

Identification of High Value Trees in the Municipality of La Libertad Zamboanga del Norte, Philippines

Joryn Cinco Ramo

Graduate Student, Master of Arts in General Science, Jose Rizal Memorial State University, Dapitan City, Zamboanga del Norte, Philippines

Abstract

This study was carried out total examine the species composition, relative abundance and evaluate species diversity index using the Shannon-Wiener Index, in 7 barangays of the Municipality of La Libertad, Zamboanga del Norte. Results identified 12 families, 16 species of high value trees. *Musa L.* and *Cocos nucifera* have the highest relative abundance value in all sampling sites. Analysis of variance showed that there is significant difference in diversity within the sampling station. This means that the number of species present and relative abundance of different species in all sampling site are not the same. This study may provide relevant information in improving profit for the farmers.

Keywords: Agriculture's Office, Barangay, High Value Trees, sampling site, species diversity

1. Introduction

Planting trees for profit is a great option for part-time or full-time employment for those who like to be their own boss and enjoys being outdoors. Trees are a renewable resource that can be cultivated in a tiny space or an acreage. Trees serve a multitude of important purposes including food, building supplies, and paper. Various tree species such as almond, coconut, cherry, prune and peach, are grown in orchards for their fruits and nuts.

La Libertad is a landlocked municipality in Zamboanga del Norte coastal province. The town has an area of 69.51 m² or 26.84 m² representing 0.95 percent of Zamboanga del Norte's total area and an average elevation of 172.2 m (564.7 feet) above sea level. The municipality comprises 13 barangay communities, namely El Paraiso, La Unión, La Victoria, Mauswagon, Mercedes, New Argao, New Batan, New Carcar, Poblacion, San Jose and Santa Cruz. (PhilAtlas, 2020).

According to Shelain Apolinario, in this municipality there are many low-income households. Lack of subsistence support is the main explanation why households have not had enough income to support their families. With the support of the Municipal Agricultural Office, the residence will be able to handle and sell its goods well.

The aim of this study is to identify the High Value Trees in the municipality of La Libertad. The number these trees will also be identified. The outcome of this study will serve as a reference for the LGU of La Libertad in its plans for in-service training, especially in the Office of Agriculture.

2. Conceptual Framework of the Study

Figure 1 shows the relationship between the independent variable (High Value Trees) to the dependent variable (Identification of High Value Trees and Hectare of High Value Trees each Barangay)

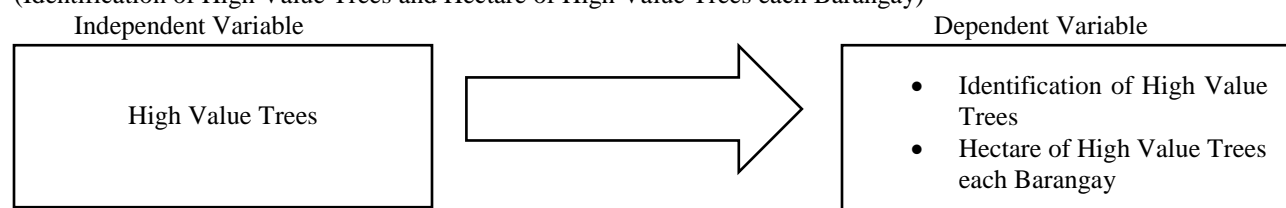


Figure 1. Conceptual framework of the study

3. Research Method

Description of the Study Area. This study was conducted in the Municipality of La Libertad Zamboanga del Norte. It is the 5th class municipality in the province of Zamboanga del Norte, Philippines. La Libertad is located on the Island of Mindanao at approximately 8.4857, 123.5191. The elevation is measured at 133.6 meters or 438.3 feet above the mean sea level at these coordinates. There are 13 Barangays and these are El Paraiso, La Union, La Victoria, Mauswagos, Mercedes, New Argao, New Bataan, Santa Cruz, and Santa Catalina. Poblacion shares a common boarders with Mauswagong, Singaran, Santa Catalina, and New Bataan.



Sampling Procedure. The researchers asked permission from the Municipality of La Libertad to allow the Municipality to carry out its study entitled Identification of High Value Trees in the Municipality of La Libertad Zamboanga del Norte. The researchers begun data collection until the authority has signed the letter of permission. For data collection, the researcher went to 7 barangays and asked the farmers how many trees are in the barangay under High Value Trees for his survey. The researcher went to the Agriculture Office after the compilation of the details for more knowledge about the High Value Trees and for clarification.

