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New Agricultural Land Measurement Adapted in Langowan, Minahasa, North Sulawesi, Indonesia

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Abstract
New agricultural land measurement adapted in Kecamatan Langowan, Minahasa and dry paddy measurement counted as odd measurement compare to well known general measurement in farmers' practicing since along time, from descendant to descendant. The writer found these measurement when searching another topic of research named "Analysis Farmer Decision Against Integration of Wetland Paddy and Duck In Minahasa North Sulawesi". One of the variables is the measurement of each farmer area wetland paddy owner. They were seventy five respondents. Gold shell was a must food to consume for duck laying eggs in the research location.
The new agricultural land measurement consists of first, "walleleng", second,"tek tek" for land measurement and third "gantang" for dry paddy weight. Some of the seventy five respondents used Ha. Eight "waleleng" have the same measurement as one Hectare. So, One "Waleleng" is 10000/8 M^2 = 1250 M^2 . Three "tek tek" have the same measurement as one Hectare. One "tek tek" is 10000/3 = About 3333 M^2 more. Five "gantang" for dry paddy have 75 Kg. One "gantang" of dry paddy is 15 Kg.To make sure. the farmer count one "waleleng" of their wetland paddy produced 17 gantang of dry paddy. It means 15 kg times 17 "gantang" = 255 Kg dry paddy.
Keywords: new measurement, waleleng, tektek, gantang, gold shell.

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I. Introduction

Agricultural land value and the value of rights to future land development as land economics (Platinga, 2001). Land as general economics factors for crop land and pasture capitalization in Georgia (Flanders,2004) Land crucial as investment and productivity in developing countries.(Zepeda, 2007).

The research of the farming system by integrating wetland paddy and duck have two advantages by the in system of farming. The wetland paddy before new period plantation or after harvesting was the time where the duck clear the golden shell "keong emas" and larva as organisms in rice soil (Anas et., al. 2011) also paddy for their food, according to the farmers, ducks have to consume these golden shell, if not, otherwise they cannot produce eggs. The same idea as Murtisari, (Murtisari et.,al. 1982) the ducks act as soil conservation. While eating they also produce fertilizer to conservate the soil by their organic fertilizer. (Norman, 1994)

In South China duck and rice culture was studied in duck production and world practice. (Liu, 1985). The location of the research is humid tropics as studied by (Anitha, 2011) showed in Journal of Tropical Agricultural 49 (1-2). The location of the research called 'Langowan', MInahasa, North Sulawesi, Indonesia. Three of the villages were the centre of wetland paddy production as well as the egg ducks production support the market around Minahasa and some of North Sulawesi consumption.

2. Research Method

Research Method Used Talllies Analysis to the seventy five respondents in the location research. Explanation by the new measurement. From 75 respondents picked up only the area without the same measure. By these the writer got twenty measurements. The research done in the location as follows: Three of seven villages are 'Wolaang", 'Amongena I' and 'amongena II'. The location was near "Kawatak" mount show by the map of (Walangitan, 2012) represent amongena II, (enclosed), showed by the altitude as follows :

Table 1. showed that the village wolaang has altitude +746 m above sea level, Amongena I Amongena II +731 m and +743 m. The following table describes the location of the study through distance villages and district as follows: East District Langowan To The Villages.

Tabel 1. The Altitude Of The Location Above Sea Level.

No.	Villages	Altitude (m)
1.	Teep	+722
2.	Wolaang	+746
3.	Waleure	+737
4.	Amongena Dua	+743
5.	Amongena Satu	+731
6.	Karondoran	+731
7.	Sumarayar	+728

Source: Central Bureau of Statistics of North Sulawesi, 2010

Tabel 2. East District Langowan To The Villages

No.	Village	(Km)
1.	Teep	6
2.	Wolaang	2
3.	Waleure	1
4.	Amongena Dua	2
5.	Amongena Satu	2
6.	Karondoran	2
7.	Sumarayar	1

Source: Central Bureau of Statistics of North Sulawesi, 2010

Table 2. showed that Wolaang village just 2 Km to the East District Langowan, Amongena I, 2 Km and Amongena II also is 2 Km. Here is the location of the study area.

