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Post-Harvest Handling Techniques Of Liberica Coffee (Coffea Liberica Var.) To Become Coca Coffea Products In Sei Kemangkus Plantation, Rungan District, Gunung Mas Regency, Central Kalimantan

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ABSTRACT

In this case, Coka Coffea producers have determined the right direction in producing Coka Coffea products which are enjoyed by coffee lovers in Central Kalimantan. This research aims to determine the income of Coka Coffea product producers as players in the roast bean coffee business with a distinctive taste and aroma, whose Liberica coffee is grown and harvested from the Sei Kemangkus area, Rungan District, Gunung Mas, Central Kalimantan. Post-harvest handling, often referred to as primary processing, is a term used for all treatment from harvest until the commodity can be consumed "fresh" or in preparation for subsequent processing. Post-harvest handling of coffee generally consists of: Pulping → Drying → Hulling → Defect sorting → Roasting → Fine grinding → Packaging → Marketing. The parameters looked at are aroma, color, water content, packaging and trademark, defective beans, coffee size, and marketing.

Keywords: Coka Coffea, Liberica coffee, post-harvest

INTRODUCTION

Right behind Vietnam, Indonesia is the second largest coffee producer in Asia. Coffee exports contribute significantly to Indonesia's foreign exchange earnings. This is one indicator of how important coffee is to the Indonesian economy in terms of growth, funding, employment prospects, and general welfare. One of the main commodities produced by Indonesian plantations is coffee, and many Indonesians work in the coffee processing industry. The coffee industry will be able to provide jobs and labor for the community (Rahardjo, 2012).

One of the main export opportunities in global trade is coffee. After Brazil, Vietnam, and Colombia, Indonesia is ranked the fourth largest coffee exporter in the world (AEKI, 2020). The majority of coffee is planted as a monoculture under the shade of Lamtoro. In addition, farmers also apply an intercropping system with annual plants such as oranges (for shade), avocados (in gardens), and cinnamon (for windbreaks) or seasonal plants such as vegetables, chilies, ginger, and others (KP Gayo, 2020).

Various actions or treatments applied to agricultural products after harvest until the commodity reaches the hands of customers are called post-harvest in the agricultural industry. In the realm of science, this expression is more appropriately called post-production, which is further divided into two stages or stages, namely post-harvest and processing. All treatments from harvesting until the commodity can be consumed "fresh" or as preparation for further processing are called post-harvest handling, sometimes known as primary processing. In general, its appearance does not change with this treatment, which includes several aspects of distribution and marketing. Secondary processing is the process of changing crop products into another state or form to extend shelf life (preservation), avoid unwanted changes, or for other purposes. This includes the food industry and processing (Raharjo, 2013).

In general, coffee processing can be divided into two, namely wet processing and dry processing. Broadly speaking, wet processing can be classified into two methods, namely wet processing by wet hulling and dry hulling. Post-harvest management will greatly determine the quality of the coffee beans. Good management will also produce good-quality coffee beans. So far, the main focus has only focused on the cultivation aspect. This is in line with Tambarta's research (2016) which states that the main focus of coffee development is only centered on increasing the amount of production by using chemical fertilizers. This will certainly cause a decrease in the quality and quality of coffee beans due to their high chemical content. The cultivation process with chemical fertilizers will also damage the taste of the coffee beans.

Coffee produced in the coffee industry in Gunung Mas is no less competitive in taste than other coffee. As we know, there are so many coffee lovers today, especially millennial youth, almost all of whom are coffee lovers, besides that coffee also has many health

benefits, so it is not surprising that many people like coffee. Therefore, it is important to make processed coffee beans into coca coffee products to add value to the coffee beans themselves. Therefore, the coca coffee products produced must have a distinctive taste that is so delicious on the tongue of the community that the coffee sells on the market. The coffee produced by UMK in Gunung Mas is already widely known by the local community because its products are so satisfying and can please the tongue of the community. The purpose of this business is to obtain high income or profit and expand employment opportunities for people in need.

MATERIALS AND METHODS

Time and Location of Implementation

The location of the implementation was carried out at Coka Coffea (Kaltfood) in Kebun Sei Kemangkus, Rungan, Gunung Mas, Central Kalimantan. The purpose of determining this location is to make it easier for researchers to be more focused on research based on the data and information needed. The selection of the location was made with the consideration that the area is a center for liberica coffee production.

The selection of the research location was based on secondary data from the Central Kalimantan Statistics Agency regarding the existence of coffee plants around Gunung Mas Regency which are located at an altitude of >100-500 m above sea level. Based on secondary data from the Gunung Mas Regency Statistics (2022), it is known that there are 12 sub-districts in Gunung Mas Regency, but not all sub-districts have coffee cultivation.

