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The Relations of Climate and Land Use with the Incident of Filariasis in Pasaman Barat 2007-2013

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Abstract

The objective of this study was to determine the relationship of climate and land use with the incidence of filariasis in Pasaman Barat in 2007-2013. This research uses with ecological design. The population in this study is all positive and filariasis disease incidence was recorded in the register of filariasisin Pasaman Barat District Health Office. Source of data using secondary data filariasis cases, climate data, and the data of land use. Processing data using univariate analysis, spatial, and the bivariate correlation test. Based on the results of statistical tests there is a relationship between rainfall (p = 0.001; r = 0.449), number of days the average monthly rainfall (p = 0.011, r = 0.275) with the incidence of filariasis, and there was no correlation between air temperature (p = 0.327 ; r = -0.108)), humidity (p = 0.683; r = -0.045) and wind speed (p = 0.751; r = 0.035) with the incidence of filariasis. The relationship of land use by plantations with filariasis events have a strong relationship (r = 0.565). Known spatial distribution of filariasis patients are most at Sungai Aur. In conclusion, by the spatial distribution of the incidence of filariasis is in the plantation area.

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Variables that serve as risk factors of filariasisis rainfall. Therefore, it is suggested to the community to care for and maintain the health of the environment, as well as the need to be implemented and the extension of filariasis vector control and an integrated environment

Keywords: Filariasis; Ecology; Climate; Land Using.

1. Introduction

The assumption of trend greenhouse effect in influencing global warming continues and cannot be inevitable. Physical and biological balance of the ecosystem will be disrupted. As a consequence, people and things on earth must quickly adapt in line with the changing environment. Natural climate changes have occurred since 5000-15000 years ago and changed the face of this planet. One of the other impacts of climate change is the change in potential patterns of infectious diseases namely, modified vectors that are common to the tropical climate region / subtropical [1]. Disease elephantiasis (filariasis) is one of the vector-borne disease caused by infection with filarial worms. The disease is characterized by enlargement of the legs, arms, breasts, genitals in men (scrotum) as well as in women. Filariasis not cause death, but if not treated properly can lead to disability, psychosocial barriers and decreased work productivity, causing huge economic losses [2].

Filariasis generally endemic in low-lying areas, especially in rural coastal areas, inland, rice fields, swamps and forest areas. In general, the disease elephantiasis spread in Sumatra, Java, Kalimantan, Sulawesi, Nusa Tenggara, Maluku and Irian Jaya [2,3]. Until the year 2010, a total of 356 (72%) districts / cities in Indonesia has been determined as the district / city endemic filariasis, Determination of endemicity districts / cities are based on the results of the survey with a finger blood microfilaria rate (mf rate)> 1%. [5]. Distribution spread of filariasis cases in Indonesia covers almost all provinces, including the province of West Sumatra. West Sumatra province is endemic filariasis and is ranked 11th in 2010 with 274 cases and ranked 17th highest in 2012 that 193 cases were scattered in various counties and cities [5, 6].

According to the West Sumatra Provincial Health Office, Pasaman West is one of the areas with the highest prevalence of filariasis. West Pasaman filariaris declared as endemic area with the incidence of positive cases and microfilaria settle on a finger blood test clinically [7]. West Pasaman is geographically located in the west coast of Sumatra that caused the air temperature is always hot and humid. The air temperature ranges from 20ºC West Pasaman - 30ºC with a humidity of about 88%. The wind speed in the area of land of at least 4 km / h and a maximum of 20 km / h. From the results of monitoring meteorological station, in 2008 precipitation ranges from 48 mm - 691 mm with an average rainfall of 345 mm / month [8]. Results of research conducted by Julius Sarungu, et al (2012) showed that the temperature and humidity are enough, affect the habits and life of a mosquito bite, so microfilariae in the mosquito's body has enough time to grow into infective L3 larvae. Sufficient rainfall levels will increase the areas of breeding places, as well as hot showers are interspersed allowing mosquitoes can breed optimally. Wind speed also has a role in the spread of the vector. High wind speeds capable of carrying mosquitoes fly farther to find a place of rest, looking for food and breeding [9].

Based on the geographical location and topography, West Pasaman region largely consists of plains, a ha;p

again form the hills, mountains and small islands and dominated also by a apart seas and coastal regions. Generally large rivers and small in the region of West Pasaman height is not much different from sea level. This situation which resulted in quite a lot of parts of the West Pasaman prone to flooding / inundation. Stagnant water is also one of the seasonal distribution of risk factors and the development of vector-borne filariasis breeding place in West Pasaman [8]. To determine the relationship of climate (temperature, humidity, rainfall, wind speed and number of rainy days) and land use with the incidence of filariasis in West Pasaman in 2007-2013.

2. Materials and Methods

This research is quantitative by using ecological study design. Ecological studies in this research is the observation of trends Ecologic trend (trend) the number of cases (incidence) in one or more groups of the population in a given period of time. In this case, these trend Ecologic studies are used to examine the relationship between climatic factors and land use with the incidence of filariasis [25]. Time and Place The research was conducted in West Pasaman in 2014. The population in this study were all recorded incidence of filariasis in the report filariasis West Pasaman District Health Department from 2007-2013. The sample in this study consisted of men and women aged 0-≥70 years who have been designated as a clinical filariasis sufferers.

Statistical analysis in the form of a simple correlation test with $\alpha = 0.05$ was done to see how the relationship between climatic elements such as temperature, humidity, rainfall, wind speed with the incidence of filariasis. In addition to knowing the relationship, of the correlation values can also determine the direction of the relationship between the two variables. Relationship between two variables can be either positive or negative patterns [26]. Stages analysis conducted univariate and bivariate analysis. Univariate analysis useful to illustrate the distribution of the incidence of filariasis and the description of fluctuations in climatic factors (temperature, rainfall, wind speed, humidity) 2007-2013. Bivariate analysis done by using correlation test to examine the relationship between the independent variables are climatic factors and land use with the dependent variable is the figure of filariasis in West Pasaman 2007-2013 [26]. Secondary data filariasis in West Pasaman years 2007-2013 were analyzed using the software Epi Info 7 in order to obtain an overview of distribution in the form of mapping the incidence of filariasis. Temporal picture obtained by grouping filariasis events based on time each month to obtain a line filariasis incidence tendency to fluctuate. Spatial analysis is also used as a tool in informing the composition of land use with the spread of filariasis cases in West Pasaman 2007-2013.

