

## The Application of Corn Post-Harvesting Technology to Improve the Quality of Production and Economic Value of Corn Skin Waste

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### Abstract

The main problem faced by partners in the post-harvest process of corn is the peeling of corn husks which is still very slow, it makes high moisture and moldiness easily, the shelling process is still carried out traditionally so it takes longer time, besides the farmers also have not mastered corn post-harvest technology so that the quality and selling price of corn is low. From the partners' problems, it was agreed to carry out a practical and standardized handling of the corn post-harvest process, so that farmers do not spend a lot of money, time, and energy but still guarantee the quality of corn production. The application of peeling and shelling technology simultaneously can be a solution so that the moisture content of corn is not too high, corn is not easy to mold, and corn kernels do not break, so it can save costs. In addition, farmers are also given a measuring device for water content and how to use it, how to package and store corn production so that the quality is maintained. To take advantage of a large amount of corn husk waste, farmers are given training on how to process corn husk waste into handicraft products with economic value. The purpose of this technology product being disseminated is 1) to partner farmer groups to know and understand the standardized postharvest corn process, 2) to know postharvest technology that is more practical, maintain and improve the quality of corn production, 3) able to operate and master the use of machines, 4) able to use water content measuring instruments, and 4) to know how to process corn waste into economic value craft products from corn husks. In achieving this goal, several activities were carried out, namely socialization, training and assistance to partners.

**Keywords:** Technology, Post Harvest, Corn Shell Waste

### INTRODUCTION

Bantaeng Regency is one of the largest corn-producing regencies in South Sulawesi. Bantaeng Regency is also the largest corn producer outside Java. The harvested area and corn production in Bantaeng Regency have increased every year. Farmer groups that are partners in technology product activities that are disseminated to the community are the Tumbua farmer group and the Turungan Tangkulu farmer group ([https://sulselprov.go.id/pages/des\\_kab/1](https://sulselprov.go.id/pages/des_kab/1) accessed 22/04/2021)

This partner group is located in Bonto Maccini Village, Sinoa District, Bantaeng Regency. The main activity carried out by partner farmer groups is corn cultivation. In Bonto Maccini, there is no paddy field to grow rice. The land in general is a garden that is only suitable for growing corn. So that the people in Bonto Maccini, especially partner farmer groups, only cultivate corn plants. Cultivation of corn plants carried out by partners is two to three times a year. The Tumbua farmer group consists of 24 members, each of which owns 1.5 to 3 ha of land. The group members from the Turungan Tangkulu farmer group are 20 people with an average land ownership of 1.2 ha – 2 ha. Apart from cultivating corn, several members of this farmer group also own cattle. The main activities of these two farmer groups are the cultivation of hybrid corn for sale and *pulut* corn for consumption. In recent years, the two partner farmer groups have often received assistance with corn seeds from the Ministry of Agriculture program.

Since the first time of UPSUS (Special Effort for Self-Sufficiency in Rice, Corn and Soybeans) and until the end of 2018, the Tumbua Farmer group has always received assistance with hybrid

corn seeds. It's just that there is no technology package, especially post-harvest technology that has been given to farmer groups. The success of the partner farmer groups in cultivating hybrid corn has been very good, the average production per 1 ha reaches 7-9 tons. However, this high production does not guarantee the welfare of farmers. This happens because the selling price of corn at the farmer level is still low because the quality of corn production by farmers is still low. This is because farmers have not mastered good post-harvest technology which have implications for low selling prices. So far, post-harvest treatment carried out by farmers is still relatively traditional, so the water content of corn is still high. Corn kernels are easily moldy and sometimes too many seeds are broken (Firmansyah, 2006).

Partner groups carry out the harvesting process using corn cobs wrapped in corn husks. The harvested corn cobs are put into sacks and brought to the farmer's house and then the husks are removed. The problem that often occurs is that farmers store old corn on the cob in sacks. Farmers are not quick to open the corn husks so the corn has a high moisture content and is usually moldy too. The delay and delay in stripping is because it takes a long time and requires a lot of manpower. The peeling of the corn husk which has been problematic since the beginning then raises the next problem the quality of the corn becomes low. In the shelling process, farmers use manual methods or simple tools and sometimes use a mobile shelling machine in the form of a rice thresher/dross machine. Because it is not according to its designation, shelling with dross makes a lot of corn kernels break. The use of dross also burdens farmers because of the high price of shelling per 1 kg of around five hundred rupiahs. Other post-harvest processes such as drying, packaging, and storage are also not standardized. Because farmers do not know and have the technology in the post-harvest processes.

