

FARMER EMPOWERMENT THROUGH PROCESSING OF MAIZE AND ITS WASTE INTO PRODUCTIVE ECONOMIC COMMODITY IN BOALEMO REGENCY OF GORONTALO

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Abstract: *The object for this research is produced: 1) Developed the maize farm capacity in maize and waste maize processing to become economy production; 2) Analyzed the target gained such as in empowering the maize farmer via on processing of maize and waste maize commodities. Where as the method of this research is: 1) For training maize and waste of maize used the active participation about 50% theory and 50% practice, to where it's described by speech method and discussion also due to the practice for maize and the waste of maize; 2) Analyzed the profitability of maize and waste processing production by using the organoleptic method also consuming responded and also effective and efficient of briquette from waste of maize; 3) Target analysis is dividing in to two as well as: a) Absorbed analysis for operating and using the machine used qualitative method; b) Maize farming financial analysis used quantitative method. Based on result analysis above those commodities is very potential and prospect to increase the people of Boalemo Regency.*

Keywords: *farmer empowering, economy productive, maize and the waste processing*

I. Introduction

Gorontalo province known as maize province that is optimistic has a program of maize product attainment of one million tons per year to support national food security. In 2011 the addition of maize land approximately 3.500 hectares affected to increase the production of maize approximately 245.000 tons, so that at that moment maize production reached 600.000 tons. In addition, as an effort to boost the production of maize, the Provincial Government of Gorontalo also take a variety of ways, including an increase in extension worker capacity, the use of high quality of seed and the availability of fertilizer. According to Isa (2012) that maize production of Gorontalo from year to year increases. Every maize crop is estimated that maize (yield) produced approximately 65%, while 35% in the form of waste such as stems, leaves, barks, and corncobs.

In addition maize to meeting the needs of people's daily life of Gorontalo, maize also can be processed to various kind of products such as corn sticks, corn oil, corn starch known maizena, poultry feed, fish feed, and many more. In addition to maize seed processed for a variety of products, waste of maize can also be tapped as a variety of products such as maize waste into ruminant feed, maize waste into organic fertilizer, corncob into charcoal- briquette, as well as cornhusk can be processed to be used as a flower, dodol pad, the basic material clothes, tablecloths and many other unique products.

Based on the survey result that in addition to corn seed (yield) in Gorontalo is generally only used for daily meal, it is also sold to other places either to neighboring country or neighboring province. Corn seed (yield) has generally not processed yet into the other processed products that can increase the economic value of the product. As an illustration mentioned, the comparison of corn seed price 1 kg Rp. 2,800 if it has been processed into fodder, the price reached 5 times from the original price when unprocessed. By processing corn seed into a basic ingredient of fodder will increase the economic value of the product.

The urgency of this research is that through this research the problems faced by maize farmer can be identified and sought for its alternative solution, furthermore which can be done to empower the maize farmer through processing of maize and maize waste into productive economic commodity in an effort to increase the income of maize farmer in the Boalemo regency of Gorontalo province. The targeted outputs are: in the first year (2014): 1) potential profiles of natural resources and human resource of maize agriculture and 2) The analysis result of the resource potential of maize agriculture based on the best of comparative and competitive. In the second year (2015): 1) The formulation of strategies for maize farmer empowerment, and 2) Activity proposal of intervention to increase the income of maize farmer. In the third year (2016): Model of maize farmer empowerment based on theoretical and empirical studies in improving the income of maize farmer in Boalemo regency of

Gorontalo province. Outcome or output of this study is expected to develop a theory or concept about empowerment and empowerment model to increase the income of maize farmer.

II. Literature Review and Development of Hypothesis

2.1 Community empowerment

Empowerment is something believed to be an “alternative development” on the model of development centered on growth. At first the development of alternative puts forward some convictions: first, state is the problem of development so that the development of alternatives to eject and even against the State; second, citizenry can not do wrong and the community is an independent association; Third, community action have capable and sufficient to realize the alternative development without state interference (Friedman, 1990).

Kartasmita (2009) suggested that community empowerment is a concept rooted in community development. The concept of community empowerment includes the understanding of community development (community development) and development focused on the community (community based development).

The final goal of community empowerment is the restoration of human values in accordance dignity and status as a unique person, independent and self-sufficient. Unique in the context of pluralism, free from all shackles of internal and external, including the shackles of worldliness and poverty and self-sufficient to be able to be programmer for themselves and take responsibility for themselves and others.

