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The Role of Farmer Groups in Increasing the Efficiency of Post-Harvest Handling of Chilies in Baho Village

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ABSTRACT

Post-harvest handling is a crucial stage in maintaining the quality and market value of agricultural commodities, including chili peppers, which are one of the main products of the community in Baho Village. This study aims to analyze the role of farmer groups in improving the efficiency of chili post-harvest handling in Baho Village, as well as to identify factors that support or hinder the implementation of optimal post-harvest practices. This research employs a descriptive qualitative approach using in-depth interviews, field observations, and documentation with farmer group members and village officials. The results indicate that farmer groups play a significant role in coordinating harvesting, drying, sorting, and packaging processes. Through training activities and experience sharing, farmer groups enhance members' skills in maintaining crop quality and reducing product damage. However, challenges include limited storage facilities, lack of access to modern post-harvest technology, and market price fluctuations that affect farmers' motivation. With support from local government and extension agencies, optimizing the role of farmer groups is expected to improve post-harvest efficiency and the welfare of chili farmers in Baho Village.

Keywords:, ***Farmer Groups, Chili, Post-Harvest, Efficiency, Baho Village***

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INTRODUCTION

Chili pepper is one of the leading horticultural commodities in Indonesia, possessing high economic value and playing a vital role in national food security. Besides being a primary spice in various cuisines, chili also holds significant potential as a high-value export commodity. However, the chili cultivation sector still faces various challenges, particularly regarding suboptimal post-harvest handling. According to Rahmawati (2023) post-harvest losses of chili at the farmer level can reach 20–30% due to inappropriate operational practices, such as inefficient drying, sorting, and storage methods. This condition not only reduces overall productivity but also directly impacts farmers' income, especially in rural areas like Baho Village, where the local economy heavily relies on chili cultivation.

Baho Village is one of the major chili farming centers in the coastal region, with the majority of residents working as farmers. However, the success of chili farming in this village is still highly influenced by farmers' capabilities in post-harvest handling. Preliminary observations revealed that most farmers still use traditional methods for drying and storage, resulting in inconsistent chili quality and low shelf life. This finding aligns with Pratama and Wulandari (2024) who argue that limited technical knowledge on post-harvest management is the main cause of high horticultural losses at the household level. Therefore, active participation of farmer institutions is required to improve skills and efficiency in post-harvest management at the local level.

In this context, farmer groups serve as strategic institutions that function as learning platforms, experience-sharing forums, and coordinators of collective farming activities. According to Suryani (2024) farmer groups play a crucial role in driving community-based agricultural modernization by facilitating access to information, technical training, and production support. In Baho Village, farmer groups not only manage planting patterns but also coordinate harvesting and post-harvest processes to meet market requirements. Their involvement strengthens solidarity among farmers, reduces operational costs, and increases labor efficiency. Furthermore, collaborative work within the group allows for a more organized division of tasks and responsibilities, particularly in sorting and packaging the harvest.

Efficient post-harvest management significantly affects farmers' income. Yuliani and Hasan (2024) note that the smaller the post-harvest losses, the greater the added value for farmers. Efficiency improvements can be achieved through the application of appropriate

technology, optimized harvest timing, and consistent quality standards. In some regions, innovations such as solar drying houses, automatic sorting machines, and airtight packaging have proven effective in extending shelf life and maintaining chili quality (Hidayat & Anwar, 2023). However, access to such technologies remains a challenge for farmer groups in rural areas due to limited capital and infrastructure.

The role of farmer groups is also essential in strengthening farmers' bargaining power in the market. Through strong institutional organization, farmer groups can act as collective entities negotiating prices with traders or distributors. Research by Putri and Andika (2025) indicates that farmers who are active members of farmer groups can obtain chili prices up to 15% higher than those selling individually. This advantage arises from the groups' wider marketing networks and their ability to meet market demand consistently with uniform quality. Therefore, farmer groups are effective tools for creating economic efficiency while enhancing farmers' self-reliance.