#### **METHOD**

Technology Product Program Disseminated to the Community with the title "The Application of Post-Harvest Technology for Corn to Improve Production Quality and Providing Economic Value of Corn Shell Waste". carried out with partners from the Tumbua Farmer's Group and the Turungan Tangkulu Farmer's Group, Bonto Maccini Village, Sinoa District, Bantaeng Regency. The implementation of this activity involves the government, researchers, and the community. The government elements involved in this activity are the Sinoa District Head, the Bontomaccini Village, and the Babimkantibmas Bonto Maccini Village. Meanwhile, from the community element, it is not only the partner group but the general community of Bonto Maccini village. The Program for Technology Products Disseminated to the Community is carried out through several stages of activities as follows: 1. Socialization of activities to partner farmer groups and the Bonto Maccini village community. 2. Coordination with the Bonto Maccini village government and the Sinoa District government and the Bantaeng Regency Government. 3. Preparation of materials and equipment as well as the venue for the event. 4. Implementation of training and implementation ceremonial events by presenting several relevant stakeholders. 5. Symbolic delivery of technology products to the public. 6. Demonstration of peeling and shelling Corn using a Corn Peeling Machine. 7. Training and demonstration of making bonsai and corn husk flower products for housewives. 8. Training on making and implementing handicrafts from agricultural waste 9. Training on production management and marketing of economic products from agricultural waste. 10. Monitoring and evaluation of the application of post-harvest technology for corn to improve production quality and provide economic value for corn husk waste are carried out in two activities. The first activity was an introduction to the corn-shelled peeler machine and how to use it. This technology is able to help farmers peel and shell corn. Part of this activity

#### **RESULTS**

The results obtained from this technology dissemination activity to the community are: 1. Corn Peeling Machine; Partner farmers have a corn peeler machine and are able to operate the machine well. 2. Measuring the moisture content of corn; Farmers can measure the moisture content of corn by using a corn moisture meter. Farmers also know the good moisture content of corn for sale and for stored corn. 3. post-harvest process; Farmers know and correctly apply

standardized post-harvest processes. 4. Manufacture of handicraft products made from corn husk waste; partner farmer groups know and understand the procedure or working steps of making handicraft products from corn husk waste. The partner farmer groups also know all the equipment used and can use them well. 5. The partner farmer groups, especially the women farmers group, can produce corn husk bonsai, ornamental flowers from corn husks, and brooches of corn husks with good quality.

## **DISCUSSION**

The technological products produced from the Technological Product activities that are Disseminated to the Community produce two types of products, namely the Corn Peel Machine and Corn Post-harvest Procedures and handicrafts from corn husks. Corn peeling machines and corn postharvest procedures as technological products in this activity have functions and benefits to help ease the work of farmers in peeling and shelling corn, while corn postharvest procedures it can improve the quality and price of corn. Farmers are able to measure the moisture content of corn so that drying and storage are carried out properly. After this dissemination activity, farmers sell corn with the expected moisture content, so that the quality is better and the price is higher. For corn that is stored, the quality is maintained because it is stored in conditions of suitable moisture content for storage. According to Warinte (2007) the quality standard of corn is to have 14% moisture content, 2% damaged grains, 1% other color grains, maximum broken grains 1% and 1% impurities. Corn husk waste generated from post-harvest processing can be used as a product so that it can add value to the corn husk waste (Paramita, 2010). The potential for corn husk waste is usually only used as animal feed, plastic substitute raw materials, and handicraft raw materials such as hair accessories, bags, wrapping paper, and decorative flowers (Novi, 2020). The handicraft products from corn husk waste in the form of corn husk flowers, corn husk bonsai, and corn husk brooches have functions and benefits as decorations in the house that can beautify the room. Corn husk flowers and corn husk bonsai can be used as table decorations and sideboards. So the room looks more alive, more beautiful, and more vibrant. While brooches from corn husks can be accessories that can be worn on the hijab. The use of this corn husk brooch can beautify its appearance. In addition, this corn husk brooch can also be a souvenir at wedding events.

The economic impact arising from this technology dissemination activity is that farmers, especially partners, get additional income, and at least reduce expenses. Farmers who initially hired labor to peel and peel corn, with this activity, they can use a peeling machine and no longer spend money and can save time. Likewise, housewives with the production of flowers and bonsai and brooches from corn husks can also generate additional income. So socially this activity increases public awareness to utilize corn husk waste. Farmers no longer want to burn and let corn husk waste become garbage. In addition, friendly relations between farmers are also increasing because they gather more often and exchange ideas.

Craft production activities from corn husk waste have also contributed to other sectors such as community empowerment and the manufacture of superior products from Bonto Maccini Village. This is because it has several development plans including community empowerment and making village superior products. This technology dissemination activity, indirectly helps the Bonto Maccini Village government in realizing the Bonto Maccini village development plan. In addition, this program also contributes to the youth and PKK activities in Bonto Maccini village to be active and productive in Bantaeng Regency.

## **CONCLUSIONS And RECOMMENDATIONS**

The Technology Product Activities Disseminated to the Community that was carried out went very well because of the collaboration of the service team, Ristekdikti, LP2M, the Bantaeng Regency Government, the Bonto Maccini Village Government, and the Bonto Maccini village community, especially partner farmer groups, the participation and enthusiasm of partner farmer groups and the community in participating in Technology Products Disseminated to the

Community as well as partner farmer groups and the community are able to improve the quality of corn products and produce various handicraft products from corn husk waste.

The follow-up plan that will be carried out is to increase awareness of partner farmer groups to jointly use equipment and carry out the correct post-harvest process and explain to farmer groups that the technological equipment provided is shared property. The follow-up will also be to improve the skills of existing participants so that they can become trainers for other communities. Regarding product marketing, it will be linked to the market and improve product quality and quantity.

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**APPENDIX**



**Figure 1.** Socialization of the Use of Corn Picking Tools



**Figure 2.** Delivery of Corn Picking Equipment to Partners