

Improving Farmers' Knowledge of Rice Cultivation through Education on High-Yielding Varieties

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Abstract

This community service activity aims to improve farmers' knowledge and skills in rice cultivation through education on the use of high-yielding varieties. Many farmers have not yet obtained up-to-date information on superior varieties that offer higher productivity, better resistance to pests and diseases, and improved grain quality. The program was implemented through interactive educational sessions, field demonstrations, and discussions designed to strengthen farmers' understanding of the characteristics of high-yielding varieties and the application of appropriate cultivation techniques. The results indicate a significant increase in farmers' understanding of the benefits of superior varieties and their ability to apply the recommended agronomic practices. This initiative is expected to encourage the adoption of high-yielding varieties, enhance local rice production, and support sustainable agricultural development.

Keywords: Agronomic Practices, Annual Plants, Community Service

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2nd International Conference on Islamic Community Studies (ICICS)

Theme: History of Malay Civilisation and Islamic Human Capacity and Halal Hub in the Globalization Era

<https://proceeding.pancabudi.ac.id/index.php/ICIE/index>

Introduction

The majority of the rice fields rely on rainwater, while some use simple irrigation systems. Farmers typically grow rice twice a year, during the wet season and the dry season. The rice varieties used are still diverse and are generally selected based on farmers' preferences or seed availability in the market rather than their suitability to the local agroecosystem. As a result, productivity has not yet reached its optimal level due to the mismatch between the varieties used and the characteristics of the land and local climate.

The agroecological approach offers a strategic solution to address these issues. This approach integrates ecological, social, and economic aspects within agricultural systems, ensuring that rice cultivation focuses not only on increasing yield but also on maintaining ecosystem balance, optimizing the use of local resources, and enhancing farmers' self-reliance. By adopting high-quality varieties that are well-adapted to local conditions and utilizing local biological resources—such as organic fertilizers, indigenous soil microbes, and botanical pesticides—productivity is expected to increase without causing environmental degradation.

Rice cultivation remains a central component of agricultural livelihoods in many rural areas, including regions where productivity is influenced by farmers' access to knowledge and appropriate technologies. Although rice is a staple food crop with high demand, many farmers still rely on traditional practices and locally familiar varieties that may not provide optimal yields. Limited understanding of high-yielding varieties (HYVs)—including their characteristics, management requirements, and adaptability to local environments—often results in suboptimal production outcomes.

Improving farmers' knowledge through targeted education is a key strategy to enhance rice productivity and support sustainable agricultural development. Educational programs that introduce HYVs, demonstrate their advantages, and provide guidance on proper cultivation techniques can help farmers make informed decisions in selecting varieties suited to their agroecological conditions. Such efforts not only contribute to increased yields but also strengthen farmers' capacity to innovate, adapt, and improve their overall farming practices.

By focusing on knowledge enhancement and the adoption of high-yielding varieties, this initiative aims to empower farmers, promote efficient resource use, and ultimately support greater food security within their communities.

High-yielding varieties (HYVs) play a crucial role in improving agricultural productivity and enhancing the quality of crop production, particularly for staple crops such as rice. The development of HYVs involves plant breeding efforts aimed at producing crops with superior characteristics, including higher yield potential, resistance to pests and diseases, tolerance to environmental stresses, and grain quality that meets market demands. The introduction of these improved varieties serves as a strategic solution to address the increasing challenges of modern agriculture, such as limited land availability, climate variability, and the growing demand for food.

In practice, selecting the right variety is essential for achieving successful cultivation. Farmers must understand the specific characteristics of each variety so they can match it with local agroecological conditions, including water availability, soil type, and climate. Without adequate knowledge, the use of unsuitable varieties may result in suboptimal yields. Therefore, educating farmers about high-yielding varieties is an important step toward improving their ability to choose and utilize varieties effectively.

The adoption of high-yielding varieties not only contributes to higher productivity but also supports agricultural sustainability by promoting efficient use of inputs, reducing losses caused by

pests and diseases, and enhancing resilience to environmental stresses. Thus, the use of HYVs represents a strategic approach to building a more productive, adaptive, and sustainable agricultural system.

Research Methodology

This educational activity was carried out in Sidodadi Ramunia Village, Beringin Subdistrict, Deli Serdang Regency, in October 2025. The activity included an extension session for farmers and a discussion forum that focused specifically on rice cultivation using high-yielding varieties. The materials used in this activity consisted of educational leaflets, presentation slides, samples of high-yielding rice varieties, demonstration tools for explaining cultivation techniques, and stationery to support discussion sessions. The methods implemented included: (1) Lectures, to deliver information on the characteristics, advantages, and management of high-yielding varieties; and (2) Group discussions, to encourage farmers to share experiences, constraints, and local cultivation practices; These combined approaches were designed to improve farmers' understanding, encourage active participation, and support the adoption of high-yielding varieties in rice cultivation.

Results

The implementation of the educational activity went well and received a positive response from the farmers. Based on observations during the counseling and discussion sessions, it was evident that most farmers previously did not have an adequate understanding of the characteristics and benefits of superior varieties. Many participants admitted that their choice of varieties was more influenced by inherited habits or the availability of seeds in the market, rather than by the suitability of the varieties to the local agroecosystem conditions.

Through the delivery of material and the question-and-answer session, farmers began to understand the differences between superior varieties and local varieties, particularly in terms of yield potential, resistance to pests, and management requirements. During the group discussions, various field experiences emerged showing that the use of less suitable varieties often led to unstable harvest yields.

After the characteristics of superior varieties and appropriate management practices were explained, the farmers showed greater interest in trying the newly recommended varieties. This enthusiasm was reflected in the number of questions raised about how to obtain quality seeds, proper nursery techniques, and crop management during the vegetative and generative phases.





Figure 1. Documentation of the activity

Conclusion

The educational activity on high-yielding rice varieties successfully improved farmers' understanding of selecting the appropriate varieties and applying proper cultivation techniques. Through a combination of lectures and group discussions, farmers gained knowledge about the advantages of high-yielding varieties. The interactive approach encouraged farmers to ask more questions and relate the material to their own field experiences. Overall, this activity strengthened farmers' knowledge and readiness to adopt high-yielding varieties in the next planting season.

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