae*), citronella (*Cymbopogon citratus*), roselle (*Hibiscus sabdariffa*), and butterfly pea (*Clitoria ternatea*). In parallel, the utilization of these cultivated resources was expanded through the production of healthy herbal beverages, particularly those based on locally grown red ginger (Utami et al., 2023). The 2024–2025 phase further strengthened this initiative by integrating the herbal garden into tourism-based educational activities. Building upon these sequential efforts, the 2025–2026 program introduced value-added processing of herbal resources into standardized products, including citronella essential oil, Virgin Coconut Oil (VCO), herbal anti-mosquito and UV-protective lotion, and roll-on formulations.

The main problems identified through a needs assessment with Bonjeruk Pokdarwis include: lack of knowledge regarding standardized herbal lotion formulation, absence of SOPs and hygienic production skills, inadequate branding and marketing, and no preparation toward legal certification. Therefore, this community service program aims to empower Pokdarwis through structured training on evidence-based herbal lotion production, marketing strategies, and foundational knowledge of product legality, with the ultimate goal of creating a sustainable local tourism product that strengthens community-based economic development.

Method

This participatory community empowerment approach involved 22 members of Pokdarwis women's micro, small, and medium enterprises (MSME) groups, and youth organizations in Bonjeruk Tourism Village. This community service program employed an Asset-Based Community Development (ABCD) approach integrated with Participatory Action Research (PAR). The ABCD framework was applied to identify and optimize local assets, including community groups (Pokdarwis), local herbal resources (citronella, coconut, and other medicinal plants), and existing production capacities. The PAR approach ensured active participation of community members throughout the process through iterative cycles of planning, action, observation, and reflection, allowing continuous improvement of skills and production outcomes.

The activities were implemented through a structured five-stage process: (1) assessment and preparation, (2) educational sessions, (3) hands-on production training, (4) branding and business management training, and (5) evaluation. This participatory and asset-

based approach strengthened community ownership, enhanced technical competencies, and supported the sustainability of herbal-based tourism products in Bonjeruk Tourism Village

the activities were conducted in five stages:

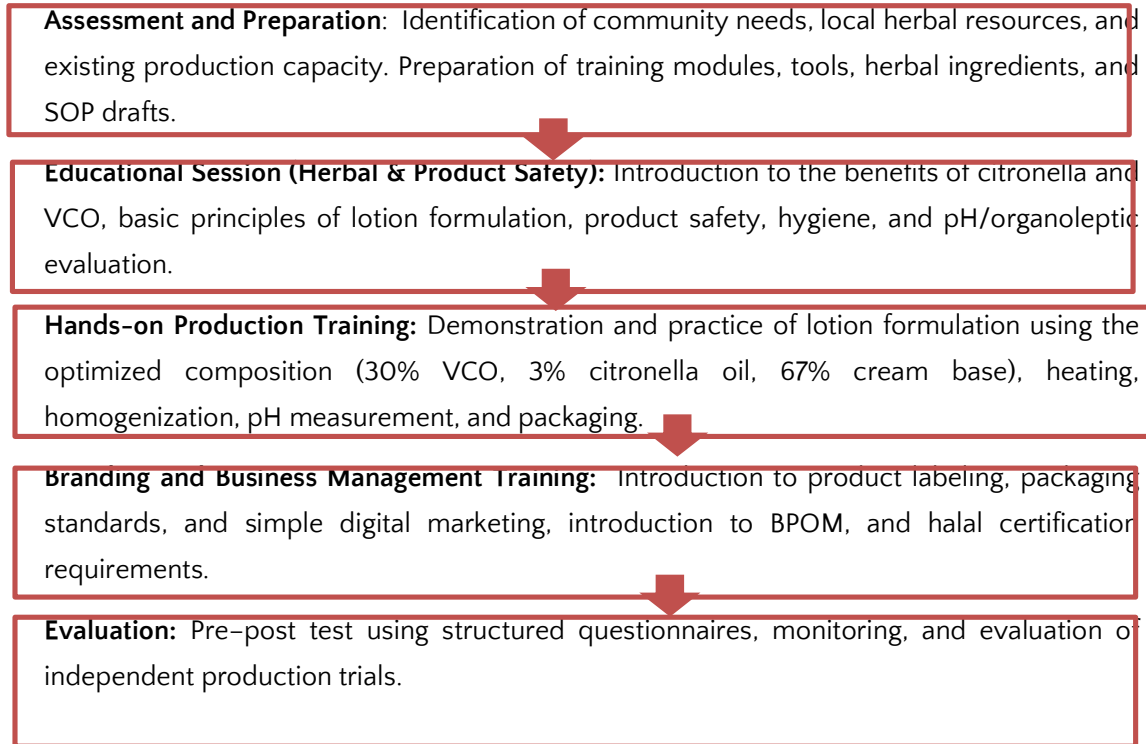


Figure 1: The workflow scheme of the community service activities in Bonjeruk tourism village

Result and Discussion

A. Product Optimization

The community service activities began with the optimization of the herbal lotion formula conducted at the Integrated Research Laboratory of Universitas Islam Al-Azhar (UNIZAR). The formulation focused on locally available ingredients from Bonjeruk Village, namely citronella, VCO, and moringa leaf powder. Initial test formulation consisted of VCO (20–30%), citronella essential oil (1–5%), and moringa leaf powder ($\leq 3\%$) per 100 mL of lotion. Previous studies indicate that these percentages are safe, well-tolerated, and effective for skin protection, moisturization, antioxidant activity, and mosquito repellency (Hariyadi et al., 2022; Hengpratomo et al., 2025).