Table 3. Regional District of East Langowan vast According to village (Ha) in 2010

No.	Village	Area (Ha)	(%)
1.	Teep	2,01	18,31
2.	Wolaang	2,14	19,49
3.	Waleure	0,93	8,47
4.	Amongena Dua	1,40	12,75
5.	Amongena Satu	2,40	21,86
6.	Karondoran	0,95	8,65
7.	Sumarayar	1,15	10,47
Total		10,98	100

Source: Central Bureau of Statistics of North Sulawesi, 2010

According to the topography, the third, even to seven villages in East Langowan is on flat ground or plain. Tabel 3. is an explanation of the rt / rw of the research sites.

Tabel 4. Rt/rw /SLS and Block Of Kecamatan Langowan Timur, 2010.

No.	Village	SLS	Census Block
1.	Teep	4	7
2.	Wolaang	10	9
3.	Waleure	6	11
4.	Amongena Dua	4	4
5.	Amongena Satu	6	8
6.	Karondoran	5	5
7.	Sumarayar	5	5

Source: Central Bureau of Statistics of North Sulawesi, 2010

Table 4. showed that wolaang has 10 village guard or rt / rw and 9 census blocks, while Amongena I have six guard and 8 blocks, Amongena II have 4 guard and 4 blocks. The following table 5, will present a number of area residents and villages according to population density.

Table 5. Population, Area and Density According To Region.

No.	Village	Population	Area(Km)	Density ($m^{2)}$
1.	Teep	1.3791	2,02	686,57
2.	Wolaang	1.810	2,14	1.011,21
3.	Waleure	1.954	0,93	2.577,42
4.	Amongena Dua	1.402	1,40	879,29
5.	Amongena Satu	2,029	2,40	974,58
6.	Karondoran	1.477	0,95	1.312,63
7.	Sumarayar	1.614	1,15	1.220,00
Total		11.665	10,98	11.075,60

Source: Central Bureau of Statistics of North Sulawesi, 2010

Table 6. suggests that the village has a population of Wolaang 1810 with an area of 214 Km and density per km2 is as much as 1011.21; village Amongena I have a population of 2029 inhabitants with an area of 240 km and a population density per km2 is 974.58; village Amongena II has population of 1402 souls with an area 140 km and a population density pe 974.58 km2.

Here is a picture of the village and the population according to gender in the Eastern District Langowan as shown in Table 7.

Tabel 6. The Population According to Gender.

No.	Village	Male	Female	Total
1.	Teep	719	660	1379
2.	Wolaang	751	1059	1810
3.	Waleure	778	1176	1954
4.	Amongena Dua	802	600	1402
5.	Amongena Satu	840	1189	2029
6.	Karondoran	856	621	1477
7.	Sumarayar	897	717	1614
Total		5643	6022	11665

Source: Central Bureau of Statistics of North Sulawesi, 2010

Table 7. suggests that the Wolaang village has male population of 751 souls and 1059 Woman so that the total population have 1810 souls; village Amongena I have male population of 840 souls and the souls of women by

1189 so that the total population have 2029 souls; Village Amongena II has a male population of 802 souls and female population of 600 souls so that the population of the village have 1402 souls. Table 8 Shows the number of households in the District of East Langowan.

Tabel 7. Number of households

No.	Vilage	Households
1.	Teep	588
2.	Wolaang	796
3.	Waleure	841
4.	Amongena Dua	402
5.	Amongena Satu	816
6.	Karondoran	401
7.	Sumarayar	459
Total		4303

Source: Central Bureau of Statistics of North Sulawesi, 2010

Number of households in the study sites were, Wolaang 796 souls on record in 2010, the village patriarch Amongena I recorded as many as 816 people and as many as 402 village heads of Amongena II family.

