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DIFFERENCE IN POST-HARVEST PROCESSING ON COFFEE FLAVOR PREFERENCE

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Abstrak

Kopi merupakan salah satu produk yang paling populer di kalangan konsumen, terutama karena profil rasanya yang unik. Beberapa faktor, termasuk varietas tanaman, kondisi lingkungan, dan metode pemrosesan pasca panen, menentukan keunikan ini. Pemrosesan pasca panen, yang melibatkan transformasi biji kopi dari ceri menjadi biji kopi panggang, secara signifikan memengaruhi rasa, aroma, dan kekentalan kopi. Metode pemrosesan seperti proses basah (pencucian penuh) dan kering (alami) menghasilkan karakteristik rasa yang berbeda. Proses basah cenderung menghasilkan rasa yang bersih dengan keasaman yang cerah, sedangkan proses kering menekankan rasa manis dan kompleksitas buah. Memahami dampak dari metode pemrosesan ini sangat penting bagi produsen kopi dan industri untuk menciptakan produk berkualitas tinggi yang sesuai dengan preferensi konsumen.

Abstract

Coffee is one of the most popular products among consumers, mainly due to its unique flavor profile. Several factors, including plant variety, environmental conditions, and post-harvest processing methods, determine this uniqueness. Post-harvest processing, which involves the transformation of coffee beans from cherries to roasted beans, significantly affects the taste, aroma, and body of the coffee. Processing methods such as the wet (full washed) and dry (natural) processes produce distinct flavor characteristics. The wet process tends to yield a clean taste with a bright acidity, while the dry process emphasizes sweetness and fruit complexity. Understanding the impact of these processing methods is essential for coffee producers and the industry to create high-quality products that align with consumer preferences.

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1. INTRODUCTION

Coffee is one of the most widely consumed beverages due to its unique flavor. Coffee can be classified as a psychostimulant drink because it can create a feeling of comfort, reduce fatigue and depression, and cause changes in mood and sleep patterns (Nurvita & Rizkaprilisa, 2024). The distinct taste of coffee is influenced by various factors, including the plant variety, environmental conditions, and post-harvest processing methods (Bumi, 2024). Post-harvest processing, which involves transforming coffee beans from cherries to roasting-ready forms, plays a crucial role in shaping the taste, aroma, and body of the coffee consumed (Maligan et al., 2022).

A variety of post-harvest processing methods have been developed, including the wet process (full washed process), dry process (natural process), semi-wet process, and honey process (Alwi et al., 2024). Each method involves distinct techniques and stages, resulting in a unique flavor profile (Maligan et al., 2022). The wet process tends to produce coffee with cleaner characteristics and bright acidity, while the dry process emphasizes sweetness and the complexity of fruit flavors (Mutiara et al., 2023).

Differences in processing techniques affect the final taste of coffee and can also impact the stability of its quality (Bumi, 2024). Therefore, understanding how post-harvest processing methods influence the flavor characteristics of coffee is crucial for producers and the coffee industry to generate high-quality products that align with consumer preferences.

2. METHODS

The method used in writing this article is the literature study method, namely collecting, analyzing, and concluding information from various literature sources that are relevant to the topic discussed. Literature sources used in this article include scientific journals, books, reports, and online articles related to coffee processing, taste, and

consumer preferences. The literature sources used range from 2017 to 2024, using keywords such as "full washing process," "natural process," "coffee taste," and "coffee consumer preferences." The documentary sources were selected based on credibility, validity, relevance, and timeliness. The documentary sources used are then summarized, classified, and synthesized to form the framework of this article.

3. RESULT AND DISCUSSION

3.1. Coffee

During the colonial period, coffee plants were introduced to Indonesia at the end of the 16th century by the Dutch East India Company (VOC). The variety of coffee brought at that time was Arabica. The cultivation of coffee expanded significantly in Central Java by the late 18th century, which was in line with the development of the railway transportation system in Java. Towards the end of the 19th century, the colonial coffee industry in Indonesia faced significant losses due to pest infestations. However, the Dutch remained active and began planting the more pest-resistant Robusta variety (Gumulya & Helmi, 2017).