3. Results and Discussion

The tendency case of Filariasis in West Pasaman Year 2007-2013.The population in this study were all patients who have been examined filariasis disease blood clots and has been positive with filariasis. Here is a graph of time series tendencies filariasis cases West Pasaman Year 2007-2013. On Figure 1, it can be seen that the incidence of filariasis West Pasaman during the period of the last seven years have increased and decreased the number of cases each month. Filariasis cases is highest amongst ie 6-12 months in 2007 with 48 cases and the incidence of filariasis lowest was between 78-84 months in 2013 with 38 cases. There are many factors that affect the incidence of filariasis, one of the most influencing factors are environmental factors. It is also

reinforced with a triangular theory of epidemiology by Gordon in which the environment becomes one of the causes of disease incidence.

Based on the above, it can be said that environmental factors more influence on the incidence of filariasis. The environmental factors such as climatic conditions and the number of shelters or housing around the puddles.

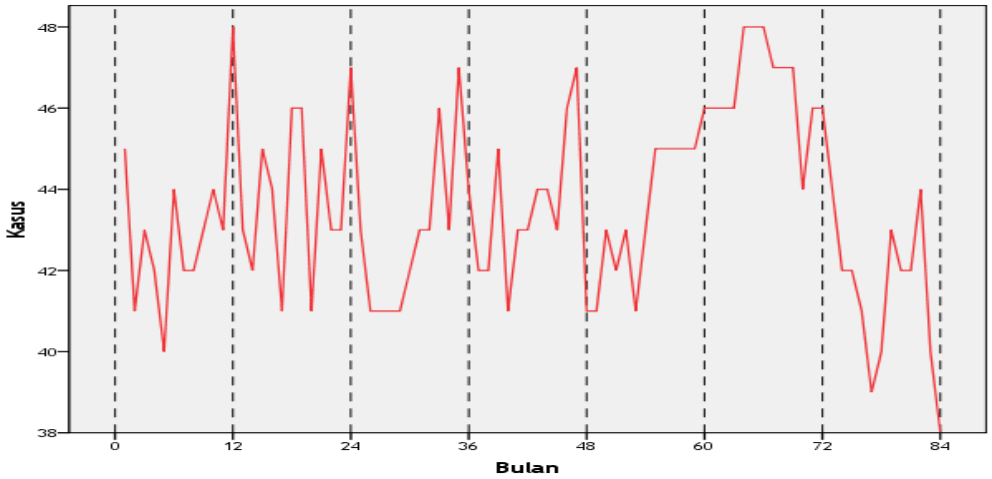

Figure 1: The Average Filariasis Case Monthly in West Pasaman Year 2007-2013

3.1 Climate Tendency West Pasaman Year 2007-2013

Climate is the average weather conditions within one year of the investigation carried out in a long time covering a particular area mainly covering air temperature, rainfall, humidity, and wind speed. Listing of these climatic factors conducted by the Bureau of Meteorology, Climatology and Geophysics (BMKG) Climatological Station of Teluk Bayur. The climate monitoring station serving the air quality report from each regencies in West Sumatra Province. Climate elements presented in this variable is the temperature, precipitation, humidity and wind speed obtained from the air quality report West Pasaman located in the Gulf Bayur BMKG Meteorological Station. Therefore, to determine the fluctuations in the climate in the region of West Pasaman following the recording of the results of climatic factors such as temperature, humidity, rainfall, and wind speed were recorded every day and averaged per month.

3.2 Relationship of Climate Condition with Genesis Filariasis.

To determine whether variations in climatic factors (temperature, humidity, rainfall, and wind speed) the effect on the incidence of filariasis in West Pasaman from 2007 to 2013, then in further analysis can be seen whether there is relationship between the climatic factors the incidence of filariasis in West Pasaman. To see the relationship, the data that had been obtained were analyzed using statistical tests. Here are the results of a statistical test every climatic variable (temperature, humidity, rainfall, and wind speed) on the incidence of filariasis cases from 2007 through 2013 in Pasaman west.

Table 1. Relationship of Climate Condition with Genesis Filariasis

Variables	R	P Value
Temperature average	-0.108	0.327
Rain Fall	0.449	0.001
Humidity	0.168	0.126
Wind speed	0.047	0.674
Number of rain day	0.275	0.011

3.3 Relationship of Temperatures with Genesis Filariasis

Temperature is one of the factors that influence the weather conditions of a region that is calculated in a considerable period of time. West Pasaman known as tropical climate with an annual average temperature. The following chart displays the results recording an average temperature per month Pasaman West from 2007 until 2013 which is conducted by BMKG Meteorological Station of Teluk Bayur.

