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ETNOBOTANICAL STUDY ON BANANA IN KARANGWANGI VILLAGE, CIANJUR DISTRICT, WEST JAWA

Tatang Suharmana Erawan*[1], Rahmi Aulia Hidayat[2], Johan Iskandar[3]

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[1,2,3]Department of Biology Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km. 21 Jatinangor 45363, telp. 022-7796412, fax. 022-796412

e-mail:
*[1]bayukelana3@gmail.com
[2]rahmicami@gmail.com
[3]johan.iskandar@unpad.ac.id

**Corresponding author*

Abstract. *Banana has been known as one of fruits that has an important function in the rural areas. Bananas have been traditionally planted by rural farmers in the homegarden, garden and mixed-garden in West Java. However, study on bananas in Karangwangi village,Cianjur has not been carried out. Aim of study was to explore varieties (landraces) of bananas, source of local knowledge on bananas, utilization of bananas and diseases of bananas. Method used in this study was qualitative with ethnobotanical approach and some techniques, including observation and semi-structure interview were applied in this study. The result of study showed that, it was recorded 13 variations of banana; main source of local knowledge on bananas from the parent and friends; utilization of bananas, including consumption of ripe fruit, made of "sale" and some banana organs, including leaves, "jantung" (male flower), pseudostem, "bonggol" (base of pseudostem) and roots of bananas were usually used by people. Main diseases of banana was known by local people as "Pireus" (virus). We recommended more intensive study on bananas must be carried on for near future.*

Keywords: *banana, ethnobotany, Karangwangi Village, local knowledge*

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INTRODUCTION

Various ethnobotanical studies on plant species have been carried out in Indonesia, such as ethnobotanical studies on rice plants (*Oryza sativa*) (Iskandar & Ellen, 1999; Warsiti, 2009), sugar palm plants (*Arenga pinnata*) (Irawan et al., 2009) and medicinal plants species (Iskandar & Iskandar, 2005). Ethnobotanical studies in essence are emphasizing the study of people's knowledge of botany (emical analysis) by researchers from scientific science on botany (ethical analysis) (Iskandar, 2018). In other words, ethnobotanical studies are scientific evaluations of local knowledge or traditional knowledge of population ecology about botany (Iskandar & Iskandar, 2017; Iskandar, 2018).

"Pisang" (english "banana", sundanese "cau") is a common name given to large leafy giant plants from the Musaceae family. Some species (developed from *Musa acuminate*, *M. balbisiana*, become *Musa* x *paradisiaca* cultivation plants), which produce fruit that is popular in the community. Various regions in Indonesia have a variety of banana landraces such as various regions in the Indonesian archipelago that have a climate, both low and high, up to 1300 a.s.l. which can grow a variety of banana landraces (Firdaus, 2009). The

Jurnal Biodjati 4(1):112-125, May 2019

JURNAL BIODJATI

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term landraces is a variety of bananas based on bananas known to the public, analogous to varieties in Western scientific knowledge literature (Iskandar & Ellen, 1999).

Indonesia is one of the largest banana producing countries in the world. National banana production continues to increase every year, for example from 2,308,379 tons, in 1988, to 2,417,760 tons, in 1989. Areas in Java, namely West Java, East Java and Central Java are the largest banana producing areas with a production rate of 1,420,088 tons, West Java; 856,883 tons East Java; and 723,096 tons Central Java (Suyanti & Supriyadi, 1992).

In general, the variety of bananas in Indonesia is still traditionally cultivated by rural people. For example, the people of Karangwangi Village traditionally cultivate a variety of bananas on land in home gardens, gardens and mixed gardens. The variety of bananas is mainly used for consumption of ripe fruit. However, there are some families who use bananas as "sale" materials. So, it is not surprising that "sale" of banana is one of the superior products from Karangwangi Village, Cianjur Regency, West Java. This shows that bananas have a function for the community, not only to fulfill the family, but can also be sold as a "sale" of bananas so they can make money. According to Kasrina & Zulaikha (2013), banana plants can be said to be a versatile plant because it starts from the roots, stems (humps), pseudo-trunks (midribs), leaves, flowers and fruit until the fruit skin can be used for various purposes. Currently a study on a variety of bananas and their use in Karangwangi Village, Cianjur has not been conducted by researchers. Therefore, the study of bananas in this area is very important.