Dwi Setianto (2011) explains that the village community empowerment can be implemented through four areas of POSDAYA Program i.e. through the areas of health, economic or entrepreneurship, education and environment. Community empowerment can be done through KKN Posdaya. The cooperation of University with local government through SKPD can be maximized to help empower community in these areas in order to achieve the MDG’s program.

The concept of community empowerment basically means putting the community and its institutions as a power base for the development of economic, political, social, and cultural. Resurrected economic institutions of society to be collected and strengthened so that it can act as a locomotive for economic progress which is a must to do. The people's economy will be awakened when the synergistic relationship of the various institutions of social and economic that are in community developed towards the establishment of a network of people's economy.

a. Several Approaches and Strategies for Community Empowerment

Several approaches and strategies in community empowerment (Karsidi, 2001) towards the independence of farmer, especially for maize farmer, can be achieved by various efforts as follows: 1) Starting with the micro and local action; 2) Development of strategic economic sector that appropriate with local condition (area); 3) Changing the administrative territorial approach with an area approach; 4) Rebuilding community institution; 5) Developing a mastery of technical knowledge; 6) Development of awareness of economic actor; 7) Building a network of strategic economic and 8) Controlling policy.

In addition there are some important aspects that need attention within the farming community empowerment, among others: 1) Development of organization/group of communities developed and functioning in dynamic of community productive activities; 2) Development of a strategic network of inter-group/community organization formed and playing a part in the development of farming communities; 3) The ability of small farmer group in accessing external sources that can support their development, both in the field of market information, capital, and technology and management, including the ability of the economic lobby (Sasono, 2000); 4) Development of technical skills and managerial of community groups, so that the various problems of technical and organization can be solved well. Here, in addition to the targeted communities (maize farmer), as well as extension workers/escort officers of community empowerment must improve a self competence as personnel capable of empowering, because many of them actually miss his ability with the targeted group.

b. The goal of community empowerment

Community empowerment in general has a goal to improve the welfare and the people's life. Through the empowerment, governments strive for various development program so that community have knowledge and life skill in fulfilling their needs.

Empowerment aims to empower community, in the form of the group as a major strategy (Ibrahim, 2009: 89). Community empowerment goal is to empower life of community group equally.

2.2 Family empowerment

Posdaya as container of empowering family member can be said to be a revolutionary program and responsive to realize human development. Empowerment programs in various fields planned and systematically considered as one of strategies to accelerate the achievement of Human Development Index (HDI) and the achievement of the Millennium Development goals

(Millennium Development Goals). Why Posdaya considered as a strategy in achieving both these objectives above for activities of Posdaya lead to targets HDI and MDGs.

Based on thought of Suyono and Haryanto (2010, 12-21), empowerment activities undertaken by the family in POSDAYA as follows;

- a. Empowerment of economic function
- b. Empowerment of Education Function
- c. Empowerment of Health Function
- d. Empowerment of Environment Function
- e. Empowerment of Religious Function

2.3 Family Empowerment as MDGs Targets

Rural community empowerment program is essentially to boost regional economic growth and poverty alleviation effort based on family. This is in line with the Presidential Decree no. 3 Year 2010 on Development Program with justice by instructing the ministers, governors, regents, mayors down to the bottom level line that expects in order that pro-people development, justice for all and the achievement of MDGs in 2015.

2.4 Achievement Indicators of MDGs

The MDGs international framework that has been agreed there are 8 goals and 18 targets which are equipped with 48 technical indicators. These Indicators are used as references for overcoming problems in particular of economy, education, health. MDGs targets no other are also directed to improvement of Human Development Index (HDI).

2.5 Maize commodity

Maize is the second source of carbohydrate food commodity after rice, it is very important for food security. Maize also bulks large in fodder industry and food industry. In Anonymous (2012) explained that in the last five years, national maize demand for feed material industry, food and beverages increased by $\pm 10\%$ -15%/year.

Based on the order of the world's staple food, maize is in 3rd rank after wheat and rice (Ditjen Tanaman Pangan, 2012). The maize crop has many uses. Almost all parts of the plant can be used, for example: 1) The young leaves: cakes pad (dodol of sticky rice, corn leaf flower, cloth fiber material); 2) Stems and young leave: fodder; 3) Stems and old leaves; green fertilizer or compost; 4) Stems and dry leaves for firewood.