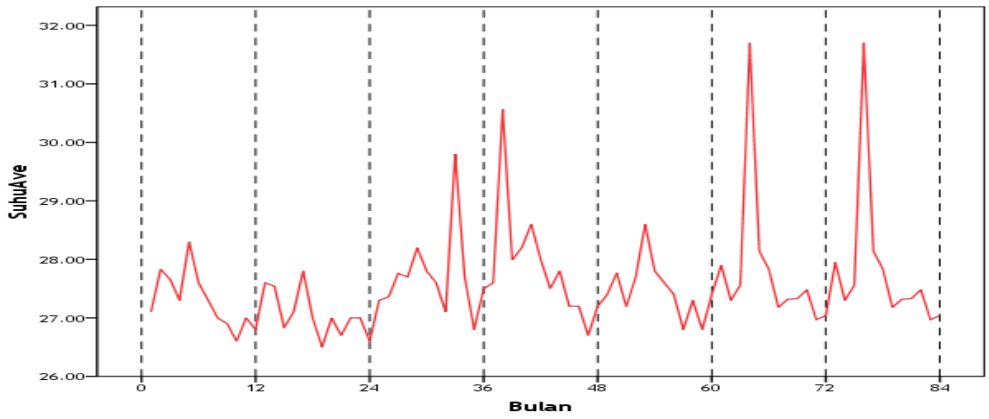

Figure 2: The Average of Monthly Temperature in West Pasaman 2007-2013

Based on Figure 2 average temperature of each month highs during the years 2007 to 2013 in West Pasaman, there are between 61-84 months for the years 2012 to 2013 with an average 31.70 0C, and the lowest is between 19-24 months ie in the year 2008 is 26.50 ^{0}C. West Pasaman has an average temperature conditions per year ranged from 23.95 to 31.77 ^{0}C. Temperature to be one measure in assessing the global warming. One of the impacts of global warming is the modification of the transmission of diseases transmitted by vectors. Climate change has a direct and indirect impact, in this case we discussed about filariasis cases occurred in West Pasaman from 2007 until 2013.

Based on Table 1 can be explained that the monthly average temperature with the incidence of filariasis in West Pasaman Year 2007-2013 showed a weak correlation (r = - 0.108) and there was no significant relationship

between the temperature of the incidence of filariasis (p = 0.327).

Form a relationship can be seen in the scatter plot graph below;

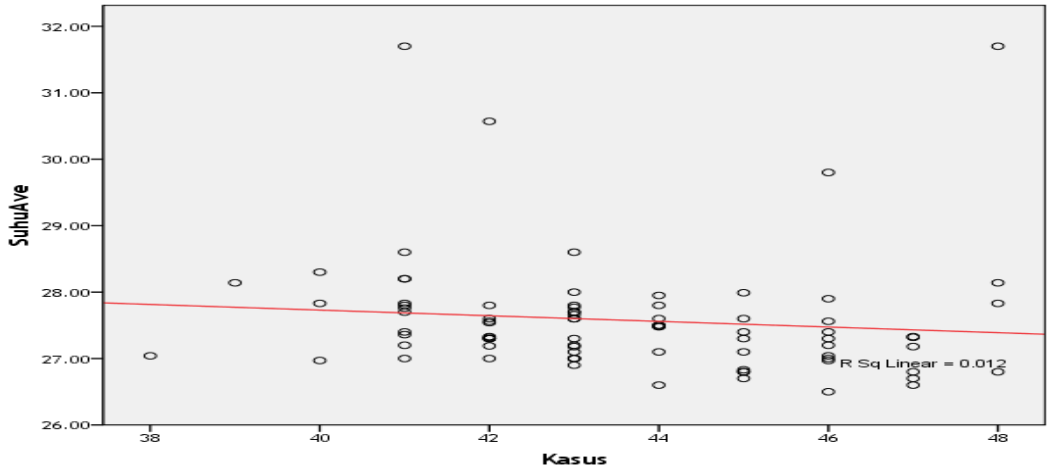

Figure 3: Relationship Between Temperatures average with Genesis Filariasis in West Pasaman Year 2007-2013

On Figure 3, the average temperature of the incidence of filariasis has a negative relationship, the higher the average temperature, the lower the incidence of filariasis. Based on the results of statistical tests, it was found that the temperature relationship with the incidence of filariasis showed a weak correlation (r = - 0.108) and there was no significant relationship between the temperature of filariasis cases (p = 0.327). Results of this study differ from research Dziedzom de Souza (2010) conducted in Ghana, that there is a relationship between temperature and the incidence being filariasis with values (r = 0.51) with design ecology [23].

The optimum temperature has a relationship with the incidence of filariasis. Average temperature optimum for the development of mosquitoes is 25-27°C. This relationship is associated with the optimum temperature will trigger the development of filarial in the mosquito's body to be fast, so that the frequency of mosquito bites is also increasing, and will affect the pattern of transmission of filariasis. At air temperature (25-27^{0}C), the development of filarial will be further optimized and faster. Besides, filarial and mosquitoes cannot survive and thrive at temperatures below 100C and at temperatures above 40^{0}C. The air temperature will also affect changes in biting behavior of the mosquito population and changes in reproductive activity of mosquitoes. If mosquitoes more solid, supported by optimal temperature conditions, the greater the potential for an increase in cases of filariasis [18]. Filariasis is influenced by various factors that can be grouped based environment, host and agent. Temperature is part of the environmental factors that cannot be changed. From the results of this study showed that the temperature had no significant association with the incidence of filariasis and different from previous studies caused by many factors, one of which is a different research so that elements of the climate between this study with previous research also different so it can be presumed that the high case filariasis is caused by other factors such as the more dominant influence human behavior.

3.4 Relationship of Rainfall with Genesis Filariasis

Rainfall is the amount of rainwater that fell on an area within a certain time. Results recording rainfall monthly average West Pasaman year 2007-2013 conducted by the Meteorology and Geophysics Climatology Station Bayur bay is as follows,

