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Realization of Drying System with the Addition of Blowers to Support the Sustainability of Local Food Industry in Tambon Tunong Village, North Aceh

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ABSTRACT

The spices that are usually available in the Aceh market itself are still wet, therefore special processing is needed to create instant seasoning powder that is easy and practical in its presentation. This community service activity aims to provide solutions to partners in processing instant cooking spices from Acehnese spices. The technology used is Drying Blower Oven Technology as an easy, practical cooking spice processing technology made from natural spices. RECEH (Rempah Khas Aceh) product will also be carried out requirements worthy of being seen by testing water content tests and organoleptic test to match product marketing standard. This dedication is expected to improve the economy of spice farmers and also introduce Acehnese specialties to various regions domestically and abroad.

Keywords: Technology, Instant seasoning powder, Spices.

INTRODUCTION

Spices are types of plants that have a strong taste and aroma and function as spices and flavor enhancers in food. Besides being used in cooking, spices can also be used as medicine and raw materials for herbal medicine. Paying attention to the benefits, it is not surprising that spices are one of the commodities that have high economic value. In fact, in colonial times, the main reason why colonists, especially from several countries on the European continent, explored other continents was to find spice-producing countries. This was done because of the high economic value of spices in Europe at that time and the potential income that could be generated (Regional news, 2014). Commodities included in the spice category include: pepper, nutmeg, vanilla, cinnamon, cloves and ginger.

Figure 1. Aceh Signature Spices

Indonesia is the world's spice producer so that colonizers, especially from the Dutch, Portuguese and British came in droves to Indonesia. According to data released by the Food and Agriculture Organization (FAO), Indonesia was ranked first in the world vanilla and clove producers and ranked 2nd in the world pepper and nutmeg producers in 2014 (FAOStat, 2016).

Culinary is one of the cultural results that is closely related to Indonesian society, where the country is known to have a variety of ethnis and cultures that are different from each daeerah. Because apart from the main function of food ingredients as fulfillment of basic needs, culinary also has historical and even philosophical values. Authentic culinary is one type of community creativity in processing food ingredients and adding value to traditional culinary culture.

One of them is the Acehnese people who have culinary that is very attached to the hearts of consumers both domestically and abroad, namely Aceh Noodle. The

seasoning of Aceh noodles can be easily obtained in the local market, but for consumers who are outside Aceh itself it is difficult to process and make into Aceh noodles with a taste that is not lost from its cuisine. There are several supermarkets or local markets located in areas outside Aceh opening branches in making Aceh noodles itself. However, there is a lack of taste, so special processing is needed in processing the Aceh noodle seasoning into Aceh noodle seasoning in practical conditions and easy to serve and can be easily carried to travel anywhere.

The purpose and benefits of implementing products through this community service program are the first is to make it easier for foreign or domestic people to be able to taste food with a distinctive taste from the Aceh region which is packaged in powder form, practical and fast in its presentation can also extend shelf life. For this reason, through this program, the proposer tries to produce and develop campus products in the form of instant spices derived from spice plants as local products to become one of the national superior products to help farmers and the community in increasing the productivity of spice plants that have large economic prospects in Tambon Tunong village, Dewantara District, North Aceh Regency.

The target to be achieved in this Community Service Program is to increase the productivity and effectiveness of the growth of spice plants to produce quality spices and can improve the economy in the local and world markets and help establish cooperation between farmers and consumers in an effort to increase the availability of spice plants. Improvements in the field of drying processes of spices in accordance with its standards.

The main target of this activity is the creation of spare change products that can be marketed in national and international markets. In addition, in this program, the planned output achievement targets are as follows:

a. Increase income for the community and partners with the proceeds from the sale of instant seasoning products typical of the local area.
b. Increase the quantity and quality of instant seasoning products.
c. Increase community understanding and skills in the field of instant seasoning processing to become a superior product of the community and partners.

METHOD

This study used a drying blower oven with Type Multioven Cabinet measuring 140 x 90 x 170 cm. The heat source is obtained from electricity. Oven temperature ranges from 50-80°C. The number of tray 30 with a distance between trays is 7.3 cm with a capacity of ± 10-20 kg depending on the material to be dried. The ingredients used are red chili, onion, garlic, tamarind, hazelnut, coriander, cardamom, and pepper.