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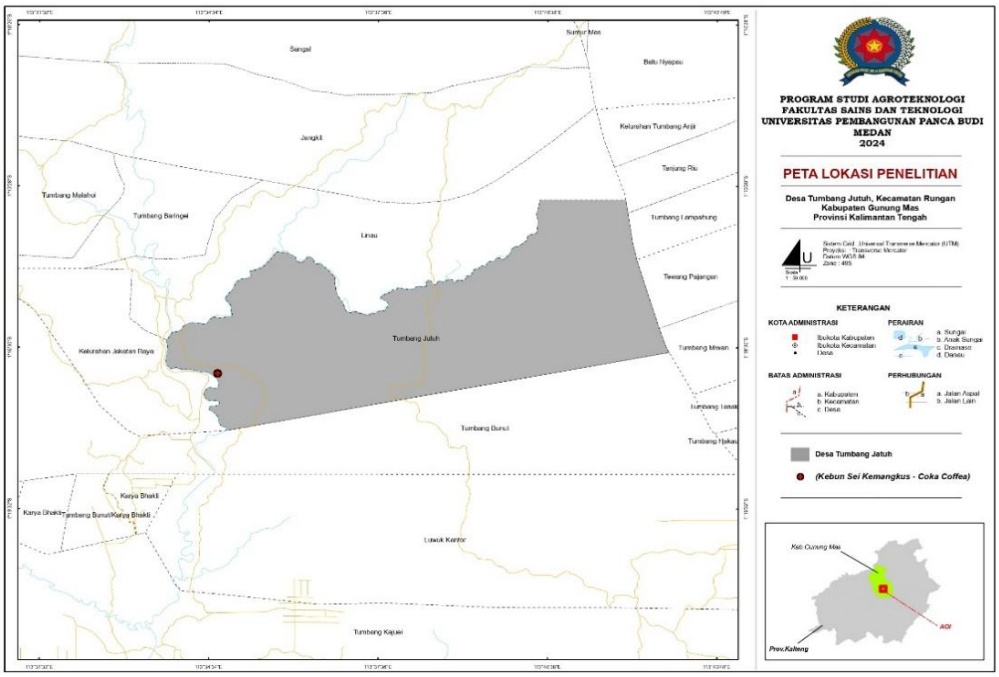

Table 1. Secondary data on plantation area, and coffee production by sub-district in Gunung Mas Regency in 2022.

Subdistrict	Area (ha)	Production (tons)
North Kahayan Hulu	45	0.05
Period	20	0.05
Miri Manasa	30	0.025
Room	20	0.075
Tewah	75	0.05
Sepang	-	-
The Stone Damang	-	-
Manuring	-	-
Great Manuhing	-	-
Greater Mihing	-	-
West Room	-	-
Upper Rungan	-	-

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Method of collecting data

The sample in this implementation is the owner of Coka Coffee, namely Mr. Dedi Setiadi (Dedi Bong) who plays a role in the coffee processing process from start to finish and in marketing the product. In collecting data in this study there are two types, namely primary data and secondary data. Primary data includes Observation (data collection by conducting direct observation of the object being studied) and Interview (the process of obtaining information by asking questions face to face directly to respondents). Secondary data includes Recording (obtained through books, reports, and others from agencies related to this study).

RESULTS AND DISCUSSION

Coca Coffea Cultivation

Figure 1. Coca Coffea Cultivation in Sei Kemangkus Garden

Coffee Processing

Dry processing and wet processing are two categories into which coffee processing can be divided. The quality of coffee is influenced by the processing method. Wet processing produces higher-quality coffee, but dry processing is simpler and cheaper (Yunna Ega Ash Yokawati and Ade Wachjar, 2019).

To create quality Liberica Excelsa coffee products with high market value, Coka Coffee itself uses a wet processing method in its production process. Coka Coffee has used several mechanical equipment, including pulper, husker, roasting, and electrical networks, to

support the production process according to its processing method.

Selecting ripe coffee beans involves soaking in water, one of the processes in the wet processing process. Floating seeds are discarded. A pulper machine is used to remove the outer skin and flesh of the coffee fruit. The coffee beans are then cleaned by soaking in water to remove any remaining mucus and skin, fermented, rinsed to remove mucus, and finally dried. Processing at Coka Coffee in this case with its wet coffee processing is expected to be more efficient and faster than other coffee processing methods.