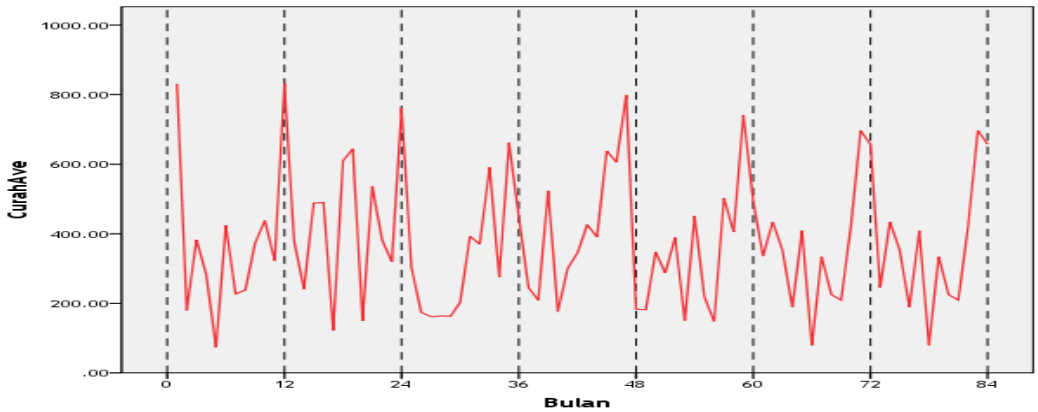

Figure 4: The Average Rainfall in West Pasaman 2007-2013

Based on Figure 4 can be explained that the average highest rainfall occurs between 1-12 months, namely in 2007 with 832.40 mm and the average of the lowest rainfall between 1-6 months ie in the year 2007 with 73.00 mm. If seen the rainfall pattern by making the average amount of rainfall each month, shows that the highest rainfall occurs in the month of October to May next lowest rainfall there in June-September. West Pasaman has average conditions of rainfall per year ranges between 73.00 - 832.40 mm.

Rainfall either directly or indirectly will have a relationship to the incidence of filariasis cases. Based on Table 4.1 can be explained that rainfall with monthly average incidence of filariasis in West Pasaman Year 2007-2013 indicates moderate correlation (r = 0.449) and there was a significant relationship between rainfall and the incidence of filariasis (p = 0.001). Form a relationship can be seen in the scatter plot graph below,

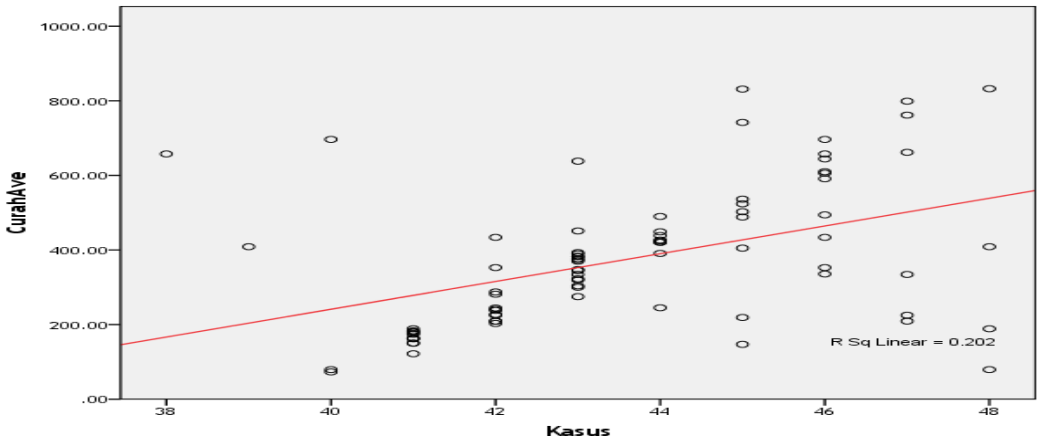

Figure 5: The Relationship between Rainfall averages with Genesis Filariasis in West Pasaman Year 2007-2013

Based on Figure 5 the average rainfall with the incidence of filariasis has a positive relationship that the higher the rainfall, the higher the incidence of filariasis. Statistical test result suggests that the relationship with the incidence of filariasis rainfall showed a moderate (r = 0.449) and there was a significant relationship between rainfall and the incidence of filariasis (p = 0.001). The coefficient of determination (R2 = 0.202) means, rainfall is only able to explain 20.2% incidence of filariasis cases caused by the influence of rainfall and 79.8% of cases of filariasis caused by other factors. The results are consistent with research Kebede Deribe Mail (2013), that there is a significant relationship between rainfall and the incidence of filariasis (p = 0.001) with a cross-sectional design of the study [22]. Adequate rainfalls, as well as hot showers are interspersed allowing mosquitoes can breed optimally. The incidence of mosquito-borne disease usually increases several times before the rainy season or after rain. The influence of rainfall varies according to the amount of rain and the physical state of the area. Too much rain causes flooding, causing migration of vector breeding, but this situation will soon be restored when the situation returns to normal. Adequate rainfall in the long term will increase the chances of mosquitoes to breed optimally [18].

3.5 Relationship of Humidity with Genesis Filariasis

Air humidity is a measure of the average moisture content in the air. Humidity is an important factor also in measuring weather and climate in a region. The following graphs recording the results of air humidity monthly average West Pasaman observed in BMKG Meteorological Station Bayur bay.

