

## Technology Assistance of Automatic Ginger Grating Machine for the Herbs Industry in Joketro Village, Magetan Regency

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### Abstract

Joketro Village, Parang District is one of the villages in Magetan Regency, East Java, where most of the people make a living as producers and sellers of traditional herbal medicine. From generation to generation, this herb is a legacy from our ancestors which is preserved and beneficial for the health of the human body. Currently, these herbs are only produced on a small scale and are only sold by going door to door. The Universitas PGRI Madiun community service aims to help improve the herbal medicine business. The methods used include: 1) we donated PIR sensor-based automatic grater machines, and 2) provided assistance and training in the use of tools for herbal medicine entrepreneurs with the aim of increasing herbal medicine production. The result of mentoring is that herbal medicine entrepreneurs have the skills to use machine technology to increase the quantity of herbal medicine produced. By increasing herbal medicine production, it will certainly improve the community's economy, especially herbal medicine entrepreneurs in Joketro Village.

**Keywords:** Jamu, herbal medicine, Joketro, JAJO

### INTRODUCTION

Joketro Village is a village in Parang District, Magetan Regency, East Java. This village is about 35 km from the center of Madiun City as shown in Figure 1 (admin, n.d., 2018). This village is an area of a tourist village and an agricultural village. This village is suitable as a tourist destination because it is located not far from the tourist area of Magetan, which is around the foot of Mount Lawu so it has beautiful views and the air is quite cool. Most of the residents of Joketro village work as farmers, ranchers, traditional herbal medicine producers, sand workers, construction workers, street vendors, open food vendors, teachers, as well as government and private employees.

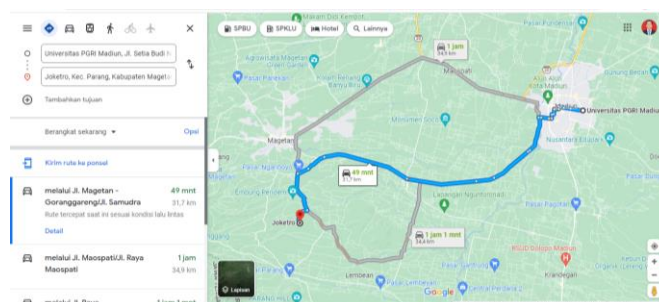


Figure 1. Location Map of Joketro Village, Parang District, Magetan Regency

One of the superior products in Joketro Village is traditional herbal medicine which is famous for its delicious taste. Most of the village community produces traditional herbal medicine (Jamu) such as Jamu Beras kencur, Kunyit asem, Jahe, Sinom, Temulawak, Pahitan, and others for body health (Setyaningrum, 2022). The manufacture of herbal medicine is a small business that provides daily needs for the community. Therefore, Joketro Village is known as the village where Jamu Joketro is made or known as JAJO (Pratama, 2021). This herbal product then became one of the product targets that the team implementing community service activities from Universitas PGRI Madiun (UNIPMA) wanted to develop and aim for (Hardiyanto, 2022).

However, the problem found in the village is that the quantity of jamu products is not increasing. Herbal medicine business actors, who incidentally are real housewives, only make herbal medicine traditionally and manually and only meet the consumption needs of herbal medicine in a day. This causes no increase in economic income in selling this herbal product. Herbal medicine that is made by pounding and squeezing, of course, requires a lot of energy to make. This large workforce certainly cannot be met by business actors, namely housewives who have an average age of over 50 years, so that it becomes no longer effective if herbal medicine is made in the traditional way. By studying the trainings conducted by the community service team previously, this solution can be implemented in Joketro Village (Lailiyah et al., 2020), (Dewi et al., 2022), (Lingga et al., 2018). By offering a touch of science and technology as well as assistance, the service team hopes that the traditional herbal medicine industry for the residents of Joketro village can develop more, increase business results, and grow a more independent community economy. In this case, the UNIPMA service team is working with partners, namely the Joketro Village Officials, Parang District, Magetan Regency who control all Joketro Village businesses including MSMEs in the herbal medicine business (JAJO). The activities carried out in this community service include: exploring cooperation (MOA) between the Joketro Village Administration and the UNIPMA campus, providing grants of tools/technology for automatic ginger grating machines to help increase effectiveness in making Joketro herbs, and providing assistance to business actors in using an automatic ginger grated machine. The equipment/technology that was granted was in the form of a ginger grated machine (ginger, galangal, turmeric, other herbal foodstuff, we call it: empon-empon) with sensor technology, so it can turn ON/OFF automatically. This machine is expected to be able to provide effectiveness and assist in producing herbal medicine. The goals and targets to be achieved from this technology assistance activity are that the community is able to use machine technology independently in making Joketro herbal medicine, so that more herbal products are produced and are able to increase people's economic income, especially joker herbal medicine business actors. The outputs achieved were 1) Cooperation (MOA) between the Joketro village administration and the campus, 2) publication of scientific papers related to community service activities, and 3) news of community service activities published in online mass media.

