



INDIGENOUS CROPS AND WILD PLANTS USED AS FOOD BY THE PALA'WAN TRIBE IN SOUTHERN PALAWAN, PHILIPPINES

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ABSTRACT – Indigenous knowledge system stands the test of time because of its sustainability and applicability. Based on this theoretical construct this qualitative research was conducted in order to identify the indigenous food crops, vegetables and fruits planted on the farm and collected from the wild by the tribal members in Southern Palawan which could be beneficial for dissemination and utilization. The data were collected through site immersion, indirect participant-observation, informal interviews and triangulations method of validation. The study found out that there are 22 food crops considered to be sources of carbohydrates, 13 of these are cultivated; and nine collected from the wild. These are classified as grains, tubers, corms and palm (source of *natek*, starch/flour). Moreover, there are 63 types of wild vegetables and 37 fruit-bearing plants identified. For the cultivated cereal crops, upland rice is indispensable.

The Pala'wan tribe is a rice-eating people. Corn and sorghum are also planted sparingly on the field. In addition, tuber and corm crops are considered best alternative to rice. Leafy vegetables, mushrooms and *ubod* from palms, bamboo and other plants collected from the wild are important vegetable stuffs. Durian, *mante*, *badak* and *tabo* are the common fruits they eat. The Pala'wan tribe has a reservoir of knowledge regarding food sources necessary for survival.

Keywords: *Indigenous food crops, vegetables, fruits, cultivated, collected, Pala'wan tribe*

INTRODUCTION

The National Statistics Coordination Board (NSCB) of the Philippines based on the findings of the Borgen Project (2013), reports that, in 2013, 28 percent of the Filipinos were living below the poverty line. This means that about one-third of the 100 million Filipinos are so poor; and, 80 percent of them are found in the rural areas suffering with the lack of nutritious food. The province of Palawan also is suffering from incidence of poverty. In fact, mimaropa.neda.gov.ph (2013) reported that out of the total population of 771,667, in 2010, the province has a poverty incidence of 24.0 percent with an annual per capita poverty threshold of PhP14, 038 (<http://mimaropa.neda.gov.ph/palawan/>, 2013).

However, it was noted that the Pala'wan tribe in Southern Palawan has an impressive wealth of knowledge regarding indigenous food crops, vegetables and fruits. There is a need, therefore, to take advantage of this kind of time-tested knowledge system (Veitayaki, 2002) in curbing food scarcity in the countryside. Aside from eating organic upland rice which they planted once a year, they have other

sources of food from the wild which they utilized to augment their food supplies. Hence, this study was conducted to identify the food crops, vegetables and fruits they are eating so as to have pool of information which could contribute in easing food shortage in the countryside.

METHODOLOGY

This study which was conducted in the municipalities of Rizal and Quezon in Palawan of the Philippines (Fig. 1) is an anthropological research employing indirect participant-observation, community immersion, and unstructured interviews with tribal leaders and elders as key informants. Data gathered from the key informants were validated with the tribal members (triangulation method) as to their veracity. Pictures of food crops and plants' parts, e.g. fruits, were taken during the conduct of the study in the field. Then, data were collated and interpreted.

