

Research report

subject

The age of the red ant nest and the temperature and relative humidity inside the red
ant nest.

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Semester 2, Academic Year 2020

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Preface

Research on the age of the red ant nest and the temperature and relative humidity in the red ant nest was conducted to determine the temperature and relative humidity inside the red ant nest as the age of the red ant nest increases, the temperature and relative humidity will be.

The research team hopes that this research will collect useful content for interested parties to be used for analysis, processing, understanding, as well as further studies for further development of information if something goes wrong. Any organizers apologize here too.

Researcher

Kunlapat Khamwan

Suchada Lawan

Suthima masri

Abstract

This research is a survey research with the objective of studying the relationship between ant nest age and temperature and relative humidity in the red ant nest. At the mango tree, behind the second building, in front of the third male toilet, using the Labquest2 instrument, the experiment took 15 days to collect data at the same time every 3 days by measuring the temperature and relative humidity in the red ant nest from the beginning of the nest until it was found that during the day. At 1-9, the temperature drops every 3 days, but the relative humidity increases for the first 3 days, then the relative humidity gradually decreases until the nest is deserted.

Contents

	page
Chapter 1 Preface	
Background and Significance of Problems	1-4
Research Objectives	4
Research hypothesis (if any)	5
Research Scope	5
Expected benefits	5
Terminology definition	5-6
Chapter 2 Relevant documents and research	
Related Documents	7-15
Chapter 3 Research Methods	
Research plan	16
Population / Sample	16
Research instruments	16
Procedure for Making Tools	17
Conducting Research / Data Collection	17

Data analysis	17-18
Chapter 4 Research Results	19
Chapter 5 Summary and Recommendations	20
Research Objectives	20
Population / Sample	20
Summary of research results	20
Discussion	20
Suggestion	20-21
Bibliography	22
Appendix	23

Chapter 1 Introduction

The importance of research

Identify the problem

Problem state

Ants are important to the ecosystem. By managing the carcass, the relationship between ants and plants in which both sides are both the giver and the receiver. Plants that are associated with ants are called "ant plants", which are examples of the common development between ants and plants in the field of food. In the food area of both sides is extremely scarce. And is one of the first food in the ecosystem. And many other things overall, in the ecology of life on Earth. Ants are very useful. Ants also prevent and eliminate pests through a combination of methods.

The benefit between ants and plants. Ants will find and provide nutrients to plants.

Provides protection and cleaning. Plants allocate food and shelter to the ants. Benefit of some ants. They act like a guard that will repel or kill intruders, such as beetles or caterpillars that will destroy parts of the plant. With food scraps that are consumed in the nest in return. Plants evolve to have a special structure. To be a shelter or food source that ants will use to consume, such as the evolution of hollow leaves. Or seeds which have parts that ants will use as food covering the outside. Or stuck to any

part of the seed It is often found that ants and plants are dependent on each other, unable to live alone.

But most people will not know and understand the benefits of red ants. Making him lose sight of the importance of red ants Red ants protect against a variety of pests such as aphids, almost all types of worms, and various pests can be used for cooking and for professional purposes. By bringing red ant eggs to be sold to generate income The livelihood of red ants in social animals likes to live together in groups within the red ant's nest.

The nesting behavior The red ant nest that work ants help each other make. Is like a human house The nest is home to all red ants. Including eggs and larvae It is a safe place from the enemy. Red ants build their nests on the trees. Along the branches or on the new treetops Red ants can nest easily. The nest will last a long time. And the leaves do not dry quickly Because there is a soft sheet Ventilated Red ants build nests based on temperature and leaf characteristics. Red ants build nests on farmland. Deserted area Trees are perennials and shrubs that are mostly dicotyledons The trees that red ants prefer to live, can be found both single and composite leaves. Both types of leaves Most of them are permanent leaves. Not easy to defoliation, dense, leaf characteristics should be large enough. And easy to assemble into a nest Red ants choose to build nests more densely where there is more water than there is no water. Because water is very necessary for red ants The ant's nest will build a nest

where the queen chooses and thinks it's safe. For plants that red ants like to live in, such as mango, neem, padauk, lukwa, apple, rose apple, etc. The tree must have a lot of leaves. If the tree is large, the red ants can increase in number as well. But red ants are not always required to use plants or shrubs. Red ants may nest in the morning glory Chaplu. Red ants like to live with aphids that can excrete the sweet liquid

Aphid insects are also very important to red ants. Because aphids will increase the number of red ants Red ants like to live in the destroyed mixed forest. The forest is really complete, no red ants will be found. Because red ants do not like dense forests such as the rain forest, red ants can build nests Throughout the year, especially in the summer, red ants build many nests. Because it is a time when the queen ant produces a lot of population.