MATERIALS AND METHODS

The research method was carried out qualitatively with an ethnobotanical approach (Iskandar, 2018). Field data collection was done by semi-structured interviews and observations. The main observation was done by observing the variety of banana variations and banana cultivation places in the home gardens, gardens and mixed gardens. Meanwhile, deep interview is conducted with informants selected purposively, taking into account the diversity. The informants in this study were banana farmers, banana plantation owners, makers of "sale", banana bookies, village elders and village staff. Semi-structured interviews with informants using interview guides/guidelines. The names of banana varieties and their characteristics, besides being recorded are also photographed.

Data analysis was done by cross-checking data, which was obtained from various informants and the results of direct observation, then summarized, synthesized and made narrative descriptively evaluative analysis (Iskandar, 2018). Various banana landraces obtained based on information from informant were identified through the site http//:www.theplantlist.org and various literature on bananas.

RESULTS AND DISCUSSION

Banana Variations

The results of interviews with informants, there are 13 variations (landraces) of bananas in Karangwangi Village, Cidaun District, Cianjur. Based on the knowledge of the residents of Karangawangi Village (emic view) about the variety of banana variations, it was studied in the view of Western science/

literature. For example, Cheesman grouped bananas into three categories based on morphological differences, namely: *Musa acuminata*, *Musa balbisiana* and the types that had combined morphological characteristics were hybrids. Initially all variations of the banana were diploid, because of human intervention, the banana that is now a hybrid. Hybrids are produced from two natural species whose genome variations are: diploid, triploid and some tetraploid. So, based on the variety of banana variations, it can be studied in its scientific name, with various species of bananas and the genomes AA, AAA, BB, BBB and AAB (Table 1).

Because of bananas which are now hybrids, it makes identification of varieties difficult. To overcome this problem, experts adopted a three-tier system, namely species, genome groups and cultivars, in classifying bananas and identifying their cultivar names and local synonyms. Taxonomic records suggested by Silayoi & Chomchalow in 1987, a modified version of the original designed by Simmonds and Shepherd, was found to be very useful in separating various varieties of bananas into six genome groups. After species and group genomes were identified, individual cultivars were classified according to the latest version of Revised Descriptor for Banana (*Musa* spp.) and Musa Germplasm Information System (MGIS) published by INIBAP/IPGRI and CIRAD, 2017.

The three-layer naming system uses species, genome groups and cultivars adopted. After Cheesman's recommendation, diploid bananas and triploid derivatives from *Musa acuminata* Colla Musa with *Musa balbisiana* Colla will adopt their respective wild parental scientific names. Hybrids from two species will be classified in *Musa* x *paradisiaca* Linn as recognized by the International Code of Nomencature for Cultivated Plants (INIBAP/IPGRI dan and CIRAD, 2017). This system is used as scientific banana names in this paper.

Local residents have their own knowledge about naming bananas. In distinguishing banana variations, they use more morphological characters such as fruit shape, fruit size, fruit skin color, number of hands in each bunch, texture and shape of leaves, and lines on leaves. The most dominant morphological characters used for naming bananas are the fruit morphology of both the skin and its contents. Based on the resident's local knowledge and scientific data it is known that in Karangwangi Village there are 13 variations of bananas (Table 1).

