

PENDAMPINGAN PEMBUATAN MESIN PENGGILING PADI OLEH KELOMPOK TANI LEMBUR AYU FARM DI DESA SEI MENCIRIM KECAMATAN KUTALIMBARU KABUPATEN DELI SERDANG

Guidance In The Manufacturing Of Rice Milling Machines By The Lembur Ayu Farm Group In Sei Mencirim Village, Kutalimbaru District, Deli Serdang Regency

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Kata Kunci :

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Abstrak :

Mesin penggilingan padi mempunyai peranan yang krusial dalam proses produksi padi. Dengan menggunakan mesin penggilingan padi dapat meningkatkan efisiensi, produktivitas, dan kualitas. Pengabdian kepada masyarakat ini bertujuan untuk menambah pengetahuan terkait pembuatan mesin penggilingan padi guna meningkatkan produktivitas hasil pertanian masyarakat. Metode pengabdian kepada masyarakat ini berupa pendampingan pembuatan mesin penggilingan padi dengan jumlah peserta sebanyak 34 orang. Media yang digunakan adalah praktik langsung berupa pelatihan dan pendampingan. Setelah kegiatan pelatihan dan pendampingan dilakukan *post-test* untuk mengukur tingkat pemahaman anggota kelompok dan masyarakat. Hasil pengabdian kepada masyarakat ini menunjukkan adanya peningkatan wawasan dan pemahaman terkait pembuatan mesin penggilingan padi. Dengan demikian diharapkan masyarakat mampu mengoperasikan alat dan bekerja secara berkelanjutan, serta mampu membuat mesin penggilingan padi di kemudian hari.

Key word :

Mentoring, Grinding Machine, Rice, Farmer Group

Abstract :

Rice milling machines have a crucial role in the rice production process. Using rice milling machines can increase efficiency, productivity, and quality. This community service aims to increase knowledge related to the manufacture of rice milling machines to improve the productivity of community agricultural products. The method of community service is in the form of assistance in manufacturing rice milling machines with a total of 34 participants. The media used is a direct practice in the form of training and assistance. After the training

and assistance activities, a post-test was conducted to measure the level of understanding of group members and the community. The results of this community service show that there is an increase in insight and understanding related to the manufacture of rice milling machines. Thus, it is hoped that the community will be able to operate the equipment and work sustainably, and be able to make rice milling machines in the future.

Panduan sitasi / citation guidance (APPA 7th edition) :

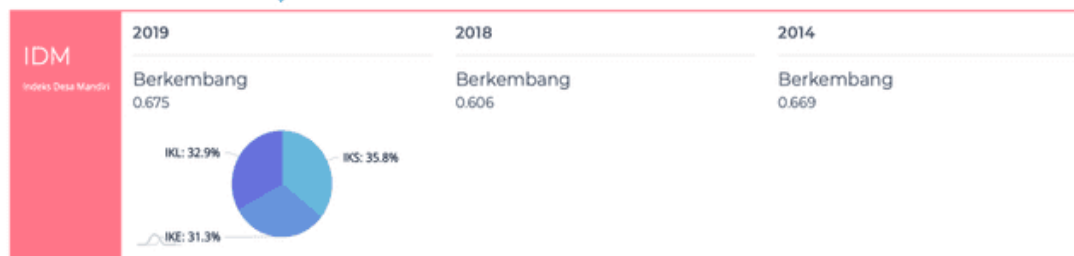
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INTRODUCTION

The development of technology in urban areas is growing rapidly. However, it is different from the implementation of technology in rural areas. Even for the category of simple technology, it is still far from being implemented. Simple technology is a relatively basic use of technology, not too complicated to create either in the work process, or use of tools or materials, but still lightens human activities themselves. The application of technology is difficult to adapt by a village influenced by several factors, including capital support systems, investors, community knowledge, location, or distance from the village to the city. The use of very minimal technology is the main problem of Sei Mencirim Village, Kutalimbaru District, Deli Serdang Regency.

Sei Mencirim Village, Kutalimbaru District, Deli Serdang Regency has experienced economic growth in the last 5 years (2019-2023). However, economic growth is not significant enough. This is indicated by the status of Sei Mencirim Village, Kutalimbaru District, Deli Serdang Regency which is still in the 'Developing Village' category since 2014 (IDM 0.669) - 2019 (IDM 0.675) until now. This can be seen in Table 1.