Over time, coffee production in Indonesia increased. Indonesia's most significant coffee production is concentrated in five provinces: South Sumatra, Lampung, East Java, North Sumatra, and Aceh (Wulandari et al., 2020). The coffee varieties grown in Indonesia are predominantly Arabica and Robusta. These two types of coffee have distinct flavor profiles. According to Kinasih et al (2021) , the aroma of Robusta coffee beans resembles that of unshelled nuts, while Arabica coffee has citrus and fruity notes, with a more pronounced acidic taste compared to bitterness

3.2 Wet Processing (Full Washed Process)

The coffee processing method, known as the wet or full-washed process, begins by immersing coffee cherries in a water-filled container. This step serves to separate ripe cherries from unripe ones. The soaking process lasts 12 hours, after which the selected cherries undergo sun drying for approximately 3 to 4 weeks until thoroughly drying (Rastuti et al., 2021). According to Najwa et al (2024) , wet processing (full-washed process) is a method used to remove the outer skin and mucilage layers from coffee cherries. This is important because the surface of the coffee beans tends to be moist, making it easier for non-coffee contaminants to adhere to the pulp, which can lead to contamination. The wet processing method is depicted in **Figure 1.**

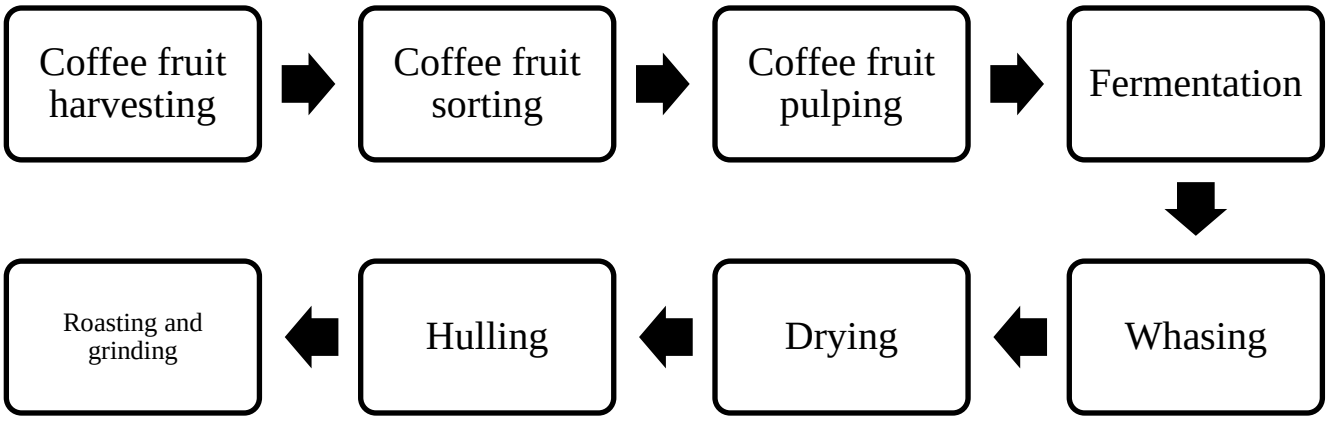

Figure 1. Wet processing (full washed process)

The wet processing method or full-washed process produces a distinctive coffee flavor. Arabica Gayo, coffee of the Ateng Super variety, processed using the full-washed post-harvest method, produces a characteristic taste with a light and smooth body. This coffee has a clean, light, slightly fruity character and a relatively high acidity (Najwa *et al*., 2024). The full-washed process for Topidi coffee is carried out through fermentation at ambient temperature using burlap sacks, which have been shown to create a unique flavor profile. The result is coffee with a light and smooth body, a clean, light character, and a tendency toward fruity notes (Mutiara et al., 2023). The wet processing (full-washed process) method involves fermentation that leads to the formation of flavor precursor compounds in coffee beans, such as organic acids, amino acids, and reducing sugars (Mangku et al., 2022).

3.3. Dry Processing (Natural Process)

The dry coffee processing method is commonly referred to as the natural process. This is because the processing involves the simplest or most natural method, which does not undergo complicated processing steps (Rulinawaty et al., 2023). The dry processing method is depicted in **Figure 2**:

According to research by (Mutiara et al., 2023) coffee processed through the natural method produces a full-bodied quality, with a wide range of flavors, often fruity, along with a bitter taste and low acidity, as well as high caffeine content. The fruity flavor profile may arise because the natural processing method involves fewer steps, allowing for the development of flavor variations similar to those of fruits (Anang et al., 2023).

