Risk Environmental Analysis, Eggs and Larvae Population in the Ground, Infection Prevalence of *Soil Tranmitted Helminths (STH)* and its distribution in Ambon Island Maluku Province

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Abstract
One of the parasitic disease in Indonesia is still a public health problem is an intestinal infection by intestinal nematodes, especially those transmitted through the ground. In the field, the life cycle of STH require host factors (human), agent (worm), and environmental factors. Host factors play a role here are the healthy habits of people either directly or indirectly. Environmental parameters, the risk of environmental conditions required for the maturation process of worm eggs become infective eggs or larvae.
Multispectral satellite image analysis to determine the risk of environmental components. Results of interpretation of the image, and then processed through the Geographic Information System ArcView program to produce a map of the distribution of the STH risk environment. STH eggs and larvae populations in different alluvial land units with *brunisem, Gleisol, kambisol, litosol, podsolic and rensina*. The difference is influenced by the roots, the average total index growth Hookworms eggs in the soil, bowel habit, soil texture class, pH.H2O, porosity, soil organic matter content, water content field, permeability, total average growth index of eggs T. *trichiura* on the ground and, on average, the total index growth *A. Lumbricoides* eggs. The prevalence of STH infections in residents of endemic land units in the settlements of the island of Ambon different for *brunisem, Gleisol, kambisol, litosol, podsolic* and *rensina*. Differences influenced by variations in population and STH eggs in the soil, population habits or children using footwear to school or during activities to other places, while out of the house, cleaning the yard work, washing hands before touching food and eating habits with hand.
Usefulness of the expected results through STH distribution maps in Ambon island endemic land units can facilitate the control of an incidence of infection (saving time, effort, and cost when compared to a surveillance activity). The group formed a healthy perception of risk, lowering the prevalence of STH. The method used is the field survey with cross sectional design
Keywords: STH, Environment, Risk, Distribution

1. Introduction

One of the parasitic disease in Indonesia is still a public health problem is an intestinal infection by intestinal nematodes, especially those transmitted through the ground. Infection with the Soil Transmitted Helminthes (STH) is still a disease people with high prevalence in tropical regions of developing countries, especially in communities with low socio-economic situation in rural areas in 2010.

In the region of the island of Ambon, the data on STH obtained showed varying numbers (MOH 2004, 2005, 2006). From the data - the data, it appears that there are areas with a high prevalence, there are areas with low prevalence, there are also areas with a prevalence between them.

In the field, STH life cycle requires the following factors; host factors (human), factor agents (worm), and environmental factors. Host factors play a role here are the healthy habits of people either directly or indirectly. Environmental parameters, the risk of environmental conditions required for the maturation process of worm eggs become infective eggs or larvae.

In connection with the development of the eggs and larvae in the soil, Pawlowski et al (1991), and Soedarto (1992), states that:

> "... The eggs of *Ascarislumbricoides* resistant to cold, drought and disinfectants. Eggs can not grow well on sandy soil than clay ... The highest frequency of Trichuristrichiura obtained in areas with heavy rain and frequent, high humidity, shade and moist soil. Trichuris eggs not resistant to direct sunlight and as a result of drought ... The land of sand or a mixture of clay and sand containing humus is a good breeding ground for larvae of hookworms (hookworm) ".

It can be concluded that, soil texture is one of the limiting factors for the growth dynamics of the eggs and larvae of soil-transmitted Helminths in the ground.

Soil temperature also has an important role in the activity of organisms in the soil, groundwater, air and soil (Rachman, 2005). Soil temperature is dependent on the heat input and output arrows. Heat input to the soil mostly from sunshine and its intensity is influenced by the angle of incidence of sunlight, the length of exposure, soil texture, soil color and cover crops.

Influence of season on the dynamics and development of eggs and larvae of soil-transmitted Helminthes in the ground, by Gunarsih (2004) stated as follows: (a) The temperature or air temperature; encourage solving substances organic ingredients, improve the dissolution of minerals and substances that contain nitrogen, (b) Humidity; slows drying, pushing solving organism materials, encourage dissolution-dilution, (c) wind; Encouraging open soil erosion, encourage drying, (d) Sunlight; raising the surface temperature, push terjainya evaporation, (e) Rain; Doing erosion and leaching, encourage clumping clay.

