ANALYSIS OF COFFEE QUALITY CONTROL BASED ON SCA (SPECIALTY COFFEE ASSOCIATION) STANDARDS ON ARABICA COFFEE AT DEPUTROE COFFE

Fadli[1], Adhiana[1] , Baidhawi[2]
[1] Prodi Agribisnis, Fakultas Pertanian,Universitas Malikussaleh, Aceh Utara, Indonesia
[2] Prodi Agroekoteknologi, Fakultas Pertanian,Universitas Malikussaleh, Aceh Utara, Indonesia
fadli@unimal.ac.id
baidhawi@unimal.ac.id
adhiana@unimal.ac.id

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Abstract
Coffee is an important commodity in the global economy, including in Indonesia as one of the world's largest coffee producers, with Arabica coffee as its mainstay. Deputroe Coffee, a business that focuses on producing and selling specialty coffee, implements quality control based on the Specialty Coffee Association (SCA) standard to maintain the quality of Arabica coffee produced. This study aims to analyse coffee quality at Deputroe Coffee through a qualitative descriptive approach and was conducted in Bener Meriah Regency, Aceh, which is the centre of Arabica coffee production. The method used is quality control analysis using Fishbone diagram. This research identifies coffee quality problems through preliminary data such as cupping results and observations of the production process. Fishbone diagrams help group and analyse the causal factors of quality problems, which are divided into five main categories: man, machines, methods, and environment. Data is collected for each category to understand its contribution to quality issues. The analysis results were then compared with the SCA standard to assess the suitability of the coffee quality produced by Deputroe Coffee.

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INTRODUCTION

Coffee is an agricultural commodity that plays an important role in the global economy, including in Indonesia. As one of the largest coffee producers in the world, Indonesia has various types of coffee with unique characteristics and flavors, one of which is Arabica coffee. Arabica coffee is known for its high quality and is often the top choice for coffee lovers around the world. The quality of the coffee produced is highly dependent on various factors, ranging from the selection of coffee beans, the planting process, to processing and serving.

The Specialty Coffee Association (SCA) standard is an important reference in determining the quality of specialty coffee, including Arabica coffee. This standard covers various aspects of assessment, ranging from bean size, cleanliness, flavor consistency, to the accuracy of the serving process. The application of this standard aims to ensure that the coffee produced meets high quality criteria, which in turn can increase the competitiveness of the coffee in the international market. In Indonesia, the implementation of the SCA standard is gaining attention, especially among coffee producers focusing on the specialty coffee market.

However, to achieve quality in accordance with SCA standards, strict quality control is required at every stage of coffee production. One method that can be used to analyze and improve quality control is the

Fishbone Diagram, also known as the Ishikawa Diagram. This diagram helps in identifying various causal factors that affect coffee quality, both technical and non-technical in nature. By using the Fishbone Diagram, manufacturers can systematically identify the root causes of quality problems and take appropriate corrective actions.

At Deputroe Coffee, a business engaged in the production and sale of specialty coffee, especially Arabica coffee, the implementation of quality control based on SCA standards is very important to ensure that the coffee produced is of superior quality. Deputroe Coffee has made various efforts to improve the quality of its products, including the implementation of comprehensive quality control techniques. However, there are still challenges in identifying and addressing various factors that can affect the overall quality of the coffee. Therefore, this study aims to analyze the quality control of Arabica coffee at Deputroe Coffee using Fishbone Diagram based on SCA standard.

Arabica coffee at Deputroe Coffee using Fishbone Diagram based on SCA standard. This analysis is expected to provide a clearer picture of the factors that affect coffee quality and provide recommendations for improvements needed to achieve the desired quality standards. Thus, Deputroe Coffee can continue to improve the quality of its products and compete in the specialty coffee market both domestically and internationally.