In addition to institutional factors, external support such as local government policies, agricultural extension services, and access to financing significantly influences the success of post-harvest handling. Fitriani (2024) reports that government interventions in the form of post-harvest training, provision of agricultural tools and machinery, and farmer group development can improve efficiency and reduce post-harvest losses by up to 25%. In Baho Village, the synergy between farmer groups and field extension officers is a critical factor in improving the still-basic post-harvest system toward the adoption of more modern and sustainable practices.

Based on this background, this study aims to analyze the role of farmer groups in enhancing the efficiency of chili post-harvest handling in Baho Village and to identify constraints and strategies for capacity building. By gaining a deeper understanding of farmers' institutional roles, the results of this research are expected to provide a foundation for formulating community-based agricultural development policies focused on increasing added value and improving the welfare of chili farmers in rural areas.

METHODS

This study employs a descriptive qualitative approach aimed at gaining an in-depth understanding of the role of farmer groups in enhancing the efficiency of chili post-harvest handling in Baho Village. This approach was selected because it allows researchers to explore

social phenomena contextually by understanding the behaviors, motivations, and interactions of farmers within their groups. According to Creswell (2023) qualitative methods enable researchers to interpret participants' experiences and understand the meaning embedded in their social actions. Therefore, this study not only describes post-harvest handling processes but also examines the institutional dynamics of farmers in supporting work efficiency and harvest quality.

The research was conducted in Baho Village, one of the largest chili-producing areas in the coastal region of [District Name], Central Sulawesi Province. The location was purposively selected due to the village's active farmer groups and its role as a community chili production center. Research informants were determined using purposive sampling, involving farmer group leaders, active members, agricultural extension officers (PPL), and village officials. A total of 15 informants were considered representative and able to provide relevant information aligned with the study's focus. Informant selection criteria included direct involvement in post-harvest activities, a minimum of five years of farming experience, and active participation in group activities.

Data were collected using three main techniques: in-depth interviews, participatory observation, and documentation. In-depth interviews were conducted to explore information regarding post-harvest practices, the role of farmer groups, challenges encountered, and strategies implemented to enhance efficiency. Observation involved directly monitoring the harvesting, drying, sorting, and packaging processes carried out by farmers in the field. Documentation was used to gather secondary data such as farmer group records, extension activity reports, and village government policies related to agriculture. According to Sugiyono (2024) the combination of these three techniques enhances data depth and accuracy, as each complements and strengthens the validity of the findings.

Data analysis was conducted using the Miles and Huberman model (as cited in Sutopo, 2025) which comprises three main stages: data reduction, data presentation, and conclusion drawing/verification. Data reduction was carried out by selecting and focusing on information relevant to the research themes. Data presentation was organized in narrative form and thematic matrices to illustrate relationships among social variables such as group coordination, post-harvest practices, and output efficiency. The conclusion-drawing stage was conducted inductively, interpreting the meaning of the data based on the social context observed in the

field. The analysis process was conducted concurrently with data collection to ensure that interpretations remained aligned with the social realities observed.

To ensure data validity, the study applied source triangulation and method triangulation. Source triangulation involved comparing interview results among group leaders, members, and extension officers, while method triangulation involved cross-checking findings from interviews, observations, and documentation. This approach ensured that the information obtained was consistent, credible, and reflective of actual field conditions (Indriani & Mulyana, 2024). The entire research process was conducted over three months, covering the stages of pre-research, data collection, analysis, and validation of results.

RESULTS AND DISCUSSION

Research Findings

The results of this study indicate that farmer groups in Desa Baho play a significant role in improving the efficiency of chili post-harvest handling. One of the main roles of these groups is coordinating the harvest and distributing labor. Based on interviews with the head of the farmer group, Mr. Ahmad, the group routinely holds meetings prior to the harvest season to plan the harvesting schedule, assign tasks to members, and develop marketing strategies. According to Mr. Ahmad, these meetings are crucial to ensure that the entire post-harvest process runs smoothly and that the quality of the chilies is maintained:

"We always coordinate the harvest schedule so that the chilies can be harvested simultaneously. This makes the drying and sorting process easier, ensuring the quality of the chilies. Tasks are clearly divided; some handle sun-drying, some sort by size and color, and others prepare the packaging. We also discuss potential challenges in the field, such as unpredictable weather or labor shortages, so all members are prepared for any situation."

