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Development of Sago Agribusiness in Facing Local Consumption Pattern

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Abstract: ***To create sustainable food security needs to be accompanied by diversification of domestic foodstuffs, one of the potential to produce carbohydrates is sago. This study aims to (1) analyze the proportion of sago consumption compared with other staple foods in the Bacan Subdistricts community , South Halmahera Regency, (2) To analyze the development of sago agribusiness based on the potential and needs of the community in Bacan Subdistrict South Halmahera Regency. This study was designed with case studies, with a sample size of 100 housewives. The analytical technique used is statistical descriptive analysis (percentage) to describe the proportion of sago (carbohydrate) consumption to household food consumption and qualitative analysis with APPAS approach. The results showed that the contribution of carbohydrate fulfillment from rice, which is 72.08% with an average of 4,881 grams of the total average amount of carbohydrate consumption of 6,772 grams. While sago percentage of 22.52% with the amount of carbohydrates that is 1,525 grams.***

Keywords: Development, diversification, sago

1. Introduction

In order to create sustainable food security, it needs to be accompanied by diversification of domestic foodstuffs. One of the non-rice commodities that have the potential to produce food (carbohydrate) is sago (Radjab, 2014).

Food is the most basic need and also the life support element for human being. Food shortages will threaten the health and survival of people, so food should always be available in sufficient quantities and affordable prices including for low-income residents. Meanwhile, food consumption is the type and amount of food (both original and processed forms) consumed by a person or a population within a certain period of time to live healthy and productive (Wuryandani, 2015).

Food Law (UU) no. 18 of 2012 mandates that the Government and Local Government are responsible for the availability of food. The provision of food is manifested to meet the needs and food consumption for the community, households and individuals in a sustainable manner. The provisions on the side of food consumption are mandated as follows: The Government and the Regional Government are obliged to increase the fulfillment of the quantity and quality of food consumption through: (1) the provision of diverse, nutritious, safe and non-contradictory food to the religion, belief and culture of the community; and (2) development of knowledge and ability of the community in diverse food consumption patterns, nutritious balanced, quality and safe (Ariani, 2013).

Sago is one of the potential carbohydrate plants in Indonesia that can be used for food diversification and is an alternative in times of food crisis and can be utilized for the management, control and preservation of the environment (Bintoro, 2008).

2. Review of Literature

a) Sago

Sago (*Metroxlyn sago*) was chosen as the icon of Cinta Puspa Day and the National Animals (HCPSN) 2013. Sago tree was chosen because the plant is one of Indonesia's biological riches that have benefits as a source of carbohydrates and food sources for the community, especially those living in eastern Indonesia. Of course not only that, the selection of sago plants as icons HCPSN 2013 contains a message that the plant is preserved and can be utilized as possible for the prosperity of the nation and people of Indonesia (Londo, 2013).

Sago is the highest carbohydrate-producing plant per unit area. In one stalk of sago there is starch as much as 200-400 kg. In Jayapura, some Japanese researchers found sagu trees containing starch as much as 800-900 kg / sago (Bintoro, 2008).

Sago flour is rich in carbohydrates (starch). One hundred grams of dried sago is equivalent to 355 calories. In it the average contained 94 grams of carbohydrates, 0.2 grams of protein, 0.5 grams of fiber, 10 mg of calcium, 1.2 mg of iron, and fat, carotene, thiamine, and ascorbic acid in very small amounts (Muchtadi, 2013).

b) Sago Processing Industry

Types of food ingredients that require processing before consumed include sago. Sago requires a certain process or technique to be enjoyed or consumed.

Technology exploitation, cultivation and processing of sago plants have not been taken seriously by the government of this country whereas sago is a huge potential for the fulfillment of the basic needs of society as a source of energy. While countries that do not have the potential for the growth of sago like Malaysia actually exploit sago

processing technology originating from Indonesia (Radjab, 2014).

The potential of Indonesia sago is high enough to spur the development of Indonesia sago industry. Sago starch is obtained from the extraction of sago stalk aged 5 - 8 years. The sago pie (Metroxylon Sagu) contains starch of 18.8% to 38.8% (wet weight), whereas in dry weight per plant can reach 250 kg. Sago industry generally do the processing in the area near water sources such as on the banks of rivers or tributaries, as sago stems from plantations or forests are brought to production by water transport (Saragih, 2012).