METHODS

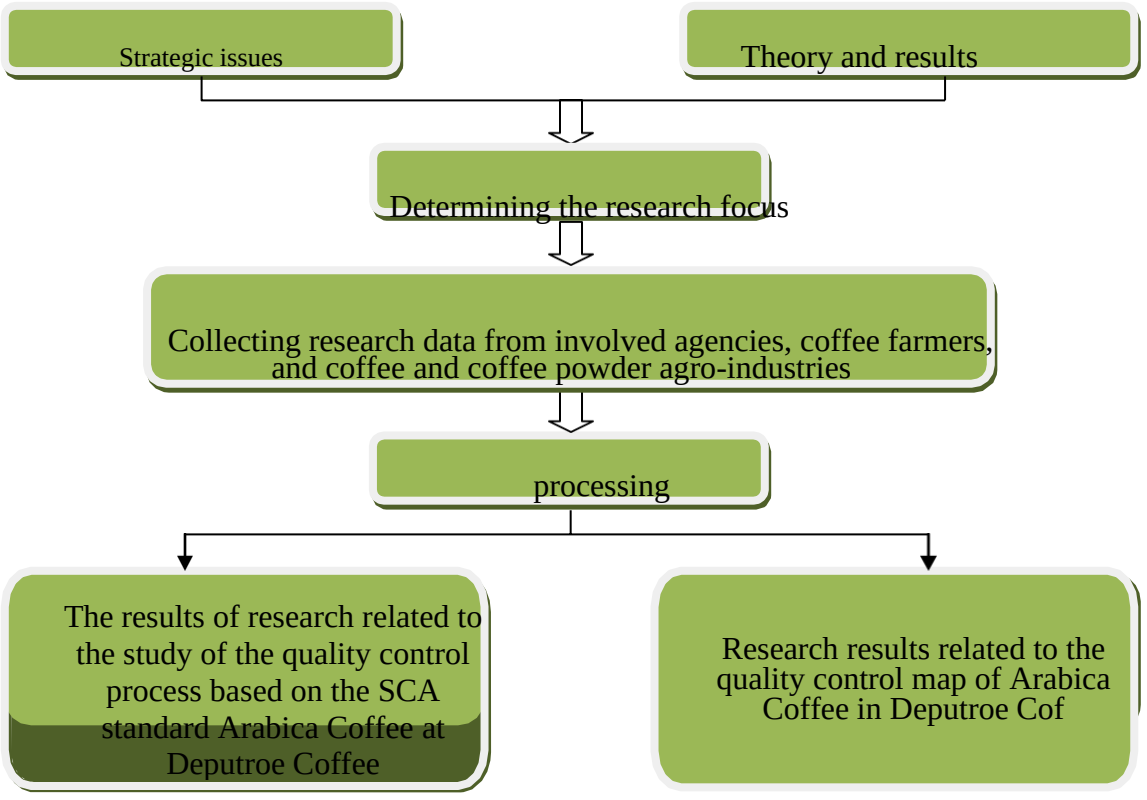
This research uses qualitative descriptive research methods. Descriptive qualitative is a method that describes the research topic with variables that cannot be measured qualitatively.

1. Location and Object of Research

This research was conducted in Bener Meriah Regency. This is because Bener Meriah Regency is one of the main production centers in Aceh. The object of this research is Deputroe Coffee industry players who own the Arabica Coffee coffee business.

2. Research Stages

This research will be carried out with the stages as presented in Figure 3.1. Here



3. Types, data sources, and data collection techniques

The data collection method used is in-depth interviews with Deputroe Coffee business owners.

4. Data Analysis Method

This study uses the coffee quality control analysis method by applying the Fishbone diagram based on the Specialty Coffee Association (SCA) standard to Arabica coffee at Deputroe Coffee. This method starts with identifying coffee quality problems through preliminary data, such as cupping results and observations of the production process. The Fishbone diagram is then applied to classify and analyze the factors causing the quality issues, which include the categories of methods, materials, machines, labour, and environment. Data related to each category was collected to understand the contribution of each factor to the quality issues. Next, the analysis results were compared with the SCA standard to assess the suitability of coffee products. Improvement recommendations were made based on the findings, and corrective measures were implemented. This process is followed by periodic monitoring and evaluation to ensure the effectiveness of the improvements in improving coffee quality in accordance with the SCA standard. Information generated from this method includes Fishbone diagrams, analysis conclusions, and improvement plans aimed at improving the quality of coffee products at Deputroe Coffee.