Coffee Post-Harvest Handling Techniques

To produce the best quality coffee, the coffee harvesting process is continued by using post-harvest coffee. After picking and harvesting, the following steps are taken to ensure the quality of selected coffee beans: sorting (mining), peeling, drying, milling, fine grinding, packaging, and product storage. In addition, Coka Coffea producers also use post-harvest coffee handling techniques to determine the quality of the roasted coffee products to be produced. These factors include aroma, color, water content, coffee brand packaging, coffee bean errors, coffee bean size, and marketing.

Peeling of Fruit Skin (Pulping)

The purpose of pulping is to extract the mesocarp (meaty part) and outer skin of the coffee bean. The exocarp and mesocarp of the coffee fruit are removed as the basic idea. Either a machine or a hand can do this pulping. Coka Coffee uses a machine called a pulper to perform the pulping procedure. The coffee bean is extracted from the skin of the fruit by using a pulper to break down the coffee fruit after it has been picked. Although there are many other types of pulping machines available today, the Vis pulper and Roar pulper are the most commonly used.

Drying

Drying aims to reduce the water content in coffee beans from 60-65% to around 20%. Drying can be done by drying in the sun or drying with a dryer. Drying at Coka Coffee is done on drying floor racks with a thickness of about 2-3 cm of coffee bean layer. Turning is done every hour while the coffee is still wet. The average drying time is between 10-14

days.

Hulling

To remove the horny skin on coffee beans is done through a peeling process. Peeling the horny skin at Coka Coffea is done using a huller machine that will produce a uniform shape and have good quality.

Defect Sorting

The process of separating defective, broken, or unqualified coffee beans is called defect sorting. The selling price of coffee may remain high due to this separation process. There are two methods of classifying coffee beans according to their physical characteristics (defect system): mechanical sorting and manual sorting. Workers' hands are accustomed to sorting coffee beans manually to classify them. In large plantations, the process of assessing coffee quality based on physical defect values is still done manually; that is, the coffee beans are arranged on the sorting table one by one.

Sorting is done in the old way at Coka Coffee itself, namely selecting good coffee beans by hand using hands and eyes and selecting bad coffee beans that are broken, damaged, black, hollow, or different in color from other coffee beans. Striving for a level of consistency in the roasting process and the development of rich flavors.

Roasting

Coffee is dried through a process called roasting, which removes the remaining water in the beans. To create the unique taste and aroma of coffee, Coka Coffee heats fresh coffee beans, also called green beans, to a temperature of 200 °C. It takes 20 minutes to complete this process. After the roasting process, various ingredients are mixed (post-blend coffee). In the process of mixing coffee with several other ingredients, a product is formed that is the trademark of coffee at Coka Coffee.

Table 2. Coka Coffee trademark + mixed ingredients

Trademark	Mixed Ingredients
Dayak Coffea Sintok Honey	Liberica coffee (excelsa) + herbal sintok honey

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Coka Munyin Coffee	Liberica Coffee + animal fermentation process endemic to Central Kalimantan Munyin (a type of Luwak)
Coka Med Coffee	Blend Excelsa 70% + Robusta 30%
Dayak Coffee Bajakah	Liberica coffee (excelsa) 95% + bajakah 5%
Coka Coffee Excelsa Beans	Liberica Coffee (excelsa) 100% grade A
Coka Peaberry Coffee	Black male coffee from local coffee sorting Central Kalimantan (excelsa, liberica, robusta)
Dayak Coffee Earth Stake	Liberica Coffee (Excelsa) 90% + Pasak Bumi 10%

Milling

Fine grinding of coffee beans is carried out at Coka Coffee using an electric grinder machine with a capacity of 30-50 kg/hour. Grinding with a sliding mechanism system through an electric grinder will produce uniform and fine coffee beans, because the coffee beans are sandwiched between 2 plates, one of which is stationary and the other rotates, and the width of the gap can be adjusted to get the smoothness of the coffee we want.

Packaging

Dried coffee beans with a water content of 11% (safe storage water content limit) are prepared for packaging. Coka Coffee uses Sealed Foil packaging, which is a type of packaging that is tightly closed and coated with foil. The purpose of this packaging is to prevent air from entering, but it is also equipped with a valve to release carbon dioxide so that the coffee remains fresh. In terms of price, freshness, and environmental impact, this packaging option is the best.

Marketing

Currently, Coka Coffee is a local company that develops coffee with the Liberica Excelsa variety in Sei Kemangkus. Coka Coffee product marketing chooses Central Kalimantan as its marketing segmentation, the target market set by the company is that Coka Coffee

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products themselves are enjoyed by the people of Central Kalimantan and can be typical souvenirs of Central Kalimantan. Coka Coffee products can be found at the Coffea Shop in Efek Samping Coffee Palangkaraya and Citra Rasa Mentaya Sampit, and this Coka Coffee product may have the potential to reach a wider market if the Gunung Mas area and the Government are serious about this UMK.