According Anggraeny et al (2006) corn waste of stem ranged from 55.4 to 62.3%, from leaves 22.6 to 27.4% and from dried corn husk between 11.9 to 16.4%; 5) Corn rod; pulp (paper material); 6) Unripe corn fruit: cakes, vegetables, bakwan; and 7) Old corn seeds; substitute for rice, marning, pastries, fodder, flour, thin rice noodles, a mixture material of coffee, biscuits, corn bread, popcorn, fodder, raw material of beer industry, pharmaceutical industry, dextrin, adhesives, textile industry.

2.6 Maize Farmer Communities

Maize farmer communities are people who have businesses and basic livelihood as maize farmers. Farmer's life is identical with community's life in rural areas so that the maize farmer community is also called maize cultivators or peasant (peasant). Maize farmers are human resources that need to be paid attention as part of agricultural producer in a region. Commodity produced by maize farmer is maize (*Zea mays*), which can grow normally at high altitude above sea level 0-1300 (Mindalan 2007). Characteristic of topography is a hallmark of Indonesian territory included in Gorontalo province, especially in Boalemo regency so that it can be concluded that the maize is a plant that fits perfectly in the development of productive commodities through various community empowerment particularly the maize farmers.

III. Research Methodology

3.1 Location and Time of Research Implementation

This study was conducted in Boalemo regency of Gorontalo province, with focus on study: Department of Agriculture and Food Security, Agricultural Extension Agency and Bapeda Office and farmer group (Poktan) and farmer group combined (Gapoktan) in Boalemo regency of Gorontalo Province. The timing of study was begun from March to September 2014.

3.2 Informant of Research

The Informant of research consisted of officials within the Department of Agriculture and Food security, the Agricultural Extension Agency and the Office of Bapeda Boalemo, the board and members of farmer group (Poktan) as well as the communities in Boalemo regency.

3.3 Research Method

The research method that will be used following program, activities and output produced for each year of activities implementation. In the second year (2015) the methods used were 1) conducted the training of processing of maize and its waste with an active participatory method (50% theory and 50% practice) which the material presented in the form of speech,

discussion and practice directly on how to cultivate maize and waste. 2) Conducting a feasibility analysis of corn refined product and waste by test of organoleptic method and consumer response as well as test of effectiveness and efficiency of the corncob briquette. 3) An analysis of the achievement of maize farmer empowerment is divided into two, namely: a) Analysis of absorption maize farmer group in processing maize and its waste and operating machine with qualitative method; b) Analysis of business of processed maize farming with quantitative method.

3.4 Data collection technique

Data collection technique that will be used to complement each other consists of: Interview, Questionnaire and Focus Group Discussion (FGD).

To achieve the goals above, a series of activities carried out in the review process include: 1) the review of secondary data; 2) meeting with relevant stakeholders in order to get the latest information as well as an introduction to the analysis of value chain; 3) Developing a questionnaire to the farmer group and related agency, and 4) Visiting field and interview to community related processing of maize and maize waste into productive economic commodity; and 5) Presentation and discussion of this research result with stakeholders to find solution of maize farmer community empowerment of Boaleme regency.

3.5 Data analysis technique

Data analysis technique used in this research is analysis of descriptive quantitative and SWOT analysis.

IV. Result and Discussion

4.1 Result

a. Potential Land and Maize Production in Boalemo Regency

As for potential of natural resource of maize agriculture in Boalemo regency covering a total harvested area, production, and productivity that can be seen in Table 1. On the Table 1 it appears that of Wonosari is bigger harvested area compared with other Sub district, namely an area of 10.949 (Ha) and also production of maize 57.037 (tons).

Whereas most small land area is Mananggu Sub district with 2.397 (Ha) and 11.617 tons of maize production. While the views of productivity, Botumoito subdistrict is the higher maize productivity of 54.13 quintal/ha.

Table 1. Harvested Area, Production and Maize Production per Sub district in Boalemo Regency

No	Sub district	Harvested Area (Ha)	Production (Ton)	Productivity (Quintal/Ha)
1	Mananggu	2.397	11.617	48,48
2	Botumoito	3.126	16.920,50	54,13
3	Tilamuta	2.650	13.429,60	50,68
4	Dulupi	7.783	37.929,20	48,73
5	Wonosari	10.949	57.037,40	52,09
6	Paguyaman	7.498	37.356,08	49,82
7	Paguyaman Pantai	3.823	19.440,51	50,85
	Jumlah	38.225	193.730,39	50,68

(Source: Boalemo in Angka, 2013).

b. Achievement of Maize Production in Boalemo Regency.