The development of sago processing industry is constrained by infrastructure problems. Efforts to increase the added value of sago should continue. The industry approach should involve indigenous peoples and local people around the sago processing site. Participation is so that there is a shared understanding, moving the community economy and simultaneously prevent the problems that arise later. optimizing the potential of sago to save enormous opportunities in mobilizing the economy and improving the welfare of the people. However, the benefits will be felt if sago industrialization involves local people, especially around the sago development site. social approaches and community participation become very important before sago processing industry operates (Kemenperin, 2015).

c) Agribusiness Development

Agribusiness development (agribusinees led development) is an economic development strategy that integrates sustainable agriculture development with the development of upstream and downstream agricultural industries and related service sectors in it. The agribusiness development strategy is based on the utilization of resource diversity in each region (*domestic resources based*), accommodating to the diversity of human resource quality, not relying on foreign loans, export-oriented then the agribusiness system development strategy will move towards agribusiness development driven by capital goods and more skilled human resources (*capital driven*) so as to shift to the agribusiness development process that is driven by science, technology and human resources (innovation-driven), so it is believed able to deliver the Indonesian economy has a high competitiveness (Saragih, 2012).

The role of the agricultural sector in Indonesia is important, not only its contribution to labor absorption, but also as a food producer, a driver of other business opportunities, and a relatively large foreign exchange earner. However, the agricultural sector is faced with a number of obstacles, partly because of the narrowness of land tenure, the increasingly limited mastery of capital, the lack of technology utilization and the difficulty of marketing. As a result, the agricultural sector's performance becomes less as expected (Harahap, 2016).

3. Materials and Methods

This research was conducted in Bacan Subdistrict of South Halmahera Regency in Amasing Town West Village, Amasing North City, South Urban Amasing with the assumption that the three villages are villages with local population of Bacan Subdistrict of South Halmahera Regency. The timing of this research data collection takes place from April - June 2017.

This research was designed with case study with main focus on food consumption of local community in Bacan Subdistrict of South Halmahera Regency with data type in the form of qualitative and quantitative data. The sample of households / local people (respondent) is determined by using Random sampling method, using Slovin formula so as to produce sample of 100 housewives from total population at research location which amounted to 1,051 households. Types of data studied were respondents age, education, income, and number of household members, type and amount of basic foodstuff (sago, rice).

4. Results

a) Overview of Research Sites

South Halmahera District lies between $126^0$45 '- $129^0$30' East Longitude and between $0^0$30 'North Latitude - $2^0$00 South Latitude. The southern boundary of South Halmahera is in the north bordering Tidore Islands and Ternate City, in the south by Seram Sea, in the east bordering the Halmahera Sea, and in the western part bordering the Maluku Sea.

South Halmahera Climate The highest air temperature occurred in December ie 32,7^0 C and the lowest occurred in August ie 20,8^0 C. Average humidity reaches 84%. There are rainy days throughout the year with varying intensity. The highest rainfall occurred in February. Maximum wind speed recorded reached 18 knots.

The area of South Halmahera Regency is 40.263,72 km^2 which consists of land 8.779,32 km^2 (22 percent) and oceans 31.484,40 km^2 (78 percent). Area of Bacan District 304,69 km^2 (3,47 percent) with high above sea level (DPL) ie 3 m and vast islands 2.053,0 km^2.

Residents of South Halmahera Regency in 2016 amount 219.836 soul, which consists of 111.925 male and 107.911 female. The sex ratio in South Halmahera regency is 103,72 which indicates more male population than female population. With the total area of South Halmahera Regency about 8,779.32 square kilometers, the average population density of South Halmahera is 25 people per square kilometer. Bacan District 304,69 km^2(3,47%) populated with as many population 22.887 (10,41%) which is the highest population number in South Halmahera District.

b) Description of Respondents

Description of respondents is to describe the identity description of respondents according to the sample research that has been determined. One of the objectives with description of respondent's characteristic is to give description which become sample in this research (Padjalangi, 2012).

