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Implementation of Kertowono Tea Production Process Control in Efforts to Create Production Targets PT. Perkebunan Nusantara (PTPN) XII in Lumajang

Emmy Ermawati

Departement of Management, Institut Teknologi dan Bisnis Widya Gama Lumajang

Corresponding Author: emmy.ermawati01@gmail.com

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ABSTRACT

The purpose of this study was to determine the implementation of the production process and planning process in an effort to achieve production targets at PT Perkebunan Nusantara (PTPN) XII in Lumajang. This type of research is descriptive research with a qualitative approach where the data were obtained from a PT Perkebunan Nusantara (PTPN) XII in Gucialit sub-district, Lumajang district. In this study, data were obtained using interview and documentation methods for PT Perkebunan Nusantara (PTPN) XII employees in Lumajang. The data used are primary and secondary data. The results of this study state that PT Perkebunan Nusantara (PTPN) XII in Gucialit Lumajang has implemented a production process starting from input, transformation, output and feedback. In the planning process for Kertowono tea production to achieve the production target, it is carried out by minimizing the number of defective products, this happens due to irregularities in the production process that are not maximal, even though the production target every year has not been achieved or fulfilled, the company is still trying to achieve the target. production with market demand which continues to increase every year.

Keywords: Control, Production Process, Production Target, Kertowono Tea

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INTRODUCTION

Tea is a drink that is very popular with the people of Indonesia. According to surveys from various research institutions, between 2000 and 2004, it was shown that the penetration rate for tea reached more than 95% (Anjarsari, 2016). This means that almost every member of society has or has consumed tea drinks. Tea is one of the plantation commodities that plays an important role for the Indonesian economy, especially in Gucialit Lumajang Village, namely as a district and state foreign exchange earner, as a provider of employment, maintaining environmental conservation, a source of raw materials for the food and beverage industry and a source of income for farmers. Indonesia in

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2017 is the seventh best producing country in the world after Vietnam and Turkey. This is one of the supporting factors in Indonesia that there are various aromas of tea throughout Indonesia. Indonesian tea is a premium class tea that has a high aroma taste.

One of the companies engaged in the tea processing industry in Indonesia is PT. Nusantara Plantation XII (Persero) Ketowono Gucialit Lumajang. This company, which is part of the State-Owned Enterprises (BUMN), produces an average of 8 tons of raw tea leaves to produce 1,800 kg of tea products every day. PT. Perkebunan Nusantara XII (Persero) Ketowono Lumajang Garden also has 150 human resources employees. Kertowono tea is a tea product that has a high selling price and is of very high quality. It's no wonder that tea from Indonesia was once the seventh best producing country. Within a time, a Kertowono tea garden can produce up to 50 tons of tea. This means that Kertowono tea is not only consumed by local people, but that high-quality products are also exported to various countries such as China, the Netherlands, France, England, and Saudi Arabia. There are quite a lot of requests for Kertowono Tea in one month, which this product has reached abroad (Afrianti, 2013). The large number of existing tea producers causes competition in the tea business to become increasingly stringent and encourages each producer tea to be more productive in order to be able to produce tea products of the highest quality and competitive prices. Therefore, the role of the production sector is important in the company because it relates to the company's ability to produce products that will determine competitiveness and to maintain the company's survival.

The production process is carried out starting from the input in the form of production factors or resources which will be transformed into output in the form of goods or services using certain methods or approaches. In the implementation of the production process, the company will try to maintain and ensure that the production process runs smoothly, and production results are obtained as planned both in terms of quantity and quality. within the company. The good and bad of a company's production system will affect the implementation of the production process, but a good production system does not guarantee that it can produce a good production process if it is not followed by proper control of the production process. The implementation of production process control is intended to monitor and ensure the production process runs smoothly in accordance with the plans implemented by the company and to take corrective action if deviations occur so as not to interfere with the achievement of production targets. Thus, control of the production process is very important in the implementation of the production process. In production activities, there is a production standard or Production Operational Standard (SOP) that serves as a guideline for employees in carrying out their duties or obligations in production activities. SOP is one of the control tools in the company. SOP helps companies achieve a level of uniformity in terms of the work being done so that production results can be obtained according to a predetermined plan.

