

CAPACITY BUILDING FOR WOMEN FARMERS' GROUPS THROUGH TRAINING ON THE PROPAGATION OF *Trichoderma* sp. USING RICE BRAN AS A MEDIUM IN TEBING BATU VILLAGE

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ABSTRACT

Strengthening the capacity of women farmer groups requires extension activities that improve not only knowledge but also attitudes and practical skills. This study aimed to describe changes in the capacity of members of the Melati Putih Women Farmer Group (KWT) in Tebing Batu Village following extension on the multiplication of *Trichoderma* sp. using rice bran as a medium. The activity was conducted starting in January 2025 with 23 members as respondents. A descriptive approach was applied using observation, interviews, questionnaires, and pretest-posttest assessment. The extension combined lectures, discussion, and hands-on practice supported by PowerPoint, brochures, and physical demonstration materials. A four-point Likert scale was used and data were analyzed descriptively. Knowledge increased from 29.89% to 76.99%, representing a 47.10 percentage-point increase. Attitude increased from 78.48% to 82.61%, or 4.13 percentage points. Practical skills increased from 75.65% to 83.70%, or 8.05 percentage points, based on the detailed tabulation. These findings indicate an improvement in the three measured capacity dimensions following the extension activity.

Keywords: agricultural extension, bran medium, KWT capacity, *Trichoderma* sp.

Introduction

Women Farmers' Groups (KWT) are one type of institution that can serve as a space for learning, collaboration, and women's empowerment in rural areas. In the context of agricultural development, extension activities function as a bridge between farmers' needs and agricultural knowledge or technology. Extension also acts as a facilitator, communicator, consultant, and motivator for farmer groups so that group members can develop their capabilities more independently (Saputri et al., 2016; Anwarudin et al., 2020).

A group's capacity is not only related to how much information its members possess but also to their attitudes toward innovation and their ability to apply it. Therefore, extension activities that combine material explanations, discussions, and hands-on practice can be used to develop these three aspects. Extension media also help clarify messages and increase participants' attention to the material presented (Wibowo et al., 2023).

One topic relevant to the Melati Putih Women's Group is the use of *Trichoderma* sp. as a biological agent. *Trichoderma* sp. is beneficial for controlling pathogens and promoting plant growth (Rizal & Susanti, 2018; Rizal et al., 2019). Propagation using local media such as rice bran was chosen because this material is available as a byproduct of rice milling and can be used as a growth medium. Research on empowering Women's Agricultural Groups (KWT) through training in *Trichoderma* propagation has also been conducted, including studies using rice as a medium (Erfandari et al., 2024).

The Melati Putih Women's Group (KWT) in Tebing Batu Village, Sebawi Subdistrict, Sambas Regency, was established in 2012 and is active in horticultural cultivation. The crops they grow include mustard greens, tomatoes, chili peppers, scallions, celery, and long beans. These factors formed the basis for selecting the group as the target for extension activities on *Trichoderma* sp. propagation using rice bran as a medium. The activities were aimed at enhancing members' capacity to understand the material, embrace innovation, and carry out propagation practices and their application.

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The Melati Putih Women's Group (KWT) in Tebing Batu Village, Sebawi Subdistrict, Sambas Regency, is a group that has been in existence since 2012 and is active in horticultural cultivation. The crops they cultivate include mustard greens, tomatoes, chili peppers, scallions, celery, and long beans. These conditions formed the basis for selecting the group as the target for extension activities on *Trichoderma* sp. propagation using rice bran as a medium. The activities were aimed at enhancing members' capacity to understand the material, embrace innovation, and carry out propagation practices and their application.

The purpose of this article is to describe changes in the knowledge, attitudes, and skills of KWT Melati Putih members before and after the extension program on *Trichoderma* sp. propagation using rice bran as a medium, as well as to outline the implications for the group's capacity building.

Research Method

This research/activity employs a qualitative descriptive approach. The activity was conducted beginning in January 2025 at the Melati Putih Women's Group (KWT) in Tebing Batu Village, Sebawi Subdistrict, Sambas Regency, West Kalimantan. The target group consisted of 23 members who served as evaluation respondents. Primary data were collected through observation, interviews, questionnaires, as well

as pretests and posttests. Secondary data were obtained from the Sebawi Subdistrict Agricultural Extension Center (BPP) and relevant parties.