The group meetings serve not only as a technical coordination forum but also as a space for sharing experiences, providing advice, and monitoring members' readiness. Several members stated that these forums help them understand best practices in harvesting and post-harvest handling, from optimal harvest timing to labor organization for efficiency. With effective coordination, the processes of sun-drying, sorting, and packaging become more structured, reducing the risk of damage and post-harvest losses that typically occur when harvesting is done individually without guidance.

In addition to coordination, the farmer groups also contribute to skill development

through technical training on post-harvest management. These trainings cover proper drying techniques, sorting chilies by size, color, and quality, and packaging methods that meet market standards. One member, Mrs. Siti, shared her personal experience:

"Before the training provided by the farmer group, chilies often spoiled because we dried them carelessly, sometimes exposed to rain or stored while damp. Now, we dry chilies in clean, protected areas, arrange them to receive sunlight evenly, and separate them by size and color. Packaging is also neater, preventing chilies from being crushed during delivery. These trainings make us more confident in selling higher-quality, uniform chilies, resulting in better prices."

These trainings have proven effective in improving chili quality, extending shelf life, and reducing post-harvest losses. Members reported that the knowledge gained from the group enables them to produce marketable chilies while enhancing their managerial skills in post-harvest handling.

Another significant role of the farmer groups is strengthening market access and stabilizing selling prices. The groups act as mediators between farmers and buyers, including local traders and large distributors, which helps stabilize prices and often results in higher revenue compared to selling individually. Mrs. Nur explained:

"If we sell chilies individually in the traditional market, prices often drop because buyers negotiate lower prices. With the farmer group, chilies are delivered directly to major traders or distributors, so prices are more stable, and products sell quickly. We also receive up-to-date market prices, allowing us to choose the right time to sell and avoid losses from sudden price drops."

Farmer groups also facilitate the delivery of large quantities of chilies, reducing the risk of spoilage due to stockpiling at farmers' homes. This shows that the presence of farmer groups not only affects technical efficiency in post-harvest handling but also provides tangible economic benefits for members, both in terms of income and bargaining power in the market.

Nevertheless, several challenges remain in post-harvest management. Farmers cited limited access to modern drying facilities and insufficient capital to purchase proper packaging. Mr. Rahman stated:

"We want to use modern drying equipment so that chilies dry quickly and maintain quality, but the cost is high, and not all members can afford it. During peak harvest, chilies can

become damp, and some get damaged before they can be sold. This remains a challenge because even with hard work, harvest outcomes are still affected by limited facilities."

Price fluctuations also pose significant challenges, especially for farmers who sell individually without group support. By being part of a farmer group, members can delay sales to wait for better prices, minimizing potential losses and stabilizing income.

Overall, the research findings demonstrate that farmer groups in Desa Baho play a strategic role in enhancing post-harvest efficiency through three main aspects: coordination of harvest and labor distribution, skill development through technical training, and strengthening market access and price stability. While challenges persist regarding facilities, capital, technology, and market fluctuations, the presence of farmer groups clearly has a positive impact on productivity, chili quality, and farmers' overall income.

Discussion

The findings of this study indicate that farmer groups in Desa Baho play a strategic role in enhancing the efficiency of chili post-harvest handling. The role of farmer groups in coordinating harvests and labor distribution aligns with the findings of Lestari et al. (2023) who emphasized that collective coordination through farmer groups can minimize post-harvest losses and improve product quality. In the context of Desa Baho, pre-harvest meetings conducted by farmer groups not only serve to establish harvest schedules but also to assign tasks to members according to their skills and readiness, ensuring that each stage of post-harvest handling is executed effectively. These meetings also act as informal knowledge-sharing forums, allowing members to learn best practices from one another's experiences. This supports Asa et al. (2021) who argued that the effectiveness of farmer groups largely depends on internal organizational capacity and communication mechanisms among members. With well-organized coordination, the risk of chili damage caused by unsynchronized harvesting or inefficient labor distribution can be minimized.

