The 1st INOVCOM FP 2016

PROCEEDINGS

INTERNATIONAL SEMINAR

"The 1st International Conference on Innovation and Commercialization of Forest Product"

Banjarbaru, South Kalimantan, Indonesia

November 22nd - 23rd, 2016

Edited by:

Prof. Dr. Ir. Gt. Muhammad Hatta, M. S.
Prof. Yasushi Morikawa
Prof. Dr. Ir. Wasrin Syafii, M. Agr
Prof. Dr. Ir. Yusuf Sudo Hadi, M. Agr
Prof. Dr. Enos Tangke Arung, S.Hut, M. P.
Dr. Sigit Sunarta, S.Hut, M.P., M.Sc.
Dr. Satria Astana
Ir. Harry Budi Santoso., M. P.

Organizer

RISTEKDIKTI

Center of Excellence
Research Consortium for Sustainable Tropical Forest Management
Lambung Mangkurat University

PROCEEDINGS

INTERNATIONAL SEMINAR

The 1st International Conference on Innovation and Commercialization of Forest Product 2016

Rodhita Hotel Banjarbaru, South Kalimantan, Indonesia

November 22nd – 23rd, 2016

Edited by:

Prof. Dr. Ir. Gt. Muhammad Hatta, M. S.

Prof. Yasushi Morikawa

Prof. Dr. Ir. Wasrin Syafii, M. Agr

Prof. Dr. Ir. Yusuf Sudo Hadi, M. Agr

Prof. Dr. Enos Tangke Arung, S.Hut, M. P.

Dr. Sigit Sunarta, S.Hut, M.P., M.Sc.

Dr. Satria Astana

Ir. Harry Budi Santoso., M. P.

Organizer

Center of Excellence

Research Consortium for Sustainable Tropical Forest Management,

Lambung Mangkurat University

Proceedings
The 1st International Conference on Innovation and Commercialization of Forest Product (INOVCOM-FP 2016)

Organized by
Center of Excellence Research Consortium for Sustainable Tropical Forest Management
Lambung Mangkurat University

In Colaboration With
Bank BNI Banjarmasin
Local Government of Tanah Laut
PT. Adaro

ISBN: 978-602-6483-37-9

Edited by:
Prof. Dr. Ir. Gt. Muhammad Hatta, M. S.
Prof. Yasushi Morikawa
Prof. Dr. Ir. Wasrin Syafii, M. Agr
Prof. Dr. Ir. Yusuf Sudo Hadi, M. Agr
Prof. Dr. Enos Tangke Arung, S.Hut, M. P.
Dr. Sigit Sunarta, S.Hut, M.P., M.Sc.
Dr. Satria Astana
Ir. Harry Budi Santoso., M. P.

Published by:
Lambung Mangkurat University Press

Publisher Address:
Pusat Pengelolaan Jurnal dan Penerbitan Unlam
Jl. H. Hasan Basry, Kayu Tangi, Banjarmasin 70123
Gedung Rektorat Unlam Lt 2
Telp/Faks. 0511-3306195

xi-553 p. A4 210x297 mm
First Edition : Desember 2016
ISBN: 978-602-6483-37-9

VEGETATION ANALYSIS OF BAMBOO IN THE HULU BANYU VILLAGE, LOKSADO, HULU SUNGAI SELATAN REGENCY

Dina Naemah [1], Emmy Winarni [2], Susilawati [3]
Forestry Faculty of Lambung Mangkurat University [1], Forestry Faculty of Lambung Mangkurat University [2], Forestry Faculty of Lambung Mangkurat University [3]
E-mail: dina_naemah@yahoo.com

Abstract

Bamboo plants could grow starts from the banks of the river, up into the mountains, so the bamboo that grow naturally or are planted in Loksado is one of the commodity which could open a kind of business with employment of people live there, which also increase incomes. But the magnitude potential of bamboo has not been known, neither bamboo species that grows on the banks of the river. On the other hand, the information about bamboo is very important in order to manage in a sustainable bamboo management.