To see the development of maize from year to year can be seen in Table 2 below.

Table 2. Output of maize Production for five years in Baolemo Regency

No	Sub district	Harvested Area (Ha)	Production (Ton)	Productivity (Quintal/Ha)
1	2009	1.107	46.219,00	47.41
2	2010	2.432	56.195,00	48.20
3	2011	9.704	73.228,00	43.63
4	2012	37.882	186.402,00	49.30
5	2013	38.225	193.730,00	50.68

Source: Agriculture Department of Boalemo regency 2014

The achievement of maize productivity for five years in Baolemo Regency has gradually increased. It is shown from 2009 harvested area of 1,107 hectares gradually increasing until 2013 harvested area reached 38.225 ha. As with the production and productivity.

c. Maize Waste

Wastes of maize (cobs, cornhusk, straw and Tebon) in Boalemo Regency have not well-organized yet.

1) Corncob/Jenggel

Based on the finding in field that corncob is many untapped, wasted away. Only a few of housewife exploit the corncob as a substitute for firewood. Many corncobs are wasted away (Fig 1).



Figure 1. The left is new corncob and the right is corncob wasted This is not utilized. (Photo: Halid-Boalemo, July 2014)

2) Cornhusk

The field finding result shows that the cornhusk for area of Boalemo regency was an untapped into processed product that is form of corn flower or dodol pad or other products.

The result of interview from respondents who stated that there was mostly cornhusk only corn as fodder for cow. If the land will be planted then the cornhusk still attached to stalk burned (Figure 2).



Figure 2. The left is huskcorn attached to stalk being fodder for cow and the right is burnt (Photo: Halid-Boalemo, July 2014)

3) Corn straw

Straw as well as husk corn that has not been fully utilized. Even burnt away (Figure 3)



Figure 3. Left is unutilized corn straw and right is corn straw burned because the land will be processed to be replanted (Photo: Halid-Boalemo, July 2014)

4) Tebon of maize

Tebon of maize i.e. including stems, leaves and fruit of baby corn chopped and given directly to livestock. In Boalemo majority of maize farmer give feed to livestock using maize Tebon. Tebon of maize by farmer has not been commercialized and is still used in private. As with the other areas that have been commercializing Tebon of maize into high economic value.



Figure 4. Maize Tebon (Photo: Halid-Boalemo, July 2014)

d. Potential Human Resources (SDM) of Maize Agriculture in Boalemo regency

To determine the potential of Human Resources (SDM) of maize agriculture, firstly described on population, welfare, poverty and the level of human development index (HDI) in each Sub districts in Boalemo regency, farmer group, and farmer group combined.

1) Population of Boalemo regency

Population of Boalemo regency per Sub district can be seen in Table 3 below.

Table 3. Population Per Sub district of all over Boalemo Regency

No	Sub district	Population		Total
		Male	Female	
1.	Manangu	6.694	6.261	12.955
2.	Botumoito	14.525	13.991	28.516
3.	Tilamuta	7.851	7.479	15.330
4.	Dulupi	8.409	8.211	16.620
5.	Wonosari	16.393	15.986	32.379
6.	Paguyaman	4.075	3.862	7.937
7.	Paguyaman Pantai	14.167	13.126	27.293
Total		72.114	68.916	141.030

Source: Boalemo in Angka, 2013

Based on the Table 3 above, it appears that the population of male is greater than the population of female. If seen based on the sub district, population of Wonosari Sub district is more than other Sub districts.

2) Classification of Prosperous Family

Classification of welfare level of Boalemo shown in Table 4. According to Table 4 that the population of Boalemo that Pre Prosperous Family is more about 12.241 households or 35.27% from 34.702 households. While prosperous family III Plus is only about 1.105 households or 3:18%. If seen per Sub district, the sub district with a population more Pre Prosperous Family is Dulupi afterwards Paguyaman and Paguyaman Pantai.

