ANALYSIS OF QUALITY CONTROL OF MYSARI NUTMEG PRODUCTS USING CHECK SHEET AND FISHBONE DIAGRAM

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Abstract

including nutmeg. In the production process at Mysari Buah Pala, the Check Sheet method is used to record the number and type of defects, the Pareto Diagram is utilized to identify the dominant cause of product defects, and the Fishbone Diagram is used to trace the root cause of the defects. The data showed that leaf curl due to pest attack and black spot due to fungal infection were the main sources of defects. Through the combination of these three tools, the quality control process became more systematic and targeted, so that improvements could be focused on the main causal factors. The results of this analysis support the improvement of production efficiency and maintain product quality to remain competitive in the market.

Keywords: Quality, Check Sheet, Fishbone Diagram, Nutmeg, MSMEs

INTRODUCTION

Quality control is an important aspect in the food industry to ensure that the products produced meet quality standards and can compete in the market. Various methods have been used in an effort to improve product quality and reduce defect rates, one of which is the Seven Tools, which consists of various data-based quality analysis techniques (Aripin et al., 2019). Several studies have shown the effectiveness of this method in identifying sources of defects and determining appropriate improvement steps (Astuti & Wahyudin, 2021). In the context of the food industry, the application of statistical tools such as Check Sheet and Fishbone Diagram has been widely used to evaluate defect patterns as well as determine the main factors causing failed products (Nuruddin & Andesta, 2022).

The Check Sheet method serves as a recording tool to collect data on the number and types of defects that occur during the production process (Andini et al., 2023). With the data collected, the use of fishbone diagrams is intended to graphically analyze the cause of the problem as well as to find out the cause and effect of the problem, for example, the factors that cause product defects (Oktaviana & Auliandri, 2023). Various studies in the field of quality control have proven that the combination of these methods can increase production efficiency and significantly reduce the number of defective products (Purba et al., 2022).

Mysari nutmeg is one of the processed spice-based products that has great potential in the food industry. However, as with other food products, challenges in maintaining quality remain, especially in terms of quality consistency and product durability (Hairiyah et al., 2022). Various factors such as raw materials, production processes, and storage conditions can affect the final quality of the product (W. Astuti et al., 2022). Therefore, a systematic quality control analysis is needed to identify the types of defects that often occur and find solutions to reduce the level of defects in Mysari nutmeg products (Zalukh & Mendrofa, n.d.).

This study was conducted to evaluate the effectiveness of quality control in the production of Mysari nutmeg by using the data recording method and defect trend analysis (Abidin et al., 2022). Through this approach, it is expected to identify defects that often occur in the production process as well as more appropriate improvement strategies. With this analysis, it is expected that the company can be more optimal in maintaining the quality of its products and increasing efficiency in the processing and distribution process.

RESEARCH METHODS
Research Location
The object of this research is MSME Mysari Buah Pala which produces various kinds of processed products from nutmeg such as nutmeg juice, candy, sweets, and so on. Mysari Nutmeg UMKM is located at Jalan Kp. Buntar No.27, RT.04/RW.08, Muarasari, South Bogor Sub-district, Bogor City, West Java. This research was conducted by conducting interviews directly with the owner of Mysari to find out information about business processes at MSME Mysari Buah Pala.

In conducting research, the authors use several stages of research, namely through identifying and formulating problems, understanding theories and similar previous research. Furthermore, the author makes observations to collect data on defects in production at the Mysari Nutmeg UMKM.

Checksheet
Check sheet is a tool used to facilitate and simplify data recording (Tarnoto et al., 2021). The form and content are tailored to the needs and working conditions that exist in the Company. In its use, there are things that must be considered in collecting data with a check sheet, namely the purpose of making it must be clear, the stratification must be as good as possible, it can be filled in quickly, easily and automatically so that it can be analyzed immediately.

Problem	A	B	C
Day 1	IIIII	II	IIII
Day 2	IIII	III	IIII

Check sheet: a method of recording data

In this study, checksheets were made based on direct observation and interviews with business owners and making check sheets. The checksheet is a sheet used to collect sample data in

the form of production quantities, number of defects, and types of defects from previous company records. In this problem, the checksheet is used to record product defect data at MSME Mysari Buah Pala.

Fishbone Diagram

Fishbone diagram is a diagram that shows the cause-and-effect relationship used to identify the cause of a problem that can then be taken corrective action (Oktaviana & Auliandri, 2023). The analysis is carried out based on several factors that affect the occurrence of failures or obstacles such as Methods, Man, Materials and Environment. Furthermore, through these factors, brainstorming techniques are used for the cause analysis process which can later be sought for solutions from all personnel involved.
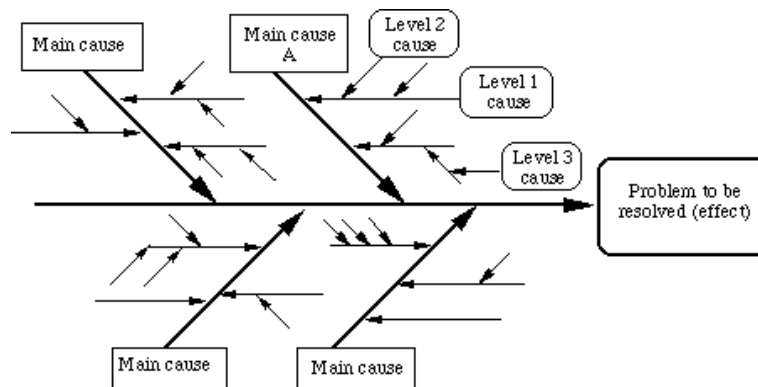

