

# Economic Improvement By Processing Tomato Into Dried Tomato In Giripurno Village, Batu City

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## Abstract.

Tomato is one of the potential agricultural products in Giripurno village, Batu City. Tomato has a delicious taste and good nutrition for health. The production of tomatoes in Batu city reach 11.750 ton in a year. However, the price of tomatoes fluctuates depending on the season. The farmers who are the tomato producers are at risk of being lost. Therefore, innovation is necessary to produce tomatoes to become one long-lasting product that can increase its value. This community service program is intended to increase the value of tomatoes by producing sweet-dried tomatoes in Giripurno Village, Batu city. The program started with an introduction to the Giripurno authorization, surveyed the potential local product, discussed with the local people, solved the problem, socialized the program to the people, trained the local people, and evaluated the program. We also granted the Giripurno authorization for one food dehydrator machine to be used by local people interested in the sweet-dried tomato business. Our program has been done for six months with the result there is an improvement in people's knowledge regarding the usage of tomatoes, the product derived from tomatoes, the way to produce sweet-dried tomatoes, and the business prospect of sweet-dried tomatoes. People also know using an appropriate technology food dehydrator to improve the sweet-dried tomato product.

**Keywords:** Tomato, sweet-dried Tomato and fruit dehydrator.

## I. INTRODUCTION

Giripurno village is located in Batu city with an altitude of up to 800 m above sea level. The weather in Giripurno is relatively cold, with the average temperature around 20°C. It makes Giripurno potential for agriculture, especially vegetables and fresh fruits. One example of a vegetable cultivated well at Giripurno village is the Tomato. The tomato plant is a short-term plant that only takes three months from growing to harvesting. Many farmers cultivate tomato plants since the Tomato has high nutrients such as folate, vitamin C, and potassium. The Tomato also contains minerals, for example, thiamin, niacin, and magnesium. The Tomato has many benefits for health, including reducing the risk of heart disease and cancer. The nutrition of tomatoes is shown in Table 1.

**Table 1.** Nutrition contains every 100-gram Tomato

nutrition	content
Calorie	18 g
protein	0.9%
fat	0.2 g
carbohydrate	3.9 g
Sugar	2.6 g
Fiber	1.2 g

Reference: U.S. Department of Agriculture (Agriculture, 2019)

The production of tomatoes in Batu city, including Giripurno village, reach 11.750 tons in the year 2020. All products are traded directly to the broker who delivers the Tomato to Malang, Pasuruan, Sidoarjo, Madura, and other cities in east java. Although the market demand for Tomatoes is quite high all year, the profit obtained by the farmer is quite low because the selling price to the broker is quite low. In addition, the tomato price is unstable depending on the season. In a certain season, the tomato price can be very low. Because the tomato can not be stored for long, the farmers have no choice but to sell their product at low prices.

Some farmers even do not harvest their products because the harvest cost is higher than the product. In this condition, the tomato farmer gets lost (Heriani et al., 2013).

In this situation, it needs innovation to process the tomato to become a product that can be stored for a long time and increase its value. Sweet-dried tomato is one alternative product that can be processed from tomato easily. Sweet-dried tomato is made by adding sugar to tomato and then drying tomato to get the optimum hardness (Risnantoko et al., 2019). The sweet-dried tomato product looks similar to the date, so people usually call the sweet-dried tomato with the date tomato (Molina et al., 2022). In the previous community service report in Priok Sumatra, the tomato processing product called candied potato increased the value of tomatoes significantly (Harahap, 2020). Another community service has been reported from Lombok Utara. They empower women to produce date tomatoes from fresh tomatoes to increase their income. Date tomatoes can be one emergency food in the disaster area (Widyasari et al. 2019). The community service program was conducted in Giripurno village by focusing on Tomato processing to become sweet dried tomatoes. The sweet dried tomato or date tomato is expected to improve the economy in Giripurno village by increasing the farmer's income and reducing the risk of losing.

