

# The Significance of Housing Shelter Forest and Regional Inhabitants' Consciousness in Island Regions

- Bise Village of Motobu Town in Okinawa Prefecture as an Example -

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**Abstract:** Fung-Shui landscapes, which were made artificially in modern times, including premises forests (forests surrounding each person's residence by *Garcinia subelliptica* Merr.), have been a rational land utilization system to harmonize human activities with the variety of living things in island regions. Regarding regional inhabitants' appreciation of the premises forests, they evaluate their functions primarily as softening typhoons and heat and also consider them essential for preservation of views and peace of mind. They think the forests of *Garcinia subelliptica* Merr. should be utilized for environmental education and tourist attraction.

## 1. Introduction

### 1.1 Objective of Thesis

In Okinawa prefecture, there are villages where premises forests (forests surrounding each person's residence by *Garcinia subelliptica* Merr.) are still well preserved. *Garcinia subelliptica* Merr. forests have been considered useful, but since they also block off the sunshine, they have been cut down and, thus, are disappearing. Bise Village, taken as an example for this thesis, is a good example of where the *Garcinia subelliptica* Merr. forests have been well preserved in Okinawa prefecture (Photo. 1, 2, 3).

Premises forests of *Garcinia subelliptica* Merr. in Okinawa have been grown throughout history and how to make use of them from now on has become a big issue.

Regarding the premises forests in Bise village, investigative research on the allocation of residences and *Garcinia subelliptica* Merr. forests from the viewpoint of a structural study of architecture was reported by Furuya (Furuya, 2002). Koki reported on the functions of coastal forests against airborne salts in northern Bise village, showing the amount of salts attached (Koki, 1978).

It is considered that research on coastal forests will be integrated more universally by including results of scientific research on the relationship with human histories and lives. However, for evaluation, examples reported in history about premises forests of *Garcinia subelliptica* Merr. and inhabitants' appreciation of them have been hardly found. In this thesis, it is intended to explore structures of appreciation for evaluation today through researching how regional inhabitants think about premises forests of *Garcinia subelliptica* Merr. based upon their historical meaning by taking Bise village as a case study.



Photograph 1: Landscape of Bise Village



Photograph 2: Landscape of premises forest in Bise



Photograph 3: Premises forest of *Garcinia subelliptica* in Bise

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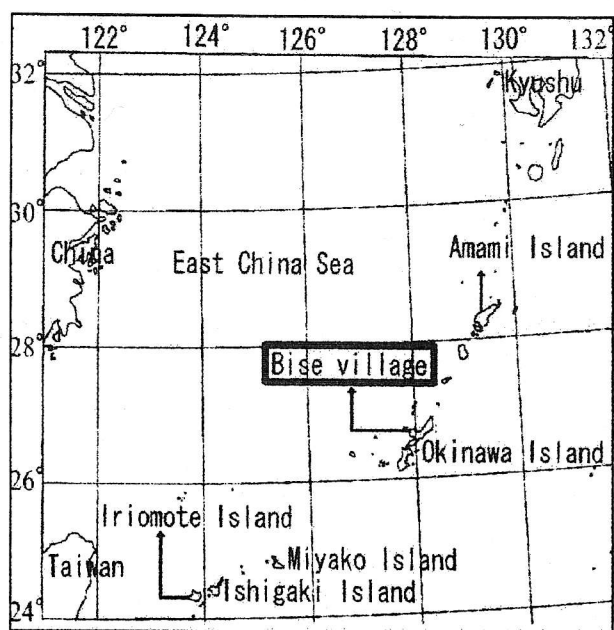


Figure 1: Map of Ryukyu Islands

### 1.2 Outline of Investigation Spots

Bise village at lat. 26° 42' N. and long. 127° 53' E. is located at the tip of the Motobu peninsula in the northern part of Okinawa island (Fig. 1). The administrative district belongs to Motobu town. The village is on an arc-like dune with a length of 1.1 km. Since it faces the sea from southwest to northeast, weather modification is severe; typhoons attack in summer and seasonal north winds blow violently in winter. Since it is on a sandy area, the village becomes burning hot by radiant heat during the day in summer.