Figure 2. Cause and effect diagram (Fishbone)

RESULTS AND DISCUSSIOON

Check Sheet

Quality control using statistical methods by creating a table that aims to see the number of defective products or those that do not meet the company's operational standards. From the data collection and analysis that has been done, the following is a table of the causes of defects in Mysari nutmegs

Table 1. Checksheet (Number of harvest defects in Nutmeg Mysari)

NO	Month	Harvest Quantity	Reject (Kg)	Realese (Kg)
1.	January	334 Kg	40.8 Kg	293.2 Kg
2.	February	357 Kg	39.27 Kg	317.73 Kg
3.	March	587 Kg	58.7 Kg	528.3 Kg
4.	April	422 Kg	20 Kg	402 Kg
5.	May	377 Kg	41.47 Kg	335.53 Kg
6.	June	413 Kg	41.3 Kg	371.7 Kg

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7.	July	310 Kg	40.3 Kg	269.7 Kg
8.	August	381 Kg	38.1 Kg	342.9 Kg
9.	September	354 Kg	38.94 Kg	315.06 Kg
10.	October	389 Kg	38.9 Kg	350.1 Kg
11.	November	367 Kg	40.37 Kg	326.63 Kg
12.	December	611 Kg	79.43 Kg	531.57 Kg

Cause and Effect Diagram

Cause and effect diagrams or called fishbone diagrams are used in analyzing what factors cause damage to the product. As for some of the causes of product damage or rejects, as follows:

1. Leaf Curl

Aphids attack which causes the leaves to curl and can cause stunted plant growth. Pests in leaf curling tend to suck leaf fluid which causes the leaves to shrink and curl which can be seen from the size of the leaves becoming smaller than normal size and there is a change in leaf color to yellow.

2. Black Spot

Fungal species of the genus alternaria are the main cause of black patches on nutmeg that can be spread by wind, rainwater, insects and contaminated farm tools. It can be seen by the appearance of small brown to black spots on the surface of the fruit that will later cause rotting of the nutmeg core.
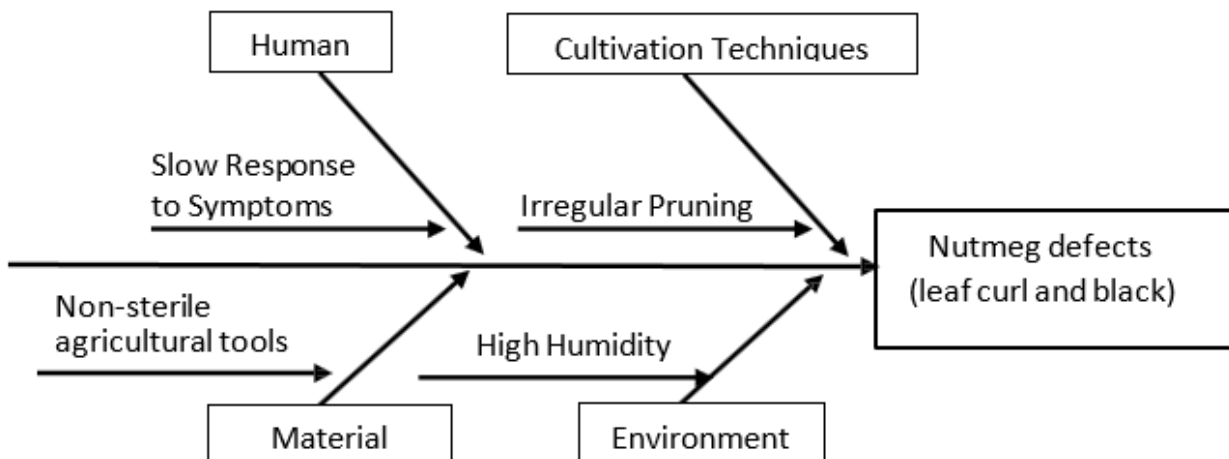
CONCLUSIONS

The results of research and analysis on the production process of MSME Mysari Nutmeg can be concluded based on data from the Check Sheet method and Fishbone Diagram analysis. Based on data recording using the Check Sheet during the period January to December 2024, the total harvest reached 4,902 kg, with the number of defective products (rejects) amounting to 518.58 kg. The highest number of defects occurred in December at 79.43 kg from a total harvest of 611 kg, while the lowest number of defects occurred in April at 20 kg from a total harvest of 422 kg. Based on the

analysis using the Fishbone Diagram, it is known that the main causes of product damage are leaf curl and black spot. Both problems are caused by several factors, namely environmental conditions influenced by high humidity, cultivation techniques with irregular pruning, human factors due to slow response to symptoms and post-harvest materials that are not yet optimal. Therefore, continuous improvement is needed at critical points in the production process to reduce defect rates and maintain consistent product quality.

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