## II. METHODS

### a. Preparation

The community service program was initiated with an introduction to the Giripurno village authority. Our team also surveyed the location regarding their potential agriculture. We interviewed some people, especially the farmers, to identify the problem related to their harvest products. In our community service program, we focused on Tomato

From the survey of the tomatoes farmer, we identify the problems they are facing are:

- 1) The price of fresh tomatoes is quite low because they sell the tomato to the broker.
- 2) The tomato price fluctuates. In some seasons, the tomato price is very low, and farmers do not get the profit
- 3) People do not know the product can be made from tomato
- 4) People do not understand about technology to produce the product.

After identifying their problem, our team arranged the program as an alternative problem-solving for them. We prepared the sweet-dried tomato to be introduced to the people.

### b. Socialization

After we find a suitable formula to process the sweet dried tomato, we introduce the product to the people in Giripurno. We also presented the profit comparison between selling the fresh fruit directly and selling the tomato product processing.



**Fig 1.** Socialization activity to the people in Giripurno village

### c. Workshop

Besides socializing the benefit and the business chance of the sweet dried tomato, we did a workshop on how to make date tomatoes for the people. The process of making dried tomatoes are as follows:

#### **Materials:**

Materials used to produce the sweet-dried tomatoes are fresh tomatoes, sugar, water, and limestone solution.

### Methods:

The sweet dried tomato process started with boiling a little water and putting the sugar into the heated water. After the sugar dilutes, put the tomato into the sugar solution. Tomatoes are cooked for a while, then turn off the stove. Let the tomato cool and dry using direct sunlight or a food dehydrator. The workshop activity is documented in figure 2.

#### d. Evaluation

The evaluation was done by observing the people's enthusiasm during the workshop and the will to apply the knowledge afterward.



**Fig 2.** Workshop processing sweet dried tomato in Giripurno village, Batu city

### III. RESULT AND DISCUSSION

Our community service program has been done for about six months in Giripurno Village, Batu city. The program started with a survey to collect information on the village's potential and problems. From the survey, we get news that farmers mainly cultivate vegetables and fruit. From all vegetables, we are focusing on tomatoes as our community service program. The problems faced by the tomatoes farmer are the fluctuating price, short-term storage, and the risk of getting lost. In the socialization agenda, we present the benefit of tomatoes to health, so people understand the urgency to consume tomatoes. As a part of community service, we also educate children about the usefulness of consuming tomatoes. Usually, children do not like to consume vegetables directly. As the local people where the vegetable can grow easily, it is important to educate the children to consume much vegetable and fruit. To solve the problem explained before, we introduce a product made from tomatoes called sweet dried tomato in this community service program. During the workshop, people were enthusiastic about learning the process of making sweet dried tomatoes.

The tomato interior should be taken to reduce the water content. The more water contains, the longer the drying process. Adding sugar to tomatoes has two purposes: improving the taste to be sweeter and preserving the product (Fatah & Bachtar, 2004). The drying process using direct sunlight is the longest step in making sweet-dried tomatoes. It needs about three to five days, depending on the tomato's water content and the sunlight intensity. The drying process takes more than ten days during the rainy season or is cloudy. When drying takes a long time, the sweet-dried tomato can be moldy and decrease its quality. To speed up the drying process, it needs to apply the appropriate technology fruit dehydrator. A fruit dehydrator is a machine to evaporate the water content of the fruit at low temperatures. The drying temperature should be controlled to prevent the vitamin content in fruit degradation. The higher the drying temperature, the more vitamins are degraded (Hok et al., 2007). Because of that, we need to set the optimum temperature to speed up drying, but not much spoil the nutrition. In our trial, the drying process using a food dehydrator at 70°C can dry the fruit well for about 10 hours. To support the Giripurno people in producing the sweet-dried tomato, our team granted one set of fruit dehydrator machines to the authorization of Giripurno Village. The given process is shown in figure 3.