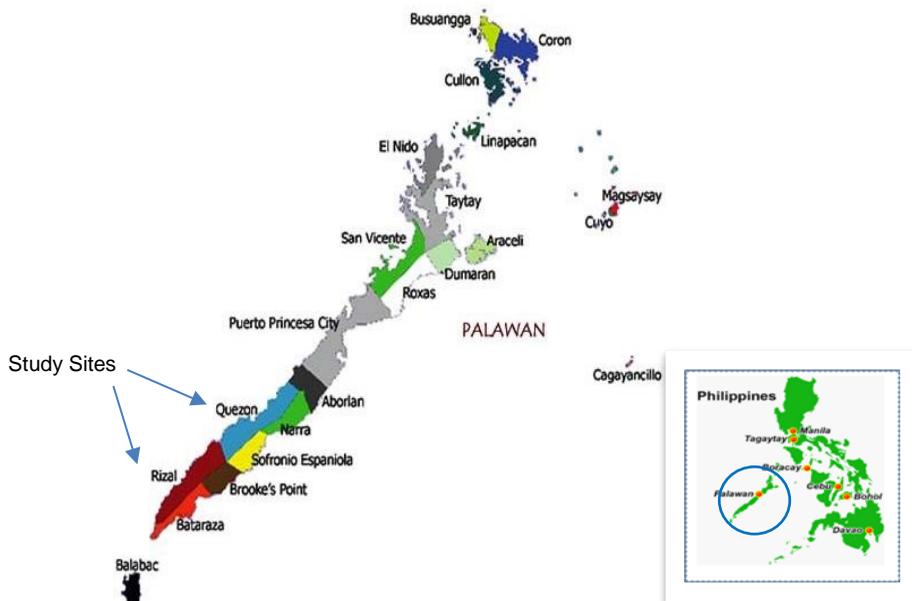


Fig.1. Map of Palawan showing the study sites (Source: <http://www.zamboanga.com/>).

RESULTS AND DISCUSSION

The Pala'wan tribe eats food stuffs, both from planted crops and those they collected from the wild. These are indigenous crops: cereals, vegetables and fruits. Indigenous crops are those which are originated in the locality (Republic of South Africa: Department of Agriculture, Forestry and Fisheries, 2016). These could also mean crops growing naturally in a particular locality or environment (<http://www.wordcentral.com>, 2007).

The crops they usually planted for food are cereals; and, the food items they usually collected from the wild are vegetables and fruits. Cereals or grain crops include rice (sticky and non-sticky), corn (sticky and non-sticky), sorghum and allied species. Other food crops are classified as tuber crops, corm crops and palms.

For vegetables, young or tender shoots and fruits are used for food. These are collected as they are needed in the kitchen. In the case of fruits, they are collected when they are ripe as to the season they are available. For example, durian and *rambutan* are harvested during summer season (March to May) up to early August each year. Surplus supply of durian and *rambutan* are usually sold or bartered with basic products needed in the kitchen to local traders, if feasible.

Indigenous Food Crops. There are 23 identified sources of carbohydrates of the tribe; 14 of these food crops are cultivated; and nine collected from the wild. They are classified as grains, tubers, corms, and palm as sources of *natek* (flour/starch) as well as fruits. Rice, corn, sorghum and *etorey* (identified as to local name only) are the common grain crops they planted on their farm. Rice, with 55 identified cultivars – both sticky and non-sticky, is the principal crop as their farming system is upland rice-based. For corn, like rice, there are sticky and non-sticky lines or cultivars.

The common food crops they collected from the wild are of the *Dioscorea species*, especially the *Dioscorea pentaphylla* and *hispidia*. There are four kinds of these wild species.



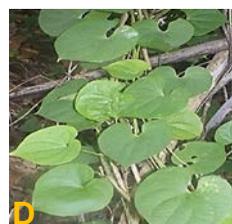
A. Upland rice with sorghum



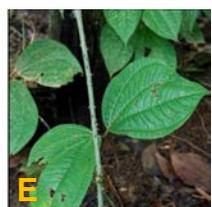
B. Etorey



C. *D. pentaphylla*



D. *Dioscorea sp.*



E & F. *D. hispidia*



G. *D. pentaphylla*



H. *Dioscorea sp.*

Indigenous Vegetables. There are 63 types of vegetables identified. Indigenous vegetables are classified into tree-type, vine/climbing-type, herb-type, mushrooms, rattans, palm-type and bamboo-type of plants. Though bamboo and rattan are non-timber forest plants, their shoots are eaten as vegetables. These vegetables are readily available the whole year round. Common of these are *bago* (*Gnetum sp.*), *kamansi* and *badak* (*Artocarpus sp.*). Young leaves and fruits are used as food. For climbing/vine-type vegetables, there are 12; 11 for herb-type; 14 mushrooms, four rattans, six palms and seven for bamboo-type. Indigenous vegetables, of these kinds, are nutritious and pesticide residue-free (Hoe et al., 1999; Achinewhu et al., 1995).



A. *Perya leot* B. Mushroom C. Shoot of wild bamboo sp. D. Amaranth

Indigenous Fruits. For indigenous plants of which fruits are used as food, 37 are identified. These are classified as tree-type, vine/climbing type, and other types of fruit plants.

For tree-type fruit-bearing plants, 27 are identified; common of these plants are the wild mango, wild *rambutan* (several kinds), and durian. There are five kinds of vine/climbing type of fruit-bearing plants; and, six for other types. These kinds of indigenous fruits are rich in vitamin C (Achinewhu et al., 1995). Ju et al. (2013) reported as well that indigenous fruits are good sources of minerals and vitamins needed in the normal functioning of the human body.