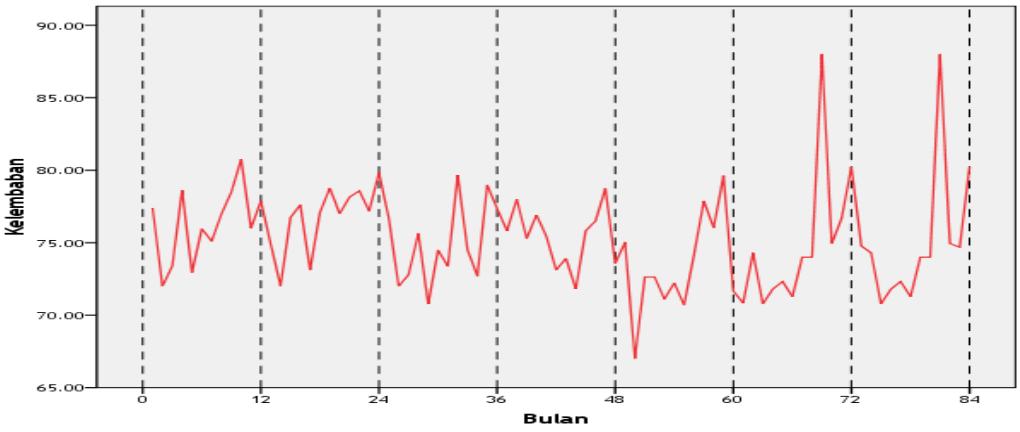

Figure 6: Humidity average in West Pasaman Year 2007-2013

Based on Figure 6 above can be explained that the average humidity is highest among the 61-72 months that occurred in 2012 with 88.00% and the lowest is between 48-60 months, namely in 2010, that is 67.00%. West Pasaman has average conditions humidity per year ranged from 67.00 to 88.00%. Another element of the climate is also a determining factor of a climate is the humidity. Air humidity is a measure of the amount of moisture content of the air inside. Based on Table 4.1 can be explained that the monthly average humidity with the incidence of filariasis in West Pasaman Year 2007-2013 showed a weak correlation (r = 0.168) and no significant relationship between the incidence of filariasis humidity (p = 0.126). Form a relationship can be seen in the scatter plot graph below.

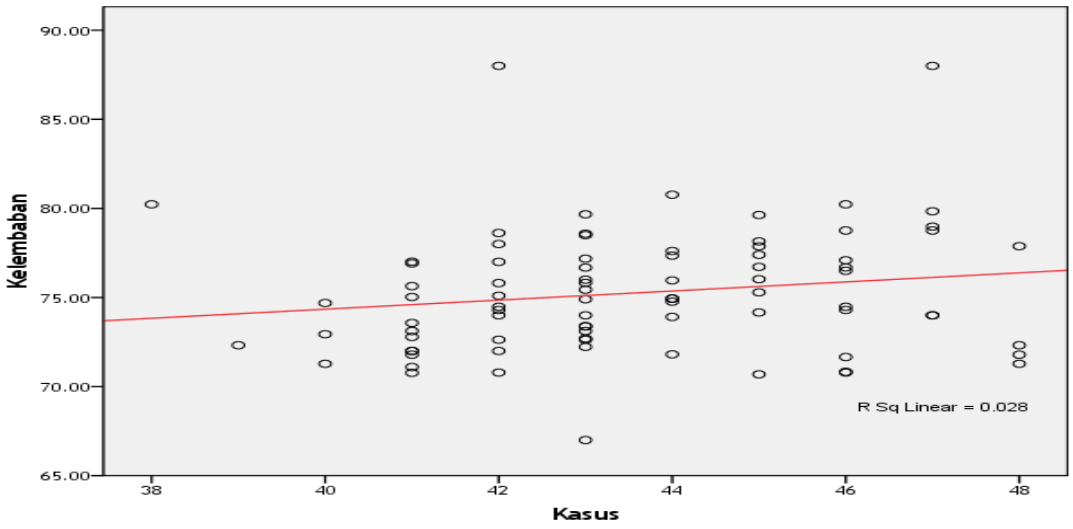

Figure 7: The Relationship Between Moisture average with Genesis Filariasis in West Pasaman Year 2007-2013

Based on Figure 7, the average humidity in the incidence of filariasis has a relationship with a positive pattern that can be interpreted by the higher humidity the higher the average of filariasis cases occurred. Statistical test results showed that the moisture relationship with the incidence of filariasis weak correlation (r = - 0.045) and no significant relationship between the incidence of filariasis humidity (p = 0.683). This study is not in line with research conducted by Dziedzom de Souza (2010) shows the relationship between the humidity being the incidence of filariasis with a negative pattern (r = - 0.26) [23].

Low humidity shorten the lifespan of mosquitoes, but has no effect on the parasite. Respiratory system in mosquitoes using air pipe called a trachea with holes in the walls of mosquito called spiracle. Their spiracle open without any mechanism of regulators, at low humidity would cause the evaporation of water from the body of mosquito that can lead to the drying up of fluid in the body of the mosquito. One of the enemies of mosquitoes is evaporation [18].

Based on the results of this study showed that the humidity had no significant association with the incidence of filariasis and different from previous studies caused by many factors, one of which is a different research so that elements of the climate between this study with previous research also different so it can be presumed that the high case filariasis is caused by other factors are more dominant. Optimal humidity can change the pattern of bites by mosquitoes that can enhance the transmission of filariasis.

3.6 The Relationship of Wind Speed with Genesis Filariasis

Recording results of Meteorology, Climatology, and Geophysics Climatology Station of Teluk Bayur showed a similar pattern with the pattern of rainfall that occurred. The following charts the average wind speed every month during 2007-2013.

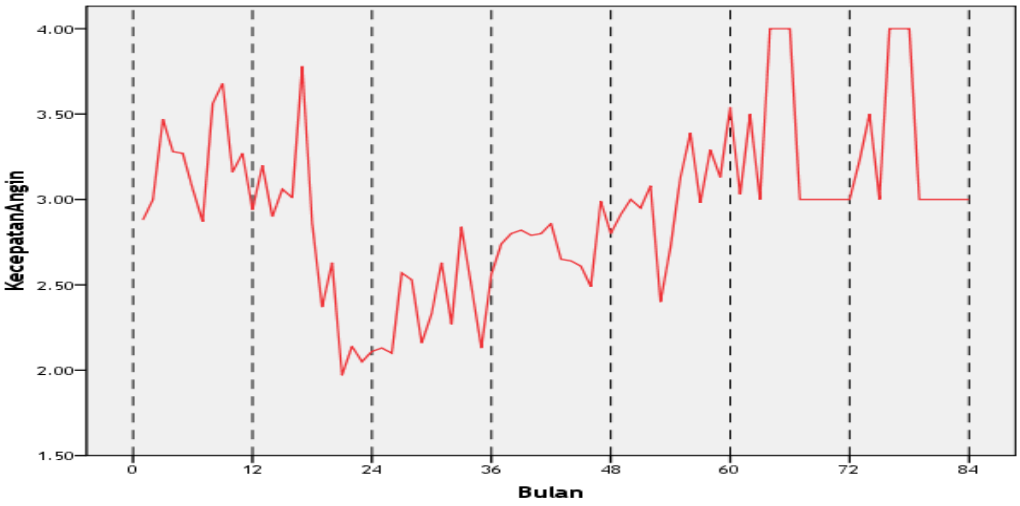

Figure 8: The Average of Wind Speed in West Pasaman Year 2007-2013

Based on Figure 8 above can be explained that the average of the highest wind speeds between 61-84 months that occurred in 2012 with 4.00 knots and the lowest is between 12-24 months in the year 2008 is of 2.05 knots. West Pasaman has average conditions of wind speed per year ranged from 2.05 to 4.00 knots. Wind speed in climatology is horizontal wind speed at the level of a two meters from the ground planted with grass. The wind speed is basically determined by the difference in air pressure between the origin and destination of wind (as a motivating factor) and field resistance in its path.

