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TRAINING FOR MAKING CORN DRYER EQUIPMENT USING UV PLASTIC IN WEST KOYA VILLAGE

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Abstract

The Koya West area is an agricultural center area in the city of Jayapura. After harvest, some of these agricultural products are sold directly to the market or to consumers, but some must go through a drying process, including corn, shallots and coconut. The drying process is still traditional, namely by relying on solar energy. Problems that occur when drying is done during the rainy season. In addition, the drying process requires a large area because the crops are just spread out on the ground with tarpaulin. In addition to being unhygienic, it will also be very inconvenient when it rains and farmers must save the crops that are in the sun so that they are not damaged. The purpose of this activity is to provide training and assistance in making dryers using UV plastic.

Keywords: Corn, Dryer, Moisture Content, Temperature, UV Plastic.

INTRODUCTION

West Koya village is one of the villages in Muara Tami District, Jayapura City. This sub-district is one of the sub-districts located east of the city of Jayapura. West Koya is located in the lowlands at an altitude of 10 meters, has an area of 3,885,019 hectares or 19 percent of the total area of Muratami sub-district which consists of dry land, swamps and forests. The annual rainfall is 2,764 mm, the average temperature is 22°C - 33°C, and the wet and dry seasons are irregular. Average air humidity varies between 79% - 81%, such climatic conditions are very supportive of agriculture and animal husbandry. The population of West Koya village is a heterogeneous population consisting of various ethnic groups in Indonesia, with a total of 4,526 people and 1,377 households.

West Koya is the largest agricultural center in Jayapura, supplying the food needs of the people of Jayapura city. Tadaro (2003) One of the most abundant agricultural products is corn, with a planting area of 11,000 hectares and a yield of about 9 tons per hectare, so that the corn harvest in one planting season is 99,000 tons of the total available area. These plants are not only sold directly in wet conditions, but also in dry conditions for breeding and animal feed. For dry corn kernels, solar energy has traditionally been relied upon for processing. Spread the corn on a tarpaulin-covered surface to dry. This becomes especially inconvenient when drying during the rainy season or when local rainfall is unpredictable. This is of course a problem that must be faced by farmers in West Koya. Besides that, If drying is done in the above way, the cleanliness and quality of agricultural products is also a matter of concern. With training and assistance in the application of appropriate technology in the form of a simple inexpensive dryer

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using UV plastic, it is hoped that farmers will be able to properly dry corn in closed rooms and not have to worry about storing their crops in the sun when it rains. , In addition, using racks in the drying room can also improve crop hygiene. With the drying method above, the quality of the dried crops will be better, and of course this will also have an impact on increasing the welfare of farmers. With training and assistance in the application of appropriate technology in the form of a simple inexpensive dryer using UV plastic, it is hoped that farmers will be able to properly dry corn in closed rooms and not have to worry about storing their crops in the sun when it rains. , In addition, using racks in the drying room can also improve crop hygiene. With the drying method above, the quality of the dried crops will be better, and of course this will also have an impact on increasing the welfare of farmers. With training and assistance in the application of appropriate technology in the form of a simple inexpensive dryer using UV plastic, it is hoped that farmers will be able to properly dry corn in closed rooms and not have to worry about storing their crops in the sun when it rains. In addition, using racks in the drying room can also improve crop hygiene. With the drying method above, the quality of the dried crops will be better, and of course this will also have an impact on increasing the welfare of farmers. In addition, using racks in the drying room can also improve crop hygiene. With the drying method above, the quality of the dried crops will be better, and of course this will also have an impact on increasing the welfare of farmers. In addition, using racks in the drying room can also improve crop hygiene. With the drying method above, the quality of the dried crops will be better, and of course this will also have an impact on increasing the welfare of farmers.

Post-harvest is the cloud phase of crop processing, including drying, cooling, cleaning, sorting and packaging. Because agricultural products isolated from plants undergo physical and chemical changes and are easily decomposed (Khalil and Anwar, 2006). Post-harvest treatment generally determines the quality of agricultural products, and also determines the use of agricultural products after post-harvest treatment, whether they are eaten fresh or used as other food raw materials. Drying is a method of using heat energy to remove or remove most of the moisture from products. When drying, use the principle of the difference in humidity between the dry air and the item to be dried to remove moisture. In principle, drying aims to reduce the water content of the product so that it is ready for further use (Desrosier, 1998). Drying is an important activity in the preservation of materials and in the agricultural product processing industry.