Operations management is a series of activities that generate value in the form of goods and services by transforming inputs into outputs. So from that, why on average large companies around the world apply a lot of MO (operational management) techniques due to awareness of the importance of attention in the production process to increase production value and get profits (Ermawati, Manurung, Samsuranto, Ramadhan, & Wirawan , 2022). Operational is a complete set of instructions about what to observe (observation) and how to also measure a variable or concept of the operational definition and can help us to classify the phenomena around into special categories of a variable. (Hermawan, Ismail, & Ichwanudin, 2021) defines operational as an explanation of how we can measure variables. These measurements can be made with numbers or certain attributes. Operational management is carried out as a whole for elements such as labor, machinery, raw materials, equipment, and products that make commodities that will later be sold to consumers.

PT. Perkebunan Nusantara XII (Persero) Kertowono Lumajang Tea Plantation as a company that prioritizes its production for export, it certainly requires the implementation of production process control. In addition to the tea production process, there is a continuous process which consists of many stages and each stage determines the quality and output of the product, with a total of 150

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employees. Employee performance that is not optimal at Perkebunan Nusantara XII (Persero) Kertowono Lumajang Plantation will affect the company's performance, especially employees in the production department. Control of the production process by the company is carried out at every stage of production on an ongoing basis, starting from factors or production resources, production processes, production results, and evaluating production performance related to problems that occur in the company, namely not achieving production targets. From the background stated above, the researcher wanted to research related to the implementation of controlling the production process of the kertowono in an effort to create production targets at PT Perkebunan Nusantara (PTPN) XII Lumajang (Aisyah, 2017).

METHODS

In this study, researchers used qualitative research methods. The research method uses qualitative methods and a descriptive approach. Qualitative methods are often called naturalistic research methods because the research is carried out in natural conditions (natural setting). (Sugiyono, 2012) The qualitative method is defined as a social science research method that collects and analyzes data in the form of human words and actions and researchers do not try to calculate or quantify the qualitative data that has been obtained and thus do not analyze numbers (Munir, 2019). According to (Kristanto, 2011), qualitative descriptive research is aimed at describing and describing existing phenomena, both natural and human-made, which pay more attention to characteristics, quality, interrelationships between activities. In addition, descriptive research does not provide treatment, manipulation or changes to the variables studied, but instead describes a condition as it is. The only treatment given was the research itself, which was carried out through observation, interviews and documentation.

The object of research is something that is of concern in a study, the object of this research is the target of research to get answers or solutions to the problems that occur. The object of this research is the Kertowono Tea Plantation which is located at Gucialit Village, Gucialit District, Lumajang Regency. The primary data source in question is data from all parties where accurate, complete and in-depth data is expected. Starting from informants who can represent all the research objects in question. In addition to primary data, secondary data is also needed in the form of written documents sourced from articles, literature studies, work programs, documents and photographs, service handling documents. Then public policies in the form of regulations, publications by PT. Perkebunan Nusantara (PTPN) regarding the implementation of controlling the Kertowono tea production process in an effort to achieve production targets in the mass media and so on Data collection techniques to obtain the data needed in this study, the researchers used methods: interviews, documentation, and observation. At this stage, data is collected regarding information on the implementation of production process control which will be used as the object of research to determine efforts to achieve production targets which is then followed by searching for data on how to implement control of the Kertowono Tea production process in an effort to achieve production targets at PTs by adjusting government regulations and laws and regulations applicable. Operational Management is a series of activities that generate value in the form of goods and services by converting inputs into outputs. Furthermore, it is also necessary to see the definition of operational management as a type of management science from the functional management of the company according to the views of operational management experts (Heizer & Render, 2008). Operational Management (Operations Management) according to Chase and Aquilano, Chase, Aquilano, and Jacobs, Russell and Taylor, Adam and Ebert is basically a number of activities related to design, transformation activities (operations), and improvement of systems that function to create and deliver output produced by the company, both goods and services. Identification of Design of Brown Sugar Supply Chain Management Network in Lumajang City (Ermawati, Atoillah, Anggraeni, & Istichomah, 2022).