The research was held on the banks of the River of Amandit, District of Loksado, Hulu Sungai Selatan Regency. The data was taken by using terraced paths (nested sampling) with a size of 20 m x 500 m, in the path of created plots with the measurement about 20m x 20m. The data was taking in two lines. Analysis of the data is using the Important Value Index.

Based on the research, it was found 4 (four) types of bamboo that is; Bamboo Banar/Rabungan (*Gigantochloa psendianum linoceae*), bamboo reed (*Schizoseyum brchycladum* Kurtz), Bamboo Tali (*Gigantochloa lear*), bamboo Tamiang (*Schizoseyum blamei* Ness). Index values are important for each type of bamboo which are, bamboo ridge (77.14), the bamboo haur (37.51), the bamboo rope (23.10), the bamboo reed (22.17) and sweet bamboo (23,52). The potential of bamboo on the location of the study, was found that there were 476 bamboo groves. Additional knowledge is required to cultivate bamboo in the study site so that it can be utilized in a sustainable way.

Key Words: Analysis of Vegetation, Important Value Index, Nested Sampling.

Introduction

The close relationship between people and forests has been started a long ago, especially for the people who live around the forest. Commonly, people use the forest product for their life. The use of forest products are including wood or non-wood. Untill now, One of the non-wood forest product that is potential until now and cultivated by the people in the forest area is bamboo.

Nowadays, Bamboo in the era of the regional economy is now very important to increase local revenues in Loksado districts, the district south of HSS, because it has been cultivated by the local community.

Bamboo is a versatile crop or multi purposes trees species (MPTS), because almost all of the bamboo plants are can be used, such as :

1. Roots and cob for crafts / souvenirs
2. *Rebung* (bamboo shoots) for foodstuff (vegetables)
3. The trunk is the main product of bamboo as a raw "*anyaman*" material , household appliances, musical instruments and home building materials, and also as pulp material. Besides the economic value, bamboo has ecological value that is used as an ornamental plant, curtains silencers, binding carbon dioxide and prevent erosion on the brink, cliffs and rivers and also can be used as a type of plant for greening (Prosea Foundation, Bogor, Indonesia, 1996).

Bamboo plants can grow at the edge of the river to the mountains, so that bamboo grows naturally and bamboo is also planted in the Loksado district, becomes the commodity of lokaso, that can open the field of business in rural areas, also increase incomes of the people there. But the location and the great potential of bamboo had not been known. On the other hand the information is very important in order to manage a sustainable bamboo management.

Based on the description above, the writer tried to examine the composition and types of bamboo in the riverside of Amandit

The purposes of this research to knowing the type of bamboo along the river of Hulu Banyu Village, Amandit and to knowing the life management of the types of bamboo in the lowlands along the river of Hulu Banyu Village, Amandit.