The activity design consisted of three evaluation stages. First, a pretest was conducted before the extension session to describe the initial conditions. Second, the extension session was conducted through lectures, discussions, and hands-on practice. The material covered the definition and benefits of *Trichoderma* sp., its general mechanism of action, propagation techniques using rice bran as a medium, and application techniques. Third, a posttest was administered after the activity to assess changes in scores regarding knowledge, attitudes, and skills.

The media used were PowerPoint presentations and tri-fold brochures, while the teaching aids consisted of materials and equipment for the practical session. The propagation stages introduced included preparation of the rice bran medium, inoculation with the starter culture, incubation, and observation. In the practical session, the rice bran was steamed, cooled, then inoculated with the *Trichoderma* starter culture and incubated under the conditions specified in the activity guide. The extension activity was designed to last 133 minutes, consisting of an introduction, presentation of material, practical session, discussion, and evaluation.

The assessment instrument used a four-point Likert scale. For the knowledge aspect, response options were scored 1–4, ranging from “do not know” to “know very well”; for attitudes and skills, the scoring followed the four available response levels. Percentages were calculated by comparing the scores obtained to the maximum possible score. The categories used in this study were good (75–100%), adequate (56–75%), and insufficient (<56%). The analysis was descriptive, comparing the pre-test and post-test percentages and calculating the percentage point difference.

Tabel 1. Summary of the Outreach Program

Komponen	Keterangan
Location	Melati Putih Women’s Group, Tebing Batu Village, Sebawi Subdistrict, Sambas Regency
Time	Starting in January 2025
Respondents	23 KWT members
Method	Lectures, discussions, and hands-on practice
Media	PowerPoint presentations and tri-fold brochures
Teaching Aids	<i>Trichoderma</i> sp. isolates, rice bran, plastic, cooking utensils, alcohol, gloves, trays, and practical training supplies
Evaluation	Pre- and post-tests on knowledge, attitudes, and skills
Analysis	Descriptive analysis using a 4-point Likert scale

Results and Analysis

Initial Conditions and Capacity of the KWT

The Melati Putih KWT was established in 2012 and engages in horticultural cultivation. In this extension activity, 23 members served as respondents. Initial capacity was uneven across the three aspects. Knowledge of *Trichoderma* sp. and its propagation techniques remained low, while attitudes and skills were at a relatively higher level. These differences indicate that group members already have experience in farming but not all of them possess specific information regarding *Trichoderma* sp. and its propagation techniques.

These findings are important for designing extension programs. The material should not merely explain the benefits of biological agents but must also link this knowledge to practical work procedures. A group-based approach involving discussion and hands-on practice is also consistent with the nature of extension programs aimed at enhancing farmers' knowledge and skills (Imran et al., 2019).

3.2 Improvement in Knowledge

The pretest results showed an average knowledge score of 29.89%, which fell into the “insufficient” category based on the criteria used. After the training session, the score increased to 76.99% and fell into the “good” category. The difference was 47.10 percentage points. Improvements were observed across all measured indicators, with the greatest changes seen in knowledge regarding the use and selection of propagation media.

Table 2. Changes in the knowledge of KWT members before and after the training session

Knowledge Indicators	Pretest (%)	Posttest (%)	Percentage Change
Definition of <i>Trichoderma</i> sp.	29	75	+46
Benefits of <i>Trichoderma</i> sp.	29	76	+47
Indicators of Successful Propagation	32	76	+44
Propagation Process	30	77	+47
Methods of Use	28	78	+50
Choice of Propagation Media	29	79	+50
Average	29,89	76,99	+47,10

This increase indicates that the material presented can broaden participants' understanding of the basic concepts and procedures for using *Trichoderma* sp. These findings are consistent with the study by Kapila and Fajrullah (2023), which showed changes in the knowledge of KWT members following extension activities, although the extent of these changes varied depending on the material and the conditions of the target audience. The use of visual aids and hands-on practice also supported the delivery of extension messages, as the material became easier to understand (Wibowo et al., 2023).