The total population of the village is 593 (as of March 2003) and well balanced; males are 299 and females, 294. People over 60 occupy more than half of the population.

The main industry is agriculture and sugarcane is the key crop.

In Bise village, premises forests of *Garcinia subelliptica* Merr. with heights of 8-12 m, diameter breast height of 30-60 cm and estimated ages over 100 years can be seen (Miyagi, 1983). Among the trees which I measured, a giant tree 2.32 m in diameter breast height could be seen.

These premises forests must have been formed artificially starting in the modern era as discussed later. The village people call the *Garcinia subelliptica* Merr. pukooigi or torpurugii in a local dialect. They have been utilizing the trees in various ways for a long time. They buried the trees in the sand under the sea for a long period of time to make them mothproof and used them as timber for pillars, beams and floors. Withered branches and leaves were used as fuel. Leaves were used in place of toilet paper and for Japanese sandals. It is said that a large flock of

bats fly to eat the fruit before and after the Kyu-Bon festival held according to the lunar calendar.

### 2. Formation of Bise *Garcinia subelliptica* Merr. forests and their historical meaning

Since there are no historical data about when and how the Bise *Garcinia subelliptica* Merr. forests were formed, the details are unknown.

However, because they mirror characteristics of the village which is formed in a rectangular arrangement and each premise is surrounded orderly by *Garcinia subelliptica* Merr. forests, they could be considered as part of the villages by allotment system mentioned by Yashu Nakamatsu. Nakamatsu assumed that the land allotment system (a system by which land was allotted periodically) had begun in 1737 and was put into practice by Saion, a politician and one of three regents, from twenties to fifties of the 18<sup>th</sup> century in King Shokei's period (Nakamatsu, 1977).

According to Nakamatsu's theory, there are 180 villages which follow the villages by allotment system with a rectangular arrangement and they are distributed from the sand dunes of the coastal alluvial plains to flat lands. It is also mentioned that these villages hardly existed before 1736 but appeared after the relocation of certain villages and creation of the new villages in 1737 (Nakamatsu, 1977).

Regarding the origin of the allotment system, there are theories that base it in the old Ryukyu era and the post-Keicho period (after 1609), but in this thesis, Nakamatsu's theory is accepted because the villages by allotment system can be understood as a form of modern reorganization.

In a hilly area in eastern Bise village, there is a place called Gusuku Mountain (tombs of ancestors), wherein places for prayer exist, and some of them look like villages that used to exist because there remain stone fences. There is a story that people used to live in the hilly areas around Gusuku Mountain. There is no evidence showing when Bise village was formed, but it is considered that people living around Gusuku Mountain were put together in the place of the present Bise village by a village integration policy of the royal capital after thirties of the 18<sup>th</sup> century, and those people seem to have formed a new village in a rectangular arrangement.

Regarding the formation of villages in Ryukyus in the modern era, it is a historical fact that ideas based upon Fung-Shui were applied.

According to principles of Fung-Shui, it is topography that divines the fortunes of the land. With Fung-Shui, the earth is a living organism and the vital energy (vital energy pulse or dragon pulse) runs through it. Being able to read right

and wrong of geographical features, through which the vital energy flows, is the basis of Fung-Shui.

Fung-Shui seem to have been introduced from China in the end of the 14<sup>th</sup> century. Today, Fung-Shui principles are distributed mainly in the cultural sphere of the countries of East Asia such as southern China, Taiwan, Hong Kong, Korea and Ryukyu.

The way of thinking based upon Fung-Shui was applied to a wide variety of fields from the planning of houses, villages, cemeteries, cities and metropolises to management of mountains as a national policy in the Ryukyus from the 17<sup>th</sup> through the 18<sup>th</sup> century.

Technical experts who apply and advise on the arts of Fung-Shui on location are Fung-Shui masters (in other words, Fung-Shui diviner or Fung-Shui reader). Saion, one of the three regents of the royal capital of the Ryukyus, was also one of the Fung-Shui masters. It can be seen through historical data that these Fung-Shui masters were deeply involved in the formation of villages in the Ryukyus in the modern era.

