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The Morphology Characteristics of Plant Gambir (Uncaria gambire Roxb.) in Pakpak Barat District

Karakteristik Morfologi Tanaman Gambir (*Uncaria gambire* Roxb.) di Kabupaten Pakpak Barat

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ABSTRACT

*Gambier (Uncaria gambire Roxb**)** is plantation sector sub commodity which was generally managed by people traditionally but that gambir is exporting commodity only some of consumed by small of society. Gambier plant type that exist in Pakpak Bharat generally not been known as morphology. It is caused by lack of knowledge of community resources Bharat Pakpak to know specifically the type of plants are planted gambier. For that survey gambir plant morphological characteristics in some areas as the center of the district gambir Pakpak Bharat in May-August, 2017. The purpose of this study was to obtain data and information about the types / varieties of gambier plants cultivated by farmers in Pakpak Bharat Regency. The results obtained from the characteristic aspects of plant morphology there are 4 types / types of plant gambier Pakpak contained in Bharat. 4 types of plant gambier it: (1) Type of reddish leaf , known as "siarang" (2) Type of leaf shape is wider and longer (3) Type of leaf is narrower and more short and (4) Type of leaf are thicker and greener leaf.*

***Keywords** : Characteristic, type, gambier plant*

ABSTRAK

Gambir (*Uncaria gambire* Roxb**)** merupakan komoditas sub sektor perkebunan yang umunya dikelola rakyat secara tradisional, namun demikian komoditas ekspor, hanya sebagian kecil dikomsumsi masyarakat. Jenis/tipe tanaman gambir yang ada di Pakpak Bharat pada umumnya belum banyak diketahui secara morfologi. Hal ini disebabkan oleh keterbatasan pengetahuan dari sumber daya masyarakat Pakpak Bharat untuk mengenal secara khusus jenis/tipe dari tanaman gambir yang ditanamnya. Untuk itu dilakukan survei karakteristik tanaman gambir secara morfologi di beberapa daerah sebagai sentra gambir di Kabupaten Pakpak pada Mei - Agustus 2017. Tujuan dari penelitian ini adalah untuk memperoleh data dan informasi tentang jenis/tipe/varietas tanaman gambir yang dibudidayakan petani di Kabupaten Pakpak Bharat. Hasil karakteristik yang diperoleh dari aspek morfologi tanaman diketahui ada 4 jenis/tipe tanaman gambir yang terdapat di Pakpak Bharat. 4 jenis/tipe tanaman gambir itu yaitu (1) Jenis/tipe gambir warna daun kemerahan, disebut dengan nama “siarang” (2) Jenis/tipe gambir bentuk daun lebih lebar dan lebih panjang (3) Jenis/tipe daun lebih sempit dan lebih pendek dan (4) Jenis/tipe gambir daun lebih tebal dan warna daun lebih hijau.

Kata kunci: Karakteristik, jenis, tanaman gambir

INTRODUCTION

Gambier plant is a shrub plant, including one of the family Rubiace which has a high economic value, namely from the extract (sap) of leaves and twigs containing katechin and tannin. In West Sumatra gambier plants grow well in the Limapuluh Kota, South Pesisir and other second-level regions. Limapuluh Kota Regency is 11,937 ha with production of 7,379 t per year. In Pesisir Selatan District there are 2,469 ha with a production of 688 t per year and other districts

covering 175 ha, most of which are not yet in production (Dhalimi, 2006).

In North Sumatra gambier plants grow well in Pakpak Bharat District. From 2010 data obtained gambier plants in this area covering 1,051 ha with a production of about 1,523 t and the sub districts that are the location of gambier plant centers are STU Jehe, Kerajaan and Tinada (BPS, 2011). The need for gambier plant products (Uncaria gambire Roxb.) Is expected to continue to increase in line with the increasing population and the development of industries that need raw gambier materials.

In 2015 the export volume was 6,633 t with a value of US $ 8,274,000, - an increase in 2016 to 12,438 t with a value of US $ 9,694,000, which means an increase in export volume of 87.49 and an increase in the value of 17.16% during a period of 5 years (BPS, 2017). Gambier demand is usually accompanied by good quality and quality, which may be one of the types / types of gambier planted.

According to Hasan et al (2000) that gambier plants to date have generally been generatively propagated, ie through seeds which are planted in advance with certain procedures to obtain plants that have good growing power, however gambier plants can also be developed through vegetative propagation, such as cuttings , negotiations and tissue culture (Hasan and Edirman, 1996). But this method is not commonly practiced by farmers and is usually carried out for research purposes, especially in maintaining the quality of seedlings from their offspring and their parents or purification of species.