RESULTS AND DISCUSSION

Results

Gayo Arabica coffee is one of the world's top coffees originating from the Gayo Highlands in Aceh, Indonesia. This coffee is known for its distinctive flavor and exceptional quality, so it is often categorized as specialty coffee. In the international coffee trade, the quality of specialty coffee is assessed according to standards set by the Specialty Coffee Association of America (SCAA). These standards cover various aspects, including green bean assessment, flavor profile, physical characteristics, and quality consistency.

The first step in assessing the quality of Gayo Arabica coffee is the grading process of green coffee beans based on SCAA standards. This grading process looks at the size, shape, and number of defects in the coffee beans before roasting. According to SCAA standards, specialty coffee can only have up to five small defects in a 300-gram sample. Gayo Arabica coffee often meets these criteria thanks to careful cultivation and harvesting practices by farmers in Gayo. This rigorous selection process ensures that only the highest quality beans are selected for export.

The flavor profile of Gayo Arabica coffee is one of its main strengths in meeting SCAA standards. This coffee is known for its distinctive aroma that combines spice, chocolate, and an enticing floral scent. In addition, its balanced acidity and medium to full body make it highly desirable in the international market. According to SCAA standards, specialty coffee needs to achieve a cupping score of over 80 out of a total of 100 points, and Gayo Arabica coffee often achieves or even exceeds this number, especially when processed with appropriate methods such as honey process or natural process.

The physical characteristics of Gayo Arabica coffee also conform to SCAA standards that prioritize consistency in bean shape and size. This coffee is generally harvested at an altitude of 1,200 to 1,600 meters above sea level, creating an ideal environment for high-quality coffee beans. The volcanic mineral-rich geography of the Gayo Highlands and the favorable microclimate produce high-density, high-quality beans. The combination of these environmental factors qualifies Gayo Arabica coffee as a specialty coffee.

In addition, the post-harvest process also plays an important role in maintaining the high quality of Gayo Arabica coffee. Local farmers often use a wet process, which helps to reduce defects and create a clean taste in the coffee. This process complies with SCAA standards that emphasize transparency of flavor and cleanliness of the coffee. With a clean finish and unique flavor profile that is hard to match, Gayo Arabica coffee has gained a strong reputation in the global market.

Overall, Gayo Arabica coffee is not only excellent in terms of taste, but also manages to meet the strict standards set by SCAA in various aspects. From green bean grading, cupping assessment, to physical characteristics, this coffee is able to maintain a stable and consistent quality. This excellence is achieved thanks to the dedication of local farmers who maintain meticulous cultivation practices and post-harvest processes, resulting in coffee that deserves to be recognized on the international stage. It is this quality that makes Gayo Arabica coffee considered one of the world's best coffees..

Discussion

Deputroe coffee is a coffee processor committed to maintaining quality control according to established standards, both for export and local consumer needs. This export standard sets a maximum tolerance of 5% for defective coffee beans. The coffee bean processing process at Deputroe coffee includes the stage of stripping the coffee skin using a tool called a pulper. The pulper is the first tool used in post-harvest processing of coffee beans to peel the outer skin of the beans. After this stripping stage, the coffee beans are then processed by the hulling

method, which is the stripping of the epidermis of the coffee beans. This hulling stage is carried out using a machine called a huller. After both processes are complete, the coffee beans are dried in the sun to reduce their moisture content.

These processing processes are important indicators in quality control. Through each stage, the coffee beans are then sorted to separate the quality beans from those with defects. After the sorting stage, the coffee beans are handed over to the QC team for quality control through cupping tests.