According to a Fung-Shui reader's diary of 1857 about both Haneji-magiri Makiya and Inamine villages, in order to preserve Fung-Shui, they were instructed to plant "matsu" (*Pinus luchuensis* Mayr) and "fukugi" (*Garcinia subelliptica* Merr.) in magiri (village, town or city), Fung-Shui places of villages and premises (Kubo, 1990).

In the Ryukyus in the modern era, with a village as a core, farmland, fields, mountains, and wooded mountains spread toward the outskirts; the various uses of land were distributed like patches. Fields and mountains mean Satoyama, which is a shared land deeply related to villages, is a place for collecting green manure for farmland and daily life firewood and timber. The main areas of managed utilization saddle villages and magiris.

Wooded mountains, places to procure timbers for the royal capital of the Ryukyus, were managed strictly under control of wooded mountain magistrates based upon ideas of Fung-Shui in each region by the unit of village or magiri. They occupy 70% of the area of forests and fields (Nakama, 1984).

It was in the formation of forests spread from coastal regions to Satoyama that the royal capital enthusiastically guided farmers by ideas of Fung-Shui.

Fung-Shui land utilization systems such as embraced enclosure for beaches applied in coastal regions and embraced enclosure for villages and magiris applied in villages and outskirts and Fung-Shui mountains applied in Satoyama were already made. That was one of the factors of

reformation of villages and forests by the royal capital after the 18<sup>th</sup> century in newly made Fung-Shui scenery of villages based upon ideas of Fung-Shui for villages and forests.

Embraced enclosure, one of the ideas of Fung-Shui, means a situation where forests or landforms surround some region (a mountain, a village or premises) in order not to scatter the vital energy.

The embraced enclosure for beaches is called a tide break fence and the embraced enclosure for villages a village fence. The royal capital recommended that *Pandanus odoratissimus* L.f., *Hibiscus tiliaceus* L., *Pongamia pinnata* Pierre, *Morus australis* Poir., *Miscanthus sinensis* Anders., etc. should be planted for the embraced enclosure for beaches, called a tide break.

Although embraced enclosure for beaches, villages and magiris are compared to windbreak forests today, they are based upon quite different concepts because the function of windbreak forests is to protect against winds and the function of embraced enclosure is to store winds in order not to scatter the vital energy. Further, the term, forests for embraced enclosure is an Okinawan expression for forests for protection against winds used after the Meiji era and it is not the nomenclature in the modern era.

It can be considered that premises forests of *Garcinia subelliptica* Merr. in Bise were formed in conformity with the ideas of Fung-Shui by the royal capital during the process of modern re-formation of villages.

A series of Fung-Shui scenes from coastal regions to Satoyama/wooded mountains came about by setting a village as a core; that is, through the viewpoint of integration by the unit of an island, a land utilization system based upon Fung-Shui has been found recently to have very important meaning through the relationship between human activities and a variety of living things. For example, since the existence of the embraced enclosure for beaches, villages, magiris and premises functions as biotope spaces and green corridors, it is seen in this way as an important factor that balances ecosystems in island regions (Nakama, 2002).

### 3. Inhabitants' consciousness of premises forests of *Garcinia subelliptica*

#### 3.1 Outline of research

Questionnaire surveys were carried out to do research on the contents of the evaluation of what inhabitants think of premises forests of *Garcinia subelliptica*.

The questionnaire consists of seven question items focusing on the meaning of the existence of premises forests of *Garcinia subelliptica* and how to use them, and the investigative survey was



carried out through person-to-person interviews by researchers to fill in the questionnaires. The period of investigation was from March 15 through 20, 2003.

The survey was carried out for village inhabitants over 18. The effective number of surveyed is 207, which is equal to 35% of 593, the total population of the village. 51% of the collected survey slips were responses from males and 48% from females. Regarding the age structure, people over 60 accounted for 53% and people between 40 and 50 accounted for 33%. Among occupations described by interviews, unemployed (17%), agriculture (14%), housewife (12%) and carpenter (7%) are notable.

