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# STUDY ABOUT POTENTIAL FRUIT MANGROVE AS A FOOD ALTERTERNATIF IN THE FUTURE

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***ABSTRACT***
*Mangrove trees usually be in the territory of the mouth of the river or estuarin so that were the areas where the ultimate goal of organic particles or mud sediment is carried away from upstream areas due to the introduction of erosion. As a result of this, the regions those mangrove trees was the urban village having tribes he may be fruitful, good as well as of waters a coastline kilometer long, because always takes place of transportation can be made nutrients due to the introduction of of ups and downs. The purpose of this research is an analysis characteristic fisiko-kimia flour fruit trees in the eastern district peteley Halmahera North Maluku. Methods used is survey and analysis fisiko-kimia flour fruit mangrove (A1, A2 and A3). The research results show that the mangrove potential to being developed as a food alternative the future but they have in of sports first. In all three mangroves namely bruguiere the kind of fruit, sonnetario rhyzoora and good for parameter chemical analysis and physical with the highest value for all parameter is on bruguire with the lowest in sonnetario products.*

## INTRODUCTION

Mangrove trees can be found at the whole entire territory of indonesian archipelago and as far as the present time in Indonesia at the time was recorded at least 202 sorts of crops mangrove, in a working meeting with 89 the two types of trees, 5 a kind of palma , 19 a kind of climber, 44 a kind of herbaceous the ground, 44 a kind of epiphytic and 1 a kind of a nail. Of such the 202, 43 a kind of mangrove of them true (true mangrove) consisting of a kind of trees and some kind of evergreen shrub, while the type of were found around mangrove and known as the type of chaste mangrove) mangrove (associate degree).
Around the world, Saenger et al., (1983) noted as many as 60 mangrove kind of true, thus it can be seen that indonesia have diversity a kind of highest (Noor et al., 2006). FAO said mangrove (1982) recommended should be used for both individual community tufted herbs and plants growing in the tides.

The 1993 Aksornkoae stated that is of mangrove halofit living along the coast affected by the approaching to the highest tides rata-rata sea water that grows in tropical and subtropical regions. Mangrove forests also known by the tidal forest, coastal woodland, vloedbosschen, and woods brackish. In addition, by indonesians and southeast asian nations other with clumps malay, woods magrove often called mangrove forest. However, use the term mangrove forest appellation mangrove forests to have not exactly and is ambiguous, because mangroves but some local rhizophora genera, while hutan mangrove developed overgrown by many marga kind of all other plants.

As a result of this , the use of the term hutan mangrove are the only proper when person whom broke law officers will only need to the tangled maze of jungle were drafted by types of the genera rhizophora , meanwhile if that forest also composed at the same time as the type of marga which had other, so these terms is not perfect or even again to used North Maluku as a whole has ample mangrove trees and long the beach with broad ± 55.322,61 Ha. Specifically the forestry area mangrove trees at North Maluku ± 46.259,41 Ha meeting with two categories of as wide as ± 29.848,83 of land and less meeting area of ± 16.410,58 Ha.

Based on the function of the zones of the forest, to scatter hutan mangrove dominant entrusted bakrie sumatra plantation tbk press statement issued here on the function of the zones of production forest that can be converted (HPK) is as the breadth of 25.594,35 than one hectare in size (55,33%). The rest in the area of land use (APL) is as the breadth of 13.790,01 Ha, than one hectare in size, of protected forest (HL) is as the breadth of 4.999,04 than one hectare in size, of production forest (HP) is as the breadth of 1.324,07 than one hectare in size or passing through forest a limited production (HPT) is as the breadth of 551,94 than one hectare in size (BPDAS Ake Lamo, 2010). .

Geographically regions a total of districts is located to island East Halmahera, the province of North Maluku. East Halmahera is located between 00 40-10 4 of latitude north and 1260 45-1290 30, with a total area 14.202.01 Km2 which consists of broad side of the land to 6.506.19 Km2 and broad the sea 7.695.82 Km2. East Halmahera is a kilometres of coastal areas of because of lack of more 80 % villages are in the regions of sea whereas 20 other % beada in mountainous regions (Bappeda Haltim, 2014). To scatter those mangrove trees in East Halmahera ran into financial difficulties east is as the breadth of 6.888,30 than one hectare in size (14,89%) 6.888,30 Ha (14,89%) (BPDAS Ake Lamo, 2014). The potential of the mangrove relatively abundant such in North Maluku causing the will become one alternative for the fulfilment of rudimentary living food special market operation or in the near future.

Food special market operation or are perceived as common needs basic human that actually matter and the right to ful fill their food needs that should take place in an equitable manner globules and evenly distributed based on independence and it shall not contravene with the public confidence as mandated by law UU No. 7 tahun 1996 on food .