This analysis uses the quantitative and qualitative research combination approach. A questionnaire survey tool is used to determine how many High Value trees are in their barangay. The quantitative approach is only utilized for farmers each barangay. Documented interviews were undertaken to include qualitative evidence about how the High Value Tree would support La Libertad's residence. Written interviews have been arranged with the Agriculture Head of the Office of Agriculture.

Species composition, relative abundance, and diversity of high value trees were determined using survey method. All high value trees were counted and recorded.

With the use of Shannon Index (H), diversity of species or the number of different species was calculated.

$$\text{Shannon Index (H)} = - \sum_{i=1}^s p_i \ln p_i$$

4. Results and Discussion

Table 1 shows the list of High Value Trees found in the Municipality of La Libertad. A total of 16 species were recorded in collecting data. There are 16 species that were found in the HVCDP (High Value Crops Development Program) which is one of the banner programs of the Department of Agriculture.

The trees in table 1 contribute for attainment of the food self-sufficient economic growth and enhancement of consumer's health and welfare. It also promotes the production, processing, marketing and distribution of high value crops (<http://dafarmm.da.gov.ph/hvcdp/>)

Table 1. High Value Trees Composition in 13 Sampling Sites

Family	Species	Local Name	La Union	La Victoria	Mauswagon	Mercedes	Singaran	El Paraiso	New Bataan
<u>Guttiferae</u>	<i>Garcinia mangostana</i>	Mangosteen	+	+	+	+	+	+	+
Moraceae	<i>Artocarpus heterophyllus</i>	Jackfruit	+	+	+	+	+	+	+
Moraceae	<i>Cocos nucifera</i>	Coconut	+	+	+	+	+	+	+
Musaceae	<i>Musa L.</i>	Banana	+	+	+	+	+	+	+
Musaceae	<i>Musa textilis Nee</i>	Abaca	-	-	-	+	+	+	-
<u>Meliaceae</u>	<i>Lansium parasiticum</i>	Lanzones	+	+	+	-	+	-	-
<u>Meliaceae</u>	<i>Sandoricum koetjape</i>	Santol	+	+	+	+	+	+	+
<u>Malvaceae</u>	<i>Durio zibethinus</i>	Durian	+	+	+	-	+	+	-
<u>Malvaceae</u>	<i>Coffea</i>	Coffea	-	-	+	+	+	-	-
Arecaceae	<i>Hevea brasiliensis</i>	Rubber Tree	+	+	+	+	+	+	+
<u>Euphorbiaceae</u>	<i>Theobroma cacao L.</i>	Cacao Tree	-	-	+	+	+	+	+
<u>Rubiaceae</u>	<i>Artocarpus odoratissimus</i>	Marang	-	+	+	+	+	-	+
Sapindaceae	<i>Nephelium lappaceum</i>	Rambotan	+	+	+	-	+	+	-
Lauraceae	<i>Persea americana</i>	Avocado	-	-	+	+	+	+	+
Annonaceae	<i>Annona muricata</i>	Guyabano	+	+	+	-	+	+	+
Rutaceae	<i>Citrus Maxima</i>	Pomelo	-	-	-	-	+	-	-

Relative Abundance

The Relative Abundance of each Species of High Value Trees are listed in table 2. In La Union, species with high relative abundance are *Musa L.*, 55.28% and *Cocos nucifera*, 16.9%. In La Victoria, the abundance species are also *Cocos nucifera*, 70.55% and *Hevea brasiliensis*, 16.73%. Still *Cocos nucifera*, 63.23% and *Musa L.*, 25.78% are abundant in Mercedes. In Singaran, the abundance species are *Cocos nucifera*, 43.25% and *Musa L.*, 37.84%. *Cocos nucifera*, 55.91% is also abundance in El Paraiso. On the other hand, *Cocos nucifera*, 35.44% and *Theobroma cacao L.*, 40.64% are abundant in New Bataan. These are the trees that belong to the High Value Crops Development Program which is one of the banner programs of the Department of Agriculture that are found in the Municipality of La Libertad, Zamboanga del Norte