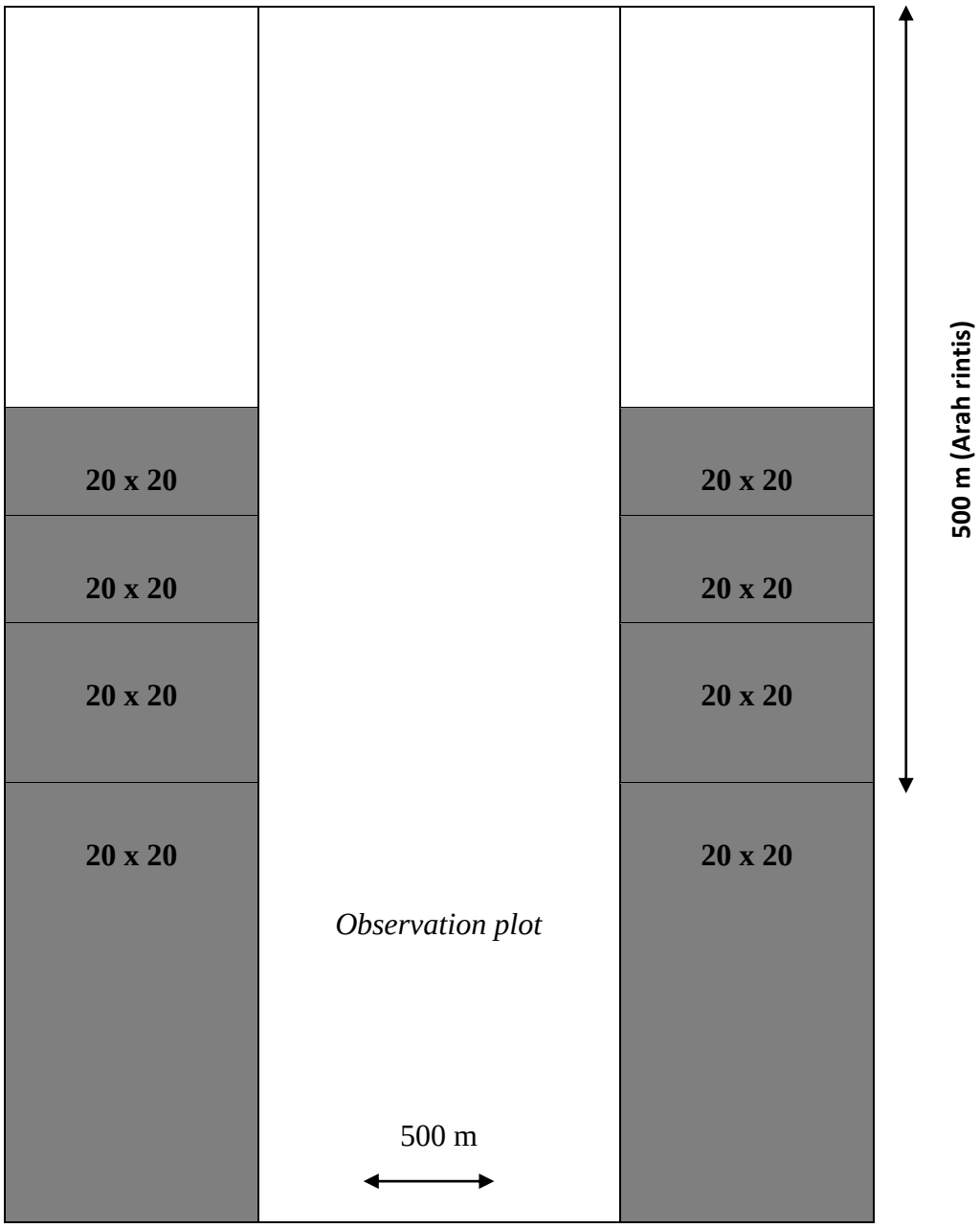
Research methods

This research was conducted in the village of Hulu Banyu, Loksado District, Hulu Sungai Selatan. Research has been conducted for 3 (three) months, 1 (one) month for preparation and implementation, and two (2) months for extensive analyzing and reporting the data. The object of this research is the bamboo clumps that grown on the banks of the river Hulu Banyu Village Amandit, Loksado District, Hulu Sungai Selatan

1. Map of the Loksado District (a scale is 1: 100,000)
2. Compass, to create a research path
3. Altimeter, to determine the altitude
4. Roll meters (50 meters long)
5. Pieces of zinc, paint and brushes
6. Rope (*rapia)*
7. Tally sheet, to record the type of bamboo
8. Cleaver

The procedures of this research are :

1. Preparation of materials and tools that will be used in research
2. Determine the location of the research
3. Collecting data in the field, using terraced path method (nested sampling)
4. Make a research path along 500 m with a width of 20 m, in the path, we create plots – the mesurements of each plots are 20 m x 20 m, so there are 25 observation plots (plot example). There are v2 tracks, so the total number of sample plots are all 50 plots, with a total area of 10,000 m^2 (1 ha)
5. Record the number of clumps, and the amount of bamboo rods, and type of bamboo.


20 x 20
20 x 20
20 x 20
20 x 20
20 x 20
20 x 20
20 x 20
20 x 20
Observation plot
500 m
500 m (Arah rintis)

Picture 1.

Data Analysis

Data were analyzed as used in ecological studies of plants. Overview quantitative research in the field is shown by Important Value Index.