By using the eco-epidemiological approach, supported by remote sensing data and the application of Geographical Information Systems (GIS) are expected incidence of infection varied Soil Transmitted Helminths can be known component of the risk environment, monitored the dynamics of the change, so that it can be controlled and the incidence of infection control Soil Transmitted Helminths The varied and fluctuating rapidly, and accurately. Mardihusodo (1997), stated that in order to make a prediction about the incidence of infection Soil Transmitted Helminths for example, must have the data accurately and regularly, and this means having to do research or surveilansi continuous. The results obtained through conventional activities that are generally obtained in the long term, so it is often too late in handling and also they are subjective. As a result of all of that, especially in estimating the possibilities of the occurrence of the Extraordinary Events (KLB) environment-related diseases, the application of advanced technology such as remote sensing (remote sensing), Geographic Information System (GIS) and Global Positioning System (GPS), is expected to can help overcome the inhibiting factors and obstacles mentioned above.

The firmness of it shall be submitted also by Danoedoro (1997), that the health problems, on the other hand is known as a realm (domain) health sciences. The study of health problems at the level of the individual to the environment have been carried out, but the making of a spatial model for health assessment remains a challenge. Spatial modeling to study the health of geographically expected to answer questions (a) where there is a health problem, (b) why the distributed like that, and (c) what are the implications.

According to Alfonso (2006), for the preparation of public health policy that exists today, should focus on the inter-relationship between the host (host), the agent (agent), and the environment (environment) which are conditioned or assist breeding a disease, need to be used more widely in public health as a policy in controlling real integrated manner to the problems of public health. Integrated control can be done is by using satellite services to the epidemiology sensing, Geographic Information Systems (GIS), medical geography, biometeorologi, environmental health, as well as integration between all of them (Brokers, 2000).

Overseas research on Soil Transmitted Helminths, has been progressing quite rapidly when compared to in ground water. Research on Soil Transmitted Helminths already applying remote sensing technology (Remote Seansing) and GIS applications. Brooker et al. (2002), has conducted research that employ Remote Seansing (RS) and GIS to control worm problems in a national program in Chad - Africa. Saathoft et al. (2006), has been doing research on the ecology kovariasi hookworms (Ad and Na) and the occurrence of re-infection in rural areas of Kwazulu-Natal, South Africa. Brooker et al. (2006), doing research by comparing the diversity of patterns of worm infection in the population of rural and urban environments in Brazil. Brooker (2006), conducts research on the spatial epidemiology Schistosomiasis in Africa, risk modeling, transmission dynamics and the controlling. Broker et al. (2000), has written articles on remote sensing and GIS technology that can be used to control the STH infections in humans (saving time, effort, and cost when compared to a surveillance activity).

2. Methods

On the basis of the findings of Salakory (2010), a macro research (surveys) in the field of cross sectional. Macro research to assess the risk of environmental parameters Soil Transmitted Helminths in land units Ambon Island. Broadly speaking, the design of the study can be seen in Figure 1.

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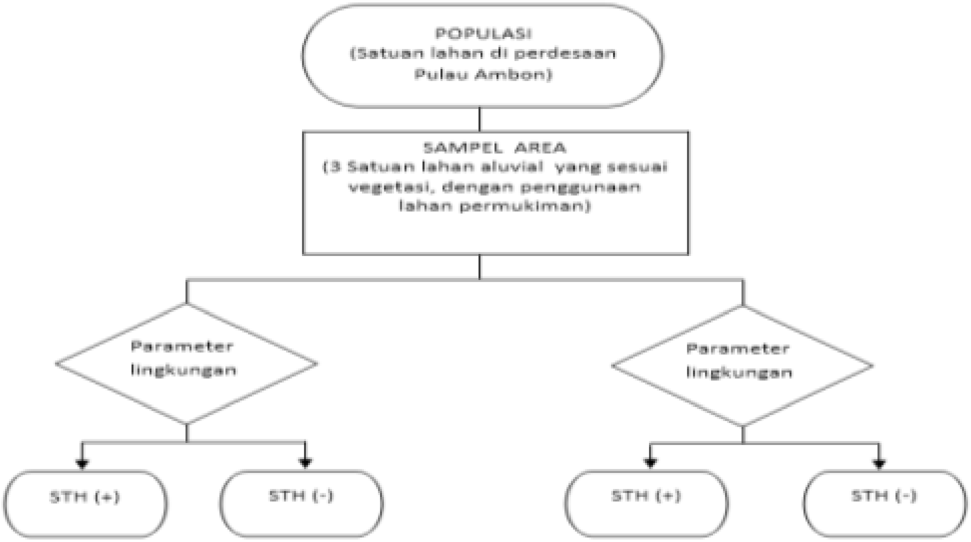