Table 1. Banana Variations found in Karangwangi Village, Cianjur Regency, West Java

No	Local Name	Scientific Name
1	Cau Kapas	*Musa acuminata* (AA group)
2	Cau Kosta	*Musa x paradisiaca* (ABB group)
3	Cau Nangka	*Musa x paradisiaca* (AAB group)
4	Cau Raja Bulu	*Musa acuminata x balbisiana* (AAB group)
5	Cau Saba/Jimluk/Jibeuh	*Musa balbisiana* (BBB group)
6	Cau Ambon	*Musa paradisiaca* var. *sapientum* (L.) Kunt
7	Cau Angleng	*Musa acuminata* triploid (AAA group) non-cavendish
8	Cau Galek	*Musa balbisiana* (BBB group)
9	Cau Raja Cere	*Musa acuminata x balbisiana* (AAB group)
10	Cau Beureum/Gember	*Musa acuminata* Colla. (AAA Group) cv. Red
11	Cau Kulutuk	*Musa brachycarpa* Back.
12	Cau Kepok	*Musa acuminata* × *balbisiana (*ABB Group*) 'Saba'*
13	Cau Muli	*Musa acuminata (*AA Group)

Source: Primary Data (2015) and Valmayor et al 2000; "Cau" is a local name (Sundanese) for bananas.

In the comparison of fruit characters based on local resident and some scientific studies (Table 2), several similarities were found, for example in the description of "cau beureum/gember" and "cau kulutuk/manggala", but there were also descriptions according to resident which were not found/ presented in scientific studies, such as the line in shoot on "cau kapas" and the red line on "cau nangka". In addition, the character of the aroma in distinguishing banana variations is not found in scientific studies. It is only based on experience and perceptions of the resident. However, for the character in its taste can be expressed both by the resident and the results of scientific studies.

Table 2. Comparison of Banana Variations according to Scientific Data and Residents of Karangwangi Village, Cianjur Regency, West Java

No	Banana name	Characteristics by Residents (emik)	Characteristics according to Scientific Data (ethics)
1	Cau kapas	The fruit is white like cotton There is a white line on the top The shape of the young fruit is rather square	Bananas whose raw fruit is light green, the comb is rather rare, the grains are quite large and long, somewhat angled and curved towards the mark.
2	Cau kosta	Similar to cotton, smaller in size The shape of the young fruit is rather round	Including the group of plantains The flesh of the fruit is yellowish white, light yellow
3	Cau nangka	Smell and taste like jackfruit There is a red line on the leaves	Fruit combs number 1-5 combs and each comb amounts to 10-12 Square or cylindrical rounded rectangular or rectangular pieces, 23-28 cm long, thick skinned White or yellowish flesh, not sweet to slightly sour
4	Cau raja bulu	Short and fat fruit Long and smooth leaves	Cylindrical fruit, slightly thick (3 mm) skin with round or rectangular pointed ends The flesh of the fruit is yellowish white, light yellow or reddish, not seeded, the taste is rather sweet to sweet, rather hard
5	Cau saba/ jimluk/ jibeuh	The skin of young fruit is green, ripe fruit skin is red, wide and short in size One bunch consists of 2-3 combs	The size of the fruit is quite large, the color of the young fruit is shiny green, the comb is solid and the grain is flat and rather short

6	Cau Ambon	Have 7-8 combs per bunch	The cylindrical fruit is slightly curved, long and not seeded Skin thickness 2.4-3 mm The color of white or yellowish white flesh tastes sweet Fruit combs number 7-10 combs and each comb consists of 10-16 pieces
7	Cau angleng	Similar to Ambon banana Longer bunches (12-13 brushes / comb per bunch)	Including the Ambon banana group The length of each fruit is about 10 cm and weighs 120-150 g The skin of the fruit is thin brownish yellow. Usually in one comb consists of 12-15 pieces Yellowish white flesh
8	Cau galek	Like Cau cotton, but bigger (2 combs per bunch)	Similar to jackfruit banana, cotton In each bunch there are 2-3 combs White or yellowish flesh, not sweet to slightly sour
9	Cau raja cere	The skin of young green fruit, old yellow fruit with black spots	The length of each fruit is about 10 cm and weighs 120-150 g The skin of the fruit is thin brownish yellow Usually in one comb consists of 12-15 pieces Yellowish white flesh
10	Cau beureum/ gember	Red fruit skin	Fruit skin is dark red or maroon when ripe
11	Cau kulutuk/ manggala	Have many seeds	The size is rather small, the color of the leaves, midrib, and the young fruit is dark green, shiny Fruit flesh contains many stones (seeds), so it is not good for consumption but is good for salad ingredients
12	Cau kepok	The fruit is flat	There are 5-9 combs with the number of fruits 10-14 Triangle, quadrilateral, or round cross section Yellowish white flesh tastes less sweet, soft with a slightly calcareous texture
13	Cau muli	The fruit is small, black skin with black spots	Small and slim fruit, 10 cm long, thin skin, white or yellowish flesh, less sweet, and slightly mushy