After describing the various aspects of the study site and the following is a description of the agricultural economy of the research sites.

Analytical process to this topic, can be used simple regression by only two variables called 'land measurement' signify to 'paddy production', in the research location, have not done here because the writer want to simply out to 'the uniqueness of 'agriculture land measurement in the location of research'. For this purpose the writer took out the seventy five respondents measurement as the owners of the wetland paddy area. The same measurements would be singled out one. That's why from the 75 respondents got only 20 measurements by this process.

3. The Result And Dicussion.

3.1. Households Economics

Based on a family of farmers running economy physiological status which should always be in a healthy condition, one of which is indicated by weight and age. Farmers have a healthy family with a wife and children so that the harmonious relationship within the family to confront its works. Education is also important so that the whole family has good access to manage their work as farmers or other jobs, which is known by moonlighting. In the face of the income for the work they have expenses ranging from household food expenditure, in the form of non-food expenditures make or repair residential homes, the expenditure for home energy ladder fuels for cooking, lighting and transportation, to access services such as smooth employment and household relationships and socializing, to health spending, for clothing expenses, assets, outlays, or the purchase of non-refundable items.

Peasant household food expenditure for consumption is computed in a time period of three months harvest consisted of spending Cereal of rice, glutinous rice, corn, noodles, vermicelli or other. Spending tubers form for potatoes, sweet potatoes, taro, cassava or other. Expenditures for grains and legumes such as green beans, peanuts, tofu, tempeh Bongkrek, soy tempeh, or other. Expenditures for meat such as chicken and eggs, chicken, duck, beef, chicken eggs, chicken eggs taste other tau, expenditures for fish such as carp, mujaer, anchovies, shrimp, catfish, milkfish, or other kuniran. Expenditure on vegetables such as spinach, kale, cucumber, cabbage, carrots, long beans, pepper, shallots, garlic, onions and other. Expenditures for fruits such as avocado, citrus, mango, jackfruit, papaya, banana, rambutan or other. Expenditure for milk and other dairy like whole milk, powdered milk, sweetened condensed milk, sour milk or other. Expenditures for fats and cooking oils such as margarine, butter or other miscellaneous expenditures for consumption like brown sugar, white sugar, tea, coffee, jelly, nutmeg, pepper, ginger, turmeric, galangal, crackers, cigarettes, tobacco or other.

Spending on home improvements such as the purchase of paint, wood, tile, sand, cement, stone, brick, nails or other. Expenditures for energy in household fuel for cooking, lighting, transportation in the form of firewood, kerosene, methylated spirits, oil, petrol, gas, diesel, coal, electricity. Household expenditures for services such as home phone, mobile, mail, tricycle, Water, Tax (PBB), recreation and thanksgiving of various birthdays. Expenditure on health as for doctors, midwives / spells, health centers, shaman, smart people, drugs, or other. Spending on education as children in elementary school costs, medical costs for children in junior high, high school costs for children, children in college costs, the cost of children for skills training as non-formal education. Spending on apparel such as baby diapers, baby clothes, children's clothing, teen apparel, clothing or other parents. Increase in assets or purchase of goods that can be cashed back as motorcycles, cars, land, or others. The source of all the above expenditures are expected to be bailed out by the farm and sideline to be commercialized.

Cultivated land and commodities are two important things to work on farms. Land consisting of garden land, wetland 1, wetland 2., And so on, cropping patterns and crop types are also determinants. In this study aimed to measure rice and ducks. As for rice cropping pattern around three months each harvest and duck eggs are taken every day but calculated income for three months.