Based on Table 4.1 can be explained that the wind speed with a monthly average incidence of filariasis in West Pasaman Year 2007-2013 showed a weak correlation (r = 0.047) and there was no significant association between the incidence of filariasis wind velocity (p = 0.674). Form a relationship can be seen in the scatter plot graph below.

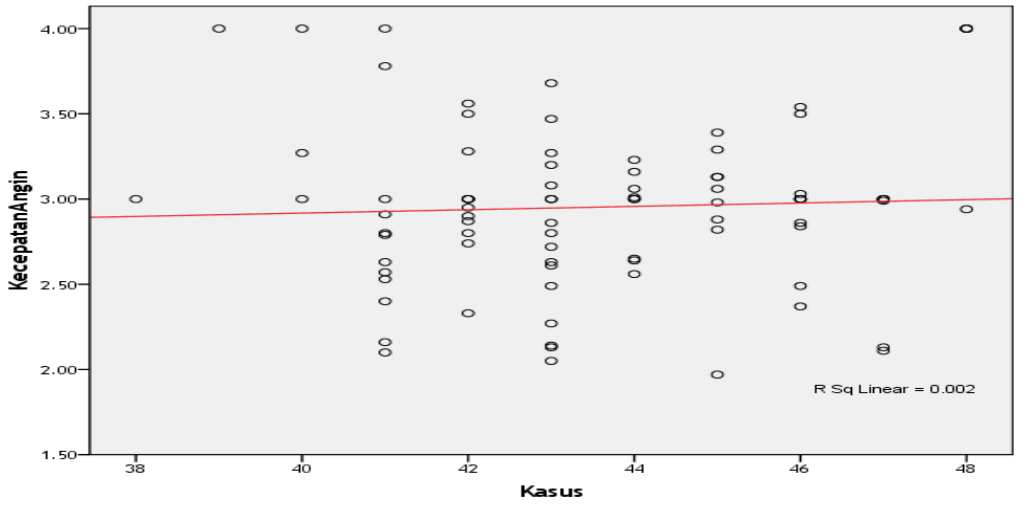

Figure 9: Relationship between Average Wind Speed with Genesis Filariasis in West Pasaman Year 2007-2013

Based on Figure 9, the average wind speed in the incidence of filariasis has a relationship with a positive pattern that can be interpreted by the higher average wind speeds more filariasis cases occurred. Based on the results of statistical tests, wind speed average monthly with the incidence of filariasis in West Pasaman Year 2007-2013 indicates moderate correlation (r = 0.035) and there was no significant association between the incidence of filariasis wind velocity (p = 0.751). The wind speed has a role in the spread of the vector. High wind speeds capable of carrying mosquitoes fly farther, and even can be carried up to 30 km. Wind speed can also affect the flight range of mosquitoes that will determine the amount of contact between humans and mosquitoes. Mosquitoes are still in place brood (breeding place) or marshes, tend not to leave the premises during the wind blows hard. While mosquitoes that are outside the nest will go into the nest to avoid the wind currents that allow mosquitoes to the wind. Mosquito flight range can be shortened or extended depending on the wind direction is not more than 2-3 km from the breeding place [9, 14].

Wind speed greatly affects mosquito flying. When the wind speed of 11 to 14 meters per second (knots) it will inhibit mosquito flight. From the results of this study found that the wind speed does not have a significant correlation with the incidence of filariasis caused by many factors, alleged that the high incidence of filariasis is caused by other factors such as the more dominant influence human behavior. Based on data obtained average wind speeds in West Pasaman not exceed 11 knots so the average wind speed is good for mosquito breeding.

3.7 The relationship of number of rainy days with the incidence of filariasis

Recording the results of Meteorology, Climatology, and Geophysics Climatology Station Bayur Gulf showed a similar pattern with the pattern of rainfall that occurred. The following charts the average number of days of rain each month during 2007-2013.

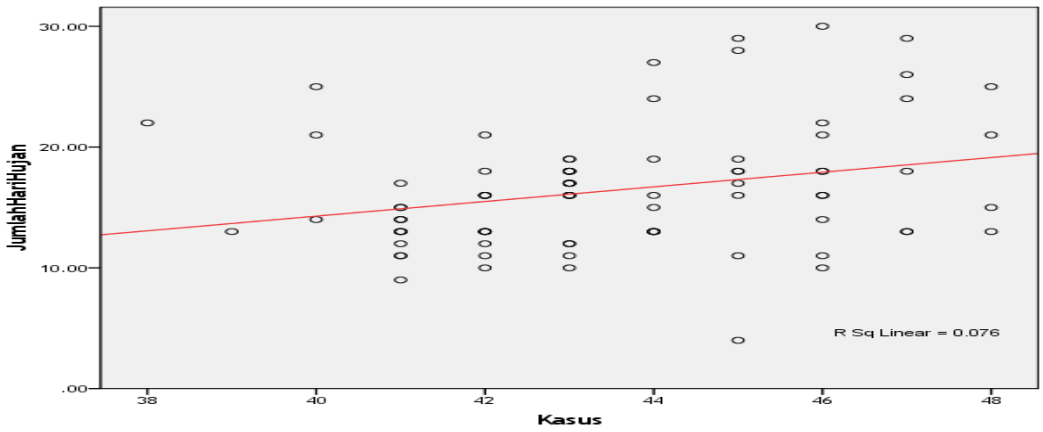

Figure 10 Relationship Between Number of rainy days with Genesis Filariasis in West Pasaman Year 2007-2013