Important Value Index

Importance Value Index (IVI) is the number of density (K), relative density (KR) then added to the Relative Frequency (FR). To know the Important Value Index, we need to calculate density (K), relative density (KR), Frequency (F), Relative Frequency (FR), using the formula of Seorianegara and Indrawan (1978) , that is :

$$K = \frac{\text{Total no of individuals of a species in all quadrats}}{\text{total no of quadrats samples}}$$

$$KR = \frac{\text{Density of particular species}}{\text{Sum of the densities of all species}} \times 100\%$$

$$F = \frac{\text{no of occurances of a species}}{\text{total no of site samples taken}}$$

$$FR = \frac{\text{no of occurances of particular species}}{\text{total no of occurances of all the species}} \times 100\%$$

K = Total Individu : Location of example plot

KR = Density of each varian : Total Density

F = Total plot for each varian : Total varian

FR = The frequency of each varian The frequency of total varian

So Importance Value Index (NP) = KR + FR

The calculation formula applies to all levels of types of bamboo that will be analyzed. The INP value ranges between 0-200%, If the calculation of each type is close to 200% which is high, so the ecological mastery in a community means higher and if the number is close to 0%, the ecological control of these types ans low(Seorianegara and Indrawan, 1978).

RESULTS AND DISCUSSION

Based on observations on the river bank, we already found seven (7) different species of bamboo, which are ; banar/rabungan, bambu buluh, bambu tali, bambu tamiang daan bambu haur, bambu manis, bambu batung

There are differences of 7 types of bamboo that we found. On the type of bamboo banar / rabungan, the number of stems and clumps area lot, compared with other types of bamboo such as bambu tali, bambu tamiang daan bambu haur details can be seen in Table 2 and 3.

Table 1. The total potential of bamboo clumps on research plots

Number.	The type of Bamboos	Total Clumps
1	Rabungan (*Gigantochloa psendianum linoceae*)	265
2	Haur (*Bambusa vulgaris Scrad*)	71
3	Buluh (*Schizoseyum brchycladum Kurtz*)	41
4	Manis (*Gigantochloa atter* (*Hassak*) *kurtz ex Munkro*)	34
5	Tali (*Gigantochloa apus*)	32
6	Tamiang (*Schizoseyum blamei Ness*)	26
7	Batung (*Dendro colamus Asper*)	7

From those table , 3 types of bamboo that have many clumps are bambu Rabungan (265), bambu Haur (71) dan bambu Buluh (41).

Table 2.The Potential of Bamboo's rods

Number.	The type of Bamboos	The Total Rods
1	Rabungan (*Gigantochloa psendianum linoceae*)	2560
2	Tali (*Gigantochloa apus*)	2531
3	Tamiang (*Schizoseyum blamei Ness*)	1597
4	Haur (*Bambusa vulgaris Scrad*)	1407
5	Manis (*Gigantochloa atter* (*Hassak*) *kurtz ex Munkro*)	1221
6	Buluh (*Schizoseyum brchycladum Kurtz*)	482
7	Batung (*Dendro colamus Asper*)	295

Based on Table 2, the number of clumps and the number of stems of bamboo rabungan is most numerous compared with other types of bamboo such as bambu tali, tamiang, manis, batung and haur , and the less is Tamiang bamboo. Tamiang Bamboo has a similarity with other types of bamboo species, but the number of clumps and the number of stem are still less numerous . *Bambu buluh* has not much different from other types of bamboo, this bamboo able to adapt the environment factors to keep the bamboos to grow, even the number of the clumps and the number of stems is less numerous.