Figure 1. Schematic field survey research with cross sectional design

Produced also map the spatial distribution of environmental risks, and the prevalence of Soil Transmitted Helminths in Land Force island of Ambon.

3. Results

Soil Transmitted Helminths (STH) requires the following factors; host factors (human), factor agents (worm), and environmental factors. Host factors play a role here are the healthy habits of people either directly or indirectly. Environmental parameters, the risk of environmental conditions required for the maturation process of worm eggs become infective eggs or larvae. The prevalence of STH infections in residents of endemic land units in the settlements of the island of Ambon influenced by variations in population and STH eggs in the soil, the habit of using the child population or footwear to school or during activities to other places, while outside the home, work cleaning the home page, the habit of washing hands before touching food and eating habits by hand.

3.1. Environmental influences Against Risk Population Dynamics eggs and larvae STH On Land.

The variables that contributed to the population dynamics of eggs and larvae in the soil Soil Transmitted Helminths are: average total growth index of eggs / larvae Hookworms on the ground, the average total growth index Trichuristrichiura eggs in the soil, culture (bowel habit) , pH.H2O, porosity, water content field, permeability, total average growth index of A. lumbricoides eggs in the soil, as well as the class of soil texture, soil organic matter and, rooting. Figures adjusted R Square on Summaryb Model output is 0586. Which means 59% of the variation of eggs and larvae in the soil Soil Transmitted Helminths can be explained by the average total growth index of eggs / larvae Hookworms on the ground, the average total growth index Trichuristrichiura eggs in the soil, culture (bowel habit), pH.H2O, porosity, water content field, permeability, total average growth index of A. lumbricoideseggs in the soil, as well as the class of soil texture, soil organic matter and, rooting, while the remaining 41% is explained by other variables. Regression models can be described as follows:

Y (T & L.GH) = -6988 (Const) + 0631 (def / X1) + -0053 (tex / X2) + 0.035 (pH / X3) + 0024 (porosities / X4) + 0105 (cal / X5) + - 0015 (permeability / X6) + 0581 (idx.Al/X7) + 0.012 (idx.Tt/X8) + 0.340 (idx.Hw / X9) + 0529 (Bo / X10) + 0.335 (roots / X11)

For the purposes of prediction can be said that with the constant -6.988, if no rooting, the average total index growth Hookworms eggs in the soil, bowel habit, soil texture class, pH.H2O, porosity, soil organic matter content, water content field, permeability, total average growth index T. Trichiura eggs on the ground and, on average, the total index growth of A. lumbricoides eggs in the soil, the variety of eggs and larvae in the soil STH is -6.988%.

That trend can be explained by assuming that based the results of laboratory analysis of soil samples obtained from the island of Ambon, alluvial soil has a sandy texture class, with medium porosity and permeability classes were to somewhat slow. Under conditions of stagnant, Alluvial soil permeability will have a rather slow, even the possibility of precipitation loam and clay. A. lumbricoides egg characteristics, as reported by Morishita (1992), tend to thrive both on the ground reached the embryonic stage with the dominant content of sand, moisture, and the soil temperature is warm conditions. Sandy soil compared geluhan and debuan, the heat absorption (surface temperature) will be easier (more) even easier (faster) also releases heat. The same physical events are also applicable to other types of land, such Gleisol which in a dry state are likely to have conditions that are not more different from the Alluvial wet or damp. Gleisol with debuan loam texture classes have low porosity, permeability class a bit slow, but if in dry conditions allowing the creation of humid conditions with warm soil temperatures circumstances. This situation contrasts with the optimal criteria for growth of A. lumbricoides eggs to reach the embryonic stage.

