

AGRICULTURE AND FOOD SUPPLY ON ULITHI ATOLL

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Abstract

To clarify the present status of crop production and related contents of diets on four inhabited islets, Ulithi Atoll, we interviewed inhabitants and surveyed some fields. Many foods such as fish and bananas are supplied within the islets, but many other foods, such as rice and canned goods, are imported. On the other hand, people in Mogmog Islet try to cultivate new fields in uninhabited islets. The idea of developing fields on unutilized islets is very promising.

Keywords: agriculture, diet, rice, Ulithi Atoll

Introduction

Ulithi Atoll is located 171 km northeast of Yap Proper and has 49 islets in a lagoon with a large area, ranked fourth in the world, of 541 square-km. The total land area is 4.6 square-km, which contains four currently inhabited islets (Mogmog, Falalop, Asor, and Fassarai) with a total population of less than 1,000.

The temperature is almost constant throughout the year, the mean maximum temperature is 29.4 °C, and the mean minimum temperature is 26.7 °C. The maximum and minimum temperature means vary little between individual months. Rainfall data obtained did not include the portions for May and June, but the total amount of rainfall during the remaining 10 months was 2485.1 mm (Australia Climate Data 2002). From the location of Ulithi Atoll and the rainfall and relative humidity data of Yap Proper, the nearest island, there must have been some rainfall during May and June. We therefore estimate that the total rainfall during the year must exceed 2500 mm. Like Yap Proper, Ulithi Atoll is also located in a typical tropical rain region.

This survey was implemented to clarify the present status of crop production and related contents of diets on Ulithi Atoll. We thus investigated the cultivation of various crops mainly in these four islets from Jan. 19 to 26, 2001. We then attempted to analyze the state of their diet within a short period by recording the contents of meals served at the home where we stayed on mainly Mogmog Islet and by interviewing islet inhabitants.

We express our hearty thanks to the scientific research team sent to Ulithi Atoll in 2002 from the Kagoshima University Research Center for the Pacific Islands for their cooperation in the diet survey.

Food Crop Production on Ulithi Atoll

As on Yap Proper, taro patches are constructed on Mogmog and Falalop islets of Ulithi

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Atoll, and the giant swamp taro is cultivated. Furthermore, in the three islets excluding Falalop Islet, concrete frames with a depth of 60 cm were constructed, and several strains of taro were cultivated together in them. In these low islets with a thin soil layer, it is physically difficult to secure agricultural water and construct a taro patch like a paddy field. This idea of constructing concrete taro patch is therefore considered very promising. Details of taro cultivation are discussed separately in this paper for reference (NAKANO et al. 2003).

In Yap Proper, the giant swamp taro is the staple food, and there are taro patches everywhere on the island. On Ulithi Atoll, however, the giant swamp taro is used more often for traditional ceremonies, and the breadfruit is used as the common staple food in its place (MERLIN et al. 1996). Unlike taro, fructification of the breadfruit is seasonal, with fructification on Ulithi Atoll being from April to August. The harvesting window is rather wide because species with various maturing dates are cultivated. Breadfruit is eaten almost every day during the harvest season.

On these islets, breadfruit is stored in a unique method consisting of peeling the skin of the breadfruit; cutting or slicing the fruit into appropriate sizes; wrapping them with several folds of leaves of coconut palm, banana, or bread fruit; and burying them under ground. This produces a kind of fermented food and enables underground storage for several months to more than two years by replacing the wrapping leaves once a month. Recently, vinyl has sometimes been used for wrapping materials or a plastic box is used for storage instead of burying under ground. This method enables inhabitants to eat the breadfruit harvested within a limited time throughout the year without utilizing a special storage facility. The inhabitants can thus use breadfruit as an emergency food for famines. This is a very good method for maximizing utilization of the food supply within the limited area of a small island.

The main crops cultivated in the four islets are shown in Table 1. Many trees were blown down by Typhoon Ophelia in 1960. Since then, most coconut palm and breadfruit plants were introduced from Yap Proper and other islands. Varieties with favorable characteristics such as high yield and rapid growth seem to have been selected and introduced. In contrast, few vegeta-

Table 1. Main crops cultivated in Ulithi Atoll

Family name	Scientific name	English name
Aracea	<i>Alocasia</i> spp.	Giant taro
	<i>Colocasia esculenta</i>	Taro
	<i>Cyrtosperma chamissonis</i>	Giant swamp taro
	<i>Xantosoma</i> spp.	
Capparidaceae	<i>Crataeva speciosa</i>	
Dioscoreaceae	<i>Dioscorea alata</i>	Water yam
	<i>Dioscorea esculenta</i>	Lesser yam
Euphorbiaceae	<i>Manihot esculenta</i>	Cassava
Moracea	<i>Artocarpus altilis</i>	Bread fruit tree
Musaceae	<i>Musa</i> spp.	Banana
Palmae	<i>Cocos nucifera</i>	Coconut palm
Rubiaceae	<i>Morinda citrifolia</i>	Indian mulberry

bles were cultivated and though *Ipomoea aquatica* can be seen, it is seldom utilized.