Value-added

Coka Coffee has succeeded in making quality products and becoming products with high selling value, it can be compared if it only produces unprocessed coffee beans which are only around Rp 60,000 per kg, raw coffee beans are around Rp 135,000 per kg, but Coka Coffee processed with its Roastbean can produce Rp 65,000-100,000 per 200 gr and this will increase the added value of profit for Coka Coffee owners. (Coka Coffee products and prices can be seen in Table 3).

Table 3. Coka Coffee Products and Prices

Product	Material	Weight (grams)	Price (Rp)	Information
Dayak Coffee Sintok Honey	Liberica(excelsa), herbal honey sintok	200 grams	Rp. 90,000	Excelsa coffee mixed with honey herbal extract is good for body health.
Munyin Coffee	Liberica + fermented processed animal endemic to Central Kalimantan (Munyin)	200 grams	Rp. 65,000	Munyin Coffee is fermented from an endemic animal in Central Kalimantan (Munyin), a type of Luwak.
Coca-Cola Coffee	Liberica (excelsa) + robusta	100 grams	Rp. 40,000	Original Kalimantan coffee blend 70% excelsa

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				and 30% robusta
Coka Coffee Excelsa Beans	Liberica (excelsa)	200 grams	Rp. 100,000	This variety of coffee has a unique taste like jackfruit, coffee bean grade A
Bajakah Coffee	Liberica (excelsa) + bajakah	200 grams	Rp. 90,000	Excelsa coffee mixed with bajakah has good properties for the body
Dayak Coffee Earth Stake	Liberica (excelsa) + earth stake	200 grams	Rp. 90,000	Pasak Bumi is very useful for maintaining men's fitness and vitality.
Peaberry Coffee	Liberica (excelsa) + robusta	200 grams	Rp. 65,000	Male black coffee, coffee from sorting local coffee from Central Kalimantan

Descriptive Analysis (Respondent Assessment Distribution)

The description of the research respondents can be seen in the results of the descriptive analysis in the form of a frequency table. Each statement item for each variable must be filled in by 20 respondents.

Table 4. Respondent Statement Assessment Criteria

No	Mean Score	Criteria
1	0-1.9	Very bad
2	2-2.9	Bad
3	3-3.9	Bad Enough
4	4-4.9	Good
5	5	Very good

Source: (Sugiyono, 2015)

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Respondents' Description of Coka Coffee Products

In this study, primary data was collected from 20 respondents to determine their responses to 5 brands of Coca-Cola products based on color, taste, and aroma, as follows:

Table 5. Respondents' Assessment of Coka Coffee Excelsa Beans Products

Respondents' Answers	**Statement Items**					
	Color		**Flavor**		**Aroma**	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Very dislike						
Don't like			1	5		
Dislike			1	5		
Like	17	85	15	75	15	75
Like very much	3	15	3	15	5	25
Total	20	100	20	100	20	100
Mean	4.15		4		4.25	

Source: Primary data processed 2025

Respondent indicators for the Coka Coffee Excelsa Beans product are represented by 3 statement items as follows:

1. For the Color item, 17 respondents (85%) stated that they liked it, with an average value of 4.15. This answer illustrates that the Coka Coffee Excelsa Beans product is good.
2. For the Taste item, 15 respondents (75%) stated that they liked it, with an average value of 4. This answer illustrates that the Coka Coffee Excelsa Beans product is good.

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3. For the Aroma item, 15 respondents (75%) stated that they liked it, with an average value of 4. This answer illustrates that the Coka Coffee Excelsa Beans product is good.

Table 6. Respondents' Assessment of Coka Med Coffee Products

Respondents' Answers	**Statement Items**					
	Color		**Flavor**		**Aroma**	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Very dislike						
Don't like						
Dislike						
Like	17	85	17	85	15	75
Like very much	3	15	3	15	5	25
Total	20	100	20	100	20	100
Mean	4.15		4.15		4.25	

Source: Primary data processed 2025

Respondent indicators for Coka Med Coffee products are represented by 3 statement items as follows:

1. For the Color item, 17 respondents (85%) stated that they liked it, with an average value of 4.15. This answer illustrates that the Coka Med Coffee product is good.
2. For the Taste item, 17 respondents (85%) stated that they liked it, with an average value of 4.15. This answer illustrates that the Coka Med Coffee product is good.