Acceptance of land planted with rice and duck eggs collected will be called a farm receipts. Farming also requires the expenditure of cost inputs. Cost of inputs consists of seeds in the seed (kg) urea fertilizer in kg, SP36 in kg, in kg NPK fertilizer, fertilizer, pesticides and irrigation costs. Labor costs consist of expenditures male labor, female labor and the cost of the small tractor. Expenditures for labor costs consist of labor within the family and outside the family labor are calculated Per Day Working People (HOK). Labor working on land management, planting, fertilizing, weeding, pesticide spraying, irrigation, harvest and post-harvest cleaning. Each harvest was over and the job is done.

Expenditures for equipment used for farming such as hoes, plows, rakes, shovels, sickles, ganco, small tractor, diesel water pump or other. As spending their access to production inputs purchased in the body called cooperate, purchased at the store or kiosk, or even treat yourself as a seed crop planting season ago. Problems that typically arise as the scarcity of seeds, shortages of fertilizer, pesticides or scarcity of water shortages. Marketing of farm and how to sell their harvest also requires expenditures. Economic grounds usually for planting, for livestock or for the spacious grounds and pool if possible. Usually cultivated grounds to meet the needs of vegetables, as a supporter of farming, organic fertilizer source, where drying results, meet the needs of fruits, to avoid areas of air pollution, meet the needs of animal protein, is used to relax in place, meet the needs of drug-traditional medicine, for the time when leisure activities, sources of additional income household economy as a source of beauty and firewood needs. The kinds of garden plants are species of medicinal plants such as ginger, kencur, turmeric, or other; types of fruit trees such as mango, guava, grapes, rambutan, or other; vegetable crops such as beans, corn, winged bean, chili or other; type crops, tomatoes, cucumbers, beans, onions or other; tuber crops such as tales, cassava, sweet potatoes, potatoes or other; types of livestock and fisheries such as chickens, ducks, menthok, or other ; types of livestock such as goats, buffalo, cattle or other species and fisheries such as carp, catfish, tilapia or other.

3.2. New Measurement

Paddy plant in wetland areas for three months harvesting. Seventy five respondents generally have these twenty measures, and these twenty measures have the ^{M2} ; 'waleleng ;and, ' tek tek' measures as follows :

Tabel 8. Paddy Plantation Area Of Respondents In ^{M2}, "waleleng' and 'tektek'.

No.	Area In (M^2)	Area In (Waleleng) compare to M^2	Area In (tek-tek) compare to M^2
1.	10.000	8	3
2.	6.666	5,3	2
3.	15.000	12	5,5
4.	4.400	3,5	1.3
5.	5.000	4	1,5
6.	8.750	7	2,6
7.	5.655	4,5	1,7
8.	16.250	13	4,8
9.	3.333	2,6	1
10.	18.750	15	5,6
11.	21.000	16,8	6,3
12.	4.666	3,7	1,4
13.	12.000	9,6	3,6
14.	6.000	4,8	1,8
15.	20.000	16	6
16	7.000	5,6	2,1
17	30.700	24,5	9
18	60.800	48,6	18
19	45.000	36	13,5
20	15.100	12	4,5

Source : The Result Of The Research By Jcl.

4. Conclusion

Tabel eight showed that the measurement of ^{M2} known by the respondents in the research location, but they used to know better and to measure with ease by 'waleleng' and ' tek tek'. By plant in the measurement of 'waleleng' they, the farmers know exactly how many 'dry paddy' have to be produced in 'gantang'. One Waleleng is the same as 1250 M^2 , one tek tek is the same as 1/3 Ha a little more than 3333 M^2, one 'waleleng' produce 17 gantang, whereas, one gantang is the same as 15 Kg dry paddy. The feed of duck in paddy's area called 'golden shell' and also 'black shell' or 'renga'. Paddy's predator is these shells, and the laying eggs ducks have to eat them. Without renga ducks cannot laying more eggs, without fertilizer of ducks paddy don't have organic fertilizer,

take and give. By the uniqueness of the 'land measurement' the writer wanted to introduce them to the world of measurement and to the reader. By introducing them means to introduce the new measurement to be compared to or to be calculated to the general well known 'land measurement'.