Survey of Meal Menus

We investigated meal menus primarily during our stay at our host’s home on Mogmog Islet. The survey period was from Oct. 20 to 26, 2001. There were 36 meals; Fig. 1 shows the frequency of each menu item. Because of the limited season and period of stay and considering the possibility of serving a more varied menu than usual for guests, it seems difficult to draw any general conclusions. However, from the viewpoint of the crops being cultivated, it is unlikely that the diet varies much throughout the year. This survey will thus enable us to analyze diet trends on Ulithi Atoll if we consider the above-mentioned issues.

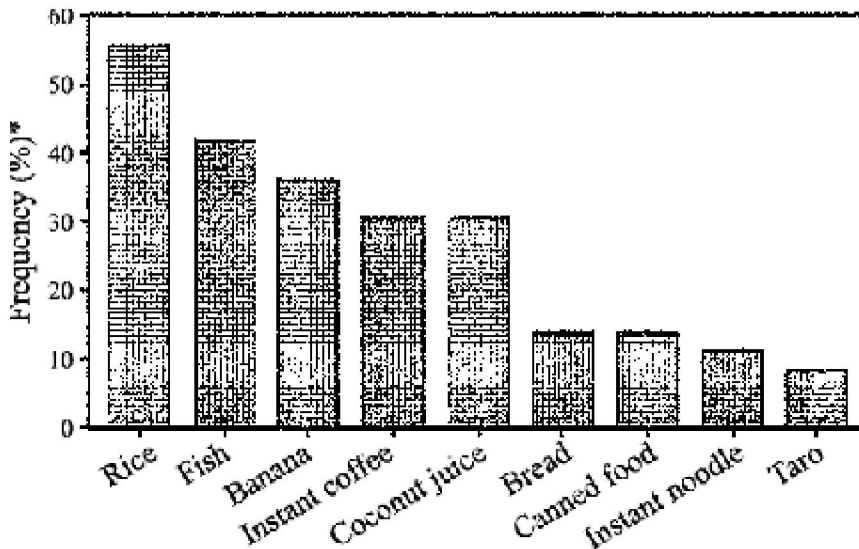


Fig. 1. The kind of food eaten in Ulithi Atoll

*: Data was collected from 20 to 26 Oct. 2001

The result shows that rice is the most frequently eaten food followed by fish and bananas. The interviews also showed that the main staple is rice, except during the breadfruit harvest season. This demonstrated a high degree of dependence on rice, the entire volume of which is imported.

For beverages, instant coffee was taken in a considerable volume comparable to that of coconut juice.

Though not an agricultural matter, the largest source of protein in these low islands is naturally fish. Besides fish, turtles are also collected in May to June and used for food.

This survey clarified that, while many foods such as fish and bananas are supplied within the island, many other foods, such as rice and canned goods, must be imported.

Example of New Efforts

On Mogmog Islet, there is an organization called the “Mogmog Women’s Association,” in which all women on the islet participate. They developed new fields on two uninhabited islets outside the main islet and are cultivating bananas, sweet potatoes, papaya, pumpkins,

cassava, etc., under the guidance of the head of the Ulithi Agricultural Bureau, State of Yap. The fields are managed jointly at a pace of one field per week. Cultivation on other islets was undertaken because there is little land available on the main islet and highly fertile land can still be found on remote islands. Varieties that were highly valued on Yap Proper and other islets were selected and cultivated. Furthermore, chemical fertilizers were initially used but were expensive, so inhabitants have recently learned how to produce and utilize compost.

In areas where land is highly limited, such as atolls, the idea of developing fields on unutilized and uninhabited islets is very promising and is considered a very useful reference for examining the feasibility of increasing food production in the future.

Conclusion

On Ulithi Atoll, it is very difficult to acquire new farmland due to the limited land area available. Nonetheless, because of the new efforts mentioned above, we conjecture that there is still some room for agricultural development. The authors observed many unused spaces adjacent to human habitations on every islet. There is thus potential for vegetable cultivation in private gardens of various sizes. Pigs and chickens are also raised, and their excreta could be utilized as compost in those private gardens. This would provide an example of sustainable agriculture on small islands.

On Mogmog Islet, electric power is available 24 hours a day owing to a recently installed power generating facility. Refrigerators have subsequently been installed in some homes to enable longtime frozen storage of fish and meat. This will undoubtedly affect the future diets of inhabitants.

In any case, agricultural activities that destroy the very fragile balance in the atoll environments must be avoided at all costs; the attitude of initiating new efforts while maintaining this balance is important.

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