Table 1. Independent Village Index (IDM) Data for Sei Mencirim Village, Kutalimbaru District



Source: <https://pddi.kemendes.go.id/desa?id=1207042014>

The Developing Village category indicates that there are still many village potentials that have not been optimized. Some of the village potentials that have not been optimized are in the agricultural and livestock sectors. This is because the location of Sei Mencirim Village, Kutalimbaru District, Deli Serdang Regency is very far from the District Capital compared to other villages in Kutalimbaru District, which is 25 km. Access to the location which is quite far from the center of the district capital and city makes a village far from reach. The location map of Sei Mencirim Village, Kutalimbaru District, Deli Serdang Regency is shown in Figure 1.

PETA WILAYAH KECAMATAN KUTALIMBARU
MAP OF KUTALIMBARU SUBDISTRICT

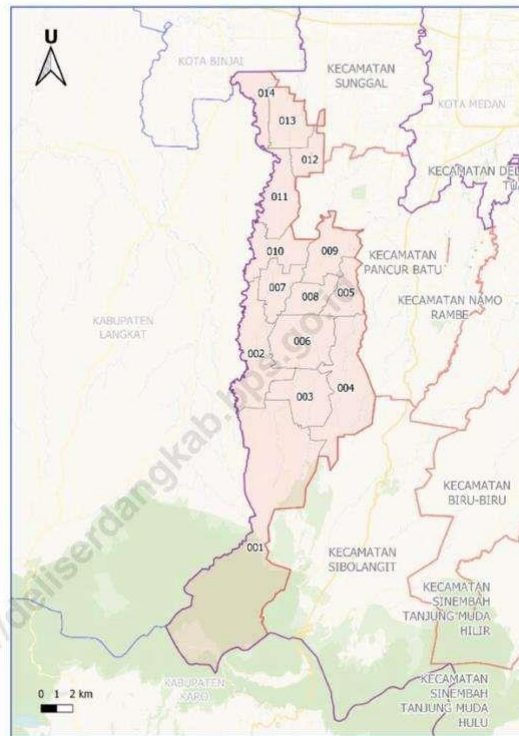


Figure 1. Map of Kotalimbaru District Area

Assistance in making rice-milling machines for the Lembur Ayu Farm Group in Sei Mencirim Village, Kotalimbaru District, Deli Serdang Regency is expected to help farmer groups and communities to improve the knowledge and skills of group members and the community. This rice milling machine has a capacity of up to 170-200 kg per hour, with a production rate of 70%. The engine power produced is 70%, for a failed rice rate of 20%, and a rice bran rate of 10%. Thus, the purpose of this program is to solve village problems with the lack of production machine equipment which leads to increased production capacity and economic development of the community in a sustainable green economy focused on infrastructure. So that it can help the community in making milling machines if they want to make machines in the future. Thus, a transformation of the production process from traditional to minimal simple technology is needed to maximize the potential of the agricultural industry in Sei Mencirim Village. This is the initial idea, simple technology is very much needed in Sei Mencirim Village, Kotalimbaru District, Deli Serdang Regency. Energy efficiency and speed in the production process will produce a competitive advantage.

METHODS

The assistance activities for making the grinding machine lasted for two months, namely from July 2024 to August 2024. The location was in Sei Mencirim Village. The assistance for making the grinding machine was carried out on August 5, 2024, attended by 34 people consisting of 25 farmer groups and community members, 1 village head and 3 village officials, as well as 3 lecturers and 2 students. The stages of implementing community service carried out in this activity are as follows:

1. Socialization Stage. In the first stage, there is the socialization stage. This socialization stage involves all village officials, namely the Village Head, the Head of the Lembur Ayu Farm Group, Group Members, and the general public. The topic of socialization is to invite the community to work together to make rice and corn grinding machines. Later, after the assistance in making the machine, the community will have an idea if they want to duplicate the grinding machine again.