Morphologically gambier plants are divided into 3 types namely shrimp, cubadak and riau types (Denian et al. 2004). The type referred to here is a temporary term for differences in some morphological characters found in populations in the field (Fauza et al, 2007). Morphological differences were seen from leaf size, length, petiola, shoot color, leaf color, branch and twig color and yield yield. There is a tendency for latex productivity and yield of shrimp species better than other types, although this has not been supported by the results of further research.

The research of several gambier products processed by people from various regions of gambier production centers in Indonesia, obtained catechin content varies from 35% to 95% (Amos, 2004). Research related to gambier extract activities has been carried out including antioxidant and antibacterial activities of methyl derivatives of gambier leaf ethanol extract (Kresnawaty and Zainudin, 2009), as oral antiseptics (Lucida et al., 2007) and gambir as immunodilators (Ismail and Asad 2009)). It has also been investigated the ability of gambier extract as an inhibitor of fatty acid synthesis (Shu-Yan et al., 2008), the toxic effect of gambir extract on kidney, liver and heart organs (Armenia et al., 2004) and antifeedant against the pest Spodoptera litura Fab . (Handayani et al., 2004).

The Department of Agriculture has released 3 superior varieties of gambier in accordance with the Decree of the Minister of Agriculture No. 115, 116 and 117 / Kpts / SR. 120/2/2007 date: 20 February 2007. The three superior varieties of gambier are Udang, Riau and Cubadak. Descriptions of each variety are presented in Table 1.

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Table 1. Morphological characters and productivity of 3 (three) types / varieties of gambier

Parameters	Udang	Riau	Cubadak
Number of leaves / twigs (sheets)	10-18	10-24	6-16
Number of ratings /branches (pieces	5-9	6-11	4-8
Number of branches / stems (fruit)	7-13	8-14	6-13
Leaf weight / twig / plant (kg)	4,5-7,0	4-7	4,2-7,3
Yield (%)	6,5-7,0	5,5-6,0	6,0-6,5
Dry sap weight / ha (kg)	750-1200	550-950	630

Source : Denian *et al*. (2004)

Gambier sap production or productivity per unit area produced in Pakpak Bharat Regency is still low at 1,500 kg / ha / year (BPS, 2011) in terms of potential production could reach 2,100 kg / ha / year (Fauza et al, 2007).

According to gambier experts, one of the causes of production and quality of gambier produced by farmers is classified as low because there are no superior varieties available, the seeds used are of low quality and in the practice of crop cultivation there is no touch of agricultural technology (Dhalimi, 2006; Fauza et al. 2007; Hasan et al. 2000).

MATERIAL AND METHOD

Location and commodity approaches
Site selection is done through coordination with relevant agencies and commodity approaches. Identification and characterization of plant species was carried out through FGD, PRA, and RRA approaches in each production center.

StudyLocation
The assessment location was in Kec, Si Tellu Tali Urang (STTU) Jehe, Kingdom and Tinada. In Pakpak Bharat District based on preliminary information from Field Agricultural Extension Officers (PPL) and farmers who had information about gambier. The implementation time starts from May to August 2017.

Observation
Data and information collected through interviews, searches and observations are the origin of gambier plants, plant morphology (leaf length, number of leaves, leaf color, shoot color, leaf type, and leaf weight), yield (%), dry sap weight. Growing environmental data, among others: cropping, plant age, soil fertility, land slope and land conservation. As a comparison to distinguish the types of gambier plants found in this area are varieties of Udang, Riau and Cubadak.

Dataanalysis
The data obtained were tabulated and analyzed using T-test. Furthermore, reports are made according to the format specified.

RESULT AND DISCUSSION

Based on the results of interviews with gambier farmers, community leaders and Agricultural Officers as well as direct searches in the field conducted at gambier plant centers obtained several tige / types of gambier. After characterization, especially from the aspects of plant morphology, there are known as many as 4 types / types / varieties of gambier found in Pakpak Bharat and the types / types are:

1. Type of gambier reddish leaf color, called by the name "siarang".

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2. Gambier type of leaf shape is wider and longer,
3. Gambier type of leaf shape is narrower and shorter, and
4. Leaf gambier type is thicker and the leaf color is greener.

From the observations and tracing, it was found that the type / types of gambier plants that were dominantly cultivated by people in this area were (1) leaf types wider and longer and (2) leaf types narrower and shorter. While the reddish leaf type (1) and the rather thick green leaf type (4) are not widely cultivated by farmers.