Since significant differences are not clear through the results of analysis of the questionnaire in terms of ages and occupations, the following were carried out with a total tabulation and separate tabulations for males and females.

### 3.2 Results and conclusion

Since the overwhelming majority, 94% of people, answered "Yes" to the question, "Do you think it better to have premises forests of *Garcinia subelliptica*?" (Fig.2) most people accepted there is meaning of their existence. Males and females had the same ratios of "Yes" and no difference in their appreciation of the forests was observed. Consequently, the appreciation based upon "Yes" seems to be related correlatively with a consciousness structure for the preservation of premises forests of *Garcinia subelliptica*.

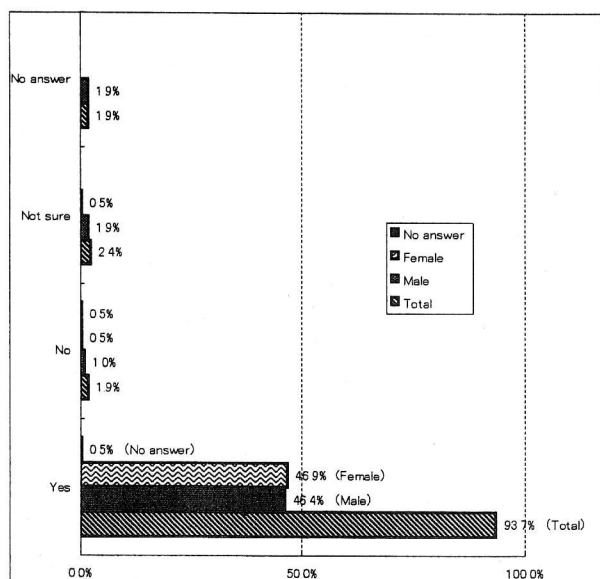


Figure 2: Do you think it better to have premises forests of *Garcinia subelliptica*?

Seven answers were prepared for the question, "What are good things you have had owing to premises forests of *Garcinia*

*subelliptica*?" (Fig.3) and we let people select as many answers as they wanted.

The multiple answer with the highest rate is "To protect houses from typhoons" by 91 %, and the next is "To become cooler by the shade of trees" at 82%, and the order was as follows; "To provide good scenery for villages" by 72%, "To make people feel comfortable" by 71%, "To provide nests for birds and insects" by 44% and "Others" by 15%. Males and females had almost the same rates in the same order. Regarding "Others," there were many functional descriptions such as fire protection, tide protection, cold protection, and so on.

From these answers, it can be understood that the village inhabitants recognize strongly the purpose of premises forests of *Garcinia subelliptica* that contribute toward alleviating the effects of severe environmental phenomena such as typhoons and the heat in summer in Okinawa. That is, the inhabitants' consciousness structure may be formed in such a manner that firstly they evaluate the role of premises forests of *Garcinia subelliptica* to be for the preservation of the life environments so that it ameliorates heat and typhoons, and then accept the functions of the premises forests of *Garcinia subelliptica* that contribute toward scenery and peace of mind secondarily.