Figure 2. Drying Blower Oven

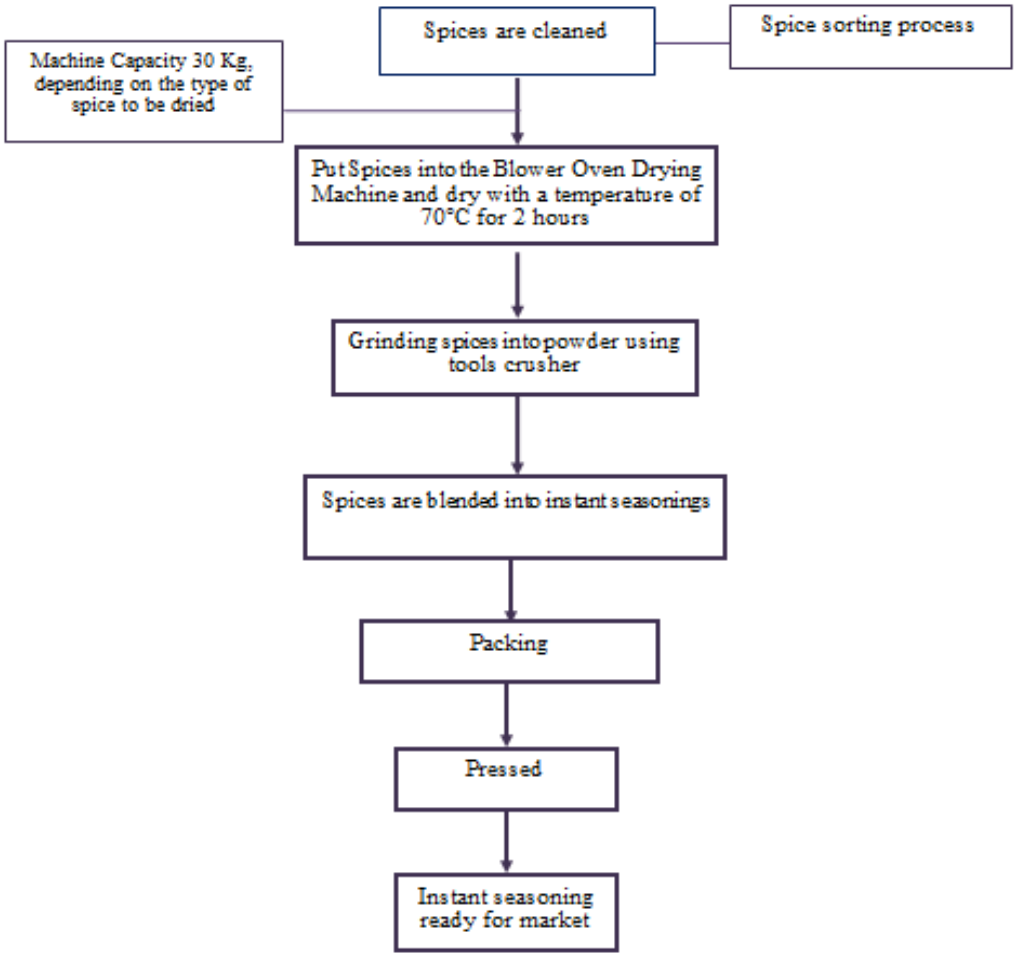

Figure 3. Flow diagram of the Application of Drying Blower Oven Tools in Drying

Drying oven blowers are an upgraded version of the oven. The working system of this drying oven machine is to dry the product at the desired temperature (the temperature can be set constantly)[4]. The working principle of this tool is to reduce the water content of the material by flowing heat from the element (which converts from electrical energy to caloric energy) with air media. On a commercial scale of the food industry, electric ovens are set at a speed of 2.45 x 10 rps [4]. Heating is obtained from the movement of particles caused by alternating current (AC current), besides electric ovens are often used as drying devices for laboratory purposes because they can be used for moisture research methods of several different materials. This blower drying oven is designed using food grade stainless steel. So, it is safe to use for foodstuffs. This blower drying oven is designed with 6 chambers, 6 blower fans and, 30 drying trays for a capacity of 10-20 kg of raw materials.

In this study, Water content test and Organoleptic test conducted to find out the effectiveness of the machine and to meet the seasoning powder standard.

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RESULT AND DISCUSSION

Product of RECEH (Rempah Khas Aceh)

Figure 4. RECEH seasoning powder

Water Content Test

Table 3. The result of changes in the weight of ingredients in spices with high moisture content

Spices	T (^{o}C)	Time (hours)	Wet weight (kg)	Dry weight (kg)	Lost (kg)
Chilli	60	2	5	3,5	1,5
		3		3	2
	70	2	5	2	3
		3		1,5	3,5
	80	2	5	1	4
		3		0,9	4,1
Shallot	60	2	5	3	2
		3		2,9	2,1
	70	2	5	2	3
		3		1,2	3,8
	80	2	5	1	4
		3		0,8	4,2
Garlic	60	2	5	3,4	1,6
		3		2,9	2,1
	70	2	5	2	3
		3		1,5	3,5
	80	2	5	1	4
		3		0,9	4,1
Asam sunti	60	2	5	3,4	1,6
		3		2,9	2,1
	70	2	5	2	3
		3		1,6	3,4
	80	2	5	1	4

		3		0,7	4,3

Table 4. The result of changes in the weight of ingredients in spices with low moisture content