Cupping test is a method used to assess the flavor and physical characteristics of coffee beans. Before conducting the cupping test, the coffee beans are first roasted to bring out the maximum flavor. After that, further sorting is done based on perfect taste and shape. This assessment or "define" stage is an important step in quality control at Deputroe coffee. To achieve these standards, Deputroe coffee implements consistent quality control, covering the purchasing, drying, and sorting stages. In this process, the role of labor and machinery is very important.

Labor is the main element in maintaining quality at Deputroe coffee. With the support of sufficient manpower, Deputroe coffe can carry out each stage of processing optimally. The workforce at Deputroe coffe is known to be skilled and meticulous, especially in the purchasing and sorting stages of coffee beans, ensuring that only high-quality beans are processed further. In addition, all human resources have been trained to follow the applicable SOPs, starting from the purchasing process, drying, to sorting. With high adherence to SOPs, the consistency of production results can be maintained well.Selain tenaga kerja, penggunaan mesin modern is an important element in maintaining product quality. Deputroe coffee has adopted advanced technology that allows the sorting process to take place with speed and precision. Automated machines such as sortex are used to separate defective coffee beans, ensuring only quality beans are passed on to the next stage. These machines operate for 8-10 hours every day, supporting a large production capacity. In addition to sorting machines, Deputroe coffee is also equipped with various other equipment such as elevators, graders, pulping, and hulling, which increase efficiency at all stages of production.

Quality control starts from the stage of purchasing coffee beans directly from farmers. At this stage, experienced workers check the quality of the beans based on their size, color and physical condition. After purchase, the coffee beans undergo a drying process to reduce the moisture content to the ideal level. The drying technique applied is designed to keep the coffee beans in top condition. The final stage is sorting, where the coffee beans are selected based on their quality. With the support of modern machinery, the sorting process is more efficient and accurate than manual methods.

Deputroe coffee's success in maintaining the quality of coffee beans is also supported by structured production management. The management at Deputroe coffe plans production carefully, including determining the number of beans to be processed, labor allocation, and machine usage schedules. Routine maintenance of production machines is also prioritized to ensure optimal performance. In addition, Deputroe coffee regularly evaluates the quality control process to identify and correct weaknesses.

With a combination of skilled labor, advanced technology, and effective production management, Deputroe coffee is able to maintain the quality of coffee beans in accordance with export standards and market demands. Going forward, Deputroe coffee needs to continue investing in human resource training and technology development to remain competitive in the coffee market, both nationally and internationally. Through this approach, Deputroe coffee is expected to further strengthen its position as a high-quality coffee producer in Indonesia and the world.