The first optimization yielded a greenish lotion with a slightly coarse texture due to the use of moringa leaf powder. Although the lotion exhibited desirable aroma, warmth, and moisturization effects, the texture was considered unsuitable for consumer use. Therefore, the formulation was adjusted by removing moringa leaf powder. This modification resulted in a smooth, white-colored lotion with a pleasant citronella fragrance, stable consistency, and a skin-friendly pH of 6.0. The optimized formula was selected as the final product for training

because it met organoleptic and safety criteria and had the highest acceptance potential for commercialization.

B. Community Training and Education Activities

The implementation phase of the community service program was conducted at Pawon 21 Bonjeruk and involved Pokdarwis members, women's MSME groups, and youth communities (Bonjor—Bonjeruk Organik). The activities included educational sessions on herbal-based formulation, SOP, safety and hygiene practices, product branding, business management, and legal aspects such as halal and BPOM certification.



Figure 2. (a) educational session; (b) poster for the educational session

During the educational session, participants were introduced to evidence-based formulation principles, including ingredient functions, ratio standardization, pH testing, hygiene requirements, and good manufacturing practices (GMP). The branding component emphasized the importance of building product identity as an authentic, locally produced herbal product from Bonjeruk. The objectives included strengthening product attractiveness, enhancing cultural value, and improving marketing potential in tourism markets.

The training was followed by hands-on practice (Fig. 3). Participants collaboratively produced herbal lotion using the optimized formula: 30% VCO, 3% citronella oil, and 67% cream base. The mixture was mildly heated, homogenized, and tested for pH stability. The final product was packaged into 50 mL containers (Fig. 4) using a simple piping technique to ensure cleanliness. The completed products were then labeled and tested by 22 participants. This practical approach aligns with the principles of community empowerment, which emphasize experiential learning, skill acquisition, and community involvement. Active participation enhances knowledge retention and motivates community members to apply the skills independently.



Figure 3. Hands-on practice



Figure 4. The final product

C. Respondent Characteristics and Pretest–Posttest Results

A total of 22 participants (Table 1) completed the training. Most belonged to the adult age group (68%), followed by young adults (23%), and middle-aged adults (9%). The majority were women (86%), which aligns with the common involvement of women in home-based industries and community MSMEs. Regarding educational background, most participants had a senior high school education (68%), followed by a bachelor's degree (23%), and junior high school (9%).

The demographic profile suggests high potential for effective empowerment. Participants of productive age groups generally have strong adaptability and motivation, while the dominance of women in the group reflects suitability for herbal product development, which is typically associated with household skills, health awareness, and local entrepreneurship.

Table 1. Respondent Characteristics

Category	Subcategory	N=22
Age Group (WHO)	Young Adult (20–24 years)	5
	Adult (25–44 years)	15
	Middle Age (45–59 years)	2
Gender	Man	3
	Woman	19
Education Level	Junior High School (SMP)	2
	Senior High School (SMA)	15
	Bachelor’s Degree (S1)	5

The structured pretest–posttest questionnaire assessed the knowledge and skills in herbal lotion formulation, hygiene practices, packaging, and readiness for knowledge dissemination. The results demonstrate a notable improvement across all indicators. Understanding of citronella and VCO benefits increased significantly, with “strongly agree” responses rising from 45.45% to 68.18%. Ability to mix ingredients according to correct ratios improved from 18.18% (strongly agree) to 40.91%. Hygiene and safety practices increased from 13.64% (strongly agree) to 40.91%. Confidence to reproduce the lotion independently rose from 18.18% to 50%. Readiness to share knowledge with others increased dramatically from 45.45% (strongly agree) to 63.64%. After three structured follow-up training sessions focusing on raw material processing and product manufacturing, all Pokdarwis participants (100%) were able to independently and confidently produce herbal lotion and roll-on essential oil products, utilizing locally sourced virgin coconut oil (VCO) and citronella essential oil as the main ingredients, indicating strong skill retention and program sustainability. The improvement trends reflect the program's effectiveness in enhancing cognitive, psychomotor, and affective domains. These results are consistent with studies showing that hands-on and skill-based community training significantly increases participants’ competence and encourages long-term behavioral change.