If it is associated with the state of the field, it appears that vegetation is also derived from species such as sago palm, palm, and fern. From the results of the field survey, very many organic materials found in both types of land.

The same thing in relation to the growth of the eggs of A. lumbricoides in land, proposed by Kobayashi (1953, 1954) in Morishita (1992), that the growth of A. lumbricoides egg into an embryo in the field land, the dominant occurs in autumn or late summer. Which could occur during the summer because the eggs contained in the surface soil (<10cm) experienced by exposure to high temperatures, supported also by soil moisture with amplitudes that are able to accelerate the growth of A. lumbricoides eggs from stage I to stage IV with a relatively faster than the environmental conditions A. lumbricoides eggs other.

Nishimura (1957) in Morishita (1992) also suggests that it is almost similar. Nishimura (1957) who conduct field research in time series to see the seasonal variations of the number of eggs of A. lumbricoides in the soil of farmland in two different geographic locations found in the area A (Northern) which has a dominant clay soil types (clay) percentage the largest number of eggs reached the embryonic stage occurs in late summer, autumn, and reached the highest growth (70%) in February in line with the peak of winter. For area B (southern) located near the shoreline with sandy soil conditions, the largest percentage of the number of eggs that reach the embryonic stage occurs in June with a peak in the summer to temperate zones (Japan).

Culture results shows that the eggs of A. lumbricoides experiencing normal growth (+) in dry Rensina (TI 75.69%), Rensina wet (TI 74.30%), Rensina moist (TI 71.53%), Brunisem moist (IT 68 , 05%), Alluvial dried (TI 59.02%), and Gleisol wet (TI 66.67%). Rensina soil types have debuan clay loam texture classes and debuan loam, medium porosity and permeability classes quickly. On this soil type there is a balance comparison loam, clay, and debuan. Keterseimbangan comparison loam, clay, soil condition and this debuanRensina as media types with a risk for the growth of A. lumbricoides eggs normally. In conjunction with moisture and soil temperature, balance comparison loam, clay, and debuan produce granules into loose soil so that the soil does not become very humid, the amplitude of normal soil temperatures. Under conditions of open ground Brunisem (which has a somewhat smoother texture) to absorb heat by that amount so that the amplitude becomes tend normal daily. Even this condition will apply for annual periods possible temperature and soil moisture.

In relation to the growth of A. lumbricoides eggs that tend normal, Kobayashi (1953, 1954) in Morishita (1992) obtain results which says that normal growth of A. lumbricoides egg to embryo stage occurs at the beginning of summer and winter. Anderson (1991) in Brooker, (2006) states that the time required to achieve the phase STH egg infective to A. lumbricoides was 28 days with a period-free life in soil 84 days. The maximum temperature for the development of eggs and larvae in the soil Geohelminths for A. lumbricoides according Seamster (1950) in Morishita (1972) is 35-39oC.

Regression coefficient of average total growth index T. trichiura in the ground (X8) of 0012 states that any additions total average growth index T. trichiura in the ground for 0,012 units will increase the variety of eggs and larvae Geohelminths in land units with settlements of 0,012 %. That trend can be explained by understanding that the characteristic structure of the three types of eggs (A.lumbricoides, T. trichiura, and Hookworms) is different. The weakest is the egg Hookworms, besides only consists of one layer, too thin and when it contains larvae then highly susceptible to changes in the external environment. Although the growth of T. trichiura egg grows well on land units Podsolic and Alluvial, but when compared with the growth of A. lumbricoides eggs were almost evenly spread over the entire land units, then in terms of resistance to T. trichiura exposure to environmental change better than A. lumbricoides which consists of 3 layers (cell). The outer or the first cell of the egg A. lumbricoides (albumin) easily dislodged or damaged (egg dicorticated), while T. trichiura eggs although composed of two cells especially coupled with the relatively smaller size (50-54 µm x 23µm) of A. lumbricoides eggs enables it more resistant to changes in the physical environment ekternalnya. T. trichiura eggs able to survive longer in the environment with the state of the dry sandy soil (based on the culture of T. trichiura eggs are found only on the type of soil podsolic) or even grow faster in humid conditions with temperatures above the state average room temperature.