Meeting the needs of food efforts must keep continue given the role of food is very strategic , is that related to with the development of the quality of human resources , the economic and national security so ketersediaanya must be in large enough numbers, nutritious, balanced, equally and reached by purchasing power of the community .

One of the food eksplor mangrove in future is the fruit, and today the utilization of mangrove fruit as level is already often undertaken by communities with various fruit the derivative products of mangrove (Priyono at al, 2010). Some kinds of fruit mangrove of them lindur (Bruguiera gymnorrhiza) can be processed into flour bread next be used as raw materials cake, cake, to mix rice or eaten directly with herbs palm (Sadana, 2007).

Flour fruit mangrove containing energy and carbohydrates a high, even over various types of food sources of carbohydrate who usually has rice kind of community, corn cassava or sago. Fruit *api-api* (avicennia alba) can be processed being flaky and fruit pedada (Sonneratia caseolaris) processed into syrup and candy (Haryon, 2004).

Order of the local community in North Maluku has already existed who uses the fruit of those mangrove trees as an ingredient of food was laid aside as one of them is in peteley village which are the same as been a long time since used to mock at encompassed as a source of food was laid aside as that go to the kolak and sago (a source of: interview the community) .

## METHOD

In the sample have used on this research is taken directly in the village peteley kec. Maba Selatan sub district east Halmahera. To sample preparasi was conducted in west java can be overcame with technology lab where internal conditions for fishing produce the faculty of this form of agriculture have the Muhammadiyah University North Maluku, in May till June 2017. While for the program it is anticipated that analysis fisiko-kimia mangrove meal and bread dough that was carried out in the lab all the time that the idea of nutrition food special market operation or and Nutritional Bogor Institute of Agriculture.

## RESULTS AND DISCUSSIONS

In the manner of a geographical area of district south Maba bordering the gulf of costly and precious and she on the north side of, on the east side of the Sea Halmahera, in south with regency Halmahera the middle of, while the corresponding amount in west side shall be district in Maba the south situated on Central bureau of statistics (BPS, 2014). A snapshot of the 1 shows to scatter those mangrove trees in the village Peteley seen from satellite images.




***Fig 1.*** *To scatter mangrove in the village of satelite peteley image*

The village Peteley is one of the nine villages in the sub district of South Maba sub district East Halmahera. Broad the village area Peteley it should also be noted a whole is 27.908 Ha, than one hectare in size, where is + 5000 Ha, than one hectare in size forested mangrove. The eastern part of the village area bordering Peteley Waci village , to the south of bordering Central Halmahera, in the western part of bordering Loleolamo village, while the northern part bordering on the sea Halmahera (BPS Haltim, 2016).

**The Study Fruit Halmahera Peteley Mangrove Trees at Village East**

These three types of mangrove fruit would therefore always be very dominated up to that moment in Maluku causing north fine the number and extents compared with the other of types. How the physical form of these three types of mangrove fruit could be lowered in the meat of 2 you see in the picture this is for our partners.



(a) Fruit Rhyzophora mucronata. (b) Fruit Lindur (Bruguiera gymnorrhiza). (c) Fruit Pedada (Sonneratia caseolaris

***Fig 2.*** *The kind of fruit trees results*

These three types of fruit mangrove have the potential for development food in which to come. At that an area on generally use fruit mangrove as a substitute for rice and corn on when there was food crisis (Fortuna, 2005).

The communities in Kabupaten Lembata, East Nusa Tenggara for example, they are used consume mangrove fruit and nuts of the forest as local food at a particular time. Mangrove types of fruit lindur (bruquiera gymnorrhiza traditional ) that is processed into a cake, cake, mixed with rice or eaten coconut sadana directly with herbs (Sadana, 2007), containing energy and carbohydrates which is quite high, even over various types of food sources of carbohydrate commonly consumed by the people such as rice, corn cassava or sago.

**Analysis Fisiko-Kimia Fruit Mangrove**

The results of the study of the three kinds of fruit *mangrove* shows that the chemical analysis of mangrove fruit of a kind of *lindur*, rhyzopora have and a very different as can be seen in the Table 1.