Table 2. Pretest and Posttest Scores on Knowledge and Skills in Herbal Lotion Production

No	Statement	Pretest (%)			Posttest (%)		
		1	2	3	1	2	3
		Disagree	Agree	Strongly Agree	Disagree	Agree	Strongly Agree
1	Understanding the benefits of VCO and citronella oil as ingredients for herbal lotion	9.09	45.45	45.45	9.09	22.73	68.18
2	Knowledge of ingredient proportion for standard herbal lotion formulation	36.36	59.09	4.55	9.09	54.55	36.36

3	Ability to mix ingredients according to the correct ratio to produce a homogeneous lotion	59.09	22.73	18.18	9.09	50	40.91
4	Ability to create variations of herbal lotion according to community or tourist needs	45.45	45.45	4.55	18.18	45.45	36.36
5	Ability to maintain hygiene and ingredient safety during the production process	31.82	54.55	13.64	9.09	50	40.91
6	Understanding proper lotion storage and packaging methods	54.55	36.36	9.09	13.64	54.55	31.82
7	Confidence in independently practicing herbal lotion production at home	27.27	54.55	18.18	13.64	36.36	50
8	Readiness to share this knowledge with other community members in Bonjeruk Tourism Village	27.27	27.27	45.45	0	36.36	63.64

The results indicate that the training successfully improved participants' abilities in herbal lotion production. The significant increases in pretest–posttest scores demonstrate the training's positive impact on knowledge, technical skills, and community readiness to adopt herbal product production as an economic activity. The demographic distribution, dominated by women and productive age groups, played a substantial role in the program's success. Women often drive local entrepreneurship and are more likely to engage in product-based economic activities. Their ability to absorb practical training efficiently aligns with previous studies highlighting the effectiveness of women-driven MSMEs in rural development.

The optimized lotion formula produced during the training meets acceptable cosmetic standards, including pH stability, odor, texture, and homogeneity. This finding corresponds with previous literature affirming the effectiveness of citronella and VCO as active ingredients for mosquito repellent and skin protection products. The success of the formulation supports its potential to be developed as a flagship product and tourist souvenir for Bonjeruk Tourism Village. Moreover, the increase in readiness to disseminate knowledge indicates strong community engagement and potential for program sustainability. This aligns with empowerment theory, which emphasizes capacity-building as a primary driver for long-term impact in community-based programs. The positive training outcomes, combined with strong local resources and community motivation, indicate that herbal lotion production has strategic potential to strengthen Bonjeruk's tourism identity, expanding MSME opportunities, and supporting eco-friendly product innovation.

D. Monitoring and Evaluation



Figure 5. Monitoring and evaluation (monev)

Figure 5, shows the on-site monitoring and evaluation activity conducted by the Institute for Research and Community Service (LPPM UNIZAR) team to assess the effectiveness and sustainability of the community service program. The field visit was carried out to directly observe how the training outcomes were applied by the participants in the actual production of herbal lotion. The monitoring results demonstrated a significant improvement in the participants' technical skills. The Pokdarwis members were able to reproduce the herbal lotion with better homogeneity, cleaner preparation processes, and a more consistent citronella aroma compared to the initial training phase. Participants confidently explained each stage of the production workflow, including ingredient measurement, heating and mixing techniques, hygiene standards, packaging steps, and pH checking. This indicates strong knowledge retention and successful transfer of skills from the training sessions.

Several participants had already begun experimenting with independent production trials, showing their readiness to continue the activity beyond the training phase. Their self-produced lotion samples had improved texture, stability, and overall product quality, proving that the community has transitioned from learning to practical application. During the monev discussion session, the LPPM team also identified several challenges faced by participants in the post-training stage, particularly the limited availability of small-scale equipment such as handheld mixers and accurate weighing tools, as well as the need for a more consistent supply of raw materials. Despite these constraints, the participants expressed strong enthusiasm and commitment to continue developing and improving the product. Some even conveyed interest in creating additional herbal product variants as part of business diversification for the tourism village.



Figure 6. Results of herbal lotion production (A and B), roll-on freshcare essential oil (A and C), production of base materials including virgin coconut oil (VCO) (D) and citronella essential oil (E), and a testimonial from an international tourist

Overall, the money findings (Figure 5-6) confirm that the community service program successfully enhanced participants' capacity and fostered early sustainability. The combination of increased technical ability, motivation for independent production, and willingness to innovate indicates that herbal lotion production has strong potential to grow into a signature economic activity within Bonjeruk Tourism Village.

Conclusion

This community empowerment program achieved its primary objective of strengthening the capacity and independence of Pokdarwis members in developing standardized herbal-based tourism products derived from local resources. The intervention contributed to improved production readiness, enhanced confidence in independent manufacturing, and the establishment of herbal lotion as a feasible community-based tourism product. Beyond short-term skill acquisition, the program lays a foundation for sustainable economic activities by integrating local herbal utilization with tourism development. Future initiatives should focus on strengthening product certification, market expansion, and long-term mentoring to ensure business continuity and broader economic impact for Bonjeruk Tourism Village.

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