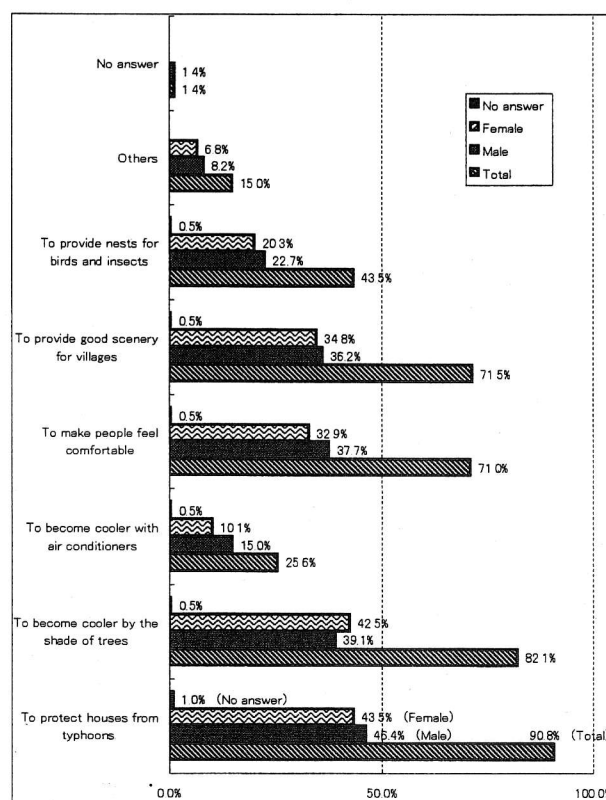


Figure 3: What are good things you have had owing to premises forests of *Garcinia subelliptica*? (Multiple answers)

The premises forests of *Garcinia subelliptica* have been evaluated positively so far; the following were to evaluate them focusing on their negative aspects by asking the questions mentioned below.

To the question, "Is there any trouble due to the existence of premises forests of *Garcinia subelliptica*?" (Fig.4) 61% of people answered, "Yes" and 37% of people responded, "No."

Then, to the people who answered, "Yes", the question regarding the contents, "What kind of trouble is it?" (Fig.5) was asked. When multiple answers from six answer items were chosen, two main reasons, "Troublesome because branches and leaves fall" and "Fruit fall and smell" became obvious. This tendency is almost the same for both sexes. For "Others," in relation to the former reasons, many descriptions such as "Hard to clean up" and "Many flies and mosquitoes," etc. were found.

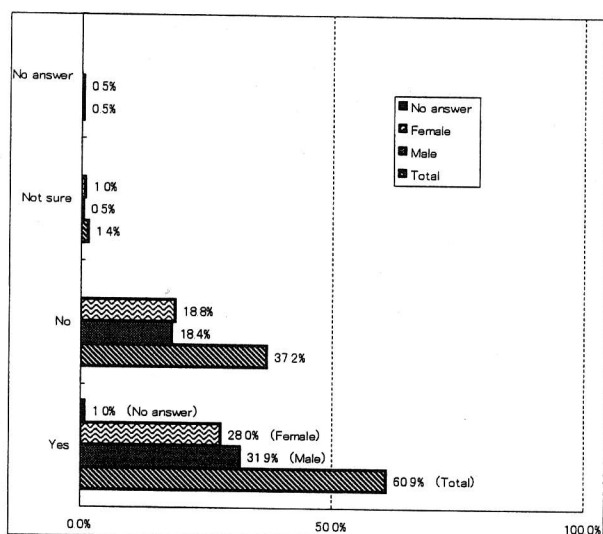


Figure 4: Is there any trouble due to the existence of premises forests of *Garcinia subelliptica*?

Answers to the question, "What do you think of the utilization of premises forests of *Garcinia subelliptica*?" (Fig.6) show almost the same rates as seen in "Should be utilized positively" by 43% and "Should remain the same as used to be" by 45%.

Checked separately by gender, 23% of females and 19% of males answered "Should be utilized positively," and 28% of males and 17% of females answered, "Should remain the same as used to be."

Females have, if anything, positive consciousness about the utilization of premises forests of *Garcinia subelliptica*. We asked about the details to the people who answered positively and let them chose multiple answers from four answer items. The answers are as follows. The

answer with the highest rate is "To make use of them as teaching materials for children's education" by 63% and the next is "To show them openly to tourists as tourist attractions" by 54%, and "To utilize to produce green trees" by 38%.