**Table 1.** *Fisiko-Kimia Analysis Mangrove Fruit*

| Pharameter | Lindur | Rhyzopora | Pedada |
|---|---|---|---|
| Water content (%) | 12.37±0.063 | 12.455±0.31 | 12.65±0.07 |
| Ash content (%) | 2.33±0.049 | 2.360±0.00 | 5.25±0.00 |
| Protein content (%) | 0.42±0.134 | 0.560±0.56 | 3.93±0.18 |
| Fat (%) | 6.01±0.162 | 8.880±0.19 | 10.01±0.03 |
| Carbohydrate | 78.85±0.030 | 75.740±0.46 | 68.41±0.22 |

The analysis on the highest levels of water the three types of bearing fruit trees are on flour fruit *pedada*

with the lowest in *lindur* as table shows the 1 above. High levels of water *pedada* probably caused is the fruit it very solid so that more containing the moisture content of compared with other types.

It is in line with the research Fortuna (Fortuna, 2005) about the chemical analysis of fruit *lindur* with the water level 11.63 % and the water level that are mandated by the central government department with the moisture content of maximum of 14 %.

The nature of all that for those three ashes long dumped there from during implementation *lindur* fruit, rhyzopora and *pedada* shows that the highest value there is for me the flour fruit *pedada* while the lowest is in the fruit of the *lindur*. High low levels of the ashes in which i depending on the type of the fruit of it for homes exacerbating an already dire ashes long dumped there from high levels of then it would be more higher the the moisture content of mineral. This result is in line by research (Fortuna, 2005) was found to have the ashes in which is 14.01%. Ashes long dumped there from the nature of all that now in comparison with this research according to your full valuation at a rate much lower, it is suspected that this caused by the process of making for the fine flour different from what is mentioned .

Fat content of the result of this research value on the highest levels of fat is on the parameters flour *pedada* worth 3.93 and the lowest in flour fruit *lindur* worth 0.42 %. Research results (Fortuna, 2005) to flour fruit *lindur* of 3.21 % flour directly to the soaking using bleach 3.09 %. Fat in flour will affect the nature of it amylograph. Fat will form complex with of amylose forming helix when gelatinization starch causing his viscous starch (Wirakartakusumah and Febriyanti, 1994).

Levels of a protein on this research with the highest value there are the fruit of the *pedada* 10.01 % with the lowest in flour fruit *lindur* 6.01 %. The results of the study the three and contacting other shows that levels of a protein fruit *lindur* higher than the percentage of levels of a protein flour cassava the results of the study Wirakartakusumah and Febriyanti (1994) within the range between 0,7 % and 1,2 %.

Levels of carbohydrates in this research with the highest value there are fruit *lindur* (78.8 %) with the lowest in flour fruit kike (68.41 %). Carbohydrates is in the number of dominant as a constituent of composition nutritional value flour *lindur* fruit. The value of the program has managed to carbohydrates as much as 81,89 % for flour direct and 80,37 % for the flour by immersion into a solution of bleach.

The nature of all that carbohydrates flour the fruit of the mangrove through the process of soaking in a solution of bleach a little bit lower it is done because there is a of carbohydrates that shaped their mediation role in protecting starch be lost and wasted with a solution of soaking. The nature of all that carbohydrates your high place at flour fruit *lindur* shows fine flour it is also they received a score of calories over the course high regard for him that could be used as an alternative source of new food was laid aside as based the source of its power of foreign currency bank deposits.

**Physical Analysis Mangrove Fruit**

The results of the analysis in all three of those three parameters in the mangrove water absorption capacity, the density of the Kamba white and degrees is presented in Figure 3, 4 and 5 .