Red ants build nests by pulling the edges of the leaves towards each other. If the leaves are far apart, the sun ants hold one edge with their jaws and pull the other edge using their legs. But if there is a lot of distance Red ants use a chain method. Each red ants use their beak to adhere to the waist of the ants in front of them. Then have other ants walk on each other to step on each other to create length until they can reach the desired leaf. Then red ants will try to pull the edges together.

Sometimes a large number of stitches may be used As soon as the leaves are drawn to the desired area The rest of the worker ants will leave their larvae almost at the last stage. (The phase of the pupa) with the head of the embryo projecting forward.

The larva, all of which excrete fibers in the head, labial glands, are moved backwards. Between the two leaves The worker ants walk along the seam of the leaf as they join them In general, the red ant larvae use fibers to form the casing because These fibers are also very useful and important in nest building. The connection is unique to each group of red ants (Colony) of the ant is very large. Assemble a large number of isolated nests Spread over not many trees The reason red ants have to separate to build a new nest is In the summer the queen will produce a large population of ants. In order for worker ants to help each other find food back to the nest So that it is enough in winter and rainy season As the queen produced more ants Making the old nest not enough to contain all of them Workers separated to build a new nest. Nearby Ants build nests to avoid rain and wind. An ant nest has members. Very little depends on the nest created.

Research question

- What is the relationship between the age of the ant nest and the temperature and relative humidity in the red ant nest?

Research objectives

- To find the relationship between the age of the ant nest and the temperature and relative humidity in the red ant nest.

Research hypothesis

- The age range of the ant nest was related to the relative humidity and temperature on the growth of the red ant nest.

Research scope

- Place of study in front of Building 2, Bueng Khong Long Witthayakhom School, Bueng Khong Long District, Bueng Kan Province
- Duration February 18 - March 1, 2021

Expected benefits

- Able to use data from the aging survey with temperature and relative humidity.

Terminology definition

- Red ant means the name of the species *Oecophylla smaragdina* in the Formicidae family, approximately 1 cm long, its body, antennae and legs are orange or reddish brown, with short white hairs on the head and chest. Connect the leaves close together in a circular nest. If disturbed, it will release acid and bite, causing a wound on the skin, causing a burning sensation.
- Temperature means the amount used to tell the heat level. Which is popular to measure with a device called thermometer.

- Relative humidity is defined as the ratio between the mass of the actual water vapor in the air and the mass of the current saturated steam. By volume And the same temperature Set the value as a percentage.

Chapter 2 Relevant documents and research

In the subject research Age and temperature and relative humidity inside the red ant nest. The researcher has studied and researched related documents and research as follows.

1. sitar. (Thursday June 2008). Red Ant (Red Ant). Retrieved from <http://oknation.nationtv.tv/blog/roller/2008/06/26/entry-1>

Factors in building a nest for red ants.

Tree (leaf)

Red ants use perennials to build their nests. Or a shrub with a permanent blade Mostly not easily defoliation In the area the red ants choose to build their nests Will be a wasteland Agricultural area Common area The leaves should be large enough. Suitable and easy to build a nest. The species that ants like to build their nests, such as mango trees, malabar trees, young Wa trees, Krapin Narong, etc.

Larva (the stage in which the embryo will pupate)

Building a nest for red ants requires a larva which is another important thing. Red ants take advantage of the larvae. Using a fiber that looks milky white Has a toughness to connect the leaves together The white filament is usually used to wrap itself up as a pupa.

Worker (Adult)

Worker ants are very important. A group of worker ants are responsible for connecting leaves by a variety of methods. Worker ants are unique in building nests. Both being connected as a chain In order to slowly pull the leaves together The other group will help protect the larvae Came to the nest to take the milky white webs from the larvae. Let's connect the leaves together.