## METHOD

This community service activity is divided into 2 activities, 1) Designing the machine tools/technology to be donated and 2) Mentoring activities for the use of automatic grating machine technology for herbal medicine businesses in Joketro Village. The design of the tool was carried out by the UNIPMA implementation team in the Electrical Engineering Education Study Program laboratory. While the assistance activities for the use of technology were carried out at

the Joketro Village Meeting Hall which was attended by village MSME business actors and village officials. The community service implementation team consists of 5 people, namely 2 lecturers and 3 students. The community service activities are carried out in accordance with the stages of implementation shown in Figure 2. The activity begins with conducting field surveys, namely observing firsthand the geographical conditions of Joketro Village, Parang District, Magetan Regency. In the survey, the community service implementation team held discussions with village officials to find out village conditions, village potential and problems that occurred. Furthermore, the UNIPMA service implementation team designed an automatic grating machine tool/technology in the UNIPMA campus laboratory. Then the activity of handing over tool/technology grants by the community service implementation team to the village which was received directly by the head of Joketro Village. The handover activity was at the same time carrying out mentoring activities for the use of automatic grating machine technology for herbal medicine business actors

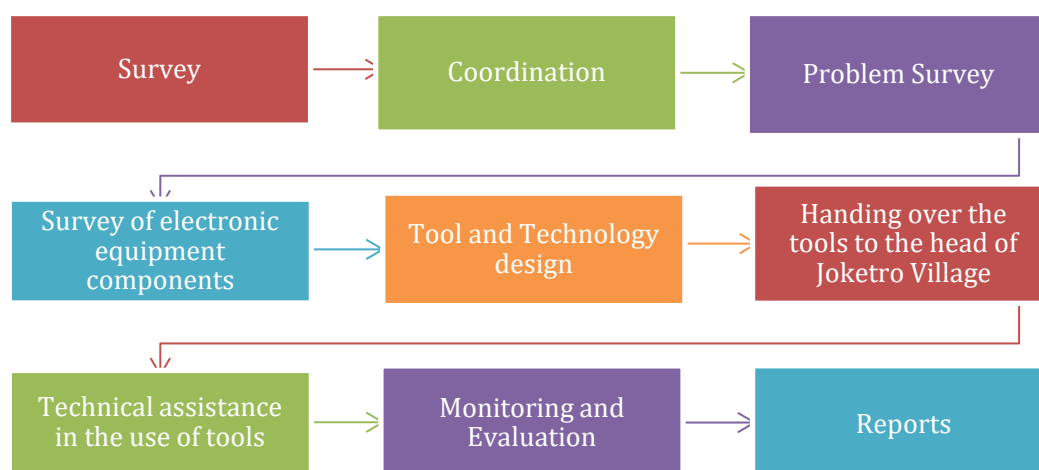


Figure 2. Stages of Implementation of Community Service Activities

The implementation of activities is carried out within 6 months in 2023 with the attached schedule shown in Table 1.

Table 1. Schedule of Community Service Activities

No	Activities	Month							
		April	May	June	July	August	Sept	Oct	
1	Survey Location	■							
2	Coordination	■							
3	Problem Survey	■							
4	Survey of electronic equipment		■						
5	Tool design		■						
6	Technology design		■						
7	Handing over the tools to the head of Joketro Village			■					
8	Technical Assistance on the Use of Grated Machine Tools for herbal medicine entrepreneurs			■					
9	Monitoring and Evaluation				■				
10	Reports					■	■	■	■

## RESULTS AND DISCUSSION

This Community Service activity aims to assist the MSMEs of herbal medicine in Joketro Village in utilizing automatic grated ginger (empon-empon/foodstuff) machine technology. The activity began with the handing over of the grating tool/machine by the UNIPMA community service implementation team to the head of Joketro Village, shown in Figure 3. Furthermore, the service team provided assistance in the use of these technological tools to MSME business actors, especially herbal medicine businesses. This activity was held at the Joketro Village Meeting Hall and was attended by around 15 MSME business actors and 5 village officials. With the help of students, the team gave examples of how to use a tool that has a sensor. Business actors are very enthusiastic about participating in mentoring activities and want to try the tool directly. First group tried grating the ginger, galangal, turmeric, turmeric (we call it, empon-empon) and second group tried grating coconut for comparison as shown in Figure 4.



Figure 3. Submission of tools to the Head of Joketro Village



Figure 4. Assistance in the Use of Grated Ginger Machine Technology

In contrast to other community service activities, this activity does not evaluate the results through written tests or questionnaires regarding understanding the use of technology (Irnawati & Anggapratama, 2023). However, in this activity only a simple evaluation was carried out as well as direct practice in the use of automatic grating

machine technology by the community, especially herbal medicine entrepreneurs in Joketro Village.

### CONCLUSION AND ADVICE

From the results of the technology assistance for this automatic ginger grating tool/machine which is applied directly to herbal medicine business actors, it is found that for grating foodstuff (empon-empon) especially ginger using an automatic grating tool, it still produces residue in the form of ginger fibre. According to the herbal medicine business actors, this turned out to be not good enough for raw materials to make herbal medicine. While the grated tool works better when used for grated coconut.

The advice given is that it is necessary to innovate an herbal medicine-making tool with technical pounding (automatic pounder).

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