(Source: Primary Data, 2015)

Jurnal Biodjati 4(1):112-125, May 2019

JURNAL BIODJATI

http://journal.uinsgd.ac.id/index.php/biodjati

The grouping of bananas based on the similarity of morphological characters is expressed both by local residents and scientific data. “Cau nangka”, “cau kapas” and “cau galek” are placed in one group because they have similarities in morphology. Similarly, “cau kepok” with “cau saba” and “cau angleng” with “cau Ambon”. Fruit morphology is not the only characteristic that distinguishes banana varieties. In accordance with the International Plant Genetic Resources Institute (IPGRI, 1996 in Radiy, 2013), the characterization of banana plants includes plant height, pseudo-stem color, leaf firmness, leaf stem color, patches on pseudo stems, leaf stalks, shape the base of the leaf, the type of canal, the spots on the base of the stem, the color of the leaf stalks and the color of the leaf strands of the upper and lower surfaces. Characterization is the process of finding specific characteristics possessed by plants that are used to differentiate species and between individuals in one plant species. In naming banana variations which in sundanese are called “cau”, the residents has unique knowledge. Giving this name is based on the color of the fruit and skin, the taste and aroma of the fruit, the area of origin of the fruit, and stories passed down from generation to generation. “Cau kapas” is named (“kapas” is cotton) because the color of the fruit is white like cotton, while “cau beureum” is due to its red skin tone (red in sundanese is “beureum”). It is named “cau nangka” (“nangka” is jackfruit) because of the taste and aroma that resembles jackfruit. “Cau raja bulu” and “raja cere” were named so because it was believed in ancient times that the king’s favorite banana. Banana from Ambon is named “cau Ambon”. The 13 variations of bananas that exist, the banana that is characteristic of Karangwangi Village is “cau saba /jimluk/jibeuh”. “Jibeuh” is an acronym for the word “hiji oge seubeuh” which means eating it one will be full. Another name for this banana is “saba”, which means strong, if you eat this banana your body will feel strong and you do not need food all day. Kumar et al. (2012) mentioned the energy value of bananas around 116 calories for every 100 grams of ingredients. Overall, the energy comes from carbohydrates contained in bananas. “Cau saba”, the fruit size is large so that one bunch only consists of 2-3 hands. Because the volume and weight are large, then eating just one fruit can cause satiety for those who eat it. It may also be that the number of calories produced is quite large so that after eating this fruit people become strong/not feel hungry all day (Figure 1).

Figure 1. “Cau saba” in Karangwangi Village. (Source: Personal Documents, 2015)