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RESULTS AND DISCUSSION

The Kertowono Gardens were opened in 1875 by the plantation company N.V. TICDEMAN VAN KER CHEN (TVK) with quinine plants at the beginning of its opening. In 1910 the garden began to be planted with tea and its nursery as an effort to diversify the plantation commodity business. In 1942 - 1945 some of the tea and quinine plants were dismantled to be planted with food crops and after the Japanese left Indonesia the tea plants were expanded by replacing most of the quinine plants. In 1959 – 1960, Kebun Kertowono joined PPN V. Then in 1961 PPN IV joined PPN Assorted Plants XII / PPN Antan XII and in 1972 became the State Plantation Company (PNP XXIII) which was a merger of PPN ANTAN (AnekaPlants). XII and VAT rubber X. The Kertowono plantation black tea factory was built around 1914 for the processing of orthodox black tea and since 1996 until now it is a black tea factory. Kertowono processes CTC black tea with the consideration that the selling price of CTC black tea is higher than the selling price of orthodox black tea. The company, which is part of the State-Owned Enterprises (BUMN), produces an average of 8 tons of raw tea leaves to produce 1,800 kg of tea every day.

PT. Plantation XII (Persero) the Kertowono garden located in Gucialit Village, Gucialit District, Lumajang Regency, East Java is divided into two gardens, namely: the Kertowono Section Garden as the Main Garden and the Class Garden as a division garden. The number of permanent workers in the production department is 7 people and 42 workers 43 workers consisting of casual daily workers. There are 7 permanent employees in the production department, consisting of shoot reception foreman, withering foreman, drying foreman, sorting foreman and packaging foreman. According to (Setiawan, 2021) the workforce can be said to be efficient if the results (output) produced are high with the use of working time that is right according to what is set, as well as a decrease in efficiency will reduce the output obtained. Before plunging into conducting this research object, the initial problems with the research object that the researchers found were only sourced from the implementation of controlling the Kertowono tea production process in an effort to achieve production targets.

Below is the organizational structure and main functions of all employees of PT Nusantara (PTPN) XII Gucialit Lumajang. Organizational Structure of Kertowono Factory Kertowono Plantation PT. Nusantara Plantation XII (Persero).

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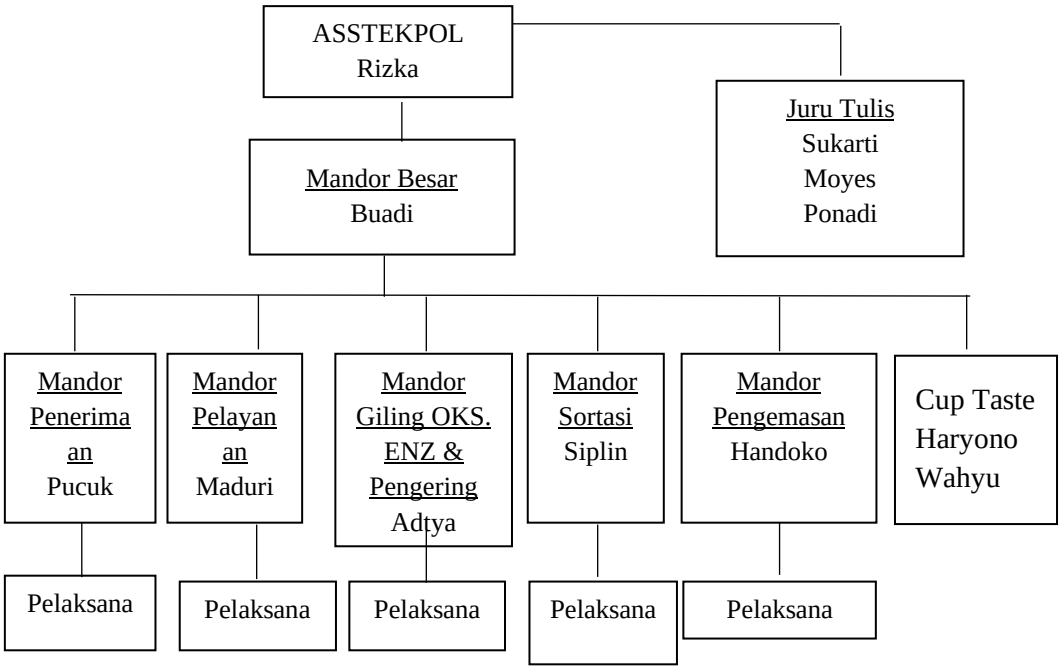
STRUKTURE ORGANISASI DI PT PERKEBUNAN NUSANTARA (PTPN) XII