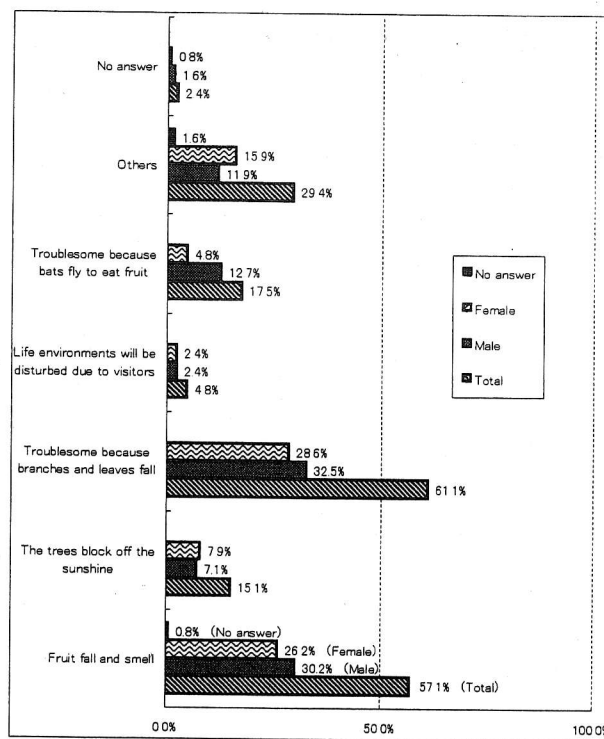


Figure 5: To the people who answered, Yes, What kind of trouble is it?(Multiple answers)

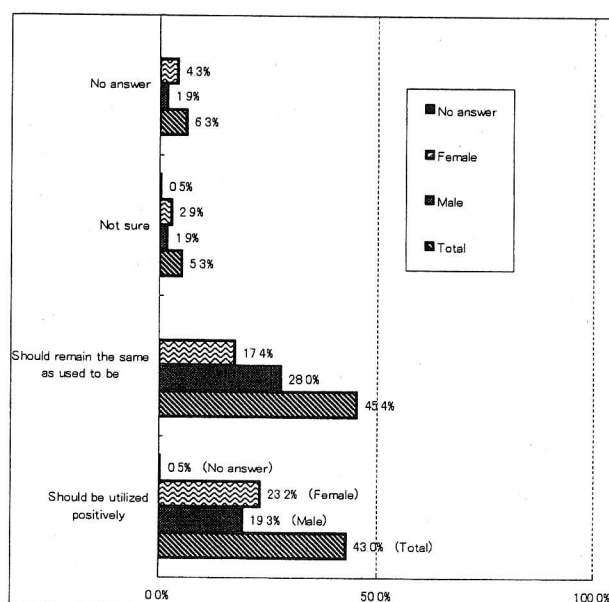


Figure 6: What do you think of the utilization of premises forests of *Garcinia subelliptica*?

Regarding "Should be utilized positively," (Fig.7) 38% of females and 24% of males selected "To make use of them as teaching materials for

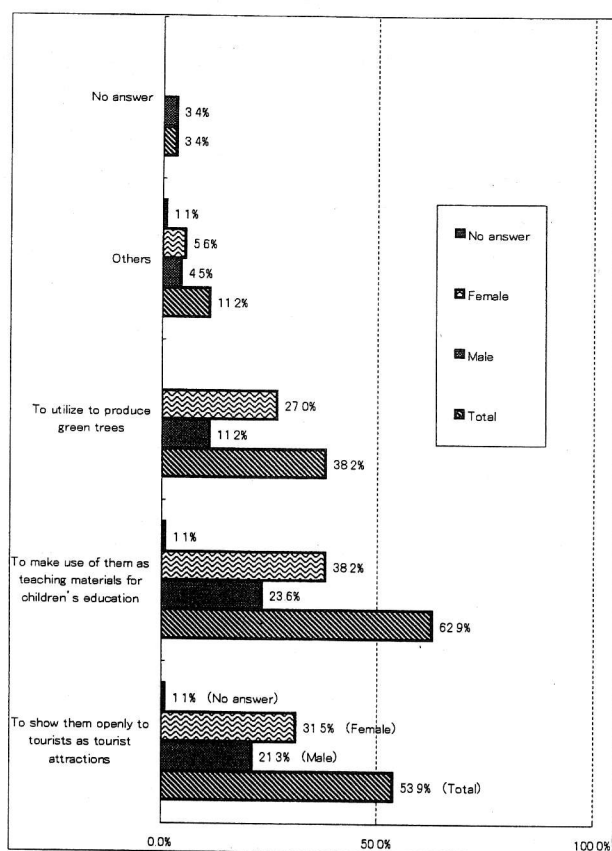


Figure 7: To the people who answered, Should be utilized positively. Select answer(s) from the following. (Multiple answer)