Meanwhile, according to Bambang (2002) It is found 7 species of bamboo from three clans, bambu Banar/Rebungan (*Gigantochloa psendianum linoceae*), bambu Buluh (*Schizoseyum brchycladum Kurtz*), bambu Tali (*Gigantochloa apus*), bambu Tamiang (*Schizoseyum blamei Ness*), dan bambu Haur (*Bambusa vulgaris Scrad*), bambu Manis (*Gigantochloa atter* (*Hassak*) *kurtz ex Munkro*), bambu Batung (*Dendrocalamus Asper*) and, Haur Bamboo (Bambusa vulgaris Scrad). It means most type of bamboos are suitable to live in in area that have enough water

According to the National Institute of Biology (1997), generally, *bambu tali and rebunga / banar* can grow in the lowlands and can also grow well on highlands to an altitude of 1000 m above sea level. *Bambu Tamiang* prefer to live in the open area, lowland with an altitude below 650 asl. *Bamboo Buluh* can grow in the lowlands to an altitude 2000 m. Thisskind of species will grow well if land is fertile and the climate is not too dry. *Bambu Haur* can grow on a variety of soil and moisture in the lowlands.

According to the Prosea foundation (1996), *bamboo banar* can grow well in rain-type areas of A, B, C, and D, rainfall> 1800 mm / year and not logged by the water, lowland to the altitude> 1000 m above sea level. *Bambu tali* grow well in the rain-type area of A and B of, with the average rainfall> 2000 mm / year, lowlands to altitudes> 900 asl. Bambu buluh can grow on various types of soil, to the altitude of <600 m asl.

Frequency can be used as a measurement for determining the distribution of the type of bamboos in the area, which can be seen from the relative frequency. Based

on the life surviving terms of a species, there are type of bamboos that have large deployment, and have a small deployment. It is because the large deployment of those type of bamboos also have larger ecological tolerant.

All those type of bamboos are not integrated grow with the community, because of the competition between individuals or the differences of altitude above sea level.This is possible because of the similarity of habitat, interactions between individuals and also the distribution.

Bambu banar species have the most extensive deployment compared to other types. Therefore, based on the presence, this type of bamboo is the most powerful among all the species. Becking (1963) which is cited by Ma'mum (2002) t the type that has largest deployment (highest frequency) is called the dominant species in the region where it is concerned.

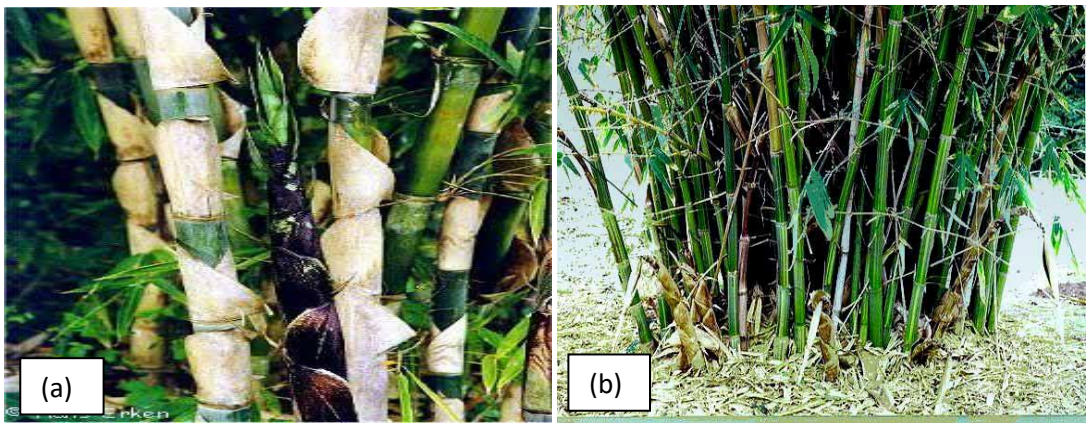
Other species has a narrow spread. This is presumably because the factors that influence the spread of these types such as the altitude of sea level and the competition between species, and also a human factor.

The spreading of *Bambu Banar* illustrates that this type will still play a role in the community in the future as long as no environmental destruction. While the other type of bamboo that has a small deployment could be lost soon if it cannot survive (extinct). Important Value Index reflects the life force against different environmental conditions and the ability to control certain areas (Table 3).

Table 3. Calculation data of density, relative density, frequency, relative frequency and importance value.