The results of the general discussion on the implementation of production process control carried out by PT. Perkebunan Nusantara (PTPN) XII in Lumajang in the Kertowono Tea production process starting from input, transformation, output, and feedback. These control activities include:

Table of PTPN XII Gucialit Lumajang Tea Production Process Activities

PROCESS ACTIVITY DESCRIPTION	DESCRIPTION
1 Planting	SCHEDULED
2 Plant Care	
3 Chemical weed control	
4 Shoot type analysis	
5 Mechanical tea picking	
6 Spraying on the leaves	
7 Manual tea picking	
9 Tea tree pruning	
11 Fertilization through the soil	
13 Manual weeding	
14 Seduction	
17 Nurseries	
18 Care, fertilization through the soil	
19 Pruning secondary tree trunks	
22 Introduction of processing machine	
25 Acceptance of tea shoots	
27 Withering of tea leaves	
29 Enzymatic grinding and oxidation	
32 Drying	
34 Dry sorting	
37 Sensory test	
39 Packaging	

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41 Processing

Source: Data processed by researchers in 2023

In general, the production process of the Orthodox system goes through several stages of the same process, namely:

Picking fresh leaves (Yunitasari, 2010), picking is harvesting tea plant shoots that meet the processing requirements. Picking also functions as an effort to shape the condition of the plant so that it can produce high yields on an ongoing basis. To avoid mistakes in picking, it is also necessary to know the types of picking and the types of quotes.

1) Picking a jendang Picking a jendang is a picking that is carried out at an early stage after the plants are pruned to form a wide and even picking area with sufficient thickness of the leaf layer, so that the plants have a high production potential. Usually, picking jendang is done 6-10 times, then proceed with picking production. 2) Production picking Production picking is carried out continuously with certain picking cycles and certain types of picking until the plants are pruned again. The production picking that is done before the plants are pruned is called "picking gandesan" which is picking all the shoots that meet the requirements for processing without paying attention to the leaves that are left behind. Type of picking What is meant by the type of picking is the type of shoot resulting from the implementation of picking. According to (Primanita, 2010), picking analysis and shoot analysis are very useful for controlling picking success and are used for sorting shoots. There are many variations for analyzing pickings and picking shoots, depending on the needs and control points being carried out. Even though picking analysis is carried out, it would be better if picking control was also carried out in the field. Usually on large plantations, this picking analysis is used as the basis for payment of wages. This is so that pickers do not carelessly carry out their duties.
2) Withering The purpose of the withering process is to make the tea leaves more flexible and easy to roll and make it easier for cell fluids to escape from the tissue when they are rolled. The degree of wilt of tea shoots is ± 44-46%. Withering time ranges from 12-18 hours. The temperature used should not exceed 27 0 C, because it can cause incomplete wilting of shoots (dry wilting), which can cause loss of caffeine and polyphenols. Air humidity (RH) in the withering process is 76% (Ayuningtyastuty, 2009). According to (Pangesti, 2015), the withering process is known for two main changes, namely physical and chemical changes. The physical changes that occur are the weakening of the leaves due to decreased water content. This limp state of the leaves provides a condition for easy rolling of the leaves. In addition, reducing water in the leaves will concentrate the ingredients contained to the right conditions for the oxidation process to occur at the next processing stage. Chemical changes that occur during withering include: a. Increase in enzyme activity b. The breakdown of protein into free amino acids such as: alanine, leucin, isoleucin, valine and others. c. Increase in caffeine content. d. Increase in soluble carbohydrates e. The formation of organic acids from the elements C, H, and O. Chemical changes during withering that appear to occur are the appearance of an unpleasant odor, the smell of fruit and the smell of flowers.
3) Rolling When withering is considered sufficient, the tea leaves are ready to be rolled. The rolling process involves twisting the leaves, cutting them and squeezing the cell juices out. Repeated rolling can result in changes to the physical properties of the tea leaves. The rolling process is without pressure, causing the tea leaves to only be directed at daubing and twisting. Conversely, if rolling with pressure creates a tendency for the tea leaves to tear and cut (Anggreiny, 2010). According to (Haqiqi, MT, & MMT, 2017), rolling tea leaves aims to break the fresh leaf cells so that the cell fluids can be released so that a reaction occurs between the cell fluids and oxygen in the air. This event is known as enzymatic oxidation (fermentation). Breaking the leaves needs to be done intensively so that the fermentation can run well. Enzymatic Oxidation The process of enzymatic oxidation has started during the rolling process, when the leaf walls break, the cell fluids come out and contact with air (Eden, 1965). In this process, the tea leaves undergo physical and chemical changes which greatly determine the quality of the tea to be produced. The green