Nesting behavior

The red ant nest that work ants help each other make. Is like a human house The nest is home to all red ants. Including eggs and larvae It is a safe place from the enemy. Red ants build their nests on the trees. Along the branches or on the new treetops Red ants can nest easily. The nest will last a long time. And the leaves do not dry quickly Because there is a soft sheet Ventilated Red ants build nests based on temperature and leaf characteristics. Red ants build nests on farmland. Deserted areas Trees are mostly dicotyledon trees and shrubs. The trees that red ants prefer to live, can be found both single and composite leaves. Both types of leaves Most of them are permanent leaves. Not easy to defoliation, thick, dense leaves should be large enough. And easy to assemble into a nest Red ants choose to build nests more densely where there is more water than there is no water Because water is very necessary for red ants. The red ant's nest will build a nest where the queen chooses and thinks it is safe. For plants that red ants like to live

in, such as mango, neem, padauk, lukwa, apple, rose apple, etc. The tree must have a lot of leaves. If the tree is large, the red ants can increase in number as well. But red ants are not always required to use plants or shrubs. Red ants may nest in the morning glory Chaplu. Red ants like to live with aphids that can excrete the sweet liquid. Aphid insects are also very important to red ants.

Because aphids will increase the number of red ants, red ants like to live in the destroyed mixed forest. The forest is really complete, no red ants will be found. Because red ants do not like dense forests such as the rain forest, red ants can build nests throughout the year. Especially summer, red ants will build many nests. Because it is a time when the queen ant produces a lot of population.

How to build a nest of red ants

Red ants build nests by pulling the edges of the leaves towards each other. If the leaves are far apart, the red ants hold one edge with their jaws and pull the other edge using their legs. But if there is a lot of distance, red ants use a chain method. Each red ant uses their beak to adhere to the waist of the ant in front of them. Then have other ants walk on each other to step on each other to create length until they can reach the desired leaf. Then red ants will try to pull the edges together. Sometimes a large number of stitches may be used. As soon as the leaves are drawn to the desired area, the rest of the worker ants will leave their larvae almost at the last stage. (The phase of the pupa) with the head of the

embryo protruding forward. The larva, all of which excrete fibers in the head, labial glands, are moved backwards. Between the two leaves The worker ants walk along the seam of the leaf as they join them In general, the red ant larvae use fibers to form the casing because These fibers are also very useful and important in nest building The connection is unique to each group of red ants (Colony) of the ant is very large. Assemble a large number of isolated nests Spread over not many trees The reason red ants have to separate to build a new nest is In the summer the queen will produce a large population of ants. In order for worker ants to help each other find food back to the nest So that it is enough in winter and rainy season As the queen produced more ants Making the old nest not enough to contain all of them Workers separated to build a new nest. Nearby A nest will have few or more members, depending on the nest.

2. Wararat Senasingha. (Monday, 26 November 2018). Way of working ants in large society. Retrieved from <https://www.scimath.org/article-science/item/8642-2018-09-11-07-44-25>

Breeding and nesting behavior When the population inside the nest is very dense and wants to expand the nest. The ant members of the reproductive caste, both male and female, fly out of their original nest. To match with ants from other nests Worker ants will help dig holes to provide a solution for ants in their reproductive caste Highly evolved ants mate and breed at high places such as

trees, while low evolved ants breed on the ground. After mating, only female ants find suitable areas to build nests. Which will vary depending on the type of ants And start building a new nest By shaking off her wings and becoming an ant queen And start laying eggs The first egg laying is placed in small groups. The first generation is the only caste worker ants. In which the queen ant will serve as foraging for the first set of larvae In which the feeding of unbreeding eggs until the first generation of worker ants grow into working ants that can go out for their own food. And when there are more adult worker ants The queen is responsible for laying eggs and controlling the behavior within the nest alone. Depending on the season and climate such as temperature, humidity, as well as the abundance of food, it will influence the breeding When the nest is more abundant Queen ants will produce male and female reproductive ants for the purpose of mating and expanding their nests.

3. HatyaiFocus. (September 6, 2017). Get to know the high-class food, red ant eggs. Retrieved from <https://www.hatyaifocus.com>

Nest building

Every red ants have a special fiber obtained from their saliva and ants' belly acid. The appearance of the filament is white. (When dried, it is soft and sticky like cotton wool) Red ants will pull the leaves together by using this web. Most will build nests in a circular shape. Can prevent rainwater Mae Peng will lay eggs for

the red ant to feed. Until the larvae hatch and the larvae are fed with water. Feed food all the time Feed food all the time. If given enough, it will grow into red ants quickly within a period of 5 - 10 days. Trees that ants like to build nests such as mango, neem, jik, banyan, bodhi, krabak and cassia, etc.

