

Identification of Insects Associated with Taro Plants in the Wamora Tribal Garden in Nabire, Central Papua

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Abstract: Insects are plant eaters but there are also insects that eat other insects. Insect pests can cause damage to plants, damage that occurs to the roots, stems, leaves, and fruit. Plant damage is caused by bite marks on the leaves and stems, including on taro plants. Taro tubers are the staple food of the Mee tribe. The purpose of this study was to identify insect species associated with taro plants in the Wamora Tribe's garden in Yaro, Nabire, Central Papua. Observations of insects in taro gardens were carried out in two ways, namely direct observation and interviews. The identification results showed that there were 12 families and 15 species of insects found, namely *Atractomorpha crenulate*, *Chilocorus* sp., *Comptonotus* sp., *Danaus plexippus*, *Harmonia axyridis*, *Hippotion celerio*, *Liriomyza huidobrensis*, *Neorthacris* sp., *Otiorynchus sulcatus*, *Paratettix mexicanus*, *Pyrharctia isabella*, *Selonopsi* sp., *Trirhabda* sp., and *Valanga nigricornis*.

Keywords: Identification, Insects, Taro, Womora Tribe

Introduction

Wamora Village is one of nine (9) villages in Yaro District located in Nabire, Central Papua and most of its people work as farmers. Wamora Village is inhabited by the Mee tribe which is the indigenous tribe and several immigrants who come from Java Island and its surroundings [1, 2].

The farming techniques of the traditional community of Wamora Village are mixed and monoculture farming techniques traditionally, namely in one land planted with different food crops such as various types of vegetables and tubers [1]. The type of tuber most widely planted by the community is taro which is the staple food of the Wamora community. The benefits of taro for the lives of indigenous Papuans are very important. In some areas, such as in Ayamura District, as many as 64% of the community use taro as a staple food [2]. In addition to sweet potatoes, taro is also consumed by more than half of households in Jayawijaya and ranks second (20.1%).

Traditional farming techniques of the Wamora Village community are certainly inseparable from the presence of insects. Insects are widely associated with plantation crops, both as pests and insects that act as predators, parasites, and some are useful as pollinators and destroyers of organic waste [3]. Insects are plant eaters, but there are also insects that eat other insects [4]. However, the community considers the presence of these insects as pests, so some farmers destroy insects in the garden without paying attention to the activities and utilization of these insects, causing an imbalance in the plantation ecosystem. The stability of an agricultural ecosystem can be seen from the structure of the trophic network and the interaction between community components, including herbivores, carnivores, and parasites [5]. Therefore, it is necessary to conduct research on the types of insects at this research location because research has never been conducted on insects associated with taro gardens on traditional agricultural land owned by the community in Wamora Village.



Figure 1. Taro garden of the Wamora tribe in Yaro, Nabire

Methodology

This research was conducted for three months from July to August 2024 in Wamora Village, Yaro District, Nabire Regency, Central Papua Province. Sampling was carried out in two ways, namely direct observation and interviews [11]. Sampling was carried out at 08.00-13.00 WIT. Sampling was carried out directly to the community garden that had a taro garden. The samples were photographed and recorded, then the insect samples were put into a specimen bottle containing 70% alcohol. Interviews were conducted in a structured manner with garden owners and tribal chiefs as well as respondents (parents) who knew about the culture of the Wamora tribe. Sample identification was carried out in the UNIPA Biological Zoology laboratory.

Results and Discussion

Taro Garden by Wamora Community

Taro (*Colocasia esculenta* L.) and in the local Wamora language, taro is called "Nomo" is the main plant in the gardens and yards of the Wamora community. Taro or *nomo* is one of the food crops that has the potential as a source of carbohydrates in food diversification and is one of the staple foods in the Wamora community. Around 10% of the world's population consumes taro as food. The taro plant type does not require special growing conditions and is an important food source because its tubers have quite good nutritional value [6, 13]. Taro is consumed by the Wamora community in the form of tubers, when cooked by boiling, frying, or grilling, while the leaves and leaf stalks can be used as vegetables. The heating process is needed to eliminate the itching sensation found in raw taro tubers which contain calcium oxalate [6, 12]. (Setyowati et al. 2007). Taro tubers are a food ingredient that is low in fat, gluten-free, and easy to digest because they contain high levels of fiber to facilitate digestion [7].