The drying process can be done in 2 (two) ways, namely: 1) natural drying using sunlight, temperature and humidity, as well as wind speed in the drying process. This drying is done by exposing it directly to the sun. This drying method has weaknesses, including being influenced by the weather, not easy to control, a large drying area, easy contamination, and a long time; 2) forced drying, a kind of drying device for agricultural products that uses solar energy, according to the work of the device using radiation for the drying process. The principle is divided into two types: passive and hybrid. Drying passively utilizes solar radiation and wind speed, without any energy source other than sunlight. Hybrid drying systems utilize solar energy and other energy sources such as electricity, fuel, etc. (Martiani *et al*., 2017).

The purpose of this activity is to help corn farming communities to make simple low-cost dryers using materials that are easily available on the market, such as by utilizing UV plastic as a drying chamber cover.

IMPLEMENTATION METHOD

The activity is carried out in the form of training and assistance to participants in this case Mr. Harsono et al. The implementation of appropriate technology for designing a corn dryer using UV plastic was carried out using a group approach and follow-up study. The target of this program is the farming community in West Koya who carry out the process of drying their crops. With this program, it is hoped that the participants will be able to develop and improve their agricultural business into a business unit and improve the welfare of farmers.

The training activities use several methods, namely: a) the lecture method, chosen to provide an explanation of the principles of this training, motivate participants about the benefits of the activity, provide participants with an understanding of the technical implementation and are very important to be mastered by the trainees; b) the question and answer method is very important for the training participants, both when receiving explanations about the theory and practicing it as well as getting solutions to the problems faced by the farmers; c) demonstration method, intended to provide an opportunity to practice the training material obtained. The hope is that the training participants can master the training materials received, and then identify difficulties to be solved later. To evaluate the implementation of the activities carried out, it consists of: a) evaluation of participants, readiness participants take part in training; b) evaluation of material and problem solving, carried out to determine the ability of participants while participating in the activities carried out.

RESULTS AND DISCUSSION

Manufacturing and testing of the corn dryer was carried out for 5 (five) days, which consisted of: a) socialization of the tool's construction and discussion; b) the activity of making dryers; and c) evaluation of the finished tool. Figure 1 shows the dimensions and construction of the dryer used, which consists of 5 x 5cm wooden blocks, UV plastic, and nails.

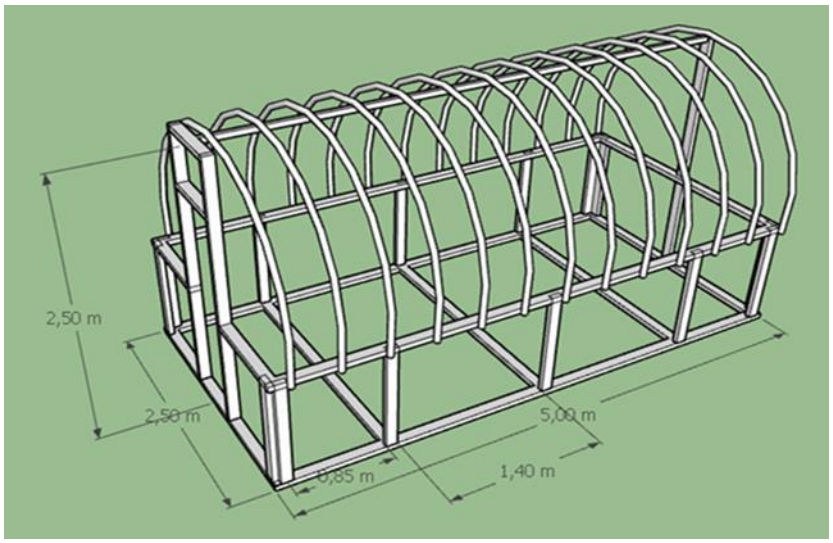

Figure 1. Corn dryer design

At the socialization stage, socialization of the construction of tools and discussions is intended to broaden insight and basic knowledge by providing explanations related to the process of drying crops which can be done in a better, faster and hygienic way. The debriefing

is carried out in discussion to make it easier for participants to interact with the companion. From the results of the discussions carried out obtained satisfactory results. This can happen because during the learning process the participants actively ask the assistant and can present the existing problems and by discussing the solutions to the problems experienced by farmers so far. The process of making a corn dryer includes several stages, such as:

1. Planning: determining the purpose, type of material, and design of the corn dryer.
2. Material preparation: prepare the required materials such as frame making materials, drying plate making materials, and cover/cover making materials.
3. Making the frame: making the frame from the prepared materials and making sure the frame is the right size.
4. Mounting the drying plates: placing the drying plates on the frame and ensuring that they are securely attached.
5. Heat distribution system installation: connecting pipes or tubes to assist heat flow from a heat source (eg sun) to the drying plate.
6. Cover: put a cover on the frame to protect the corn that is being dried.
7. Testing: conducting tests on the corn dryer to ensure all parts function properly and can be used safely.
8. Storage and maintenance: store the corn dryer properly and carry out regular maintenance to ensure its quality and safety.

