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Black Rice Agroindustry in Sleman, Yogyakarta: Early Analysis

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Abstract: Black rice is getting more acknowledged by consumers for its function as a healthy intake. The demand may be reflected in the more obvious black rice product display on rice retailers shelves. Frequent availability may as well be detected within certain community market that is related to organic produce or health interest base. Sleman, Yogyakarta is a district in the Special Region of Yogyakarta, Indonesia where agriculture is stepping up toward higher value of agroindustry products such as pigmented rice, including black rice particularly. Limited studies on black rice lead us to do this early survey and analysis. The finding suggest that farmers in a small scale had been involved with black rice farming for almost a decade. The farming was not necessarily organic, but in most cases farmers had the idea to be more environment friendly. Local black rice Cultivar Sembada Hitam, used to be known as Pari Ireng should improve the value of this agroindustry in this area. Some marketing channels available and the supply chains exhibited the connection with suppliers from other area nearby. This phenomenon also the case in related with the buyers; Sleman black rice produce also sent to other area including Jakarta, and even to off-Java area. The role of local government in production side might be as important as private sectors in the market side to boost black rice agroindustry development.

Keywords: black rice; agroindustry; local cultivar; supply chain; market

1. Introduction

Increased public awareness on healthy lifestyle had led the consumption growth of healthy food products. Pigmented rice, in particular, facing high demand from consumers who want to be healthier because of the nutritional value is higher compared to white rice [1]. Demand of black rice as one kind of the pigmented rice continues to increase each year as well. Black rice is considered capable of reducing cholesterol levels that trigger the appearance of liquid coronary heart disease and stroke [2]. In Yogyakarta, the pigmented rice demand (including black rice) increased from 900 ton into 1200 ton in the last three years. This statement was supported by the increasing availability of pigmented rice in modern retail in Yogyakarta, which shows that there is a rising demand. In the year 2016 pigmented rice consumption index in Yogyakarta is 1.2 kg/capita/month with the purchase of an average of 3.5 kg/month. Pigmented rice demand is estimated to continue raising along with more awareness food consumption will slide. Most of the pigmented rice consumers has high health-awareness. Most of the consumers believed that consuming rice pigmented can prevent the risk of emergence of diseases [3].

The increased demand has not been in accordance with the availability of sufficient local black rice. In Sleman, Yogyakarta, there are many farmers who plant pigmented rice (black rice in particular). However, information on the production side i.e. number of farmers, planting location, the amount of rice production as well as other information about pigmented rice farming is limited. Whereas this information was very important to gather in order to find out the potency of black rice as healthier food and potency of those area. Based on this situation this paper aims to reveal some basic information and analysis of black rice agroindustry in Sleman, Yogyakarta as a start.

2. Object and Methods

The research object is the black rice agroindustry in Sleman District, Special Region of Yogyakarta, Indonesia. The research was started by collecting any information regarding black rice farming and business to the related service officers starting from the provincial, district, sub-district, and village level. The information included the individuals as well as groups of producer (farmer), broker, distributors, retailers, up to the consumers. Field survey has been conducted to gather the information covering the area of development, extents, farming systems, the number of production and productivity. Snowball sampling technique is used to identify black rice supply chain flow. A survey was conducted to find out the information from the side of the consumers. It was conducted using a questionnaire that involved 30 respondents with criteria that consumers ever buying and consuming black rice. The questionnaire was shared online and in interview in some healthy oriented community market.

3. Results and Discussion

3.1. Black Rice

Pigmented rice is often found in Indonesia included varieties of red rice and black rice. Dark purple of black rice seeds is caused by high anthocyanin content. The anthocyanin are stored in the seed *perikarpium* so the colors being purple toward the black. This increases the potential for black rice as food alternatives [4]. Black color on a rice reserved of compounds formed by anthocyanin in seed *aleurone* layer of rice [5]. Black rice have been long cultivated but not so evolved because it requires a longer growing period and relatively are not resistant to pest attack.