	Species	The number of clumps	K	KR(%)	F	FR(%)	INP(%)
1	Rabungan	265	0,6625	55,67	0,95	21,47	77,14
2	Haur	71	0,1775	14,91	1	22,60	37,51
3	Manis	34	0,085	7,143	0,725	16,38	23,52
4	Tali	32	0,08	6,723	0,725	16,38	23,10
5	Buluh	41	0,1025	8,613	0,6	13,56	22,17
6	Tamiang	26	0,065	5,462	0,275	6,215	11,68
7	batung	7	0,0175	1,470	0,15	3,390	4,68
Total		476	1,19	99,99	4,425	99,99	199,98

The highest importance value index of bamboo species on the plot observations are bambu rabung (77,14%), bambu haur (37,51%), bambu tali (23,10%), bambu buluh (22,17%) and bambu manis (23,52%). The dominant species of bamboo take a role in the community, this can be seen by determining importance value index, highest to lowest. *Bambu banar* species have the highest importance value compared to other bamboo, it means that the type of bamboo Banar can adapt to the environment.



Picture 2. (a) *Gigantochloa apus* (b) *Gigantochloa psendianum linoceae*

Bamboo batung species have the smallest importance value index, this means that the type of bamboo Batung less adapt to environment. Deployment of bamboo species have a good potential in a lowland, those species have a large number of density value, frequency and INP for observation It is not based on the type of topography, but because of the most dominant species in the area.But, It might not last forever, because many factors that affect the growth of the community such as the altitude above sea level, exploitation on a large scale, light, water, and soil fertility.

Conclusion

1. There are 7 compositions of the species of bamboo on the plot of the research,There are bambu Rabungan (*Gigantochloa psendianum linoceae*), bambu Buluh (*Schizoseyum brchycladum Kurtz*), bambu Tali (*Gigantochloa apus*), bambu Tamiang (*Schizoseyum blamei Ness*), bambu Haur (*Bambusa vulgaris Scrad*), bambu Manis (*Gigantochloa atter* (*Hassak*) *kurtz ex Munkro*), dan bambu Batung (*Dendrocolamus asper*).
2. The potential of bamboo on a plot of research are 476 bamboo groves
3. The highest (INP) of bamboo is bambu Rabungan (77,14 %) followed by Bambu Haur (37.513%), while the lowest is Batung (4.86%).

Suggestion

Specific study should be done to *Bambu Banar/ Rebungan* and *bambu tali* to know cultivation and resistance towards pests and diseases, so it can be fully utilized by the people.

REFERENCES

Abdurahman, Aj. 1997. *Bambu dan Rotan untuk Barang Kerajinan,* Balai Penelitian Batik dan Kerajinan, Bogor.

Balai RLKT, 1995. *Keadaan Tanaman Bambu di Kabupaten Hulu Sungai Selatan,* Banjarbaru

Balai RLKT, 1995. Budidaya Bambu di Kabupaten Hulu Sungai Selatan, Banjarbaru

Lembaga Biologi Nasional, 1997. *Beberapa Jenis Bambu*. LIPI-Bogor

Ma'mum. 2002. *Analisis Vegetasi Kawasan Lindung Di sekitar Areal Saw Timber PT. Hendratna Di Kecamatan Sungai Pinang Kabupaten Banjar Kalimantan Selatan.* Skripsi Fakultas Kehutanan Universitas Lambung Mangkurat. Banjarbaru. Tidak dipublikasikan.

Puspawara, 1999. *Pengawetan Kayu dan Bambu. Sinar Harapan,* Jakarta.

Suyitno, 2001. *Ply Bambu, Kurangi Beban Hutan.* Suara Buletin dan liputan, edisi 2001. Bandung.

Sorensen dalam Dombios, M and Ellenberg, H. 1974. *Aims ang Method of Vegetation Ecology* .John Wiley and Sons. Toronto.

Soerianegara dan Indrawan. 1978. *Ekologi Hutan Indonesia.* Lembaga Kerjasama Fakultas Kehutanan Institut Pertanian Bogor. Bogor.

Yayasan Prosea indonesia, 1996. *Budidaya Bambu Guna Meningkatkan Produktifitas Lahan.* Lembaga Ilmu Pengetahuan Indonesia. Bogor.