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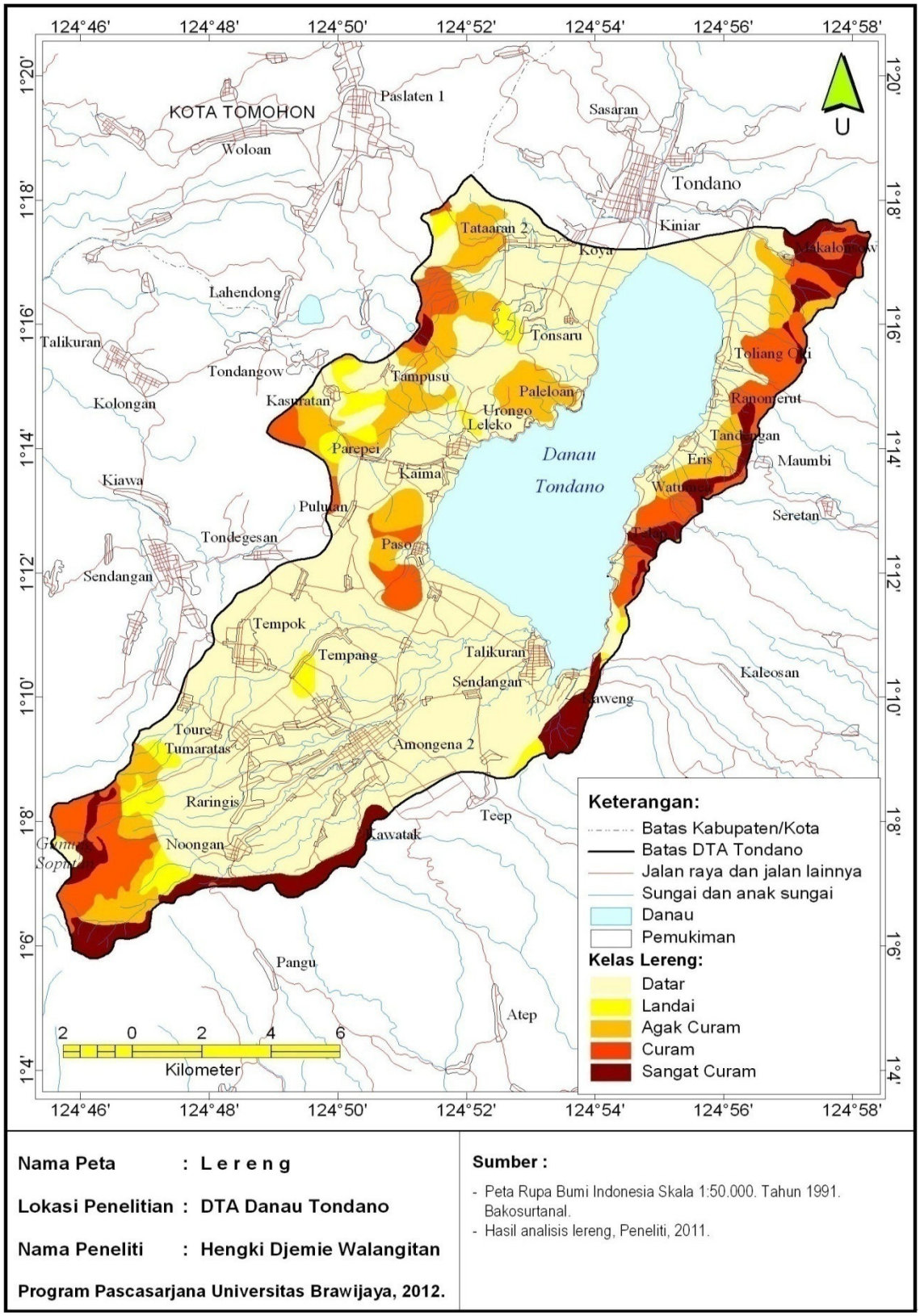

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