4. Advertisement. (29 April 2009). Story of ... jar .. Moddaeng Retrieved from <http://kroobannok.com/blog/8708>

The nest building process of red ants Every red ants have a special filament. That is made from acid, vinegar or ants from the stomach. Mixed with the pulp or rubber of the leaves. Scientifically speaking, the leaf's structure is starchy. Or containing carbohydrates Red ants will pull the leaves together by using this web. When dried, it will be white and sticky like cotton wool, adhering to the leaves to form a round shape. Can prevent rainwater Red ants like to nest in trees that grow near water bodies For example, on the edge of a creek, a stream, and a swamp, it will find ants that inhabit their nests. Than a source without water Because red ants need a lot of water For use in the formation of acetic acid Contain in the abdomen And apply it to its life The trees that ants like to nest include trees with soft, thick leaves that do not easily defoliation. Has a rate of dehydration Spit good oxygen gas such as Wah, apple, sapphire, mango, longan, carambola, gooseberry, chik, nest, kabok, kabak, etc In the rainy season, red ants build nests in small trees. Not very high because it builds a nest in a high place. Red ants will

suffer from the wind and storm, causing their nests to be damaged. So they build many small nests in low places, almost on the ground. To prevent such damage Therefore, if there are leaves of ivy plants such as zucchini, pork rolls, gourd or local vine. Red ants will build a nest to live immediately.

1. The benefits of red ants

The benefits of red ants There are many reasons When summarized as follows:

1.1 Can be used as food from eggs and red ants, red ants with acidic orange juice gives a delicious sour taste.

It has acidic properties that can be used instead of lemons. Or vinegar Giving a mellow taste Food items obtained from Red Ants and Red Ant Eggs are Spicy Red Ant Egg Salad, Koi, Red Ant Eggs wrapped in Red Ant Eggs. Tom Yum with Snakehead Fish and Red Ant Eggs Cassia curry with fried red ant eggs, stuffed eggs, etc.

1.2 Used as medicinal herbs as follows

1.2.1 Inhalation to relieve wind, dizziness, dizziness, dizziness, by using red ants to crumple and inhale.

1.2.2 Relieve diarrhea, use local chicken meat. Bring the meat into the red ant nest. When red ants are bitten in large quantities, pull them out and use your

hands to maul and roast them on fire to cook while they are still hot. The diarrhea will subside and go away.

1.2.3 To cure constipation, bring red ants to a boil and add about 1-2 cups of clean water. Filter with some whites, drink immediately, the constipation will disappear.

1.2.4 Used to remove moles or flies. By catching the red ant to bite on the birthmark Let it sear. If the mole is large, bite several at the same time. With the power of acid The mole is swollen and festering, dissolving the black discharge. Once the wound has healed, the mole will no longer appear. Only a small scar

1.2.5 Used to cure flare-ups and remove abandoned red ant nests caused by multiplication trees Come into the steaming pot, boil it to a boil, then use a cloth to cover the head with boiling steam to inhale the hot steam. People with hot flashes get better and eventually go away.

1.3 Use to get rid of pests Various fruit trees Throughout vegetables such as zucchini, long beans, melons, if there are red ants living in it. There will be no worms, insects, and aphids because red ants will manage to feed them completely. Mango trees with aphid problem Mealybug in tamarind tree If red ants are brought to rearing, there will be no problems resulting in increased productivity Reduce the cost of pest control and toxic free too.

1.4 Enjoy All those who feed red ants To have fun Not serious Red ants will help relax. Builds moral values from observing behavior The life of ants

Red is always Red Ant commented. Many moral and truths give us many things.

Which all those who feed the red ants can feel

2. Cautions from Red Ants

Although red ants are useful as mentioned above. Red ants also have some things to be aware of.

As the following details

2.1 Bites hurt but are not dangerous

2.2 Pesticide of acidic ants If it gets into the eyes, it will hurt and sting. Heat pain remedy Use saliva to smear the eyes will disappear immediately.