children's education," 32% of females and 21% of males agreed with the statement, "To show them openly to tourists as tourist attractions," and 27% of females and 11% of males accepted "To utilize to produce green trees." The rates for females were higher in any case.

People who answered, "Should be utilized positively," especially females, seem to think of utilizing forests of *Garcinia subelliptica* mainly for environmental education and tourist attractions from now on.

Answers to the question, "In order to preserve forests of *Garcinia subelliptica*, is periodical trimming and thinning carried out?" (Fig.8) are "Yes" by 15%, "Yes, sometimes" by 33% and "No" by 40%. If "Yes" and "Yes, sometimes" are combined, it reaches 48% and almost one out of two persons would be taking care of the trees.

If checked separately by gender, regarding care of the forests of *Garcinia subelliptica*, males and females have the same rate of 24% for both "Yes" and "Yes, sometimes." Regarding the rate of "No," males have a higher rate while females have a higher rate regarding "Yes." This shows the tendency of females to engage in taking care of forests of *Garcinia subelliptica* more positively than males. It is considered that this derives from the positional difference (division

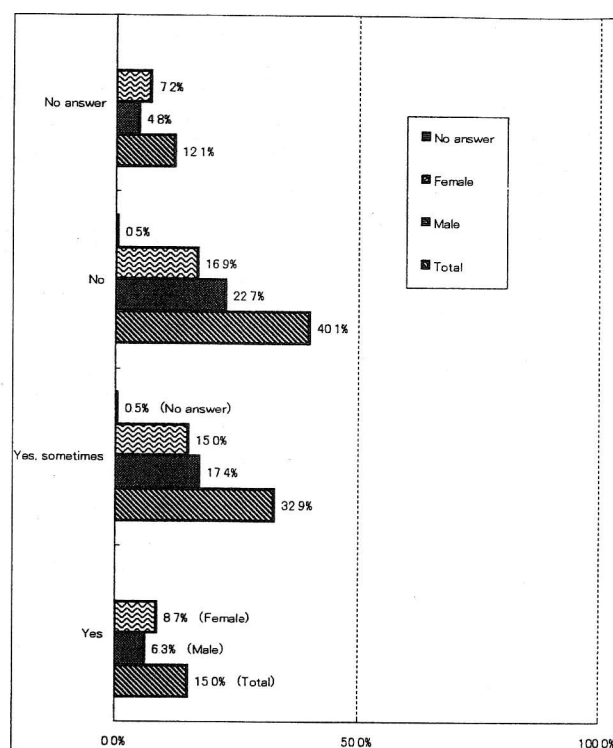


Figure 8: In order to preserve forests of *Garcinia subelliptica*, is periodical trimming and thinning carried out?

of labor) where females are usually engaged in housework.

As a final question, we let people describe freely what they usually think about forests of *Garcinia subelliptica*. Answers from 55 people were obtained. Summary of the problems that will confront us in future are as follows.

The first is a problem of empty lots. A considerable number of empty premises can be seen in villages. They have been abandoned and may become sources of mosquitoes. Some policy shall be taken and implemented in future.

The second is a method of maintenance for forests of *Garcinia subelliptica*. Before World War II, young men's associations carried out pruning periodically. In addition, students used to clean up villages before going to school. Today, women's associations make a rule to clean forests up in villages a couple of times a year. Each premise is cleaned up individually. If trying to make them sightseeing areas, people should carry out a beautification campaign with local administration.

The third is a method of how to deal with premises forests of *Garcinia subelliptica* as cultural properties. Not a single forest of *Garcinia subelliptica* has been designated as a cultural property. They shall be preserved by establishing local control regulations. In order to preserve landscapes, buildings that fit geographical features shall be constructed.