Based on interviews using questionnaires on research in Bacan Subdistrict, South Halmahera Regency, the description of respondents as follows:

No	Description	Criteria	Number of Respondents (n)
1	Age (Year)	≤20	1
		21 – 50	80
		≥50	19
		amount	100
2	Education	SD	11
		SMP	29
		SMA	40
		≥ SMA	20
		amount	100
4	Family Revenue (Million)	≤ 1	11
		1,1 – 3,5	58
		≥ 3,5	31
		amount	100
5	Number of Family Members	1 – 4	63
		5 - 7	37
		≥ 7	0
		amount	100

The data were obtained by conducting interviews using questionnaires that have been prepared by researchers to respondents who are in Amasing West Town, Amasing North City and Village Amasing City which is a local resident in Bacan Sub. The number of respondents interviewed in this study were 100 samples, which consisted of West Amasing Village as many as 30 respondents, Amasing North City as many as 19 respondents and Amasing City of 51 respondents.

1) Age of Respondents

Age is the unit of time that measures the time of existence of an object or creature, both living and dead. Adult life is divided up (Fitriana, 2015):

a) *Early adulthood* 21- 40 year
b) *Middle adulthood* 40 - 60 year
c) *Later adulthood* 60 years and above

Based on Table 1, it shows that the age grouping of respondents in the study consisting of 100 respondents most at the age of 21 - 50 years, that is with the percentage of 80%. This shows that the respondents in this study included in early adulthood and middle adulthood.

2) Respondent's Education

Education is an adult human effort to guide immature people to maturity. Education is a social activity that allows people to exist and thrive in complex societies (Fitriana, 2015).

Based on Table 1, it shows that the education of respondents in the research is mostly found at the senior high school level, that is, the percentage of 40% of the total 100 respondents. This shows that the average level of education of respondents is still low.

3) Respondent's Revenue

Revenue is all receipts either in the form of money or in the form of goods derived from other parties or industrial products that are in value on the basis of a sum of money from the treasures prevailing at that time. Revenue is a source of income for a person to meet the daily needs and is very important for the survival and livelihood of a person directly or indirectly (Hestanto, 2017).

Based on Table 1, it shows that the grouping of respondents' income in the research consisting of 100 respondents mostly found in the income of 1.1 to 3.5 million ie with the percentage of 58%. This shows that the respondents in this study approached the income of Rp 4 million per month.

4) Number of Respondent Family Members

The number of family members is the number of all family members consisting of the head of the household, his / her spouse and / or his / her children (children) and any other person or adopted child who is part of the family who is not married, whether resident or non-resident house. In addition there is also a special family, the unit of an individual / someone who is not tied in family relationships, live and eat and settle in one house (BKKBN. 2016).

Based on Table 1, it shows that the number of family members of respondents in the most research that is the number of family members with grouping 1-4 people with the percentage of 63% of total 100 respondents. This shows that the average number of family members is 1-4 family members.

5) Proportion of Main Household Food Consumption

1. Consumption of Carbohydrates Per Week

Carbohydrates serve as an energy source, in addition to helping regulate protein metabolism. Some carbohydrates in the body are in the blood circulation as glucose for energy purposes. Where it is partially stored as glycogen in the liver and muscle tissue and is partially converted into fat to be stored as energy reserves in fat tissue (Arimurti, 2010).

Based on the results of research, carbohydrate consumption of local people in Bacan Subdistrict of South Halmahera Regency per week is as follows:

No	Type of Food	Consumption of Carbohydrates	
		Amount (grams)	Proportion (%)
1	Rice	4.881	72,08
2	Sago	1.525	22,52
3	Others	366	5,40
Amount		6.772	100 %

The contribution of carbohydrate fulfillment in respondents in Bacan sub district is the most dominant is the fulfillment of carbohydrates derived from rice, which is 72,08% with an average of 4.881 grams of the total average amount of carbohydrate consumption of 6.772 grams. While sago percentage of 22.52% with the amount of carbohydrates that is 1,525 grams. With Bdd (edible parts) on the same rice and sago, ie 100%. While the standard carbohydrate of rice is 78.9 grams and sago is 84.7 grams for every 100 grams of ingredients (Depkes, 2009). This indicates that sago is no longer the basic daily carbohydrate fulfillment for people in Bacan Sub-district.