2. Training Stage. The second stage is the training stage. This stage is the core stage of the community service program. **The training stage is carried out by assisting in making a rice rice-milling machine, as well as how to operate it. For two days, training was carried out for the rice-milling machine and the rice and corn flour machine. This rice-milling machine is used to turn rice into the paddy. While the flour machine is used to turn rice or corn into flour.** At this stage, it will be ensured that the community gets increased knowledge of simple technology that will be applied in Sei Mencirim Village. Thus, the training provides new knowledge that can be passed on to other residents.
3. Technology Implementation Stage. At this stage, rice and corn milling machines have been run and implemented to increase community agricultural productivity. **The separation of rice from the husk to become rice usually takes two days, currently, it only takes 3 hours. The application of the rice-milling machine shortens the rice separation time to be more efficient by more than 100%.**
4. Mentoring and Evaluation Stage. Although the machine has been implemented and operated, the lecturers who are members of the community service take turns with students to visit Sei Mencirim Village periodically. This mentoring is an important process as a form of responsibility and consistency towards this program. If there are problems and obstacles, they will become evaluation material for the lecturers and students. Furthermore, evaluation of program implementation is also needed to ensure that the level of productivity increases in agriculture by at least 30%.
5. Program Sustainability Stage. At this stage, lecturers, students, and the community try to ensure that the rice and corn milling machines continue to operate and are sustainable. Even if possible, the community is expected to be able to duplicate the machine as a follow-up to this training and mentoring program. The method that lecturers and students apply is: that community members who use the rice and rice milling machines put 10% of their sales proceeds into the Lembur Ayu Farm Group Cash Fund. This fund will later function to purchase new milling machine materials to be assembled. This is the most effective method to maintain the sustainability of the long-term program.

RESULT AND DISCUSSION

The series of assistance activities for making the grinding machine was carried out on August 5th, followed by the training stage and the technology application stage on August 8th-13th, 2024. After that, the assistance and evaluation stage of the activity was carried out on August 15th, 2024, in the form of a focus group discussion (FGD). Moreover, the machine and components installation process can be seen in Figure 2.



Figure 2. The process of installing the engine into the engine part

Based on Figure 2, we can see the process of installing the components of the rice-milling machine and installing the driving machine (05/08/2024). In addition to installation, at this stage, instructions are also given regarding what components are needed, how to operate the machine, and direct testing of the machine. In Figure 2, it can be seen that the test was carried out by inserting rice and at the end the machine removes rice without its husks. The success rate of rice milling into rice is >85%. It means that the rice-milling machine is working very well. Likewise with the flour machine,

where the rice that is put in successfully becomes rice flour. This flour will later be used by the housewives of Sei Mencirim Village to make cakes that will be sold in their businesses (Micro Small Medium Enterprises/MSMEs). Subsequently, the handover activity of the rice milling machine and flour machine equipment was documented in the form of photos as seen in Figure 3.



Figure 3. Documentation of handover of milling machine and flouring machine

After the installation of the rice milling machine and flouring machine, the next stage is the training stage and the technology application stage on August 8-13, 2024. At this phase, the machine is operated directly by the community. In this case, the lecturer as the community service team is only tasked with monitoring the operational success of the machine. Within the deadline of August 8-13, 2024, there were no machines that failed to operate. In other words, there were no defects or "zero defects" in product operations. During this period, the community was also fluent in operating the grinding machine and flouring machine. The community **looked very enthusiastic and happy during** the training period. Since the community felt helped in the process of producing paddy into rice, and also learned new things that had never existed in their village before.

Moreover, the assistance and evaluation stage of the activity was carried out on August 15th, 2024, in the form of a focus group discussion (FGD). The FGD activities can be seen in Figure 4.



Figure 4. Focus Group Discussion of the Guidance Program

The assistance and evaluation stage in the form of FGD is important to find out feedback in the form of suggestions and input for improving future activities. Based on Figure 4 at FGD Program, one thing that was marked was that the community needed a guidebook as a reference for how to operate the equipment. So, the lecturers prepared a book containing operational guidelines and machine capacity. After the activity, a special post-test was carried out on the 16 members of the farmer group who were present. The post-test was conducted only on farmer groups so that the indicators of the

event's success were by the target, namely members of the Lembur Ayu Farm group. The assistance and training activities for rice milling machines ran according to the planned time.

The results of the mentoring activities showed that before the education was carried out, there were no people who knew how to make and operate a rice milling machine. With the mentoring of making rice milling machines, the community has had a rice milling machine and knows how to make and operate a rice machine. The detailed results of the post-test of 16 members of the Lembur Ayu Farm farmer group are shown in Table 2.