Source of Information on Differences in Banana Variations

Based on semi-structured interviews with informants, it can be seen that the knowledge of local residents about the variety of bananas is obtained in various ways. In general they get their knowledge from their parents. Residents who mostly own their own gardens often help their parents work in the garden. In this activity information transformation occurs. The submission of information from parents to children shows that this traditional knowledge is inherited from one generation to the next through parents to their offspring (vertical transmission) (Reyes-Gracia et al., 2009; Iskandar 2018). Besides that, there are also informants who get information from their friends, both those who have the same profession as banana farmers or the owners of banana gardens, as well as residents around the house. Research conducted by anthropologists shows that a person usually spends more time with peers, thus providing an opportunity for them to exchange information until they grow up (Reyes-Gracia et al., 2009; Iskandar 2018). This exchange of information is called horizontal transmission (Cavalli-Sforza & Feldman, 1981 in Reyes-Garcia et al., 2009; Iskandar, 2018). Submitting information that occurs between peers takes place within work from banana farmers or banana garden owners. They used to gather to take a break after work and exchange information about the variety of bananas that exist. This conversation is based on economic factors and the commercial value of bananas, for example what bananas have the highest selling value or how to process bananas to make them more durable. Cavalli-Sforza & Feldman (1981) in Reyes-Garcia et al. (2009) and Iskandar (2018) state that cultural formation is obtained through three ways, namely (1) from parent to child (vertical transmission); (2) between two individuals from the same generation (horizontal transmission); and (3) from non-parents to the younger generation (oblique transmission). In the knowledge of variations in bananas in Karangwangi Village, it is known that only two ways of delivering information, namely vertical transmission and horizontal transmission.

Use of Bananas for Residents of Karangwangi Village

According to the informants/residents of Karangwangi Village, in the beginning the Karangwangi Village was a tropical forest which was overgrown with banana plants. The existence of bananas is then used by residents to fulfill their daily needs. All organs from a banana plant can be utilized. The residents of Karangwangi Village, Cianjur Regency use fruit, "jantung" (male flowers), humps and leaves from banana plants in their daily lives. The part of the banana plant is used in several purposes such as to be consumed directly or processed, for treatment, for traditional ceremonies and for packaging materials. The uses of each organ of a banana plant according to the informants in Karangwangi Village (Table 3).

Uses of Banana Fruit

Banana fruit is the most common part of banana plants being used. All types of bananas in Karangwangi Village can be consumed by local residents either directly or processed first. According to the informants, groups of "cau ambon", "cau angleng", "cau beureum", "cau kulutuk" and "cau muli" can be consumed immediately, meanwhile, "cau kapas", "cau kosta", "cau nangka", "cau raja bulu", "cau raja cere", "cau galek", "cau saba" and "cau kepok" is usually processed before being consumed, made fried banana or steamed banana.

Banana fruit has also helped the local economy. The banana harvest from residents

Jurnal Biodjati 4(1):112-125, May 2019

JURNAL BIODJATI

http://journal.uinsgd.ac.id/index.php/biodjati

who have a banana garden is usually sold to the market. In addition, many of them process bananas for sale or self-consumption such as fried bananas, banana chips and banana sale. This method is taken to increase the selling value of bananas and make them durable. They do home production individually or in groups.

Bananas do not only act as a source of vitamin B, but also contain vitamins C, A, potassium and sodium. Natural fibers in bananas also contribute to health. Bananas are beneficial for stomach health, heart health, protection from strokes, increasing blood pressure, improving mood, increasing energy and helping reduce water retention.

In addition to the interests of food, bananas are also useful as "landong" (medicine). The young fruit from "cau kapas" is often used as a diarrhea medicine and is processed into "rujak" (salad) for heatines drugs. Banana pectin (dissolved polymer) can help normalize bowel movements and relieve constipation. However, banana intake is also beneficial for people with diarrhea. In one study, 31 patients with diarrhea chose to eat bananas or get medical treatment to treat diarrhea. They found that 57% of diarrhea subjects who ate bananas did not need medical treatment anymore, inversely proportional to 24% of subjects treated medically because they needed additional drugs for their healing (Kumar et al., 2012).

According to the informant, in the local traditional ceremonies to date, bananas are also often included in offerings. For example, in the fisherman ceremony, "cau kapas" is served by being cut into pieces, then put into a package of banana leaves to be burned. The banana in the package is served with a glass of milk. In addition to "cau kapas", first "cau kulutuk" is also included in offerings.