Number of rainy days either directly or indirectly will affect rainfall that has been associated with cases of filariasis. Based on the above table can be explained that the number of rainy days with a monthly average

incidence of filariasis in West Pasaman Year 2007-2013 indicates moderate correlation (r = 0.275) and there was a significant relationship between the number of rainy days with the incidence of filariasis (p = 0.011) , Form a relationship can be seen in the scatter plot graph below,

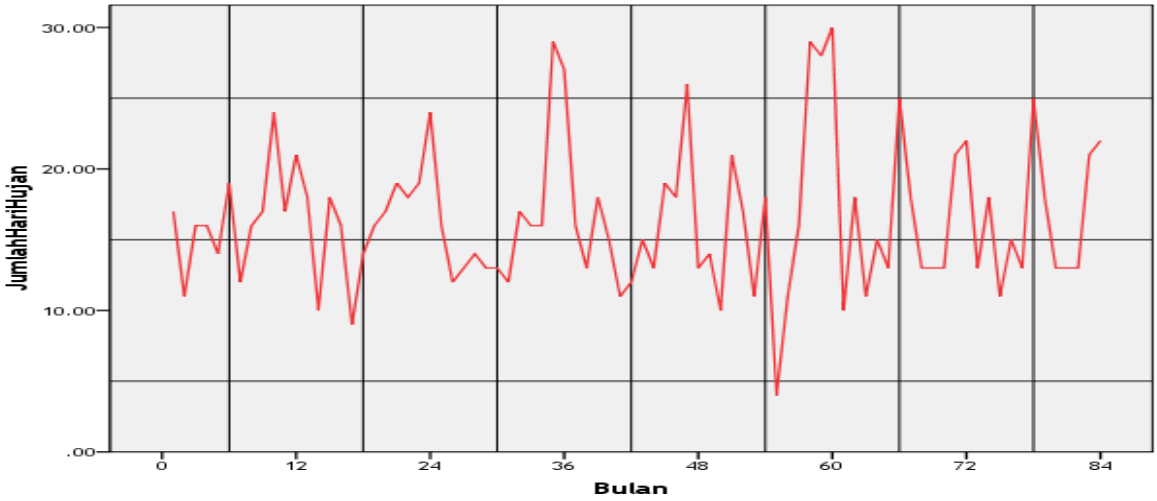

Figure 11: The amount of the monthly average rainfall West Pasaman Year 2007-2013

3.8 Relationship of Land Use Conditions with Genesis Filariasis

Utilization of land is arable regions derived from ecosystems has been done cultivation. The unit of analysis of land use is the rice fields, plantations and forests. To determine whether the condition of the land use effect on the incidence of filariasis in West Pasaman from 2007 to 2013, then performed an analysis to see if there is a relationship between the condition of the land use on the incidence of filariasis in West Pasaman. The data have been obtained were analyzed using statistical tests. Here are the results of a statistical test conditions of use of land (paddy fields, plantations and forests) on the incidence of filariasis cases from 2007 through 2013 in Pasaman west.

Table 2 Relationship with the land use Genesis Filariasis

Land use	**R**	**P Value**
Paddy field	0.177	0.704
Plantations	-0.565	0.187
Forest	-0.473	0.283

Based on table 2, which shows the condition of land use is a strong relationship plantation unit. Descriptively, the incidence of filariasis based mapping are in a condition that the dominant land use by plantations. The following conditions of land use Pasaman Barat:

Table 1: Land Use Condition in West Pasaman

No.	Land use	Land Wide	Percentage
1	Village	8.344	*2,15%*
2	Industrial area	1.120	*0,29%*
3	paddy field		
	a. irrigation	15.904	*4,09%*
	b. rain base	11.156	*2,85%*
4	Garden	7.413	*1,96%*
5	Mix garden	13.939	*3,69%*
6	Community filed	71.338	*18,88%*
7	Big gardening	69.541	*18,40%*
8	Forest	121.589	*32,18%*
9	Bushed land	30.045	*7,95%*
10	Disfuntion land	2.109	*0,55%*
11	Aquatic	20.707	*5,48%*
12	Other	4.645	*1,23%*
Total		**377.843**	***100,00%***

In this study, the condition of land use with the incidence of filariasis there was no statistically significant relationship. It is influenced by other factors are more dominant. Based on statistical analysis of the relationship of land use by growers with the incidence of filariasis in West Pasaman have a strong relationship (r = - 0.565) and there was no significant relationship between the incidence of filariasis and land use by plantations in West Pasaman (p = 0.187). Based on Figure 12 below, it can be seen that the highest incidence of filariasis in Sungai Aur (River Aur) district with 9 cases. Sungai Aur (Aur River) District is district with the highest plantations in West Pasaman with that 50% of the total area utilized for plantation.

Utilization of land is arable regions derived from ecosystems has been done cultivation. The unit of analysis of land use is the rice fields, plantations and forests. Descriptively, the incidence of filariasis based mapping are in a condition that the dominant land use by plantations. Based on statistical analysis of the relationship of land use by growers with the incidence of filariasis in West Pasaman have a strong relationship (r = 0.565) and there was no significant relationship between the incidence of filariasis and land use by growers in West Pasaman (p = 0.187). The pattern of spread of filariasis cases on land use that occurred in West Pasaman, spread more on the plantation. However, this deployment only explain the existence of clinical case and unlike the case of dengue fever or malaria is correlated to changes in land use. In fact, the occurrence of filariasis cases itself require a long process to become a clinical case, in which patients in the early symptoms do not feel anything, but the next 10 years there was an explosion of clinical cases of filariasis [2].