Spices	T (^{o}C)	Time (hours)	Wet weight (kg)	Dry weight (kg)	Lost (kg)
Candlenut	60	2	5	3,1	1,9
		3		2,8	2,2
	70	2	5	2	3
		3		1,5	3,5
	80	2	5	1	4
		3		0,8	4,2
Coriander	60	2	5	3,2	1,8
		3		2,9	2,1
	70	2	5	2,1	2,9
		3		1,6	3,4
	80	2	5	1	4
		3		0,9	4,1
Cardamom	60	2	5	3	2
		3		2,5	2,5
	70	2	5	1,9	3,1
		3		1,3	3,7
	80	2	5	0,9	4,1
		3		0,7	4,5
Pepper	60	2	5	3,3	1,7
		3		2,7	2,3
	70	2	5	2	3
		3		1,5	3,5
	80	2	5	1	4
		3		0,8	4,2

In Table 3 and Table 4, it can be seen that the experimental capacity of the dryer with a spice weight of 5 kg is dried for 2-3 hours. The working capacity of this dryer can be increased if the weight of spices is added, the working capacity can be increased if the amount / rate of rotation per minute is increased, because according to the results of the study it is stated that the amount of power can affect the processing process time and the capacity of the processing tool. In addition, spices can be added again when

viewed from the length and diameter of the tray and this requires operator expertise in operating this tool.

In Table 3, yield loss occurs in spices that have high water content, it can be seen that the yield loss obtained at the best temperature is 70 ^{o}C within 3 hours, with an average moisture loss rate of 70-75%. In Table 4 it can be seen that spices that have low water content obtained the best temperature in grinding which is 70 ^{o}C within 2 hours, the average moisture loss rate is 60-65%, In addition, in the drying process that is too hot and long can cause damage to spices that have low water content. Based on tables 3 and 4 above, the results of the analysis carried out for the water loss rate test are appropriate according to SNI 01-2974-1996 for this instant seasoning product, the moisture content should not exceed 8-10%.

Organoleptic Test

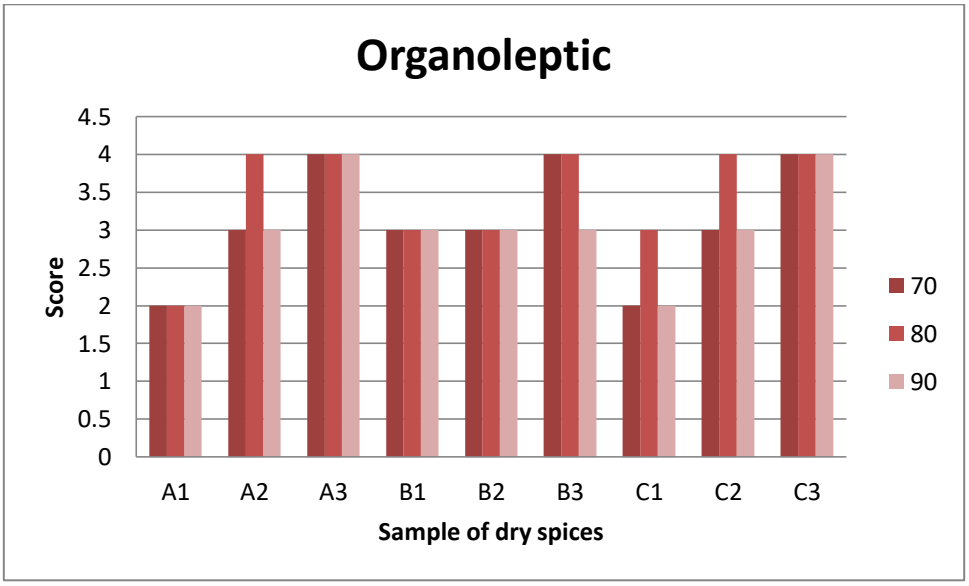

Figure 5. Color observation graph on high moisture content spice samples

The results of the observations in the graph above on the color, taste and smell of instant spice-based spices after washing and drying in this drying blower oven with temperatures of 60oC, 6oC and 80oC at a drying time of 3 hours. Given to 15 panelists, showing the highest scores of color, taste, and smell with a rating scale of 1-5 found in the MA, BP, P, and KJ treatments at a temperature of 70 oC average score of 4 (likes) and the lowest found in treatments A1, B1, C1 which is 2.3 (less) for A2, B2, C2 with an average score of 3 (likes). The difference in organoleptic values in color testing does not show such a big difference. All treatments were favored by the panelists on average with a score range of 2.5 – 4. The influence of the level of color preference on instant spices made from spices is influenced by the presence of compounds contained in these spices.

CONCLUSION

Increase the productivity and effectiveness of the growth of spice plants to produce quality spices and can improve the economy in the local and world markets and help establish cooperation between farmers and consumers in an effort to increase the availability of spice plants. Improvements in the field of drying processes of spices in accordance with its standards. The method is carried out using a drying blower oven that has previously been prepared by the proposer.

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