Table 2. High Value Trees' Relative Abundance Per Sampling Site

Species	La Union		La Victoria		Mauswagos		Mercedes		Singaran		El Paraiso		New Bataan	
	No. Ind.	R. A. %	No. Ind.	R. A. %	No. Ind.	R. A. %	No. Ind.	R. A. %	No. Ind.	R. A. %	No. Ind.	R. A. %	No. Ind.	R. A. %
<i>Garcinia mangostana</i>	450	1.24 %	50	0.14 %	47	0.06 %	40	0.08 %	148	0.19 %	49	0.04 %	43	0.07 %
<i>Artocarpus heterophyllus</i>	1000	2.76 %	750	2.09 %	974	1.26 %	1400	2.28 %	4080	5.15 %	2100	1.83 %	750	1.22 %
<i>Cocos nucifera</i>	6133	16.95 %	25363	70.55 %	49065	63.23 %	40307	77.02 %	34289	43.25 %	64033	55.91 %	21821	35.44 %
<i>Musa L.</i>	20000	55.28 %	1600	4.45 %	20000	25.78 %	1000	1.91 %	30000	37.84 %	38000	33.18 %	4000	6.50 %
<i>Musa textilis Nee</i>	0	0	0	0	0	0	2116	4.04 %	0	0	1040	0.91 %	2030	3.30 %
<i>Lansium parasiticum</i>	2013	5.56 %	1025	2.85 %	1611	2.08 %	0	0	1014	1.28 %	0	0	0	0
<i>Sandoricum koetjape</i>	25	0.069 %	107	0.30 %	202	0.26 %	110	0.21 %	400	0.51 %	75	0.07 %	22	0.04 %
<i>Durio zibethinus</i>	875	2.42 %	257	0.71 %	201	0.26 %	0	0	553	0.70 %	814	0.71 %	0	0
<i>Coffea</i>	0	0	0	0	2015	2.60 %	1004	1.92 %	1575	1.99 %	0	0	0	0
<i>Hevea brasiliensis</i>	5504	15.21 %	6014	16.73 %	2000	2.58 %	4000	7.64 %	2000	2.52 %	2000	1.75 %	7000	11.37 %
<i>Theobroma cacao L.</i>	0	0	0	0	1041	1.34 %	2052	3.92 %	4023	5.07 %	6012	5.25 %	25024	40.64 %
<i>Artocarpus odoratissimus</i>	0	0	520	1.45 %	334	0.43 %	251	0.48 %	637	0.80 %	0	0	824	1.34 %
<i>Nephelium lappaceum</i>	156	0.43 %	154	0.43 %	27	0.035 %	0	0	152	0.19 %	232	0.20 %	0	0
<i>Persea americana</i>	0	0	0	0	52	0.07 %	50	0.10 %	151	0.19 %	100	0.09 %	27	0.04 %

<i>Annona muricata</i>	21	0.05 8%	109	0.30 3%	25	0.03 %	0	0	103	0.13 %	80	0.07 %	30	0.05 %
<i>Citrus Maxima</i>	0	0	0	0	0	0	0	0	155	0.20 %	0	0	0	0
Total	361 77		359 49		775 94		523 30		792 74		1145 35		615 71	

Species Diversity Index

Species diversity is the range of different species that live in a given area. The effective number of species refers to the number of species used to obtain the same proportional species distribution in the dataset of interest. Shannon-Weinner Index (H), revealed that El Paraiso had the highest diversity index and La Union had the lowest. Analysis of variance showed that there is significant difference in diversity within the sampling station. This means that the number of species present and relative abundance of different species in all sampling site are not the same.

Table 3. Diversity Index

Species	La Union	La Victoria	Mauswagos	Mercedes	Singaran	El Paraiso	New Bataan
Shannon-Weiner Index (H)	0.37	0.93	1.09	0.92	1.41	1.8	1.34

5. Conclusion

Among 16 species, *Cocos nucifera* and *Musa L.* are the most abundant species in the Municipality of La Libertad, Zamboanga del Norte. Shannon-Weiner is used to determine the Species Diversity Index. It is revealed that El Paraiso had the highest diversity index and La Union had the lowest. It is recommended that the Office of Agriculture will continuously assist and conduct a seminar to the farmers in all barangays for them to be oriented regarding on how to increase production, income, and access affordable, safe and healthy food.

6. References

1. Reference 1 Apolinario, S. (n. d.). Potential Delight. Retrieved from <http://saad.da.gov.ph/potential-delights/#1574320750946-b0ecfeaf-d5be>
2. Reference 2 Department of Agriculture and Fisheries. (2018). HVCDP. <http://dafarmm.da.gov.ph/hvcdp/>.
3. Reference 3 Web Solution LLC. And Its Licensors. (2021). Trees. Economic Significance. <https://bit.ly/39o6GSu>.
4. Reference 4 The Seed Site. (2013). Retrieved from <http://www.theseedsite.co.uk/clusiaceae.html>
5. Reference 5 PhilAtlas. (2020). Retrieved from <https://www.philatlas.com/mindanao/r09/zamboanga-del-norte/la-libertad.html>