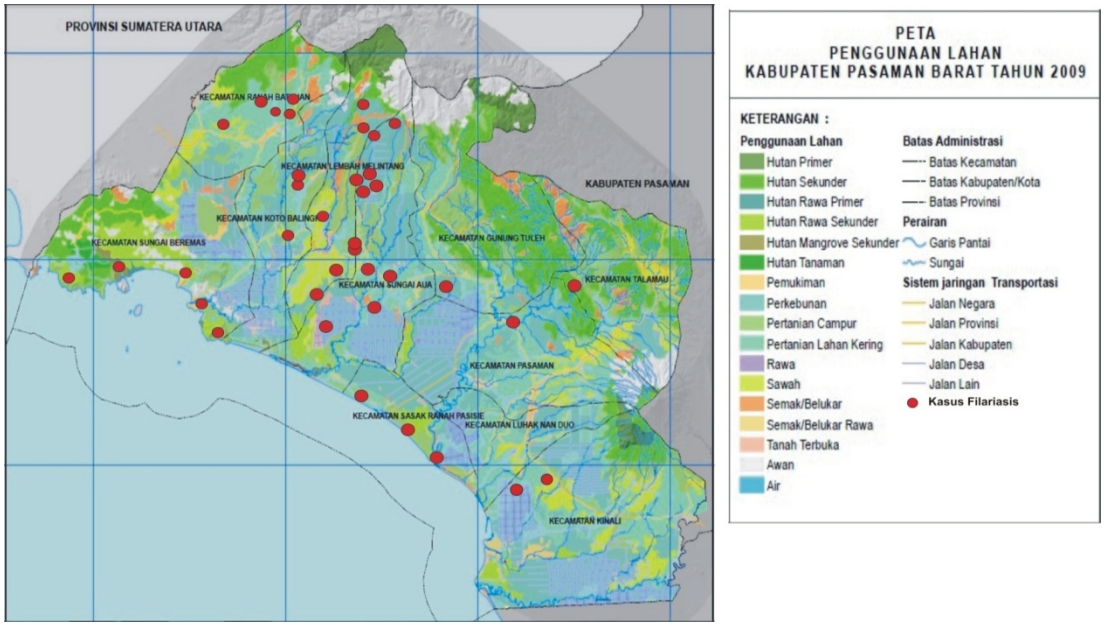

Figure 12: Map of Filariasis distribution base on Land Use

In this study, the condition of land use with the incidence of filariasis there was no statistically significant relationship. It is influenced by other factors more dominant, which consists of a host of factors, agents and other physical environmental factors. Land use in West Pasaman consists of wetland and paddy fields not (dry land and other land). West Pasaman from the standpoint of land use are quite large (outside the forest area) is a people's plantations in the amount of 71 338 ha (18.65%) and the activities of a large plantation covering 69 541 ha (18.18%), while the lowest is the land use for the area industrial area of 1,120 ha (0.29%) [8]. Land use characteristics can be seen Pasaman, In general, West Pasaman region can be divided into three (3) characteristics of land use, namely: Forests that are mostly protected forests, the transition is used as agricultural land and partly still a bush / reeds, and urban areas dominated by settlements, means of socio-economic-cultural and urban infrastructure.

Land use in the City Center District did not experience significant change, but it looks the higher the intensity. Physical development trend follows the pattern of the main roads network (ribbon-type development) has become increasingly thick and dense so as to form a corridor of development. Physical development along the coast will be controlled by the road construction along the coast. The existence of Gulf Harbour Tapang encourage physical development in the region, especially along the main streets.

4. Conclusions and suggestions

Data filariasis cases positive during the period of the last seven years in West Pasaman of the year 2007-2013, the incidence of filariasis hardly shows the increase and decrease of cases on a monthly basis. The highest cases amounted to 48 cases in 2007 and decreased to 38 cases in 2013, the climate conditions in Pasaman during 2007-2013 was not extreme. The temperature trend conditions showed an increase in temperature. Precipitation trends indicate that the pattern of the highest rainfall occurs in the month from October to May next lowest

rainfall there in June-September. Average conditions humidity tends to range between 70% - 90% for 7 years. Wind speed average monthly throughout the year 2007-2013 was highest in April lows in October. The amount of the monthly average rainfall during the year 2007-2013 was highest in December lows in July.

The relationship between the temperature with the incidence of filariasis showed a weak and there was no significant association between the occurrence filariasis. Relationships between rainfall and temperature with the incidence of filariasis showed a moderate and no significant relationship between rainfall and humidity with events filariasis. Relationships between events filariasis showed a weak and there was no significant association between the occurrence filariasis. Relationships humidity wind speed with the incidence of filariasis showed a weak and there is no significant relationship between the incidences of filariasis wind speed. Number of rainy days with a monthly average incidence of filariasis in West Pasaman Year 2007-2013 indicates moderate correlation (r = 0.275) and there was a significant relationship between the number of rainy days with the incidence of filariasis. Spatially known that the highest incidence of filariasis mostly in conditions of land use by plantations. Land use by growers relationship with the incidence of filariasis in West Pasaman have a strong relationship.

it is suggested to the Department of Health West Pasaman to urge the public to keep the environment around the home to reduce mosquito breeding places, especially to the people who live around the vector breeding places such as swamps, rivers, gardens and fields, to implement vector control programs and the environment and filariasis elimination program in an integrated manner by strengthening cross-sector cooperation between governments and local communities to prevent vector breeding places around the settlements.

By knowing the distribution area of filariasis cases in West Pasaman ie plantations, swamps and rice fields need to be implemented identification of mosquitoes as vectors transmitting filariasis by further research or related agencies (the Department of Health West Pasaman) in order to determine how prevention and eradication of mosquito vectors based on the type. Suggested for health workers to conduct health education about filariasis in order to maintain the environmental community in prevention efforts filariasis.

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