Table 3. Parts of Banana Organ Utilized and Useful for Residents of Karangwangi Village, Cianjur Regency, West Java

No	Banana type	Parts of organs used	Usability
1	Cau Kapas	- Ripe fruit	- Fried, Steamed - Fisherman Ceremony Offer
		-Young fruit	- Diarrhea medicine - Made rujak for medicinal heat inside
2	Cau Kosta	-Ripe fruit	- Fried
3	Cau Nangka	-Ripe fruit	- Fried, Steamed
4	Cau Raja Bulu	-Ripe fruit	- Fried
5	Cau Saba/ Jimluk/Jibeuh	-Ripe fruit	- Fried
		-Heart	- Made Heart "Opor"
6	Cau Ambon	-Ripe fruit	- Direct consumption - Superior material for making banana sale
		- Sap in the midrib	- Treat toothache
		- Heart	- Treat toothache
		-Hump	- Steamed
7	Cau Angleng	-Ripe fruit	- Direct consumption
8	Cau Galek	-Ripe fruit	- Fried
9	Cau Raja Cere	-Ripe fruit	- Fried
10	Cau Beureum/ Gember	-Ripe fruit	- Direct consumption
		-Young fruit	- Make "rujak" - Offerings
11	Cau Kulutuk	Leaves	Leaves for rice cake packaging
		Heart	For making "Gebog" (Tobacco dressing: traditional cigarettes)
12	Cau Kepok	-Ripe fruit	- Fried
13	Cau Muli	-Ripe fruit	- Direct consumption

Variety of Uses for Bananas

The main use of bananas in Karangwangi Village is as the fruit to be consumed. For consumption of bananas, they are usually left to ripen first. The description below explains the traditional procedures for ripening bananas that are commonly done by residents in Karangwangi Village.

How to Ripen Banana Fruit

According to the informant's information in Karangwangi Village residents ripen bananas naturally. Bananas are wrapped in "ki hujan" (*Albizia saman* (Jacq.) Merr.) leaves, then put in a sealed plastic bag and left for three days and three nights. This method is proven to be able to ripen bananas perfectly and produce a better taste, compared to the results of fruit ripening using carbide (Calcium carbide; CaC2).

During the ripening process, the fruit produces a large amount of ethylene. The ripening of bananas is triggered by ethylene biosynthesis which causes bananas to become ripens (Arista et al., 2017). When the fruit is wrapped (placed in a closed space), ethylene gas becomes concentrated. The leaves of "ki hujan" help to accelerate the release of ethylene gas from these bananas. This causes the banana to ripens faster.

The water content increases and reaches 77.19% in ripe fruit and 79.2% in over ripe fruit. Increasing the water content during the fruit ripening process greatly affects the texture of the banana; bananas become softer with increasing water content. Furthermore, the content of magnesium (Mg) has decreased in ripe fruit and very mature fruit. This decreasing of magnesium is related to the degradation of chlorophyll and the formation of carotenoid pigments which are responsible for the characteristics of the yellow color of mature fruits (Adeyemi & Oladiji, 2009).

Soft bananas are very easy to get bruises when hit. This bruise can produce polyphenoloxidase enzyme which causes brownish bananas. Therefore, bananas are more durable if they are distributed in green.

The Use of Male Flowers (Jantung Pisang)

"Jantung pisang" is the remaining part of the flower that can no longer produce fruit. In Karangwangi Village not many people use this part. However, by processing and mixing with the right spices "jantung pisang" can be processed into "opor jantung" which is very beneficial for health. The "jantung pisang" contains nutrients that are beneficial to the body, such as 12.051% protein, 34.831% carbohydrates and 13.050% fat. "Jantung pisang" also contains protein, minerals (especially phosphorus, calcium, and iron), as well as a number of vitamins A, B1 and C (Astawan, 2008 in Kusumaningtyas et al., 2010). According to the locals, the most delicious "jantung pisang" is "jantung cau saba", while "jantung cau Ambon" has a rather bitter taste. This part of the banana plant is also useful for treatment. Residents believe that jantung pisang can be used to treat "nyeri waos" (toothache). Based on the explanation from the key informant, first the "jantung pisang" piece of strands is often made "gebog" which is a tobacco wrapper for traditional cigarettes.