Another factor that enables T. trichiura eggs can grow very well on land units podsolic, while A. lumbricoides Hookworms and is not in addition to the physical state of the land that has proven its significance, there is a possibility of reaction compounds chemical elements such as ionization that has never been studied. Morishita (1972), presents a number of research results to the culture in the laboratory and field observations on a number of agricultural land to see the exposure of carbon disulfide (CS2) and sodium nitrite (NaNO2) against the population of A. lumbricoides eggs. The results obtained are significantly inhibit the growth of A. lumbricoides eggs. Carbon disulfide (CS2) and sodium nitrite (NaNO2) is a type of insecticide that is often found in agricultural lands.

Temperature relationship at the speed of developing eggs in the soil media, culture results (replication to 3) were carried out in the Laboratory of the Faculty of Science Unpatti to eggs of A. lumbricoides, T. trichiura, Hookworms and conditioned at room temperature 30oC circumstances, faster mature (growing) compared to culture results first and second at a temperature of 26oC - 27,5oC. The development of T. trichiura eggs in the soil until it reaches the embryonic stage takes 2-4 weeks. A. lumbricoides new eggs out with the faeces requires favorable environmental conditions for the land that can develop into infective.

Anderson (1991) in Brooker, (2006) states that the time required to achieve the phase Geohelminths egg infective for T. trichiura, to be infective period is 10 days to live freely in the soil 30 days. The maximum temperature for the development of eggs and larvae in the soil Geohelminths, for T. trichiura according to Beer (1976) in Brooker (2006) is 37 - 39oC.

3.2. Regression coefficient of average total growth index of eggs and larvae Hookworms

The ground (X9) of 0.340 states that any additions total average growth index of eggs and larvae Hookworms in settlement of land units with 0340 units will increase the variety of eggs and larvae in the soil Geohelminths of 0.340%.

Anderson (1991) in Brooker, (2006) states that the time required to achieve the phase Geohelminths egg infective for Hookworms to become larvae filariform takes 3 days with a free 10-day life span. The maximum temperature for the development of eggs and larvae in the soil Geohelminths, for for Hookworms, according to Nwosu (1978) and Smith (1989) in Brooker (2006), is 40oC.Hookworms larvae have a life expectancy (3-4 years) on the ground better than A. lumbricoides and T. trichiura Hookworms can cause larvae to move sought protection from exposure to external temperature. It can effectively protect themselves from extreme temperatures for 3-4 years under suitable conditions, compared with ova A. lumbricoides and T. trichiura were in a state of constant temperature exposure and will eventually die (Brooker, 2006). The opposite situation Laboratories (culture) in dry conditions (Petri dish) looks larvae Hookworms can not survive because their movements may be limited by the narrow space with the external conditions that tend to be homogeneous. To that end, it is expected to do a more in-depth research to explain in detail and accurately the phenomenon.

The regression coefficient in soil organic matter content (x10) of 0.529 states that any addition of organic matter content in the soil of 0.529 units will increase the variety of eggs and larvae Geohelminths in land units with the settlement amounted to 0.529%.

The real effect of organic matter in the soil to soil properties influence on the physical properties of the soil, increasing granulation (granulation), reducing plasticity, cohesion, etc., and to raise the binding ability H2O (Buckman and Brady, 1982). The amount of organic matter in the soil provides indirect influence. Confirmed also by Rachman (2002) that all organisms in the soil have a fairly significant effect on the physical properties, the formation of humus and soil penghawaan.

The regression coefficient rooting in the ground (x11) of 0.335 states that each additional rooting in the soil of 0.335 units will increase the variety of eggs and larvae Geohelminths in land units with the settlement amounted to 0.335%.

How do soil conditions affect the growth and development of eggs of A. lumbricoides on the ground, by Crompton (1992) in Hotezet. al (2003), explained that the eggs of A. lumbricoides grow better in soil with little clay content. Mizgajska (1993) in Hotez et.al (2003), mentions that unlike A. lumbricoides and T. trichiura, Hookworms prefer soil with clay content, clay content because the soil can store water higroscopis so that soil moisture is maintained primarily at this stage of larval development on the ground. Reaffirmed by Komiya and Yasuraoka (1966) in Morishita (1972) that such conditions are optimal conditions right in the phase of development of eggs in the soil such as a temperature of 20 - 30oC, as well as shade and sufficient moisture.