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color of the leaves turns dark brown as a result of chemical changes (Putri, Yusasrini, & Nocianitri, 2021). According to (Ika, 2020), during the enzymatic oxidation process, oxidation of cell fluids, namely catechins and their derivatives, occurs with the help of oxygen and enzymes that function as catalysts. Enzymatic oxidation converts catechins and their derivatives into tea-flavin and then into tea-rubigin. The longer it takes, the more tea-flavin condenses into tea-rubigin so that the cell liquid is darker in color.

4) Drying Drying is intended to stop the enzymatic oxidation process when the quality supporting substances reach optimal conditions (Arifin, 1994). Because if the enzymatic oxidation stage is not stopped it will continue. This will result in the properties of the leaves and their quality decreasing (Sari, Affandi, & Prabawa, 2020). The ideal drying time for drying powdered tea until it reaches the desired water content, namely 3-4%, is 20-30 minutes with an inlet temperature of 90-98 0 C and an outlet temperature of 45-50 0 C (Sari et al., 2020). Sorting Tea that comes from drying is still heterogeneous or still mixed up, both in shape and size. In addition, tea still contains dust, leaf stalks and other impurities which will greatly affect the quality. tea later. For this reason, a sorting or separation process is needed which aims to obtain a uniform shape and size of tea so that it is suitable for marketing with guaranteed quality (Sari et al, 2020).
5) Packaging and Storage After sorting according to its quality, the tea is put into storage crates so that the quality of the tea remains at the desired condition before being packaged. Equipment for storing tea is usually in the form of a slanted casket made of stainless steel with a hole at the bottom. These tools are commonly called tea bins. The crate is then tightly closed, both the mouth and the bottom. This closure is to prevent air seepage into the crate (Sari et al, 2020).). After the volume of tea in the storage crates is large enough to be packaged and ready to be exported or traded, then this tea is channeled through the holes at the bottom of the crates and accommodated on a rotating moving plate to the packing area. To make packaging easier, they are usually assisted by tools called tea packers and tea bulkers. As for packaging, tools in the form of crates or packages are used which are adapted to the type of market. For the export market, wooden crates are usually used, the inside of which is lined with tin foil or aluminum. Meanwhile, for local or domestic markets, usually only in the form of packages made of layered paper (Sari et al, 2020).
6) Quality Control According to (Muawanah, 2016), quality is a combination of product attributes that are assessed organoleptically including color, texture, taste, and smell. This is used by consumers to choose a product in total. Classification of quality characteristics of food ingredients is divided into two groups, namely: a. Visible physical characteristics, including: texture, thickness and consistency. b. Hidden characteristics, including: nutritional value and microbiological safety According to (Muhandri & Kadarisman, 2012).

In order to maintain the quality of food products as expected by consumers and to be able to compete globally, companies must refer to a quality control system that is pursued with the following efforts:

1. Control of Raw Materials Procurement of raw materials, both complementary and industrial additives, must be properly planned and controlled. Important aspects that need to be considered, namely the requirements and purchase contracts, suppliers, agreements on quality assurance, agreements on methods of verification, resolution of quality disputes, planning and control, inspection and the last is regarding acceptance quality records.
2. Control of the Production Process Control of the production process is carried out continuously covering activities including, control of materials with the aim of controlling damage to raw materials, control and maintenance of equipment, special processes, namely production processes whose control activities are very important to quality products and the last is the control and changes in the production process.
3. Final Product Control The main objective of final product quality control is to find out whether the items produced meet the requirements according to the procedures set by the company. Quality control is an effort to achieve and maintain the planned shape, usability, and color standards.

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In other words, quality control is shown to ensure that the final product (service) conforms to predetermined specifications. The main objective of quality control is to find out to what extent the processes and results of products (services) are made according to the standards set by the company (Prawirosentono, 2002). One of the important steps in quality control and quality assurance is developing corrective actions. This step is carried out to identify the root causes of nonconformities that occur in a process. The fishbone diagram is a structured approach that allows one more detailed analysis in finding the causes of an existing non-conformance problem.