6) Distribution of Household Consumption of Carbohydrates Per Week

One of the causes of the lack of public consumption in sago is the inferior impression attached to sago. The availability of more and more sustainable carbohydrate sources as well as the number of other carbohydrate promotions that can replace the role of sago carbohydrate fulfillment, the lack

of food diversification derived from sago, there are lifestyle changes in people who are more likely to consume rice as a daily staple food, people's consumption appetite (Bawolo, 2016).

Based on the results of the study, the distribution of household consumption of carbohydrate of local people in Bacan Sub-district, Halmahera Selatan Regency per week is as follows:

No	Proportion of Consumption (%)	Number of Households consuming (n)	
		Rice	Sago
1	0	0	16
2	1-25	1	56
3	26- 50	13	19
4	51 – 75	32	9
5	≥ 75	54	0
Amount		100	100

Grouping the proportion of carbohydrate consumption ≥ 75% for rice was 54 respondents out of a total of 100 respondents and for no sago (0 respondents). Respondents who did not consume rice (grouping the proportion of 0% consumption) did not exist or 0. While the respondents who do not consume sago amounted to 16 people. This shows that all respondents meet the needs of carbohydrates by consuming carbohydrates derived from rice.

There is a decrease in sago consumption today due to the diversity of food, such as rice, banana and cassava. Nevertheless local people or indigenous people still consume sago. In another area known as one day without rice, but in Bacan district known as one day with rice, in the past only on the new Friday they consume rice, apart from that day every day to eat sago.

7) Sago Agribusiness Development In Support of Local Community Consumption

a) Potential

Natural resources, especially sago forest in North Maluku Province with an area of 3.293 hectares (Ha) is sufficient for the fulfillment of food carbohydrates. Sago processing in Bacan District is now much better than it was a few years ago. Processing system also experienced changes, sago processing by using motorization / mechanical technology.

b) Production Process of Sago Processing Household Industry

Food processing from sago flour has not been well developed in Bacan Sub-district, South Halmahera District. For the processing of cakes namely bagea and sago biscuits only consists of 2 units of home industry. The processing system is still very manual and traditional. As for the sago plate consists of 30 household industries, but the production period for each industry in accordance with a predetermined schedule. To per day only 10 home industries which produces, therefore every sago plate processing industry produces 3 days. It is mutually agreed to share customers or consumers. As in the bagea and sago biscuits industry, sago plate industry is still manual and traditional processing system.

c) Marketing

Marketing area of home industry of sago slab processing in Bacan District ie in traditional folk market which is about 5 kilometers from the production site. As for the home industry processing sago bagea and biscuits, the marketing area is on the kiosks that are located close to where the production of household processing industry sago and also direct marketing to consumers. Consumers usually come directly at sago processing industry household locations when buying in large quantities.

d) Supporting Services

The strategy used by local government of South Halmahera in order to support the diversification of consumption of sago products that annually the agriculture service held B2SA (Various, Nutritious, Balanced and Safe). This activity is expected to enable local people to diversify food in order to avoid the tendency of rice dependence. The participants are equipped with training to create sago-based creative menus that are in demand by family members.

One form of policy in the effort to develop local food based indsutri, the Department of Industry and Trade provides assistance in the form of equipment / machine scar in processing sago tree to be used as sago flour.

4. Conclusions

The contribution of carbohydrate fulfillment in respondents in Bacan sub district is the most dominant is the fulfillment of carbohydrates derived from rice, which is 72,08% with an average of 4.881 grams of the total average amount of carbohydrate consumption of 6.772 grams. While sago percentage of 22.52% with the amount of carbohydrates that is 1,525 grams. This shows that sago is no longer the basic daily carbohydrate fulfillment for people in Bacan Sub-district, which was once known as one day with rice slogan.

Natural resources, especially sago forest in North Maluku Province with an area of 3.293 hectares (Ha) is sufficient for the fulfillment of food carbohydrates. Farmers have used machinery ranging from sago cutting to sago flour making process so that flour income with modern processing systems, can produce more starch or starch than traditional processing.

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