According to information from the agriculture apparatus and farmers in this village in 2005 seeds were imported from West Sumatra and distributed to the community. The seedlings brought in are probably (1) Udang varieties with reddish leaves and similar to Siarang gambier types and (2) Cubadak varieties similar to slightly thicker leaves and greener, while (3) Riau varieties similar to local gambier varieties which is often found and cultivated in Pakpak Bharat District.

Leaf color character is one of the characters that can be seen morphologically to distinguish between one plant with another plant in grouping the four types that exist. However, the color difference is not strict and has variations that are difficult to notice (Ferita et al, 2010).

Figure 1. Gambier plant flowers and seeds

One of the characteristics of local gambier types is that plants will not produce flowers or fruit if the plants are pruned or harvested, so if they are to obtain seeds or seeds, they look in the forest or wild gambier. While other types / varieties even though the leaves are harvested can still produce flowers and fruit.

In the Shrimp and Cubadak varieas, the first stage is the earliest stage of the flower development process of each plant species. At this stage gambier plant flowers only have two parts, namely the flower stalks and the buds of each part are green. The length of the flower stalks to the tip of the bud at the time of initiation reaches 4.6 cm in length and 1.3 cm in diameter (Laba and Asep, 2013)

Figure 2. Types of reddish leaves (siarang) gambier = Udang variety

Figure 3. Types of leaf gambier rather green and thicker = Cubadak variety

Figure 4. Types of gambier in Pakpak Bharat = Riau variety

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Table 2. Morphological characteristics of the four types of gambier in Pakpak Bharat

Characteristics	Siarang	Thick Leaves	Local Big Leaf	Small Local Leaves
Leaf				
1. Leaf length (cm)	11,2-14,2	10,5-17,5	13,2-15,2	10,0-14,2
2. Leaf width (cm)	6,0-7,2	6,7-9,2	6,0-7,3	6,0-6,8
3. The length of the petiole (cm)	0,5-0,8	0,5-0,8	0,5-0,8	0,5-0,7
4. Diameter of petiole (cm)	0,20-0,25	0,20-0,25	0,20-0,25	0,20-0,25
5. Thick leaves (mm)	0,20-0,35	0,25-0,40	0,20-0,35	0,20-0,35
6. Leaf weight /lembar (g)	1,25	1,80	1,40	1,38
7. Leaf shape	Oval	Oval	Oblongus	Oblongus
8. Base	Acuminatus	Acuminatus	Acuminatus	Acuminatus
9. Musty	Acuminatus	Acuminatus	Acuminatus	Acuminatus
10.Leaf color	Red	Dark green	Dark green	Light green
11.Sap yield (%)	-	-	5,5-10,5	6,0-10,0

From the morphological characteristics of the four types of gambier for the parameters of the longest leaf length in the Local type of Large Leaves 13.2 - 15.2 cm followed by Siarang 11.2 - 14.2 cm, Thick Leaves 10.5 - 17.5cm and Local Leaves Small 10 0-14.2 cm. The leaf width parameter is obtained from the widest leaf range in Thick Leaf type 6.7 - 9.2 cm then followed by Large Leaf Local 6.0 - 7.3 cm, Siarang 6.0 - 7.2 cm and Small Leaf Local. For parameters of leaf stalk length, leaf stalk diameter and leaf thickness for the four types of gambier there were no significant differences. In the type of Thick Leaf has a leaf weight / sheet 1.80 g greater than the other three types. Siarang Type and Thick Leaf have the same shape of leaf blade, oval, while Local type of Big Leaf and Local Small Leaf have the same shape of leaf blade, oblongus. On the basis of the parameters and musty to the four types have the same character that is acuminatus. In the character parameters of the color of the leaves the type of Thick Leaf and Local Big Leaf have the same leaf color that is dark green while the Siarang type has a red leaf color and the Local type Small Leaf has a light green leaf color. The parameters of the sap yield characteristics for Siarang type and Thick Leaf are not measurable, while for the type of Local Small Leaf 6.0 - 10.0% and Local Large Leaf 5.5 - 10.5%.

CONCLUSION

From the results of the discussion it can be concluded that there are characteristics of 4 types / types of gambier plants:
(1) The type / type of reddish leaves color gambier, called by the name "siarang"
(2) Types / types of gambier of leaf shape are wider and longer
(3) Types / types of leaves are narrower and shorter and
(4) Types / types of leaf gambier are thicker and the leaves are greener.
Suggestions (recommendations), of the 4 types of gambier above, types 2 and 4 need to be developed because in the industry of making dry gambier and gambier leaf tea bags produce more gambier sap.

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