Beaver (1975) in an experiment in the laboratory found that the eggs develop slowly Hookworms in sandy soils, but sandy loam soil provides optimal conditions for the development of eggs and larvae Hookworms. Sandy loam soil with high humidity will be a high risk endemic areas with Hookworms (Lilley et al, 1997).

How seasons affect the conditions of growth and development of eggs and STH larvae in the soil, by Mark (1975), Undosi et al (1980) in Hotez et.al (2003), explained that in some STH endemic areas such as the western part of Bengal (India) and some of the surrounding area, are affected by changes in the pattern of infection season. Phenomenon of hookworms can be observed in some areas dry and rainy season marked by turnover (heat to rain), the average number of infections is higher. In Japan, A. lumbricoides infection rate fluctuations associated with the onset of the harvest of agricultural products as a result of the use of feces as fertilizer (Crompton, 1989b in Brooker et al. 2006). The relationship between people's behavior with Geohelminths infection, by Humpries et al (1997) and Hotez (2002) in Brooker et al (2006), explained that the infection by the worm hooks in the Sichuan province of China and Vietnam-is positively correlated with the use of feces as fertilizer in the area agriculture widely. Still according to them, the infection by the highest Hookworms found in families of farmers when harvesting potatoes, tobacco, cotton, and soybean. In India, Bangladesh, and Sri Lanka, the highest rate of infection can be found in the tea workers and family farmers. In

Latin America, banana and coffee plantations is endemic Hookworms (Sorensen et al. 1994 in Brooker et al. 2006).

3.3. Effect of Population eggs and larvae in the soil, Habits Residents Against Infection Prevalence Soil Transmitted Helminths

Population STH eggs and larvae in the soil, using the child's habits or population footwear habits of children or people using footwear to school or move to another place, while outside the home, at work cleaning up the yard, habits of children or people who often do not wash hand when touching the food, as well as the habits of children or people who eat with your hands contributes to the prevalence of STH infections in endemic land units resident in the island of Ambon. Adjusted R Square on model output Summaryb is 0.96. Which means 96% of the rural population prevalence of STH Ambon Island can be explained by variations in the eggs and larvae in the soil STH, habits of children or people using the footwear habits of children or people using footwear to school or move to another place, while outside the home , at work cleaning up the yard, habits of children or people who often do not wash hands when touching the food, as well as the habits of children or people who eat with hands. The remaining 4% is explained by other variables.

The regression equation model can be described as follows:

Y2 (Prev.GH) = 0,012 (Constanta) + 0.835 (Tel & Larvae / Y1) + 0.052 (Ak.Tmpt Other / X2) + -0.166 (Ak.LuarRmh / X3) + 0.232 (Br.H / X4) + 0.376 (CT / X5) + E2

Specification Symbol: Prev.GH: Prevalence Geohelminths Other Ak.Tmpt: Use of footwear at a time move to tempt others. Br.H: Use of footwear and gloves hand when cleaning page	Eggs and larvae: Eggs and larvae Geohelminths in soil Ak.Luar Rmh: activity outside the home. CT: Wash your hands before touching food E2: Error

Source: Compiled Based on Statistical Analysis Results, Year 2011

Seen that, the variation of eggs and larvae in the soil STH will increase the prevalence of STH infections in residents of rural residential land units Ambon Island of 0.83%.

Habits of children or people using the footwear when the activity to another will increase the prevalence of STH infections in residents of rural residential land units Ambon Island 0.05%. A positive number of 0.05 is inversely proportional to H1 which reads: every decrease of 0.05% habits of children or people using the footwear when the activity to another will increase the prevalence of STH infections in residents of rural residential land units Ambon Island it gained 0.05%. Interviews and field observations show that children or people always use footwear during activities to other places so that the possibility of infection by these risk factors is very small, namely only 0.05% or 0:05 of the 100 people infected. The regression coefficient (x2) which is directly proportional to Y (prevalence) indicated there are other risk factors with respect to the habit of using the footwear. Type of footwear that is used generally is flip-flops. The model is open footwear that does not cover the entire foot. Section between the fingers and feet become unprotected dorsal safely so as to provide the possibility of entry into the body filariform larvae. Children possibility footwear often release time activities elsewhere. This habit is associated with a sense of comfort because of the limited space for children. Discomfort caused by geography unit of land is hilly and uneven and slippery, especially in the rainy season. Cleanliness footwear (flip-flops) are used also likely to be a factor. Footwear worn less attention tends to clean, especially if you only have 1 pair pengalas feet and always worn outside the house and inside the house.