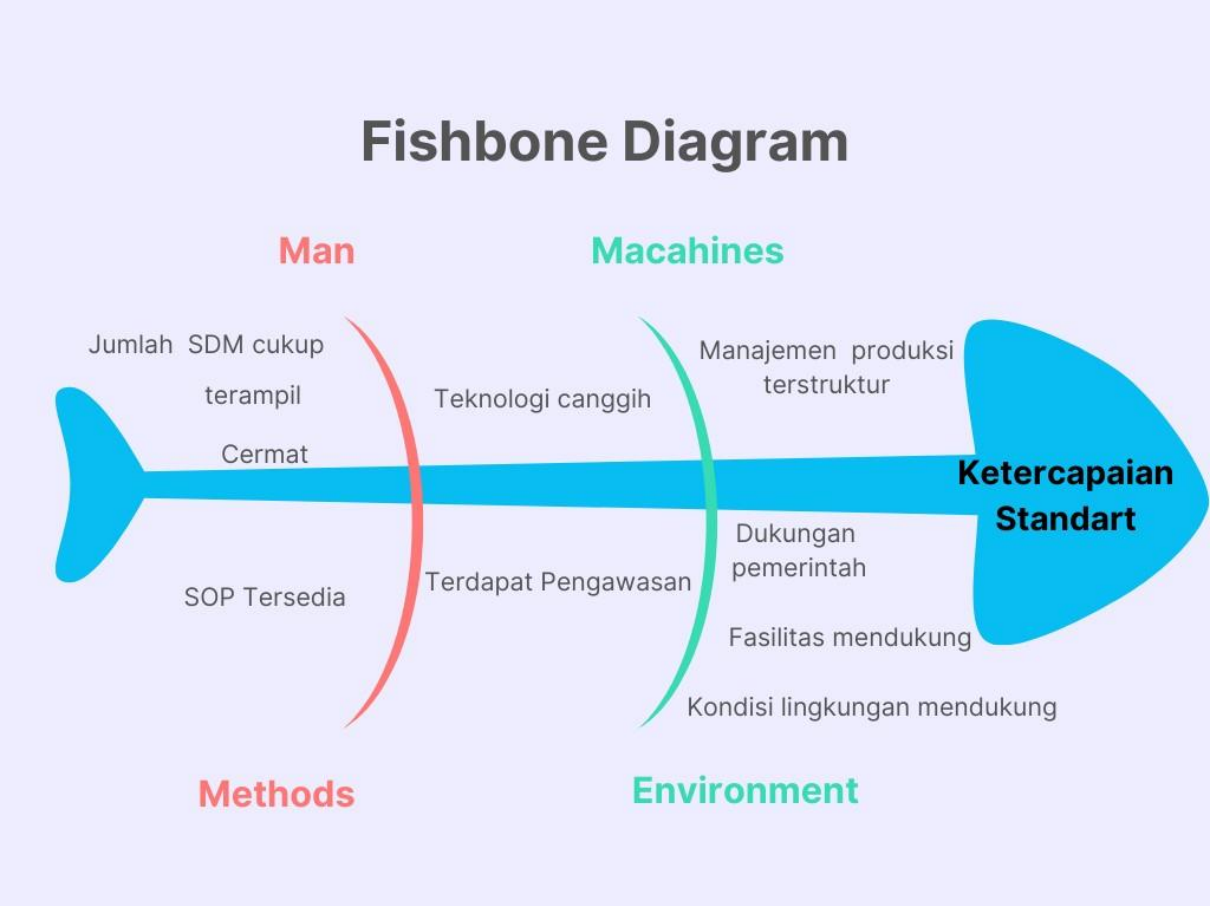
The final process in the processing of coffee beans at Deputroe coffee is sorting, a crucial stage to ensure the coffee beans meet quality standards. This sorting relies heavily on the expertise of employees who are meticulous in operating the machines. Skilled employees can operate the machines optimally, so that the quality control process runs optimally. The latest technology used not only helps in sorting, but also in Quality Control

(QC), ensuring the quality of the coffee beans is up to standard. This machine is also used in the roasting process to produce high-quality coffee products.

The quality control method at Deputroe coffee is regulated in detail in the SOP. This supervision covers not only machine usage, but also routine maintenance. Machine inspections are carried out regularly, at least once a month, by employees assigned as inspectors. These inspections aim to ensure that the machines continue to function optimally and prevent potential damage that could hamper production. This quality control is applied to both equipment and labor aspects. Every employee is required to comply with the applicable SOPs, ensuring that all processes are procedural and structured. Compliance with this SOP supports work efficiency and the achievement of quality standards set by Deputroe coffee. In addition to labor and machinery, the environment also plays an important role in meeting coffee quality standards at Deputroe coffee. This good environment not only supports successful production, but also contributes to the welfare of Deputroe coffe employees.

Deputroe coffe's method also involves in-depth analysis using a fishbone diagram or cause-and-effect diagram. This diagram is used to identify the various factors that affect the success of coffee bean quality control. Key factors include labor, machinery, work methods, and environment. Labor plays a role in machine operation and SOP implementation, machinery supports process efficiency and accuracy, work methods include regular inspections and maintenance, while the environment supports organic coffee production. The synergy of these various factors is the main key in maintaining the consistency of product quality produced by Deputroe coffee. In the implementation of daily operations, Deputroe coffee not only focuses on the production process, but also on the sustainability aspect. With an environmentally friendly approach and good management, Deputroe coffee seeks to create a positive impact on farmers, consumers, and the ecosystem. The fostered farmer development program is also a priority, so that farmers have the knowledge and ability to produce high-quality coffee beans according to organic standards. Through this strategy, Deputroe coffee has managed to maintain a balance between productivity, quality, and sustainability.