In the process of making tools in the field based on the results of the discussion and the design of the drying equipment that is applied. application of the design in the field, participants can apply the agreed concepts and designs so that crop dryers using UV plastic can be made properly, as shown in Figures 2 and 3.

Figure 2. The activity of making a corn dryer

Figure 3. Complete construction of corn dryer

The process of evaluating a corn dryer involves several things, such as:

1. Drying efficiency: measure drying time and temperature to ensure corn drying process efficiency.
2. Maize quality: assess the quality of corn after the drying process to ensure the drying results meet the specified standards.
3. Ease of use: measures how easy the corn dryer is to use and makes repairs if needed.
4. Safety: ensuring that the corn dryer is safe to use and meets applicable safety standards.
5. Cost efficiency: Assess the corn dryer production cost and compare it with the corn drying output to ensure cost efficiency.
6. Material quality: assess the quality of the materials used to make the corn dryer and make repairs if necessary.

This evaluation is important to ensure that the corn dryer meets standards and has maximum results, as well as ensuring safety and comfort for the user. One of the evaluation activities carried out was by measuring the room temperature and moisture content of corn for 3 consecutive days. Figure 4 shows the results of the evaluation carried out on the results of making the dryer.

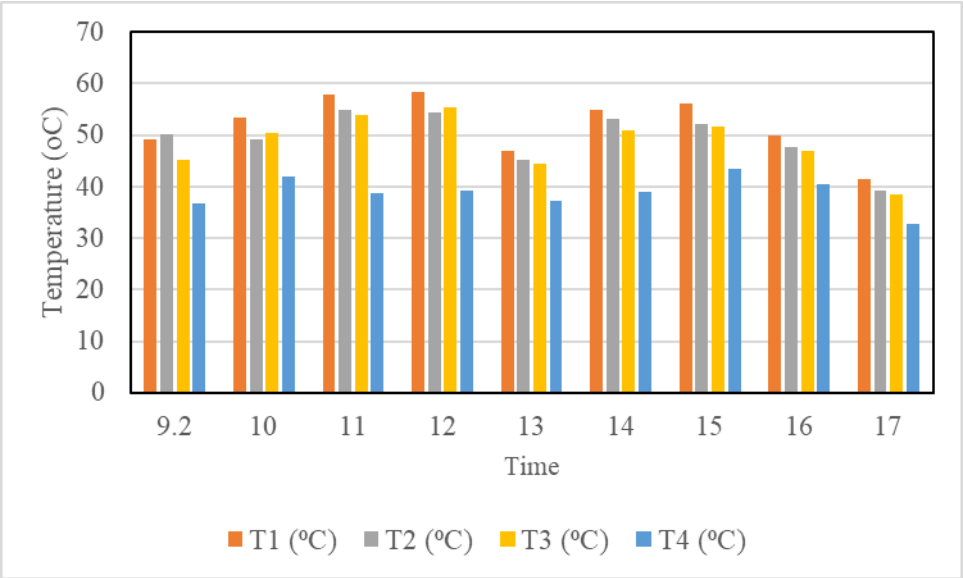

Figure 4. Temperature distribution in the drying chamber

The average drying room temperature reaches 50,70ºC which is able to dry corn faster with a water content that can be removed up to 14,85%, while drying without tools only reaches 9,0%; This result shows that the applied dryer can be used, not only for corn but also for drying other agricultural products. With information on the results of this evaluation, Top of FormThis activity needs to be developed for other farmer groups around the village of West Koya. In order to be able to disseminate the results of this activity, it is necessary to have a strategy including: a) in the form of assistance to participants who have been trained to be able to apply the skills and knowledge acquired during the training. Through community assistance, it is hoped that the skills and knowledge possessed by the participants can be applied and motivate the surrounding community to develop the skills they have so that participants can benefit from the training conducted; b) community empowerment in the field of entrepreneurship sustainability must be supported by knowledge and skills, organizational systems, access to capital and access to marketing;

CONCLUSION

The training and assistance for making corn dryers was attended by the farming community of West Koya Village. Through activities with the theme of appropriate technology, it will foster community insight and knowledge, if the equipment does not always require high costs. Assistance in training and manufacturing UV plastic drying devices that have been carried out can be developed according to the scale of needs and disseminate information to other farming community groups who need this tool in storing and drying agricultural products.

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