**Fig 3.** Fruit dehydrator granting to Giripurno Authorization

The product of the sweet dried tomato is shown in figure 4. The sweet-dried tomato texture is soft and tender. It has a sweet taste, like candy. Adding sugar can eliminate tomatoes' sour taste. The drier the tomatoes, the sweeter the product because the less water content inside the product improves the sucrose concentration. (Febriyanti et al., 2018).



**Fig 4.** Product of sweet dried tomato (Date tomato)

The final step of our community service program is to assist the local people in producing sweet-dried tomatoes. The assistance encouraged people to produce sweet-dried tomatoes and develop them as their business. Especially for the household mother can earn income by producing and selling sweet-dried tomatoes. Our expectation, the sweet-dried tomatoes from Giripurno village, Batu city can be a superior commodity. Since Batu is a tourist destination, the chance to develop sweet-dried tomatoes as a special product from Batu will be promising.

#### IV. CONCLUSION

The community service program in Giripurno Village, Bumi Aji district, Batu city, focusing on sweet-dried tomato production, has been done completely. People give a good response and are enthusiastic about this program. From our program, we find people improve their knowledge about the benefit of consuming tomatoes, the derivative product produced from tomatoes, and the business chance from tomatoes. Giripurno people can produce sweet-dried tomatoes in Small capacities. Support from local authorization is needed to develop the production to become larger.

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#### REFERENCES

- [1] Agriculture, U. S. D. of. (2019). *Food Data Central*. <https://fdc.nal.usda.gov/fdc-app.html#/food-details/170457/nutrients>
- [2] Fatah, M. A., & Bachtiar, I. Y. (2004). *Membuat Aneka Manisan Buah*. AgroMedia.
- [3] Febriyanti, N., Caronge, M. W., & Lahming, L. (2018). Pengaruh Lama Pengeringan Dan Berbagai Jenis Gula Terhadap Kualitas Manisan Tomat (*Lycopersium Esculentum*). *Jurnal Pendidikan Teknologi Pertanian*, 1(1), 86. <https://doi.org/10.26858/jptp.v1i1.6222>

- [4] Harahap, W. U. (2020). Pengaruh Harga dan Inovasi Manisan Tomat Kering Terhadap Pendapatan Petani. *Logista Jurnal Ilmiah Pengabdian Kepada Masyarakat*, 4(2), 379–383.
- [5] Heriani, N., Abbas Zakaria, W., & Achdiansyah, S. (2013). Analisis Keuntungan dan Risiko Usahatani Tomat di Kecamatan Sumberejo Kabupaten Tanggamus. *Jiia*, 1(2), 169–173.
- [6] Hok, K. T., Setyo, W., Irawaty, W., & Soetaredjo, F. E. (2007). Pengaruh Suhu Dan Waktu Pemanasan Terhadap Kandungan Vitamin A dan C Pada Proses. *Widya Teknik*, 6(2), 111–120.
- [7] Molina, R., Rohaya, S., & Haryani, S. (2022). Kajian Literatur Pembuatan Produk Manisan Tomat Kering ( Production of Candied Dried Tomatoes : A Mini Review ). *Jurnal Ilmiah Mahasiswa Pertanian*, 7(2), 381–385.
- [8] Risnantoko, W., Suhartatik, N., & Mustofa, A. (2019). Aktivitas Antioksidan Kurma Tomat (*Solanum Lycopersicum*) Dengan Variasi Jenis Jahe Dan Lama Pengeringan. *JITIPARI (Jurnal Ilmiah Teknologi Dan Industri Pangan UNISRI)*, 4(1).
- [9] Widyasari, R., Sulastris, Y., Zainuri, Z., Zaini, M. A., & Nofrida, R. (2019). Penerapan Teknologi Pengolahan Tomat Menjadi Produk Bernilai Ekonomi Di Desa Gumantar Kabupaten Lombok Utara. *Jurnal Ilmiah Abdi Mas TPB Unram*, 1(1). <https://doi.org/10.29303/amtpb.v1i1.14>.