Table 2. Distribution of respondents participating in community service activities

Question	Useful	Very useful	Number of respondents (people)
Benefits of procuring a grinding machine	3 (18.75%)	13 (81.25%)	16 (100%)
Benefits of mentoring training in making grinding machines	7 (43.75%)	9 (56.25%)	16 (100%)

Source: Data processed by the author (2024)

The post-test was conducted using a Likert Scale of 1-5 for the answers (1) Very Useless; (2) Useless; (3) Less Useful; (4) Useful; (5) Very Useful. Based on the results of the post-test, it is known that the question "Is the procurement of rice milling machines and other machines useful for the needs of the Lembur Ayu Farm Farmer and Livestock Group?", 18.75% stated that it was useful and the remaining 81.25% stated that it was very useful. Furthermore, for the question "Is the Lembur Ayu Farm Group's Rice Milling Machine Manufacturing Assistance Program Useful for the Sir/Madam?", 43.75% stated that it was useful, while the remaining 56.25% answered that it was very useful. This indicates that overall, the community service program in the form of assistance activities for the manufacture of rice milling machines and the provision of several other machines is very useful for the Lembur Ayu Farm farmer group in particular, and the Sei Mencirim Village community in general. Thus, in general, the Lembur Ayu Farmers Group and the community have understood the manufacture and operation of rice milling machines.

Based on the constraints related to the rice milling system that occurred, it is known that the mentoring activity for making this milling machine is very useful for both group members in particular and community members in general. This mentoring program can increase the insight and abilities of group members and the community regarding the process of making a milling machine, the specifications, and the capacity of the milling machine per hour. The results of this activity indicate that there was an increase in knowledge scores after the mentoring activity was carried out.

Rice milling machines have revolutionized the agricultural industry, particularly rice production, by enhancing efficiency, quality, and productivity. These machines are crucial in processing rice from raw paddy to polished grains. milling rice causes a lot of B vitamins and minerals—mostly present in the outer germ and bran layers—to be lost. Paddy rice typically yields 65% white rice, 10% bran and germ, and 25% husk.

In terms of efficiency and productivity, rice-milling machines can clean, husk, polish, and grade rice. These methods ensure that the rice is impurity-free and of consistent quality, which is critical for meeting community needs and satisfaction. The devices can handle large amounts of rice rapidly and efficiently, saving time and labor over human processing. This increased efficiency helps farmers to produce more rice with minimum work, therefore increasing productivity and yields.

In terms of quality, rice-milling machines cause a reduction in nutrient content. Furthermore, changes occur in the proportion of starch, particle size, and structure, which in turn affect the thermal properties, adhesive properties, and in vitro digestion of rice. These factors need to be considered when assessing the quality of milled rice.

At an advanced level, the use of rice milling machines as a means of appropriate technology is enhanced by utilizing Small and Medium Scale Rice Processing (SMSRP). To fill the capacity and quality gaps in the rice sector, small and medium-scale rice processing (SMSRP) uses process capacity algorithms, aggregate capacity planning, and robust resource allocation. Strong value proposition, efficient machine and human resource allocation, optimal resource utilization, process efficiency, and cost reduction are just a few of the transformational benefits that can be expected from process capacity algorithms, aggregate capacity planning, and robust resource allocations in SMRP.

CONCLUSION AND RECOMMENDATION

The Community Service Program entitled Mentoring the Manufacture of Rice Milling Machines by the Lembur Ayu Farm Group in Sei Mencirim Village, Kutalimbaru District, Deli Serdang Regency consists of training activities and the application of appropriate technology to groups and community members. This program concludes that before the mentoring activity for the manufacture of rice milling machines was carried out, there were no rice milling tools/machines, and the community did not know how to make the milling machine. After carrying out the activities, the results obtained were that 18.75% stated that it was useful and 81.25% stated that it was very useful for the procurement of rice milling machines. Furthermore, regarding the assistance activity for making the milling machine, 43.75% of respondents answered that it was useful, while the remaining 56.25% answered that this assistance activity was very useful. Through this activity, it is hoped that members of the Lembur Ayu Farm Group in particular, and the community in general, can duplicate the manufacture of the milling machine if in the future they want to make the rice milling machine.

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