The latest technology used not only improves process efficiency, but also adds value to the final product. Modern machinery enables the processing of coffee beans with a high level of precision, so that the end result meets consumer expectations. In addition, strict implementation of SOPs creates a structured work pattern and supports the overall quality control process. supports the overall quality control process



1. Man (Human)

The optimal performance of the workforce at Deputroe coffee has a major impact on the process of purchasing, drying, and sorting coffee beans, so that the coffee is ready to market with maintained quality. The main factor in achieving quality standards at Deputroe coffee lies in the workforce who have duties and responsibilities in each field. The thoroughness of employees, especially in the purchasing and drying processes, supports the improvement of coffee bean quality because they have followed the established SOPs and have adequate skills. In addition, the sufficient number of human resources allows all production activities at Deputroe coffee to run smoothly. Each section conducts training beforehand to ensure employees have the competence according to their duties.

2. Machine

Deputroe coffe uses a sortex machine that has the ability to sort the equivalent of 350 employees, separating coffee beans from defects such as flakes, skins, and stones. Before sorting, grading is carried out to ensure high quality coffee beans, especially grade 1. Deputroe coffee is equipped with various machines, from pre to post-production, and structured machine management ensures the machines are maintained and functioning optimally. The main machines include a sortex machine for sorting, a grader for directing coffee to the sortex machine, and elevators 1, 2, and 3 that place coffee beans according to size and quality.

3. Methods

Deputroe coffee implements strict quality control methods throughout the production process, especially in areas that do not undergo intensive inspections. This supervision method is enforced with discipline, as non-compliance by employees or fostered farmers can lead to sanctions, even termination of partnerships. With consistent working methods, the production process runs more smoothly, and the SOPs implemented help to reduce defective coffee beans. Nevertheless, there are still some who do not fully comply with the prescribed methods and SOPs. Manual methods are also applied, such as tasting and smelling to check the moisture content and aroma quality of the coffee.

4. Environment

The work environment at Deputroe coffee is very supportive of the welfare of farmers, assisted by cooperation between the local government and foreign partners. Deputroe coffee has complete facilities to support production, both in the pre and post-production stages. With the right work structure, employees and farmers feel comfortable and motivated, as evidenced by the number of employees who have worked for more than five years. Facilities include a greenhouse, and cooperation with the local government has helped boost exports and sales.

Overall, Deputroe coffee's success in achieving coffee bean quality standards is the result of the synergy of various factors. A skilled workforce, the use of modern technology, conducive environmental support, and an organized work system are the main elements in quality control. Through a comprehensive and sustainable approach, Deputroe coffee not only meets the set standards but also contributes to the progress of the organic coffee industry in Indonesia. The fishbone diagram used by Deputroe coffee provides a clear picture of the interrelationship of these factors, making it easier for management to recognize and overcome obstacles that may arise. Going forward, Deputroe coffee is expected to continue to innovate and increase collaboration with farmers and the government. By strengthening the work system, utilizing advanced technology, and implementing environmentally friendly practices, Deputroe coffe can maintain the quality of its coffee beans and compete in an increasingly competitive market.

CONCLUSION

Research applying SCA (Specialty Coffee Association) standards-based quality control to Arabica coffee at Deputroe Coffee can provide significant improvements to the quality of coffee products. Utilizing the Fishbone diagram analysis method, this study successfully identified factors that affect coffee quality, such as methods, materials, machines, labor, and environment.

Implementation of the SCA standard allows Deputroe Coffee to understand and improve various aspects that have the potential to reduce coffee quality, so that the product results can meet or even exceed international standards. Through this analysis, Deputroe Coffee is expected to increase competitiveness in the specialty coffee market, both domestically and internationally, and add value to their Arabica coffee products in the global market.

AUTHOR CONTRIBUTION STATEMENT

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