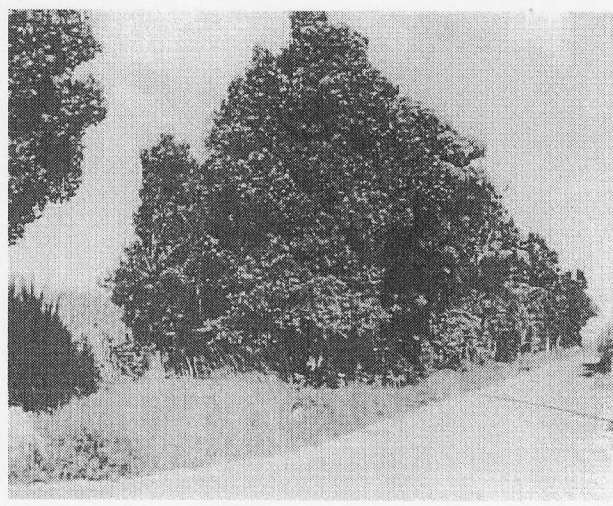
## References

- [1] Kohichi Miyagi, *Premises Forests of Garcinia subelliptica in Bise*, Okinawa Encyclopedia, Okinawa Times, Okinawa (1983), 300.
- [2] Nobuaki Furuya, *Investigative Report on Villages of Garcinia subelliptica Merr. of Bise Town in Okinawa Prefecture*, Waseda University Advanced Research Institute for Science and Technology (2002), Tokyo, 1-55.
- [3] Tokuchu Kubo, *Fung-Shui of Okinawa*, Hirakawa Publisher, Tokyo (1990), 238-303.
- [4] Yuei Nakama, *The Significance of Fung-Shui as a System of Administration for Village Environments-The Case of a Modern Ryukyuan Village and Forest Landscape*, Journal of the Japanese Society of People-Plant Relationships 2 (1) (2002), 39-46.
- [5] Yuei Nakama, *Research on Utilization History of Okinawan System of Forest and Field*, Hirugi-Sha, Okinawa (1984), 21-44.
- [6] Yashu Nakamatsu, *Koso-no-mura, A Thesis of Okinawan Ethnic Culture*, Okinawa Times, Okinawa (1977), 111-138.
- [7] Zenfuku Koki, *Research on Airborne Salt in Okinawa from Viewpoint of Coastal Protection*, the Science Bulletin of the Faculty of Agriculture, University of the Ryukyus, 25 (1978), 429-554.

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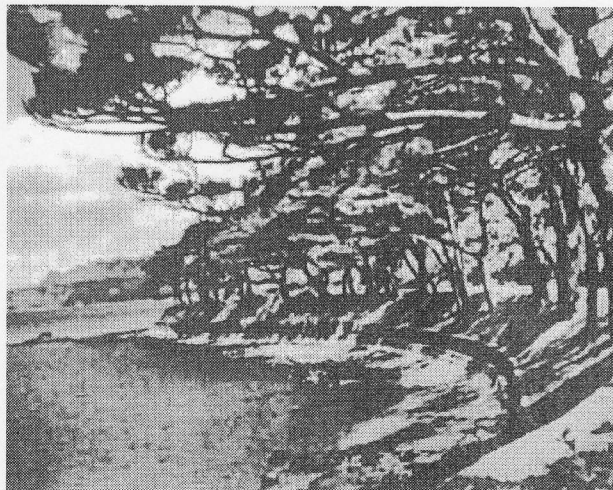
Photograph 4: Premises forest of *Garcinia subelliptica* with limestones in Bise



Photograph 6: Embraced enclosure forest (*Garcinia subelliptica*) surrounding the village on Tarama Island, Miyako



Photograph 5: Typical premises forest (*Garcinia subelliptica*) with limestones on Hateruma Island, Yaeyama



Photograph 7: Typical coastal forest (*Pinus luchuensis*) in Inamine village, Nago city, northern part of mainland of Okinawa