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MECHANISM OF SPIRAL POTATO CRIPS MACHINE FOR INCREASING MSMEs PRODUCTION CAPACITY IN MOJOKERTO

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Abstrak.

Kentang merupakan hasil pertanian Indonesia yang melimpah. Kentang bisa digunakan sebagai pengganti nasi, oleh karena itu kentang sangat popular digunakan sebagai olahan makanan khas di Indonesia. Secara geografis Indonesia merupakan negara agraris. Hal tersebut sangat mendukung hasil produksi pertanian. Maka agar kualitas dan komoditas hasil pertanian (kentang) tetap tinggi perlu adanya ide-ide atau gagasan baru salah satunya yaitu dengan mengolah kripik kentang menjadi berkwalitas. Hal tersebut mendorong peneliti untuk mengembangkan sebuah inovasi peralatan yang dapat mempercepat proses pengolahan kentang menjadi kripil spiral dengan membuat mesin teknologi tepat guna yang bisa menghasilkan produksi lebih optimal dibandingan dengan metode konvensional yaitu 15 kg/jam. implementasi mesin teknologi tepat guna ini di gunakan pada UMKM kripik kentang Desa Kemiri, Kecamatan Pacet, Kabupaten Mojokerto. dengan adanya mesin tersebut dapat membantu mempercepat pengolahan sehingga waktu produksi dapat ditingkatkan secara optimal.

Kata kunci: mesin kripik kentang spiral, kapasitas produksi, UMKM.

Abstract.

Potatoes are Indonesia's abundant agricultural product. Potatoes can be used as a substitute for rice. Therefore potatoes are very popular as special food preparation in Indonesia. Geographically, Indonesia is an agricultural country. It greatly supports agricultural production. So that the quality and commodity of agricultural products (potatoes) remain high, it is necessary to have new ideas or ideas, one of which is processing potato chips to be of high quality. They prompted researchers to develop innovative equipment to speed up the process of processing potatoes into spiral chips by making appropriate technology machines that can produce more optimal production compared to conventional methods, namely 15 kg/hour. This appropriate technology machine is implemented in MSME potato chips in Kemiri Village, Pacet District, Mojokerto Regency. This machine can help speed up processing so that production time can be increased optimally.

Keywords: *spiral potato chip machine, production capacity, MSMEs.*

Introduction.

Potatoes are a type of tuber with great potential to be developed in Indonesia. Although not a staple food in Indonesia. Potatoes are generally only fried lengthwise, boiled for complementary food, or processed again into other food products [1]. In general, there are two types of potatoes: industrial potatoes and vegetable potatoes. Potatoes that we often encounter in traditional markets are a type of vegetable potato that can be processed into various food preparations. At the same time, industrial potatoes are raw materials for chips or potato sticks. The important characteristics of vegetable potatoes are texture and mealiness, while the characteristics needed for industrial potatoes are uniform shape and size of sweet potato, high starch content, low reducing sugar content, and high specific gravity [2]. Potato chips begin with sorting the potatoes based on size, washing, peeling the potato skins, slicing, frying, draining the oil and packing the potato chips. In the production of potato chips manually, peeling potatoes is done using a knife by peeling the skin of the potatoes one by one while slicing the potatoes using a slicer [3]. Mechanization of appropriate technology machines in supporting processing processes is proven to increase productivity and production efficiency. Two machines play an important role in the mechanical production of potato chips: peeling and potato slicing. As a basis for production planning, testing the machine's performance is necessary [4].

According to these conditions, humans make tools that are commonly used, namely manual spiral slicers using human power, which will also cause other problems, namely when the amount of raw material to be processed is large, it requires a lot of energy and time. Very inefficient. Humans began to make modifications and innovations to their tools for convenience in carrying out work. Steps taken include making the spiral potato slicing machine move by itself/automatically so that the heavy work can be lighter by having an automatic tool that uses an electric motor drive. So the discussion this time is to analyze the results of the sliced process from a spiral potato slicing machine using an electric motor as an alternative drive of the machine. From the results of spiral potato slicing, the main problem faced was determining the parameters of the slicing blade rotation, the type of pulley and the length of the belt so that the results of slicing the potatoes could be known with certainty. Based on the reasons above, an analysis was carried out to analyze the results of the slicing process of the spiral potato slicing machine. Analyzing the results of this slicing will compare good and poor results from the results of spiral potato slices. To overcome this problem is done by implementing a design using a knife driven by a pulley as the driving force of the knife. The type of pulley and the length of the belt affect the outcome of the knife rotation, which will determine the slices of the potato [5][6].

Minister of home affairs regulation number 20 of 2010 concerning Community Empowerment Through the Management of Appropriate Technology (TTG), currently the role of technology is very important to boost the performance of SMEs and overcome the difficulties they often face in this case in this case producing quality commodity goods. Through a touch of technology and supported by reliable human resources, it is hoped that the quality of products produced by SMEs can be maintained, so that they can compete with foreign products and the profits generated can also be greater. By utilizing technology, SMEs can accelerate production and provide added product value. Utilizing appropriate technology, SMEs can speed up the production process and provide added value to products. If producers still do the process traditionally, SMEs can save time and increase production capacity with machines.