2.3 Clothes that are acidified by red ants will be pale, spotted, lacking beauty.

2.4 Cause nuisance in the event of red ants climb to find food in the house. May misunderstand that Red ants annoy Indeed, red ants find food to feed their young ones. If providing water supply They feed and place food on the tree where they nest. Red ants will not bother us at all. Notice, red ants build nests only in trees. It does not appear that a nest is built in a human's house.

Chapter 3 Research Methods

Subject research Age and temperature and relative humidity inside the red ant nest.

The researcher has carried out research in the following steps.

1. Research plan

This research is

Objective To find the relationship between temperature and relative humidity in the red ant nest.

2. Population / Sample

Dang ant nest population in front of Building 2 in Bueng Khong Long
Witthayakhom School

A sample of an ant nest in front of building 2 (latitude 17.575468 north
Longitude 104.25262 East) in Bueng Khong Long Wittayakhom School Bueng
Khong Long District Bueng Kan Province

3. Research tools

- Indoor temperature and humidity measurement unit (LABQUEST2)
- mobile phone camera
- Record table

4. The process of creating each type of tool.

- Use the indoor temperature and humidity meter (LABQUEST2) to measure the temperature and relative humidity outside and inside the red ant nest
- Use the mobile phone camera to take pictures during storage.
- Create a table showing the storage date, outside and inside temperature of the red ant nest, the outside and inside relative humidity of the red ant nest.

5. Conducting research / data collection

- Use the indoor temperature and humidity meter set (LABQUEST2) to measure the temperature and relative humidity outside the nest and inside the red ant nest in front of Building 2 at Bueng Khong Longwitthayakhom School. Bueng Khong Long District Bueng Kan Province Data is collected every 3 days until the nest is deserted.
- latitude 17.575468 north Longitude 104.25262 East
- Period from February 18, 2021 to March 1, 2021

6. Data analysis

In this research study to determine the relationship between temperature and relative humidity in the red ant nest.

The researcher has analyzed the data as follows.

From the study of age and temperature and relative humidity in the red ant nest.

The relationship of temperature and relative humidity was found using a set of internal temperature and humidity gauges.

(LABQUEST2) found that as the red ant nests get older, the temperature increases but the relative humidity increases in the first 3 days and then gradually decreases until the nest is deserted.

Chapter 4 Research Results

Research results

4. Research results by objective

Storage date	Outside the red ant nest		The area inside the red ant nest.	
	temperature	relative humidity	temperature	relative humidity
18/2/21	27.1°C	53.79%	26.5 °C	59.86%
21/2/21	28.9°C	39.72%	28.2°C	52.67%
24/2/21	26.3°C	60.87%	25.8 °C	70.89%
27/2/21	29.4°C	56.78%	26 °C	70.81%
2/3/11	35.7°C	30.87%	35.1 °C	33.47%

Chapter 5

Conclusions and recommendations

5.1 Research findings

From the study of age and temperature and relative humidity in the red ant nest. In the area in front of Building 2, Bueng Khong Long Witthayakhom School, Bueng Khong Long District, Bueng Kan Province, it was found that when the ant-dang nest was older after the construction The temperature increases and the relative humidity decreases, with days 1-9 the temperature drops every 3 days, but the relative humidity gradually decreases until the nest is deserted However, the results of this study showed a complication, ie the storage time changed during the seasons, causing the temperature change

5.2 Discussion

From the study results The age and the temperature and relative humidity in the red ant nest. The important issue that should be discussed is temperature and relative humidity. Affects the spawning of red ants. And depending on the climate, temperature and season, as well as the behavior of the ant nest.

5.3 Recommendations

- Should be applied With additional studies in every season To study the change of temperature and relative humidity

- Study the temperature of every season In order to be able to create a model of an ant nest. And can raise for a career
- Applied on temperature and relative humidity To create an off-season model

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[11-07-44-25](https://www.scimath.org/article-science/item/8642-2018-09-11-07-44-25)

<https://www.hatyaifocus.com>

<http://kroobannok.com/blog/8708>

Annex

Ants are insects in the family Formicidae, rank Hymenoptera. They build nests into a large kingdom. Some nests have a population of up to a million. There are caste divisions, acting as a caste. Worker ants are sterile female ants. Serves foraging Build and repair the nest Protect the nest from enemies, take care of the larvae and other common tasks, it is the most common caste. The reproductive caste is the male ants and the female queens are responsible for reproduction. As ants belong to the family Formicidae, they are able to produce ants or formic acid, a characteristic of this family.