The Use of Bonggol Pisang (Banana Hump)

In the Japanese colonial era, villagers survived by eating banana humps. These days they called "usum tapran" or in Indonesian the season where food is difficult to obtain. The humps of these bananas are sliced and then soaked in water so the sap is gone and then steamed. But now the local residents no longer uses banana humps because of the unpleasant taste and lots of gummy.

Badan Litbang Pertanian (2013), stat-

ed that the use of banana humps during this time was for making K fertilizer and soap by burning it into ash. Banana humps water can be used to cure various diseases, such as dysentery, intestinal bleeding and tonsillitis as well as improving children's growth and blacken hair. Even though it is considered as a waste, the bottom of the banana stems turns out to contain high nutrition with a complete composition. In 100 grams of wet banana hump contains 43.0 calories, 0.36 g protein, 11.60 g carbohydrates, 86.0 g water, several minerals such as Ca, P and Fe, vitamins B1 and C and fat-free.

The Use of Banana Leaves

Around us, we often find snacks wrapped in banana leaves like "lontong", "leupeut" and "timbel" rice. The use of banana leaves is also carried out by residents of Karangwangi Village. They use "cau kulutuk" leaves for rice cake packaging. This leaf is the best because of its smooth texture and gives the most delicious "lontong" flavor.

The sap from the banana midrib is used by residents to treat toothache. Banana sap contains astringent, a substance that can cause tissue shrinkage so that it can reduce secretion; commonly used as an external medicine for skin care (Indonesian Dictionary). In traditional medicine, sap is used to treat various diseases, including leprosy, hysteria, fever, indigestion, bleeding, epilepsy, hemorrhoids, and insect bites (Kumar et al., 2012).

"Sale" Banana

Based on information from the informants, for several decades Karangwangi Village produced large quantities of bananas. In many cases, the large number of bananas is often sold just off the road at a very cheap price. To explore this matter, the researcher conducted an interview with two people who made banana "sale" from the villages of Karangwangi and Cimaragang.

The abundance of bananas is not proportional to the rate of consumption of bananas in the village. Therefore residents are looking for ways to make bananas durable but still have a high selling value, the idea of making banana "sale". Since 1986, one of the banana "sale" makers has worked with people of Chinese descent to learn about making banana "sale". There are also those who get the knowledge of making banana "sale" from their parents from Garut.

The basic ingredients of high quality banana "sale" are "cau ambon". "Cau saba/ jimluk" is also sometimes made in "sale" but it doesn't feel as tasty as "cau Ambon". The maker of the "sale" uses this type because it contains "honey", which causes the banana to dry out, shrink and the color then becomes brown. "Cau kapas" or "cau nangka" does not shrink after drying, so it is not suitable as a banana "sale" base material.

Banana "sale" base material is obtained within the village itself and from neighboring villages. Banana "sale" products are usually marketed to Bandung, Garut, Jakarta and Cianjur. One of the producers of banana "sale" from the neighboring village (Cimaragang Village) also exported its products to Singapore, but because the "sale" of these bananas did not last long the distribution was not continued. Natural preservation of bananas produces a "sale" that can only last for two months at the most.

Making banana "sale" is a traditional processing process. No mixture of chemicals such as sodium bisulfite is used in the process. The process of making banana "sale" takes several stages. The first stage is the ripening of bananas by making a hole in the soil called "dibeuleum". After that the banana goes through the drying process. Before drying pro-

cess the outer layer of the banana is scraped to remove the tannin layer on the surface of the banana so that the banana is brownish, not black.

Tanin is a polyphenol compound that has a fairly high molecular weight (more than 1000) and can form complex compounds with proteins. Based on its structure, tannins are divided into two classes namely condensed tannins and hydrolysable tannins (Sulistiono, 2018). Because of its complex nature, tannins have complex biological roles ranging from protein deposition to metal chelating. Tanin can also function as a biological antioxidant.