In addition to coordination, improving members' skills through technical post-harvest training is a crucial aspect of maintaining chili quality. Trainings provided by the farmer groups cover drying techniques, sorting by size and color, and packaging according to market standards. These findings are consistent with Herawati et al. (2023) who highlighted the importance of technology transfer and practical knowledge for smallholder farmers to enhance the quality of horticultural products. Interviews with group members revealed that these

trainings have helped reduce post-harvest losses and extend chili shelf life. Such capacity-building initiatives align with the concept proposed by Ibanah et al. (2024), which emphasizes strengthening farmers' abilities not only through physical infrastructure but also through the enhancement of practical technical knowledge in the field. With improved skills, farmer group members are able to produce uniform, marketable chilies, positively impacting their market reputation and product competitiveness.

Another important aspect is strengthening market access and stabilizing selling prices, which emerged as one of the primary functions of the farmer groups in this study. The groups act as mediators between farmers and major traders, ensuring that chili prices remain stable and often higher compared to individual sales. This is consistent with Salsabilah et al. (2023) who found that farmer groups can enhance farmers' bargaining power through collective marketing mechanisms. In Desa Baho, this system enables bulk chili sales and faster turnover, reducing the risk of spoilage due to stockpiling. Furthermore, access to accurate market price information through the farmer group helps farmers determine the optimal timing for selling their products. Therefore, farmer groups not only improve technical efficiency but also economic efficiency, which in turn can significantly increase members' income.

Despite the tangible benefits provided by farmer groups, the study also identified several challenges that affect the optimization of post-harvest efficiency. Limited access to modern drying facilities, insufficient capital for purchasing proper packaging, and market price fluctuations are the main obstacles. These findings are consistent with Lestari et al. (2023) who noted that infrastructure and capital constraints often hinder smallholder farmers from improving horticultural product quality. These challenges indicate that post-harvest efficiency is influenced not only by coordination and member skills but also by the availability of physical resources and external economic factors. Therefore, strategies to strengthen farmer groups should include support in technology, financing, and market policies to maximize the improvement of post-harvest efficiency.

Overall, the findings confirm that the presence of farmer groups has a significant positive impact on chili post-harvest management. Through effective coordination, technical skill enhancement, and improved market access, farmer groups are able to reduce losses, improve chili quality, and maintain price stability. The challenges encountered can be mitigated through technological interventions and appropriate policy support. Thus, strengthening the

role of farmer groups represents a crucial strategy for increasing productivity and income for chili farmers in Desa Baho, in line with the principles of sustainable farmer empowerment as emphasized by Lestari et al. (2023) and Ibanah et al. (2024).

CONCLUSION AND IMPLICATIONS

Based on the findings and discussion, it can be concluded that farmer groups in Desa Baho play a strategic role in enhancing the efficiency of chili post-harvest handling. The three main roles that stand out are: first, coordinating the harvest and labor distribution, which ensures that all post-harvest processes run smoothly, simultaneously, and efficiently; second, improving members' skills through technical training, which enhances chili quality, extends shelf life, and reduces post-harvest losses; and third, strengthening market access and price stability, enabling farmers to obtain more stable prices, sell chilies in bulk, and minimize the risk of losses due to stockpiling or price fluctuations.

Although farmer groups provide significant contributions, this study also identified several challenges that affect the optimization of post-harvest efficiency, including limited access to modern drying facilities, insufficient capital to purchase proper packaging, and market price fluctuations. These challenges indicate the need for additional support from the government, non-governmental organizations, or other relevant parties to enhance the capacity of farmer groups so that they can function optimally.

Overall, this study confirms that strengthening the role of farmer groups is a crucial strategy for farmer empowerment, increasing productivity, and improving the quality of chili harvests in Desa Baho. The success of farmer groups impacts not only the technical aspects of post-harvest handling but also economic efficiency and the welfare of their members.

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