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3. For the Aroma item, 15 respondents (75%) stated that they liked it, with an average value of 4.25. This answer illustrates that the Coka Med Coffee product is good.

Table 7. Respondents' Assessment of Dayak Coffee Sintok Madu Products

Respondents' Answers	**Statement Items**					
	Color		**Flavor**		**Aroma**	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Very dislike						
Don't like						
Dislike						
Like	16	80	15	75	15	75
Like very much	4	20	5	25	5	25
Total	20	100	20	100	20	100
Mean	4.2		4.25		4.25	

Source: Primary data processed 2025

Respondent indicators for the Dayak Coffee Sintok Madu product are represented by 3 statement items as follows:

1. For the Color item, as many as 16 respondents (80%) stated that they liked it, with an average value of 4.2. This answer illustrates that the Dayak Coffee Sintok Madu product is good.
2. For the Taste item, 15 respondents (75%) stated that they liked it, with an average value of 4.25. This answer illustrates that the Dayak Coffee Sintok Madu product is good.

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3. For the Aroma item, 15 respondents (75%) stated that they liked it, with an average value of 4.25. This answer illustrates that the Dayak Coffee Sintok Madu product is good.

Table 8. Respondents' Assessment of Dayak Coffee Pasak Bumi Products

Respondents' Answers	**Statement Items**					
	Color		**Flavor**		**Aroma**	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Very dislike						
Don't like						
Dislike						
Like	18	90	17	85	18	90
Like very much	2	10	3	15	2	10
Total	20	100	20	100	20	100
Mean	4.1		4.15		4.1	

Source: Primary data processed 2025

Respondent indicators for Dayak Coffee Pasak Bumi products are represented by 3 statement items as follows:

For the Color item, 18 respondents (90%) stated that they liked it, with an average value of 4.1. This answer illustrates that the Dayak Coffee Pasak Bumi product is good.

For the Taste item, 17 respondents (85%) stated that they liked it, with an average value of 4.15. This answer illustrates that the Dayak Coffee Pasak Bumi product is good.

For the Aroma item, 18 respondents (90%) stated that they liked it, with an average value of 4.1. This answer illustrates that the Dayak Coffee Pasak Bumi product is good.

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Table 9. Respondents' Assessment of Dayak Coffee Bajakah Products

Respondent's Answers	**Statement Items**					
	Color		**Flavor**		**Aroma**	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Very dislike						
Don't like						
Dislike						
Like	18	90	17	85	16	80
Like very much	2	10	3	15	4	20
Total	20	100	20	100	20	100
Mean	4.1		4.15		4.2	

Source: Primary data processed 2025

Respondent indicators for Dayak Coffee Bajakah products, represented by 3 items the following statement:

1. For the Color item, 18 respondents (90%) stated that they liked it, with an average value of 4.1. This answer illustrates that the Dayak Coffee Bajakah product is good.
2. For the Taste item, 17 respondents (85%) stated that they liked it, with a value of an average of 4.15. This answer illustrates that the Dayak Coffee Bajakah product is good.
3. For the Aroma item, 16 respondents (80%) stated that they liked it, with a value of an average of 4.2. This answer illustrates that the Dayak Coffee Bajakah product is good.

CONCLUSION

The results of the study showed that the post-harvest coffee process carried out at Coka Coffee in the Sei Kemangkus plantation followed the provisions of post-harvest processing

according to Permentan number 52 / Permentan / OT.140 / 9/2012 concerning Guidelines for Post-Harvest Handling of Coffee. This can be seen from the facilities and infrastructure based on the location of the building, tools, and machines and the packaging of the coffee produced is in accordance.

Market acceptance and high-quality standards for Coka Coffea products show that Liberica coffee (Excelsa) can compete with Arabica and Robusta coffee in terms of sales value and consumption. Coka Coffea with classic Kalimantan coffee processing which also includes fermented coffee processing from typical Kalimantan animals (Munyin) and some other natural Kalimantan ingredient blends, including herbal plants sintuk madu, pasak bumi, and bajakah.

From the descriptive analysis data obtained from 20 respondents regarding the Coka Coffee product with 5 variants presented regarding color, taste, and aroma, the product is in a good category.

In the research, it was also found that Coka Coffee had a good goal, namely that the product produced would be a typical Kalimantan coffee, open up employment opportunities for the surrounding community, and become a market for Liberica coffee farmers in Sei Kemangkus to be able to sell their red fruit coffee to Coka Coffee as a follow-up producer to create Coka Coffee products for consumers, especially in Central Kalimantan.

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