Table 4. Classification of Population Welfare Level of Boalemo

Classification of family	Manangu	Tilamuta	Dulupi	Botu-moito	Paguya-man	Wonosari	Paguyaman Pantai	Kab. Boalemo
(1)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(2)
Pre Prosperous Family	1.059 (32,27%)	1.114 (20.2%)	2.014 (49.72%)	1.329 (32.51%)	3.575 (41,67%)	2.348 (32.49%)	802 (40.92%)	12.241 (34.70%)
Prosperous Family I	786 (23.96%)	1.755 (31.82%)	1.531 (37.79%)	1.376 (33.66%)	2.175 (25.35%)	2.111 (29.21%)	760 (38.78%)	10.494 (30.24%)
Prosperous Family II	928 (28.29%)	2.083 (33.77%)	374 (9.23%)	736 (18.00%)	1.794 (20.91%)	1.624 (22.47%)	320 (16.33%)	7.859 (22.65%)
Prosperous Family III	390 (11,89%)	1.610 (29.19%)	111 (2.74%)	639 (15.63%)	701 (8.17%)	987 (13.66%)	74 (3.78%)	4.512 (13.00%)

Prosperous Family III+	177 (5,4%)	402 (7,29%)	21 (0,52%)	8 (0,2%)	335 (3,90%)	158 (2,19%)	4 (0,2%)	1.105 (3,18%)
Total	3.280	5.515	4.051	4.088	8.580	7.228	1.960	34.702

Source: BKKBD of Boalemo Regency, 2014

3) Poverty line and the percentage of poor resident in Boalemo Regency

The poverty line and the percentage of poor resident in Boalemo Regency are seen in Table 5. On the table 5 described that the poverty line from year to year has increased while the percentage of poverty has fluctuated at times down and up again, namely from 2008 to 2009 decreased 2:43% further in 2010 decreased again 0.9%. However, in 2011 the percentage of poverty to increase again 2:06% and down 1.49% in 2012.

Table 5. Poverty Line and Percentage of Poor population in Boalemo Regency for 5 recent years.

Year	Poverty Line	Percentage of Poor population
(1)	(3)	(2)
2008	154.672	23,17
2009	200.692	20,74
2010	212.873	19,84
2011	231.480	21,90
2012	251.713	20,41

Source: BPS of Boalemo Regency, 2013

4) The Level of Development Index

5)

Table 6. Human Development Index (HDI) of Boalemo Regency 2009 to 2012

YEAR	HUMAN DEVELOPMENT INDEX	HDI RANK OF PROVINCE
2009	68.03	6
2010	68.69	6
2011	69.16	6
2012	69.49	6

According to Table 6 that Baolemo Regency from 2009 to 2012 was including the 6th ranking of Gorontalo provincial level.

6) Resident and Farmer Household

Resident and Farmer Household who have business of maize farming in seven sub districts Baolemo Regency can be seen in Figure 5.3. From total number of farmers in Baolemo Regency that is some 3.098 people, showed that sub district of Dulupi have a larger number of farmers (21.37%) compared to other districts. Furthermore, the sub district of Paguyaman (17.01%), Wonosari (16.14%), Tilamuta (13.46%), Botumoito (13.04%), Paguyaman Pantai (10.65%) and the last Manangu (8.33%).

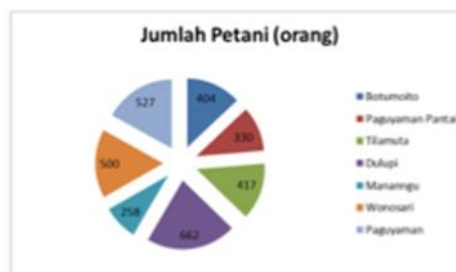


Figure 5. Number of Farmer In every sub district of Baolemo Regency

7) Farmer Group (POKTAN) and Farmer Group Combined (GAPOKTAN)

The number of farmer group and farmer group combined every sub district in Baolemo Regency can be seen on the table 7 below.

Table 7. Total of Farmer Group and Farmer Group Combined

NO	SUBDISTRICT	TOTAL OF POKTAN	TOTAL OF GAPOKTAN
1.	Mananggu	50	9
2.	Botumoito	111	9
3.	Tilamuta	68	10
4.	Dulupi	105	8
5.	Wonosari	259	18
6.	Paguyaman	141	22
7.	Paguyaman Pantai	93	7
	Total	827	83

According to Table 7 that a farmer group in the Boalemo regency as much as 827 groups and 83 farmer group combined.

e. Potential of Facilities and Infrastructure of Agricultural Machinery in Boalemo Regency

Potential of facilities and infrastructure of agricultural machinery in Boalemo Regency is seen in four categories: soil processor, rice processor, maize processor and fieldsmen. It is described to determine the potential tools of agricultural machinery in accordance with the field of work in the farmer communities of Boalemo. This is shown in Table 8.

f. Use of APBN Budget To Maize Commodities in Boalemo Regency, 2012

Maize commodity development program in Boalemo Regency closely related to the readiness of the budget disbursed by the central government through the Ministry of Agriculture RI and other Ministries, the foundation of the budget still expects from APBN because the fiscal capacity of the region has not been able to pay it in full. To detail can be seen in Table 9.

