INNOVATION OF EFFICIENT SEAWEED DRYING EQUIPMENT FOR BORONGLOE VILLAGE, PAJUKUKKANG DISTRCIT BANTAENG REGENCY

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Abstract

This study presents the development and implementation of an innovative seaweed drying tool specifically designed for the residents of Desa Borongloe, Kec. Pajukukkang, Kab. Bantaeng. Seaweed farming is a critical economic activity in this region, yet traditional drying methods are inefficient, time-consuming, and heavily reliant on favorable weather conditions, often resulting in inconsistent product quality. To address these challenges, an efficient drying tool was designed, constructed, and introduced to local farmers. The implementation of this tool showed a significant reduction in drying time, improved quality of the dried seaweed, and increased income for the farmers. This journal discusses the project's planning, execution, results, and future recommendations for sustainable adoption and scalability.

Keywords: Devotion, seaweed, Improvement, Site.

1. INTRODUCTION

Seaweed farming is a prominent economic activity in many coastal regions of Indonesia, including Desa Borongloe, Kec. Pajukukkang, Kab. Bantaeng. It provides a livelihood for numerous households, contributing significantly to the local economy. However, traditional seaweed drying practices pose several challenges. These methods often involve spreading seaweed on the ground or on makeshift drying racks under direct sunlight, making the process highly dependent on weather conditions. Rain or high humidity can delay drying, leading to spoilage and loss of product quality. Moreover, exposure to dust and other contaminants during drying can further degrade the quality of seaweed, reducing its market value.

The need for a more efficient and reliable drying method prompted this project to innovate a drying tool that could offer a practical solution to these issues. The primary objectives of this project were to design a drying tool that was easy to use, cost-effective, and capable of producing consistently high-quality dried seaweed. The project also aimed to engage the local community in the development process, ensuring the tool met their needs and preferences. This journal outlines the implementation of this project, the methods used, and the results achieved, providing insights into how such innovations can benefit small-scale farmers and contribute to sustainable development.

2. METHOD OF IMPLEMENTATION

2.1 Time and Place

The project was carried out over a four-week period, from July 17 to August 15, 2024, in Desa Borongloe, Kec. Pajukukkang, Kab. Bantaeng. This location was selected due to its significance in seaweed farming and the willingness of the local community to participate in the project. The timing of the project was strategically chosen to coincide with the peak seaweed harvesting season, allowing for practical demonstrations and real-time feedback from the farmers.

The base of operations was set up in a centrally located facility in Desa Borongloe, providing easy access to the surrounding seaweed farms. This facilitated effective

communication and coordination with the local farmers, ensuring their active involvement in the project.

2.2 Target Audience

The primary target audience for this project consisted of seaweed farmers in Desa Borongloe, who would directly benefit from the improved drying tool. These farmers rely heavily on seaweed farming as their main source of income, making them ideal participants and beneficiaries of the project. In addition to the farmers, the project also engaged local community leaders, who played a crucial role in mobilizing community support and participation. By involving these leaders, the project ensured that the innovation was aligned with the community's cultural and social practices, enhancing acceptance and adoption.

Secondary target audiences included local youth groups, who were involved in the training and implementation stages. Engaging the youth helped in building their skills and knowledge in agricultural innovation, empowering them to contribute to the community's economic development. Furthermore, local entrepreneurs who showed interest in the commercialization of the drying tool were also considered a secondary target audience, as they could potentially scale the innovation for broader application.

2.3 Method of Service

The implementation of the project was structured into three main stages: Planning, Preparation, and Implementation. Each stage was carefully designed to ensure the successful introduction and adoption of the drying tool.

a. Planning Stage

The planning stage involved a thorough assessment of the current seaweed drying practices and the challenges faced by local farmers. This was achieved through a series of surveys and focus group discussions conducted with the farmers and community leaders. The key issues identified included long drying times, dependency on weather conditions, contamination of seaweed, and inconsistent quality of the final product.

Based on the feedback from these consultations, the project team, consisting of engineers and agricultural experts, designed a prototype drying tool. The design focused on simplicity, ease of use, and cost-effectiveness. The tool was intended to be constructed using locally available materials to ensure sustainability and ease of maintenance. A detailed project plan was developed, outlining the objectives, timelines, roles, and responsibilities of the project team and community members.

b. Preparation Stage

During the preparation stage, the materials required for constructing the drying tool were procured. The selection of materials was guided by the principles of durability, availability, and cost-efficiency. The project team collaborated with

local craftsmen to construct the prototype, ensuring that the design was feasible and could be replicated by the community.
Once the prototype was built, it underwent initial testing to assess its functionality and efficiency. Adjustments were made based on the test results to optimize the tool's performance. Parallel to the construction of the tool, training materials were developed, including user manuals, instructional videos, and demonstration kits. These materials were designed to provide comprehensive guidance on the use, maintenance, and troubleshooting of the tool.

c. Implementation Stage

The implementation stage focused on introducing the drying tool to the community and training the farmers on its use. A series of training workshops were organized, where the farmers were given hands-on experience with the tool. These workshops covered various aspects, including setting up the tool, operating it, and maintaining it for long-term use. Demonstration sessions were also conducted to showcase the tool's effectiveness compared to traditional drying methods.
The farmers were encouraged to use the tool in their daily drying activities, allowing them to experience its benefits firsthand. Continuous support was provided by the project team to address any issues or concerns raised by the farmers. Feedback mechanisms were established to collect input from the users, which was then used to make further improvements to the tool.