Identification of Insects in Traditional Agricultural Land Taro of Wamora Tribe in Yora Nabire Papua

Insect species found in traditional agricultural land of Wamora tribe in Yora Nabire in taro garden, there are 15 species, namely *Atractomorpha crenulate*, *Chilocorus* sp., *Componotus* sp., *Danaus plexippus*, *Harmonia axyridis*, *Hippotion celerio*, *Liriomyza huidobrensis*, *Neorthacris* sp., *Otiiorhynchus sulcatus*, *Paratettix mexicanus*, *Pyrrharctia isabella*, *Selonopsi* sp., *Trirhabda* sp., and *Valanga nigricornis*. The results of the identification that has been done on taro farming land found 15 species included in 12 families, namely, Nymphilidae, Acrididae, Agromyzidae, Balidae, Chrysomelidae, Coccinelloidae, Eleyrodida, Erebidae, Formicidae, Gryllidae, Hesperidae and Libellulidae. Taro plants are staple foods cultivated by the Wamora Community which during their growth are susceptible to pests, or several insects associated with the community's gardens. The Wamora tribe often encounters several types of insects that damage the taro tuber plants that they cultivate, from all these types of insects are categorized as pests that inhibit the growth of taro tuber plants. Pest insects that damage plants directly can be seen their traces, for example, movements and bites.

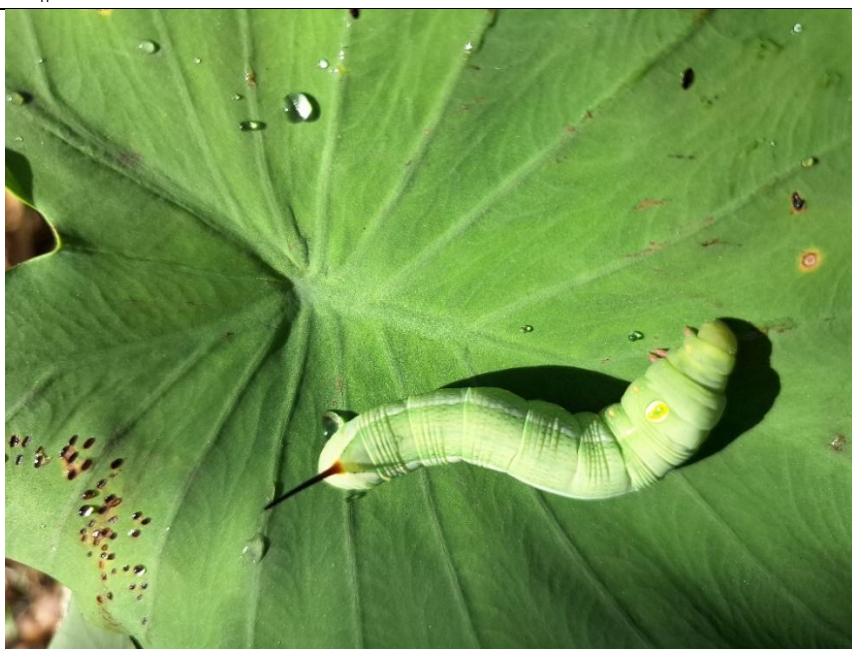


Figure 2. Hippotion celerio caterpillars are one of the dominant pests on taro leaves.

Traditional Plantations of the Mee Community in Wamora Village

The lives of the Mee tribe in general and the lives of the Mee community in Wamora village in particular are very dependent on nature as a source of life. There are two terms that are also the basis of the life of the Mee tribe, namely the first "Owa beu kitouhoko kawa umine" this term comes from the Mee language, Owa means house, Beu means nothing, Kitouhoko is a conjunction which means if/if, Kawa means where, Umine means sleep. Literally it means if there is no house, where will you sleep? second "Bugi beu kitouhoko magiho naine" this term also comes from the Mee language, namely Bugi means garden, Beu means nothing, Kitouhoko is a conjunction which means if/if, Magiho means what and naine means eat. so literally it means if you don't have a garden, what will you eat? (Sesilius Tebai and Bernadeta Butu). Because if there is no garden, there is only the desire to steal, which is clearly contrary to the Mee tribe's customary norms, as well as religious teachings. Thus, every Mee community is required to have a house and garden and every yard of a Mee tribe house is not only used as a flower garden but also filled with various types of vegetables, herbs, fruits and tubers (Fig. 3).



Figure 3. One of the Mee tribe's houses surrounded by taro plants

The Mee Tribe's gardening methods still use traditional techniques. The first step, the community opens the garden by burning the plants on the land. Next, the community will loosen the soil using wood with

sharpened ends (Fig. 4). Based on the results of the interview, the community believes that if using a machine or hoe (iron) the taro plant (tubers) will be small and small. The next step, the community will plant the taro stems that have been prepared in advance in the soil that has been dug previously with a depth of about 30 cm. The garden will be cleaned of wild plants by pulling them out. The community does not use herbicides or pesticides. Then the taro plants will be left for approximately 6 months to harvest.



Figure 4. Sharpened wood as a substitute for a hoe by the Mee Tribe

In addition, the local wisdom of agricultural land management of the Wamora Village community is almost the same as other Papuan communities, one of which is the Arfak indigenous community which also applies a sustainable agricultural model and shifting cultivation system that has been carried out for generations by the local community [9,10].

Conclusion

The types of insects associated with taro plants in the Wamora garden in Nabire were found to be 15 species of insects included in 12. The most dominant species is *Hippotion celerio*. The staple food of the Wamora community is taro. The gardening methods of the Wamora community still use traditional and organic techniques.

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