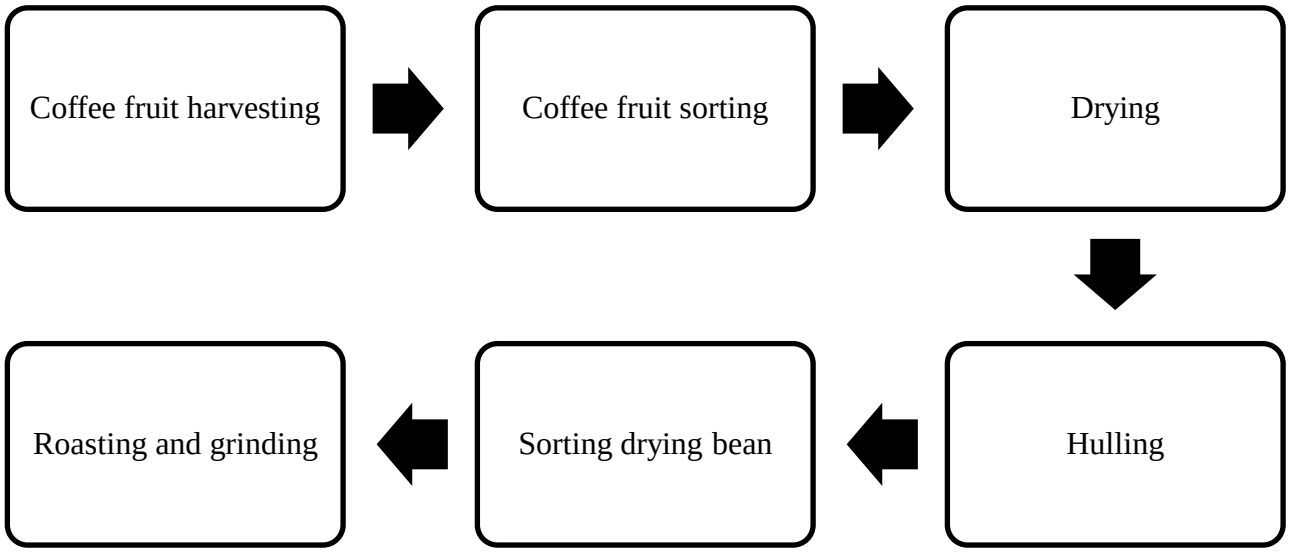

Figure 2. Dry processing method (Natural Process)

3.4. Coffee Flavor

Flavor is an aspect of organoleptic properties that can be assessed using the five senses and can be influenced by physical and chemical properties, agronomic and processing factors (Hartati et al., 2022). Coffee quality assessment is typically done using a flavor analysis method based on the Specialty Coffee Association of America (SCAA) standards. In this analysis, panelists identify and evaluate the sensory attributes of coffee by slurping brewed coffee from a special cup or bowl used for cupping, a process known as cup testing (Widyasari *et al*., 2023).

According to Maligan et al (2022) the attributes used in flavor testing include aroma, flavor, aftertaste, acidity, body, balance, and overall quality. Their odor characteristics can be categorized into nine main groups: roasted, spices, nutty/cocoa, sweet, floral, fruity, sour/fermented, green/vegetative, and other (which includes chemical and papery/musty odors). These categories are illustrated on the Coffee Taster's Flavor Wheel by the Specialty Coffee Association (SCA) (Zakidou et al., 2021). Aroma testing consists of two attributes: fragrance and aroma. Fragrance refers to the scent of ground coffee before brewing, while aroma refers to the smell after brewing. Flavor analysis is the combined taste and scent perceived by the nose and mouth when the coffee is consumed, creating a complex profile between taste and aroma. Aftertaste analysis evaluates the lingering taste of the coffee after swallowing, considering how long the flavor persists and the specific flavors remaining in the mouth. Acidity analysis assesses the perceived acidity from various flavors, such as fresh fruit acidity or sweetness. Body analysis refers to the concentration or mouthfeel of the coffee, with panelists evaluating the strength and texture of the coffee as it is perceived between the tongue and the roof of the mouth. Balance analysis measures the harmony between these different attributes. The final overall quality evaluation is a general assessment by the panelists of the coffee being tested. Additionally, flavor testing includes evaluating defects, which refer to any shortcomings in the coffee being tested.

For example, flavor defects are categorized into shame and fault. The sensory profile of brewed coffee is assessed based on two main criteria: general overall characteristics and specific sensory descriptors (Seninde & Iv, 2020)

3.5. Consumer Preferences

Coffee is a beverage with a wide range of distinctive flavors. This diversity leads to varying consumer preferences toward coffee. Consumer preference refers to the attitude consumers exhibit toward a product choice, which is based on evaluating the different products available within a given selection (Permadi et al., 2022). Consumer preferences are crucial in business development because they provide insight into consumers' main priorities when selecting a product. Similarly, the wide variety of processing methods for coffee further expands consumer preferences.

According to Bumi's research (2024) , local coffee consumers in Brebes, Indonesia prefer coffee processed using the dry method (natural process) and incorporating modern technology. Several factors influence consumer preferences, including price, service quality, and product quality (flavor) (Hanafiah & Wardhana, 2019).

4. Conclusion

Coffee is one of the most widely consumed beverages due to its unique flavor. Several factors, including the post-harvest processing method, influence this uniqueness. Post-harvest processes, such as the wet (full-washed process) and dry (natural process) methods, significantly affect the coffee's taste, aroma, and body. Each post-harvest process produces a distinctive flavor profile. Coffee sensory evaluation involves various attributes: smell, flavor, aftertaste, acidity, body, and balance. Consumer preferences for coffee are highly diverse and influenced by factors such as processing methods and product quality (flavor profile).

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