3.3 Improvement in Attitudes

The attitude score on the pretest was 78.48% and increased to 82.61% on the posttest. The difference of 4.13 percentage points indicates a strengthening of attitudes in a group that was already in the “good” category from the outset. Thus, the potential for improvement in attitudes was indeed smaller than that for knowledge because the respondents' initial scores were already relatively high

Table 3. Changes in the Attitudes of KWT Members

Attitude indicators	Pretest (%)	Posttest (%)	Percentage Change
Willingness to apply <i>Trichoderma</i>	79	82	+3
Not applied in conjunction with chemicals	72	91	+19
Application by drenching	79	80	+1
Willingness to propagate	77	77	0
Ease of obtaining tools and materials	83	81	-2
Average	78,48	82,61	+4,13

The most significant change occurred in attitudes regarding the separate use of *Trichoderma* sp. from chemical fertilizers and chemical pesticides. In contrast, the indicator of willingness to propagate the organism remained unchanged, and perceptions regarding the ease of obtaining tools and materials decreased slightly. These findings indicate that extension services can strengthen attitudes regarding some indicators, but not all indicators change in the same direction or to the same extent. This is important because capacity building is determined not only by the delivery of information but also by the experiences, beliefs, and real-world conditions faced by group members.

Skill Improvement

The detailed tabulation shows that the skill score increased from 75.65% on the pretest to 83.70% on the posttest, representing an increase of 8.05 percentage points. The greatest improvement was observed in the indicators related to the availability of rice bran as a growing medium and the storage of propagation materials, while the improvement in the ability to apply and mix the medium with manure was smaller.

Table 4. Changes in the Skills of KWT Members

Skill indicators	Pretest (%)	Posttest (%)	Percentage Change
Application of <i>Trichoderma</i>	79	84	+5
Application with manure	78	80	+2
Propagation process	76	85	+9
Availability of rice bran medium	71	82	+11
Storage of propagated material	72	84	+12
Detailed average tabulation	75,65	83,70	+8,05

The improvement in skills related to the propagation process indicates that hands-on practice is an important component of extension activities. Practical activities provide participants with the opportunity to observe the sequence of tasks, identify the materials used, and understand hygiene and storage practices. These findings are consistent with those of Widiastuti et al. (2018), who reported changes in farmers' knowledge and skills following practice-based learning activities.

If capacity is understood as a combination of knowledge, attitudes, and skills that support a group's ability to recognize and implement innovations, the evaluation results indicate improvements in all three dimensions. The greatest improvement occurred in knowledge, followed by skills, while attitudes showed the smallest increase. This pattern is logically consistent with the descriptive findings, as knowledge was the lowest-scoring aspect at the outset and had the greatest room for improvement.

The participants' enthusiasm during the activities was also a relevant qualitative finding. Participants asked questions about how to obtain *Trichoderma* starter cultures for independent propagation. Some participants were also interested in ready-to-use *Trichoderma* products. These responses indicate an interest in the innovation, but cannot yet be treated as evidence of adoption because the study did not measure implementation after the activity.

Institutionally, this capacity building can serve as a foundation for the KWT to develop internal learning. The role of women farmers' groups in agricultural activities and empowerment has been widely discussed in the literature (Margayaningsih, 2020; Widjayanti et al., 2021). For capacity building to be sustained, extension activities need to be followed by mentoring, repeated practice, monitoring of propagation success, and documentation of field use.

Overall capacity building for KWT

Tabel 5. Summary of Changes in Three Aspects of Capacity

Aspect	Pretest (%)	Posttest (%)	Increasing	Descriptive interpretation
Knowledge	29,89	76,99	+47,10	The greatest improvement: from poor to good
Attitude	78,48	82,61	+4,13	Strengthening in the "good" category
Skills	75,65	83,70	+8,05	Improvement in the "good" category

Conclusion

An educational program on the propagation of *Trichoderma* sp. using rice bran as a medium at the Melati Putih Women's Group showed improvements in knowledge, attitudes, and skills based on a descriptive evaluation of pretest and posttest results. Knowledge increased from 29.89% to 76.99% (+47.10 percentage points), attitudes from 78.48% to 82.61% (+4.13 percentage points), and skills from 75.65% to 83.70% (+8.05 percentage points). Thus, the outreach activities contributed to an increase in members' capacity across the three measured aspects. However, because the study design was descriptive—without a comparison group and without inferential testing—these results should be interpreted as changes in scores following the activities, rather than as evidence of causation or statistical significance.

Recommendations.

Follow-up support is needed to ensure that the knowledge and skills acquired are consistently put into practice. Subsequent activities can focus on repeated practice, monitoring the quality of propagation results, recording usage, and evaluating field application. Further research could also involve a larger sample size, a control group, and appropriate statistical tests to provide a more robust analysis of changes in capacity.

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