The drying process is done so that the banana "sale" is durable. The drying process of bananas is very dependent on sunlight. When the sun shines all day long, the bananas will be dried in the sun ("dipoe") by arranged on top of "tampah" ("nyiru", made of woven bamboo) (Figure 2). However, if the weather is cloudy the maker of the "sale" will immediately dry it by "menggarang" (brushing) or smoking with smoke from firewood. The banana drying process lasts seven days during good weather and can take 10-15 days during cloudy weather. "Sale" of bananas that are ready to be marketed has "hideung semu geuneuk" (black rather bruised) color. Processing of banana peel waste has not developed in Karangwangi Village.

There are a number of people's beliefs regarding the "sale". They argue that for the "sale" of bananas "tong cau nu di pipir" means not to use bananas that planted in the backyard. There is also a mention that the maker of "sale" ("tukang nyale") will avoid eye disease because it interacts with smoke in the process of drying.

a. b.

c. d.

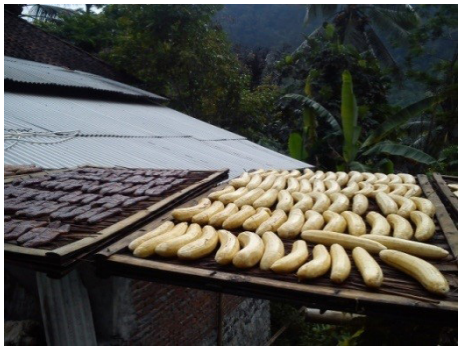

Figure 2. a. "Pisang Ambon", b. banana "sale" base material, c. the hole in the ground where bananas are made / banned, c. Firewood, d. The process of drying bananas on top of it (Source: Personal Documentation, 2015)

Jurnal Biodjati 4(1):112-125, May 2019

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Get to Know About the Disease in Bananas

Banana is one of the abundant herbs in Karangwangi Village. Banana crops are sold at cheap prices. However, according to information from informants, two years back the banana was attacked by a disease that is often referred to by local residents in Karangwangi Village as "pireus" (local name for virus) (Figure 3). This disease causes a decrease in banana production up to 70%. Many diseases that occur during the "halodo" (dry season) cause the banana to be yellowish but not yet mature, or even attack the leaves and stop the formation of fruit. Until now there have been no studies that revealed what exactly the "pireus" is.

In addition to the presence of diseases, there are several factors that cause banana production in the village to decline, one of which is economic factors. The selling price of bananas per kilogram is only Rp. 2,000-Rp. 2,500, with harvest period of six months. Moreover, many residents replace banana plants with albasiah wood (*Paraserianthes falcataria* (L.) Nielsen Fosberg) because of their high selling value. This wood is valued at Rp. 100,000.00 rupiah per cubic, with harvest time every five years. These results are then taken in the form of logs or wood that are ready to use and distributed to the nearest city like Cianjur. One of the informants also mentioned that the number of bananas decreased with the development of infrastructure in the village.

Figure 3. Diseases of bananas which are often called "pireus" by local resident (Source: Personal Documents, 2015)

Based on the results of this study it can be concluded, Informants in the Karangangi Village community, Cidaun Subdistrict have admitted 13 variations of bananas in their area, which are distinguished among others based on fruit morphology, fruit color, and fruit flavor. The informants from the Karangwangi Village got local knowledge about the variety of bananas, especially from parents and also from friends in their villages. A variety of banana variations can be used by residents of Karangwangi Village, the banana produced, can be consumed directly also can be made sale bananas and can be trad-

ed. In addition, some banana organs, such as "jantung" (male flowers), leaves, stems and humps can also be used by residents in Karangwangi Village. The main disease that usually attacks bananas according to Karangwangi village informants is "pireus" (virus) which is very disturbing to banana trees and causes a decrease in banana production.

Considering that this research is preliminary, it is necessary to conduct in-depth research on bananas. The need for more empowered banana cultivation at home gardens, gardens and mixed gardens, because bananas have an important function for rural communities.

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