Figure 3. *Working on the Seaweed Drying Machine*

2.4 Success Indicators

The success of the project was measured using several qualitative and quantitative indicators:

1. **Reduction in Drying Time**: One of the primary indicators of success was the reduction in the time required to dry seaweed. The aim was to achieve a drying time at least 30-40% faster than traditional methods.
2. **Improvement in Seaweed Quality**: Quality was assessed based on color, texture, and moisture content. Higher quality seaweed would indicate that the tool was effective in producing a product that met market standards.
3. **Adoption Rate**: The number of farmers who adopted the tool for their regular drying activities served as an indicator of the tool's acceptance and practicality.

4. **Community Feedback**: Positive feedback from the farmers regarding the tool's ease of use, efficiency, and maintenance requirements was considered a critical indicator of success.
5. **Economic Impact**: An increase in the income of local farmers, resulting from the higher market price of better-quality seaweed, was a long-term success indicator. The project aimed to enhance the economic well-being of the community by improving seaweed production.

2.5 Evaluation Methods

To evaluate the effectiveness of the project, a combination of qualitative and quantitative methods was employed:

1. **Pre- and Post-Implementation Surveys**: Surveys were conducted before and after the implementation of the drying tool to measure changes in drying time, seaweed quality, and farmer satisfaction. These surveys provided quantitative data to assess the impact of the tool.
2. **Interviews and Focus Group Discussions**: In-depth interviews and focus group discussions were held with key stakeholders, including farmers, community leaders, and youth participants. These qualitative methods provided insights into the community's perceptions of the tool and its impact on their livelihoods.
3. **Direct Observation**: The project team conducted regular field visits to observe the use of the drying tool by the farmers. Observations focused on how the tool was being used, any challenges encountered, and the overall efficiency of the drying process.
4. **Quality Testing**: Samples of dried seaweed were collected and analyzed to assess quality parameters, such as moisture content, color, and texture. Laboratory tests were conducted to provide scientific data supporting the project's outcomes.
5. **Economic Analysis**: An economic analysis was conducted to evaluate the financial benefits of using the drying tool. This included comparing the market prices of seaweed before and after the introduction of the tool and calculating potential increases in income.

3. RESULTS AND DISCUSSION

3.1 Success

The project successfully met its objectives, as evidenced by several positive outcomes:

1. **Reduction in Drying Time**: The use of the drying tool resulted in a significant reduction in drying time. Farmers reported that they could dry their seaweed in nearly half the time required by traditional methods. This allowed them to process more seaweed, increasing their productivity.
2. **Improvement in Seaweed Quality**: The seaweed dried using the tool was of noticeably higher quality. The color was more vibrant, the texture was more consistent, and the moisture content was within the optimal range. These improvements enhanced the marketability of the seaweed, leading to higher prices.
3. **High Adoption Rate**: The tool was well-received by the community, with a high adoption rate among local farmers. The simplicity of the design and ease of use contributed to its acceptance. Farmers appreciated that the tool required minimal maintenance and could be easily integrated into their existing practices.
4. **Positive Community Feedback**: Feedback from the farmers and community leaders was overwhelmingly positive. Farmers expressed satisfaction with the tool's performance and its impact on their seaweed production. They also valued the training and support provided by the project team.
5. **Economic Impact**: The improved quality of seaweed led to an increase in market prices, enhancing the income of local farmers. The economic analysis indicated that

farmers could earn up to 20% more per batch of dried seaweed, significantly contributing to their livelihoods.

Figure 4. *Final Product of Seaweed Drying Machine*

4. CONCLUSION AND SUGGESTIONS

4.1 Conclusion

The project "Inovasi Alat Pengeringan Rumput Laut yang Efisien untuk Desa Borongloe, Kec. Pajukukkang, Kab. Bantaeng" successfully introduced an innovative drying tool that addressed the challenges of traditional seaweed drying methods. The tool's effectiveness in reducing drying time and improving seaweed quality demonstrated its potential to enhance the productivity and income of local farmers. The high adoption rate and positive feedback from the community highlight the tool's practicality and suitability for the local context. This project has provided a valuable example of how technological innovation can be harnessed to support sustainable development in rural communities.

4.2 Suggestions

To build on the success of this project, the following suggestions are proposed:

1. **Continuous Training and Support**: Regular training sessions should be conducted to ensure that farmers remain proficient in using the drying tool. Ongoing support will help address any issues that arise and provide opportunities for feedback and improvement.
2. **Expansion to Other Regions**: The tool has the potential to benefit seaweed farmers in other regions with similar challenges. Efforts should be made to introduce the tool to other seaweed-farming communities, adapting it as needed to suit different local conditions.
3. **Partnerships for Scaling Up**: Collaborating with local government agencies, non-governmental organizations, and agricultural institutions can provide the technical and financial support needed to scale up the project. Partnerships can also facilitate the dissemination of knowledge and best practices.

4. **Research and Development**: Further research should be conducted to refine the tool and explore additional innovations that could enhance seaweed farming. This could include developing complementary tools or techniques that address other aspects of the seaweed production process.
5. **Establish a Feedback Mechanism**: A system for continuous feedback from farmers should be established to monitor the tool's performance and identify areas for improvement. Engaging farmers in the innovation process will ensure that the tool remains relevant and effective.

emerging issues more quickly and evaluate the success of the program to identify areas for further improvement.

Figure 5.*Seaweed Drying Machine Promotional*

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The author realizes that the contents of this report are still far from perfect, so criticism and suggestions from the readers are highly expected. Hopefully, this report provides benefits and knowledge for its readers.

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