Table 8. Agricultural Machinery in Boalemo Regency

Types of Agricultural Equipment	Subdistrict				
	Mana-nggu	Pagu-yaman	Pagu-yaman pantai	Tilamuta	Wonosari
Tractor With Two Wheels	21	52	-	2	138
Medium Tractor (25-50 PK)	-	-	-	2	2
Big Tractor (>50 PK)	2	53	-	-	-
Rice Thresher	-	92	-	-	68
Rice Dryer	-	1	-	-	-
Grain Cleaner	4	18	-	-	-
Big Rice milling	-	1	-	-	-
Small Rice milling	-	18	-	-	54
Rice Milling Unit	4	-	-	-	25
Corn grinding	12	42	21	15	12
Boat without motor	-	-	67	0	-
Motorboat Tempel	70	-	167	250	-
Motor Boat	-	-	1	16	-
Water Pump	-	-	-	-	81

Table 9. Use of APBN Budget for Maize Commodity Development Program

No	Location of Activity	Vol.		Total of Village	Total of Farmer Group	Total of Farmer (person)	SI-ptt Budget (Rp)	Relief Budget Of Seed (Rp)
1.	Wonosari	405	Ha	11	27	500	99.900.000	273.375.000
2.	Paguyaman	255	Ha	8	17	330	62.900.000	172.125.000

	Pantai							
3.	Paguyaman	405	Ha	16	27	527	99.900.000	273.375.000
4.	Dulupi	420	Ha	8	28	662	103.600.000	283.500.000
5.	Tilamuta	270	Ha	8	18	417	66.600.000	182.250.000
6.	Botumoito	270	Ha	9	18	404	66.600.000	182.250.000
7.	Mananggu	225	Ha	8	15	258	55.500.000	151.875.000
	JUMLAH	2.250	Ha	68	150	3.098	555.000.000	1.518.750.000

Source: Agriculture Department of Boalemo Regency, 2012

g. Analysis of Potential of Natural Resources (SDA) and Human Resources (SDM) of Maize Agriculture Based the Advantage of Comparative And Competitive

1) Analysis of Comparative Advantage

Based on data from Agriculture Department and Food Security in 2013 of Gorontalo province that maize production of Boalemo Regency is in the second rank of the six regencies of city in the Province of Gorontalo is as much as 193.730,39 tons, compared with the other regencies such as 120.960 tons of Gorontalo Regency, 26.675 tons of North Gorontalo, 18.740 tons of Bone Bolango and 165 tons of Gorontalo city. While the maize production of Pohuwato is 339.509 tons.

2) Analysis of Competitive Advantage.

Based on the finding in the field that maize in Boalemo has not been processed into product that has high economic value such as with maize waste. In general way maize is only eaten as a staple food everyday while maize waste namely corncob, bark and corn straw just burned away. With a cheap base material can be processed into corn cornflakes, corn cookies, corn bread, corn marning and other corn processed products. While the waste can be processed into fish feed, poultry feed or fodder.

h. Maize Farmer Empowerment Through Processing of Maize /Maize Waste Into Productive Economy Commodity In First Priority

Maize farmer empowerment through processing of maize and maize waste into productive economic commodity in the first priority based on the field finding that from the seven districts of be there, the farmer groups generally expect intense training on processing skill of base materials of maize to make maize having productive economic value. This is obtained based on interview result with farmer groups who were trained in maize processing into cornflakes. Community expects not only one skill possessed but should be a lot of skills provided by the government so that market competition is not difficult for a small community.

In addition, researcher also found that maize waste processing conducted by researcher still focused on corn briquette that is utilizing corncob into corn briquette. The research result shows that in addition to the corncob, by the difficulty of fodder today, how waste such as corn straw and corn husks is also expected to be able to be used the fodder.