Once it is known that the prevalence and intensity of STH in people who are not supposed to be proportional to the habit of using the footwear time activity to another (x2), time cleaning the yard (x3), and the habit of washing hands before touching food, then there needs to be an intervention activity conducted on land units with high risk. Intervention activities can be: a) counseling; done to the target to increase the knowledge of the worm such as signs or symptoms of worm infection, danger, prevention methods, and prevention. b) treatment; is based on a stool examination with a frequency of once every 6 months. c) prevention; conducted through the efforts of personal hygiene and environmental cleanliness.

Maintain personal hygiene can be done by: 1) Wash hands before eating and after defecation with soap and water. 2) Using clean water for the purpose of eating, drinking and bathing. 3) cooking water to drink. 4) Washing, cooking food and drink before a meal. 5) Cut and clean the nails. 6) Wear footwear when walking on the ground, and wear gloves when doing work related to soil. 7) Wear footwear that fully cover the feet when doing work related to soil. 8) Wash footwear and gloves with soap and water after completion worn doing work related to soil.

Keeping the environment can be done by means of: 1) dispose of faeces in the toilet, so as not to pollute the land surface directly. 2) The toilet should always be in a closed state, so it is not used as a nesting place of flies, cockroaches, roaches, rats. The animals were able to move the eggs and larvae Geohelminths out of the toilet to another place. 3) shared pit latrines are built in flood inundation areas, and areas with a slope angle (> 15%) in the vicinity made the embankment so that no meluar in the rainy season. This type of latrine should also be given houses and walls for protection from rain and wind. Winds in the dry season can move the eggs and larvae Geohelminths elsewhere. 4) Do not dispose of feces, garbage or dirt in the yard. 5) Ensuring regulation of domestic wastewater disposal and surface water during rain. 6) Disposing of waste in place to avoid flies and lifas. 7) Do not use the stool as fertilizer for crops.

Children or resident habit of washing hands before touching food will increase the prevalence of STH infections in residents of rural residential land unit Ambon Island at 0:38%. These results are in sync with the habits of children or people on the ground are often not washing hands before touching food.

Habits of children or people who do not eat by hand will increase the prevalence of STH infections in residents of rural residential land units amounting to 0,020% of Ambon Island.

In relation to the results obtained, Saathoff et.al. (2005) also resulted in a multiple regression model fit to infection Hookworms. Determinant variables include: age; socioeconomic which includes ownership of household goods, radio, TV, fridge, electric, livestock ownership, employment, parental education, religion; healthy behaviors include: possession of footwear and frequency of use, wash hands with soap, and the availability of toilets.

4. Conclusion

Through the application of remote sensing of environmental parameters obtained Soil Transmitted risk Heliminths quickly and accurately. Through the application of GIS Risk Map produced eggs and larvae populations Heliminths Soil Transmitted Infection Prevalence and Risk Map Soil Transmitted Heliminths the population in the rural residential land units Ambon Island.

Population eggs and larvae Soil Transmitted Helminths in different alluvial land units with brunisem, Gleisol, kambisol, litosol, podsolic and rensina. The difference is influenced by the roots, the average total index growth Hookworms eggs in the soil, bowel habit, soil texture class, pH.H2O, porosity, soil organic matter content, water content field, permeability, total average growth index of eggs T. trichiura on the ground and, on average, the total index growth A. Lumbricoides eggs.

The prevalence of STH infections in residents of endemic land units in the settlements of the island of Ambon different for brunisem, Gleisol, kambisol, litosol, podsolic and rensina. Differences influenced by variations in population and STH eggs in the soil, population habits or children using footwear to school or during activities to other places, while out of the house, cleaning the yard work, washing hands before touching food and eating habits with hand.

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