3.2. The Local Cultivar Sembada Hitam

Cultivar Sembada Hitam in Sleman, Yogyakarta still needs to be developed. In this district, black rice began to be developed since the year of 2008. In 2010 the planting area was 8,100 m² and increased to 9,600 m² in 2011. From year of 2012 to 2014, its development continued in area of 12,400, 10,600, and 28,500 m², respectively. Table 1 shows the results of the survey that has been done both to the related local government officers and the farmers as well as the business players directly. In most area the farmer organizations cultivated black rice because of local government programs as an effort to maintain the sustainability of local cultivars so the role of local government in this particular District was significant.

Table 1. Black Rice Area in Sleman District

Year	Field Area (m ²)	Production (kg)	Productivity (ton/Ha)	Annual Increase (%)		
				Field Area	Production	Productivity
2015	36,300	16,162.0	3.42	27%	N/A	N/A
2016	101,500	43,912.5	4.39	180%	172%	28%
2017*	113,300	48,157.5	4.13	12%	10%	-6%
2018*	130,000	60,000.0	4.75	15%	25%	15%

Source: Agricultural Government Office of Sleman District (2017) and Processed Data (2018*)

3.3. The Agroindustry

Black rice demand continues to rise as seen in the increasing amount of black rice packages on display in the shelves of rice retailers. It encouraged some farmers to start the business of black rice [6]. The transformation process of the harvested black rice before marketed was beginning with drying, milling, sorting, weighing, and packaging. The sizes adjusted to orders or requests from consumers, both the end consumer as well as business consumers. Before getting into the hands of the end consumer, the majority of the marketing channel flow as: farmers → farmer groups → distributors →

retailer → consumer [7]. Currently the local black rice Cultivar Sembada Hitam has been marketed both inside and outside of Yogyakarta.

3.4. The Supply Chain

The supply chain is a network consisting of several parties that is physically involved either directly or indirectly, in creating and submitting a product to the end consumer in the fulfillment of the customer's request [8]. The observed black rice supply chain depicted in Figure 1. The black rice supplied from farmers in Sleman and some parts of Central Java which is supplied in the form of grain. Then, farmer groups (Poktan) and its association of farmer groups (Gapoktan) processed the grain into black rice. Next, the black rice packages were distributed inside and outside of Sleman District such as to Semarang, Jakarta, Kalimantan, Aceh, and other areas in Indonesia.