4.2 Discussion

a. Potential of Natural Resources (SDA) of Maize Agriculture in Boalemo Regency

Potential of Natural Resources (SDA) of maize agriculture in Boalemo Regency is very spacious compared to other regencies in Gorontalo province. Based on the existing map of agricultural land of Wonosari Sub district, Dulupi and Paguyaman is wider than other Sub districts in Boalemo regency. The extent of agricultural land is very potential for development of food crop, especially maize. Maize crop is in second order after rice. Maize production in Boalemo in 2013 amounted to 193.730,39 tons with a productivity of 50,68 quintals/ha. With the maize production also shows the amount of maize waste produced. Thus the need for community empowerment of Boalemo to process maize or maize waste into higher economic commodity.

b. Potential of Human Resources (SDM) of Maize Agriculture in Boalemo Regency

The population of Bolaemo Regency is 141.030 people by the number of patriarch (KK) of 34.702. A view of the community welfare is 34.70% KK who still Pre Prosperous family and 30.24% KK of Prosperous family I. Views of the Human Development Index (HDI) Boalemo including the sixth rank of six regencies of city in Gorontalo province. The existence of this condition requires the attention of government how in order to improve living standard of community, especially in terms of economic and educational level.

The community life of Boalemo is dominated by the farmer community. Although agriculture that is developed in Boalemo is diverse as rice, maize and other crops, but maize is the superior commodity in Boalemo. This looks at the data in all the Sub districts (7 Sub districts) in Boalemo. With the main agricultural products in

Boalemo is maize, it is very good if it is developed into maize product having so high economy value. From the farmer communities there are 3.098 maize farmers (Department of Agriculture, 2013). The maize farmers are distributed in seven Sub districts. Sub district of Dulupi has 662 persons of maize farmers of (21.37%), Paguyaman has 527 persons of (17.01%), Wonosari only (16.14%). In Sub district of Wonosari farm land is wide but largely it is a wet farm field that is to *sawah*. Furthermore to other districts also depend on suitable land for maize. The presence of farmer group and farmer group combined greatly simplify government intervention in terms of providing skill or empowerment of farmer in term of maize processing into processed product that can be commercialized into having a high economic value.

c. Potential of Facilities and Infrastructure of Agricultural Machinery in Boalemo Regency

The government of Boalemo regency has given good farm equipment's of soil processing, rice processing, maize processing or fieldsmen. From the existing of data there are 102 pieces of corn grinders.

it shows that maize is in Boalemo just grinded and used as a staple food, or given away to poultry without being processed with a ratio of balanced nutrition. Thus need for tools of maize processing such bolting mill of maize, straw silage grinder of baby corn or other tools that are useful for maize processing into commodities of high economic value.

d. Analysis of Potential of Natural Resources (SDA) and Human Resources (SDM) of Maize Agriculture Based on the Advantage of Comparative and Competitive

By looking at the potential of natural resources and human resources that exist in Boalemo then need for maximum utilization of existing natural resources by empowering farmer in Boalemo community. The community empowerment with expectation in order that the level of community life, especially the community level of Pre Prosperous family and prosperous family I can increase more then before.

e. Maize Farmer Empowerment Through Processing of Maize /Maize Waste into Productive Economy Commodity In First Priority

Based on the research result that the maize farmer empowerment through the maize is processing and maize waste into commodities of productive economy in the first priority as field finding that from the seven districts there the farmer groups generally expect intense training on processing skill of base material of maize to make maize has value of productive economy. By this finding shows that how the importance of the role and the attention of policy makers to be able to provide education to community in processing corn product from low to high economic value by providing the training of various corn product. The importance of training again to the community through other corn product for the improvement of economic value of community. As with maize waste is not only one product provided but by providing some trainings about maize waste that can be processed into products that have higher economic value both be utilized by local communities themselves and be worth export to other neighboring districts. To get a good product need for analysis of the results of maize product and maize waste. For details on the analysis of aspects as follow:

1) Organoleptic aspect

The result of organoleptic analytical testing of cornflakes when viewed from the hardness, it is in the first rank. Panelists like the hardness of corn cornflakes for the hard texture of the cornflakes product so easily chewed with the taste sensation that consumer likes. But in general the views of seven parameters: overalls, texture, hardness, crispiness, flavor, aroma and color indicate that the cornflakes product produced by farmer groups assisted in the village of Harapan Bongo 1, Sub district of Wonosari is the second rank compared with three types of cornflakes served to panelist. This means that cornflakes will be received in the market or in the community if it is marketed.