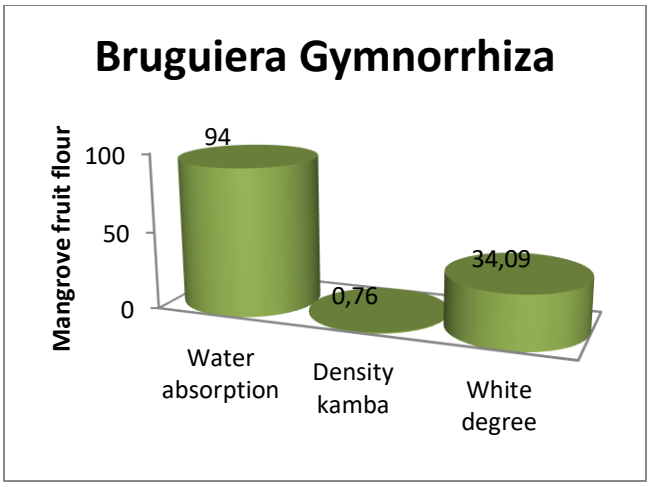



***Fig 3.*** *Charts the mangrove Bruguiera*

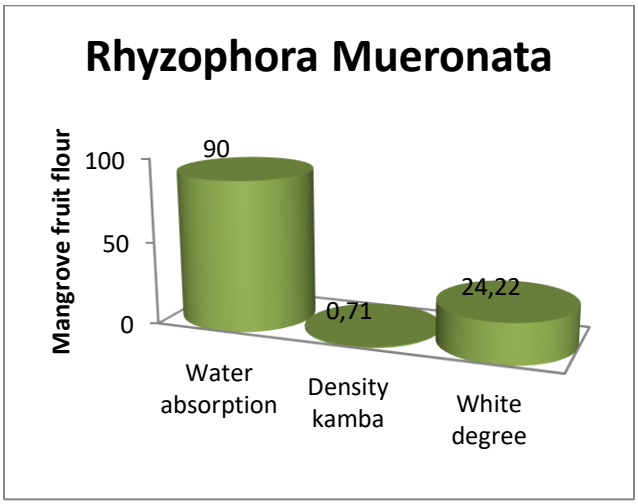



***Fig 4.*** *Charts the mangrove Rhyzophora*

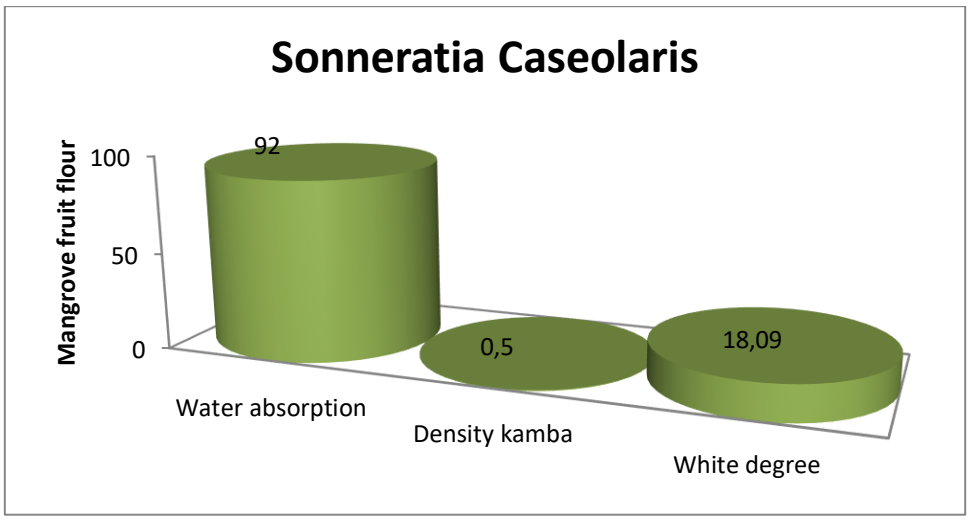



***Fig 5.*** *Charts the mangrove Sonneratio*

The results of the kind of fruit trees shows that s absorptiveness water with the highest found in flour fruit bruguera (lindur) (94%) and lowest rhizopora is worth (90%). Absorption capacity water is characteristic physically important role in determining higroskopisitas product dry as wheat flour included product flour fruit trees (Talib, 2015).

Treatment with the use of acid the result more good this is because acid can used to break down protein, so that the higher levels of a protein so the higher the absorption capacity water (Ohren 1981 in Talib, 2009 )

test to the density of the Kamba with the highest in flour fruit *bruguera* (0.76%) and the lowest in *sonneratio* with the value of (0.5%). The density of the Kamba (do bulk density) is the ratio weight material with the volume inhabited, including the space empty of granules food. The density of the Kamba allegedly not affected by deposits of the acid at the time boiling, the higher deposits of the acid the low also the density of the Kamba and vice versa the lower deposits of the acid the higher the density of the Kamba (Talib and Zailanie, 2017).

Parameters third besides degrees white and density of the Kamba is degrees white. The results for the density the Kamba with the highest in flour fruit *bruguera* worth (34.09 %) and the lowest on the parameter *sonneratio* worth (18.09). This value compared with degrees white wheat flour who is in the range of 80-90 %, then degrees white flour fruit trees produced smaller than at degrees white wheat flour a key *bogasari* stamp blue (Talib et al., 2009)

It is suspected that this because flour of mangrove fruit produced without the use of a bleach usually used for flour and sold stood in line. Degrees the white flour that reflects the quality of the flour, the higher degrees white a kind of flour then it would be more good too the quality of the flour from giants like dupont (Buckle et al. 1987 in Talib, 2009).

## CONCLUSION AND SUGGESTION

The results of research for the third the kind of fruit mangrove trees with the highest value there are on fruit lindur and the lowest on fruit Rhyzopora while for physical analysis with the highest value bruguera and the lowest in Rhyzopora.Fisiko-kimia analysis of the fruit trees is indicated that flour fruit trees can be used as a an alternative food development time is coming.

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