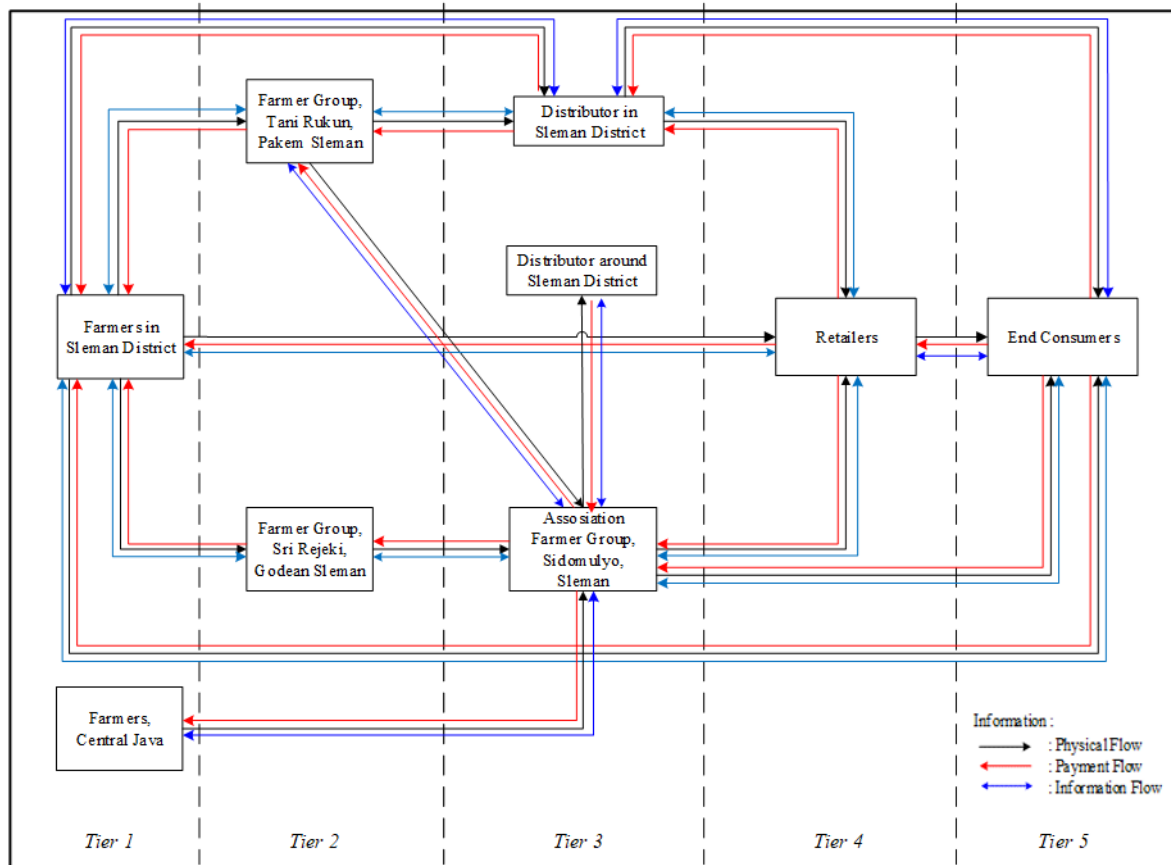


Figure 1. The Supply Chain in Sleman and its Surrounding

3.5. The Marketing

The marketing of black rice was currently done through various methods both conventional as well as online. Figure 2 shows various way how consumers looking for information about black rice. In the process of information search, the internet was chosen by most consumers (47%) .

According to consumer respondents, black rice appearance observed directly and through the screen of monitor (iPad) did not differ significantly [9]. It indicated that doing a search on the internet or by visiting to the black rice retailers directly was not different.

In addition to the appearance, the consumers were also very attentive to the product that will affect their loyalties [10], so the quality of the products and packaging must be considered in black rice marketing strategy.

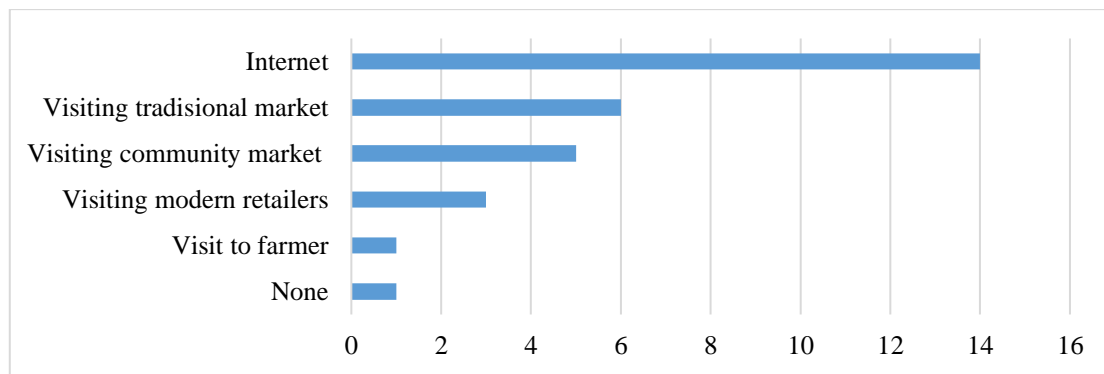


Figure 2. Sources of consumer information searching

4. Conclusion

The development of black rice in Sleman, Yogyakarta mostly continue to increase each year as shown in the production side. The suppliers must start to engage online marketing to respond many consumers tendency in searching information about black rice before buying. Aside from that, the high produce quality should be combined with proper packaging to fulfill customer's preferences. Government's role in this agroindustry is very important especially to introduce and develop black rice farming to farmers in addition to the role of private sector in the market side.

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