The process of quality control activities at various levels of quality-related activities include:

1. Supervision of the quality of materials in the warehouse including receipt, storage and dispensing.
2. Control of activities at various process levels, in accordance with SOP (Standard Operational Procedure).
3. Supervise the packing and delivery of products to consumers or customers. The quality of tea is a collection of properties possessed by tea, both physical and chemical. Both have been owned since the form of tea buds obtained as a result of the processing and handling techniques used. Therefore, the tea quality control process has been carried out since the tea is planted, picked, transported to the factory, during processing and after processing. Testing the quality of tea in the context of quality control and processing control can be carried out physically, chemically or sensory. Sanitation is the control of something that you want to protect against the possibility of damage or contamination.

In the process of tea processing, sanitation is very important to do to prevent damage or contamination of tea products (Nuruzzaman & Arifin, 2008). Sanitization of Raw Materials Sanitation of tea shoots has started from picking in the garden. Plucking of tea shoots should only be done at least 7 days after the last pest spraying. This is to avoid the possibility that there are still remnants of chemicals attached to the tea leaves. Then the tea shoots that are picked should also not be exposed to dirt when picked, such as falling to the ground for example. This is due to the processing of tea shoots which does not involve the washing process of the tea shoots to be processed (Arifin, 2008).

a. The sanitation of the tea shoots when they are in the factory is no less important. The tea shoots to be withered should not fall out of the whitering trough during the spreading process. Tea shoots should also not be exposed to chemicals such as oil, diesel or lubricating oil when transported by truck to avoid contamination of tea shoots (Arifin, 2008).
b. Sanitation of Machinery and Equipment Sanitation of equipment is carried out since the picking of tea shoots in the garden. Machine sanitation will be more common in factories. Machines that have just been used for processing or when they are going to be used for processing must be cleaned to remove contaminants that can stick to the raw materials and finished tea products (Arifin, 2008).
c. Processing Room Sanitation Sanitation of the processing room can be done by cleaning the room used for the production process periodically. The rooms are ventilated so that air circulation can run smoothly, the room must be cleaned of dust and other debris periodically every day. And specifically for the fermentation room, it is necessary to mop every day because in this room the production process takes place in a humid atmosphere so that if it is not mopped at the end of the production process it can result in the growth of fungi and bacteria in this fermentation room (Arifin, 2008).
d. Employee Sanitation Sanitation of employees who enter the factory is very important to do because humans are the biggest source of contaminants. Employees who enter the factory are required to wear masks and special clothes and hats, as well as shoes that have been provided. The use of masks is intended so that the raw materials and products produced are not contaminated by sources of contaminants from the mouths of employees when conversing. In addition, by using this mask the comfort of employees will also be guaranteed because the tea processing creates an odor that is quite piercing to the nose (Arifin, 2008).

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CONCLUSION

Analysis of the implementation of controlling the production process for Kertowono tea in an effort to create production targets at PT Perkebunan Nusantara (PTPN) XII in Lumajang. It can be concluded :

1. Implementation of production process control carried out by PT. Perkebunan Nusantara (PTPN) XII in the Lumajang gucialit, the production process starts from input, transformation, output and feedback. These control activities are based on the Standard Operation System that has been set.
2. In the process of planning the production of Kertowono tea in achieving production targets by implementing the number of defective products which is minimized when carrying out the production process really through the quality control stage to produce products whose quality is guaranteed. As well as for increased product volume, a joint commitment is needed to carry out a standardized production process so as to achieve production targets and be able to meet market demand which continues to increase every year.

Based on the results of the research that has been done, the authors try to provide suggestions as a complement to the research given as follows:

1. For raw materials from Kertowono Tea in companies whose yields, both in terms of quantity and quality, are unstable or stable every year, and there are several tea trees that are starting to wither and die. Constraints at the stage of transformation, namely in grinding. Irregularities in grinding result in defective products such as tea leaves that start to turn yellow due to wilting which results in death which in this case reduces the production process, making it difficult to achieve the company's production target.
2. PT Perkebunan Nusantara (PTPN) XII in Lumajang should continue to improve and develop production process control so that it can continue to strive to create production targets in accordance with Standard Operating Procedures (SOP).

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