In the past, the process of making potato chips was done manually, in peeling the skin, still relying on a kitchen knife as a peeler and in the cutting process, using a tool that had to be rotated by the crank lever; the results were determined by human power, shown in figure 1. This innovation is proven by the renewal of a tool with a different design by combining a peeler and slicer system in one design. In addition, it may also help new entrepreneurs utilise potato ingredients as processed food ingredients in potato chip snacks. The author expects this machine to work according to expectations and desires. Hopefully, this tool can be useful for entrepreneurs to do business and assist in the potato chip production process. So that in the manufacture of potato chips, many pieces of potatoes can be produced in a relatively short time, and in practice, sliced potatoes can be

processed into potato chips with various flavours. One of them is a spiral-shaped potato. Therefore, we made this spiral potato cutter to provide innovation in potato products so that it is hoped that it will increase people's purchasing power for potato production in Indonesia.

Figure 1. Conventional process of slicing potato

Implementation Method.

a. Field Survey

A field or site survey is an important initial stage in planning a work planning activity. In the site survey, we can find out the location and condition of the environment so that planners can plan as much as possible what things we can develop in the area by looking for potential. The village owned us. Survey One of the initial activities that we carried out was exploring village potential to become village-owned business opportunities.

b. Discussion with Partners and Finding Problem Solving

The purpose of this discussion is to solve various MSME-potato chip problems in Kemiri Village-Pacet District-Mojokerto Regency and find solutions to these problems. It is hoped that the Community Service Activities team will achieve these goals because the programs of the humanitarian project team have not finished here yet. The team plans to make one more program related to practices that might help the development of MSMEs in Kemiri Village.

c. Making a Tempe Slicing Machine

The purpose of making this spiral potato-cutting machine is to provide innovation in potato products so that it is expected to increase people's purchasing power for potato production in UMKM-Kemiri Village-Pacet District-Mojokerto Regency.

d. Testing Machine

The spiral potato-cutting machine is finished [7], and before transferring technology to partners, trials are carried out on the machine that has been made. It aims to ensure that the spiral potato-cutting machine functions optimally.

e. Implementation of the machine

The spiral potato-cutting Trial Is Done, And The Results Are Following The Specifications. The Next Stage Is The Handover Of The spiral potato-cutting Machine To Partners In MSME-Kemiri Village-Pacet District-Mojokerto Regency. During the machine handover, a brief training was also conducted on the use of the spiral potato-cutting machine and its maintenance process so that the use of the machine can be optimal and, with good maintenance, can increase the service life of the spiral potato-cutting machine.

This community service activity in MSME-Kemiri Village-Pacet District-Mojokerto Regency, is a collaboration between the Faculty of Engineering, Wijaya Putra University, and the local government to improve the quality of life with a strategy of developing MSME-potato chip for the local community which aims to carry out the planned program. The determination of the program was based on the results of brainstorming between officials, community leaders, and the Engineering Faculty Team, a community service activity program was determined, which included 1) the application of appropriate technology machines for the community and 2) increasing the quality and quantity of spiral potato small businesses.

Before the team carries out all activities, the team will socialize the program to the community to increase participation in program implementation. The activity continued by making materials, providing counseling or training, and then assisting in the field [8]–[12].

Several sources and tempeh chips sellers at traditional markets in MSME-Kemiri Village-Pacet District-Mojokerto Regency, did this implementation. The data used in this study are qualitative and quantitative. The data is obtained directly or through primary data through interviews and questionnaires, as well as data obtained indirectly or secondary data from journals and previous research. In the first stage, the attributes of consumer needs were determined by interviews. Then the second stage is technical response data obtained from interviews with several SME entrepreneurs and

Results and Discussion.

In general, making the framework of a spiral potato-cutting machine is divided into several stages: preparation of tools and materials, reduction of material volume, joining, and finishing. Making the frame of a multifunctional spiral potato-cutting machine uses many cutting, drilling, milling, welding, and other supporting equipment. A manufacturing plan is needed to increase the effectiveness of the time needed for making this frame. It is necessary to have a guide that is described in general with a flowchart of the process of making the frame for a multifunctional spiral potato-cutting machine.

Figure 2. Counseling to Partners

Given the increasing price of basic needs today, many people are doing small and medium businesses to meet these basic needs. One of them is the business of spiral potato. Now many small and medium businesses sell spiral potato, one of which is in Kemiri Village-Pacet District-Mojokerto Regency. With a savory and crunchy taste, these spiral potatare trendy. The first step in this community service activity is to survey partner locations to identify the problems partners face when making spiral potato. From the survey results to partner locations, making spiral potat, especially potato into thin pieces, still uses the manual method, requiring particular expertise and a long time. For this reason, a spiral potato machine is needed that is easy to use so that partners' production capacity increases in a short time that partners' income increases. The output of the implementation of the community service program activities is in the form of a spiral potato machine, as shown in Figure 3.

Figure 3. Spiral potato machine

With this spiral potato machine, it can reduce production time. As production time decreases, production capacity increases so that partner income increases. A comparison of slicing tempe manually and using a machine can be seen in Table 1.

Table 1. Comparison of conventional and machine sliced tempe.

Description	Konvensional	Machine
The resulting spiral potato	2.5 kg	15 kg
Time required	1 hour	1 hour

Conclusion.

The output of this community service activity is a spiral potato machine which is easy to operate and maintain. The hope is that the spiral potato machine as a result of this community service program, can increase partners' production capacity. With faster and more tempeh sliced with a certain thickness, the product yield will also increase in a relatively short time so that partners' income will increase compared to the manual method that has been done by partners so far.

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