Indigenous fruits are present and eaten worldwide (Chua-Barcelo, 2014) and they are abundant. However, limited researches had been done to identify and determine their potential uses. Recent literatures on indigenous fruits reveal that they are indeed abundant. In fact, in the Philippines, Chua-Barcelo (2014) mentioned a "...total of 36 fruit species ... (are) found in different municipalities of Benguet. These fruit species belong to 27 genera and 20 families." In related development, Tibetan Chinese eat 78 edible fruits (Ju et al., 2013); while 44 species are reported eaten in Nepal (Upreti et al., 2012).

The most common of these fruit-bearing plants/trees are the durian (*Durio* sp.), *rambutan* (*Nephelium* spp.), wild mango and *tabo* (*Willughbeia* sp.). Philippine Star.com (2015), also identified these indigenous fruits, except wild mango as popular in the province of Palawan.



A. Wild Durian B. Wild Rambutan C. Tabo D. *Boneg* (*Garcinia* sp.)

Aside from such noted fruits which could be found in the market places during fruit-bearing season, there are a lot more kinds of fruits collected and used as food stuffs by the Pala'wan tribe. These are endemic to the place; e.g., *meraring*, *kandis*, *eloyew*, *badak* (local names).



A. Badak



B. Balenewnew



C. Penoen



D. Eloyen

CONCLUSION

The study revealed that the Pala'wan tribe is cultivating 14 cultivars of indigenous crops which served as their sources of carbohydrates (food). But, aside from this, they also gathered food stuffs from the wild. These food sources which they gathered from the wild constitute nine kinds of sources of carbohydrates, 63 vegetables, and 37 various fruits. Besides, the data clearly show that there are many plants which are considered vegetables, and sources of fruits.

RECOMMENDATION

The two main factors that could affect the sustainable way of life of the Pala'wan farmers are the encroaching of the settlers on their previously fallowed plots and the virgin forests which were converted into agricultural lands under the "modern" agriculture system of crop production. The second one is the influence of these settlers on their way of life, specifically in the use of commercial agricultural inputs in doing agriculture. Once their habitat is destroyed and altered to the level where its (forest) ecosystem is no longer sustainable, they will ultimately be assimilated to the lowlanders' worldview. Once assimilated, their knowledge system does not only erode but would be forgotten. Then, their knowledge on indigenous sources of food would become things in the past. Simultaneously, the plants which are their sources of nutritious food stuffs would also be lost as the forest is cleared to give way to modern agriculture. There is an urgent need, therefore, to document their indigenous knowledge system before they are completely forgotten (Simpson, 2004; Dweba and Mearns, 2011; Thrupp, 2000).

Hence, based on the above-mentioned premises, the following specific activities are recommended to be done:

1. Collect all the identified plant species to be planted *ex situ*. A pilot site where Pala'wan community is occupying is an ideal one to be used as *ex situ* site. They will be the ones to manage such project because they are knowledgeable about it. This is an urgent call considering that the conversion of the forest into agricultural lands is so high nowadays. Besides, the province is mineral resources-laden; hence, many applications for mining are in the pipeline.
2. An applied research could be implemented in a pilot indigenous community where all indigenous plants would be planted and used. And, the income and health status of the community people would be determined; and, be compared with other indigenous community not planting and using such plants.
3. Though indigenous vegetables are considered important in the dietary requirement of indigenous people (Dweba and Mearns, 2011; Bharucha and Pretty, 2010; Hoe et al.,1999), there is still a need to conduct a study to determine the nutritional properties of the identified plants which are considered sources of food by the Pala'wan farmers.

4. Commercialization of promising indigenous crops, vegetables and fruits (Hoe et al., 1999; Akinnifesi et al., 2004) could be implemented through the indigenous community. These food stuffs could be good sources of income. Vegetable and fruit products, after a thorough study of their nutritional components, could also be processed, canned and sold in the market.

STATEMENT OF AUTHORSHIP

The senior author is responsible in the formulation of the research proposal, conduct of the research study, organization of the data and writing the paper. The junior author assisted in the organization of data and is responsible in editing and formatting the pictures, in doing the literature search needed in the write up and in proofreading the paper.

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