2) Waste Processing Aspect

Corn cob processing into briquette product is a very easy process, because it does not require advanced technology and sophisticated equipment, corncob briquette can be produced well. This process begins with the burning of dried corncobs to be charcoal then refined by crushed or milled. In order for charcoal granules are smooth and one kind then after crushing or grinding charcoal should be sifted with a sieve size of $80 \pm$ mesh. Charcoal flour that is finished then added adhesive in the form of tapioca heated so that it becomes like glue in the ratio between charcoal flour and tapioca 9:1. Charcoal flour dough and tapioca provided then molded by using a mold of bamboo as well as the pipe while holding up to solid. The Briquette formed then dried in the sun or dried \pm 2-3 days.



Figure 6. Brikette Charcoal Cob Corn

3) Financial Feasibility Aspect

The financial feasibility aspects of corn processed business of cornflakes business group in Harapan Village of Wonosari sub district of Boalemo regency of 2015 are seen from:

1. Operating Cost (Variable Cost)

Variable cost taken out covers the cost of raw materials of corn, cooking oil, flour and Balado, earned cost of Rp. 5.710.000/ year.

2. Operating Costs (Fixed Cost)

The fixed cost taken out for one year of production includes tax cost, electricity cost, water cost, employee wages and depreciation cost of appliance. Retrieved cost of Rp. 148.551.600/year.

3. Receipt

Total of production amounted to 300 kg with the selling price per unit of Rp. 1.000, so the receipt total received Rp. 30.000.000 if multiplied by receipt per year, and then the receipt total is gotten of Rp. 360.000.000.

4. Total Cost

The variable cost of Rp. 5.710.000 and fixed cost of Rp. 148.551.600, so obtain a total cost of Rp. 154.261.600/year.

5. Income

Income or receipt per year Rp. 360.000.000 with a total cost of Rp. 154.261.600, so get net income of Rp. 205.738.400/year.

6. R/C Ratio

Based on the criteria of R/C Ratio value of $2,33 > 1$ gives the meaning that the expenditure of one rupiah will give receipt at 2,33. Thus hypothesis that the business of maize processing into cornflakes is profitable and feasible to be developed.

7. B/C Ratio

Based on the criteria of the B / C Ratio value of $1.33 > 1$ gives the meaning that the business is worth to run.

f. Distribution Flow And cornflakes Marketing and Corncob Brikette In Group of MP3EI Patronage in Bongo 1 Village of Wonosari sub district of Boalemo Regency

Another aspect that is important to at present is related to how the existing supply chain production of corn processed in Wonosari and Tilamuta sub district of Boalemo regency, Gorontalo province, the benefit that the development of system distribution can be run efficiently and at the same time as a form of simplification of the supply chain from the producer (Home Industry) patronage in two sub districts would be more beneficial producer because with this approach can also be analyzed how much the value of margin that can be received by producer (the research agenda on the 3rd stage of MP3EI) in marketing the production of corn product and Brikette resulted in any business activity of patronage group business.

The important aspect to be looked is how to identify and analyze the market sentiment against both types of products that are being developed in two patronage groups because this is as guidelines for measuring consumer tastes and measuring the product's ability to be competitive and different products in the consumer market.

There are three models of the marketing chain of corn product and Brikette derived from maize waste utilization in two sub districts, namely:

1) Market chain of producer (Farmer Group of MP3EI Patronage) to Consumer Market.

Market chain from producer (Farmer Group of MP3EI Patronage) to collector, consumer market

2) Marketing chain of Manufacturers (Farmer Group of MP3EI Patronage) to collector, seller and consumer.

V. Conclusions

The conclusions of this research are:

- a. Potential profile of maize agricultural land Resources of Boalemo regency in 2013 was a land of 38.225 Ha with maize production of 193.730,39 tons so that the productivity was 50,68 quintals/Ha. Thus the maize waste follows the amount of corn production there.

- b. The level of community welfare of Boalemo are Pre-prosperous family of 34,70% KK, Prosperous family I of 30,24% KK, Prosperous family II of 22,65% KK, Prosperous III family of 13% and Prosperous family III + of 3,18% KK.
- c. The Boalemo regency seen from the potential of natural resources of maize agriculture and human resources potential of maize agriculture based on a comparative analysis and competitive analysis, is very good to be developed to be able to improve the economy of Boalemo community both of potential empowerment of natural resources or human resources, Especially in Gorontalo has not been developed skill that can improve the economy of community.
- d. Farmer group of Boalemo regency expects that there is training on basic materials processing of maize and maize waste that more intense to make maize have productive economic value which of low-priced maize into maize processed products with high value so that it can prop up the family economy.

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