

# The Assessment of Production System and Marketing of Siam Citrus in Jember Regency

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**Abstract.** Siam citrus is a potential horticultural commodity for export and has high economic value. This research was conducted in Umbulsari District, Jember Regency, one of the productions and marketing centres for Siam citrus in East Java Province. The research results on the production and marketing system for the Siam citrus commodity in Jember Regency show that economically the Siam citrus agribusiness provides direct economic benefits to local farmers and has a multiplier effect for a household. The marketing system has been running, involving many actors known as the perfect competition market. However, it is necessary to increase farmers' bargaining value by strengthening farmer institutions, capital institutions, and market and technology information systems. The SWOT analysis results show that the opportunity for the development of Siam citrus is still facing technical problems in cultivation and marketing institutions. However, Siam citrus cultivation is the strength component to meet domestic demand in the country.

## 1 Introduction

The agricultural sector is one of the sectors that is considered as the capability for producing high-quality production [1]. This is supported by [2], which states that the agricultural sector plays a role in spurring economic growth, reducing poverty, and increasing food security. With the increasing population, it is estimated that the demand for Siam citrus production will continue to increase so that the opportunities for developing this fruit cultivation will be more extensive and intensive. The phenomenon shows the high comparative value of citrus farming is a large number of paddy fields, sugar cane, that have turned into citrus plantations, thus requiring a policy of regional arrangement of agricultural commodity production centres [2, 3].

Siam citrus is a horticultural commodity that is quite profitable to be cultivated by Indonesian farmers today. This fruit crop can be harvested in the fourth year, with an average productive age in the field of up to 15 years [4, 5]. This crop is high economic value, which can be seen from the relatively good income of Siam citrus farmers compared to farmers of food crops or other agricultural commodities. Siam citrus fruit can be grown and cultivated by farmers in low to medium lands and can be consumed by all society levels [5]. Citrus farmers in Indonesia are still small farmers with the number of plants

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owned around 50-1000 trees or equivalent to 0.12 - 2.50 ha [1]. The destruction of citrus plantations in Indonesia is generally caused by management that has not yet referred to the Integrated Management of Healthy Citrus Plantation (PTKJS), resulting in attacks of deadly diseases including *diplodia*, *corticium*, *phytophthora*, *tristeza*, CVPD, and the presence of nutrient deficiency [6].

This study's initial step is to identify location-specific problems in the Siam citrus centre and development area, identify the availability of natural resources and its biophysical environment, identify and inventory the available cultivation and post-harvest technologies and study the supply chain system of Siam citrus agribusiness.

## **2 Methodology**

### **2.1 Method**

Analyse the production and marketing system of Siam citrus in Jember Regency was carried out from April to December 2016 and focused on Umbulsari District. The location selection was based on the consideration that the Umbulsari District has enormous citrus agribusiness potential and the citrus agribusiness development centre in Jember. Identification and inventory of players in production and marketing activities are carried out through surveys with the selection of respondents based on snowball sampling techniques and open interviews, especially with those directly involved in production and product marketing activities and taking into account market information from surrounding farmers.

### **2.2 Data Collection**

Primary data collected included identifying farmers and their production systems, marketing actors of citrus, distribution of functions, products flow, and money. The implementation of this research involved the full participation of farmers, traders, and extension workers.

### **2.3 Data Analysis**

Data and information analysis were carried out to obtain the Siam citrus farming system's description, particularly in the study location's production and marketing system. The SWOT analysis method was used to understand the aspects of strengths, weaknesses, opportunities, and threats in the research location in carrying out Siam citrus agribusiness.

## **3 Results and Discussion**

### **3.1 Characteristics of the Siam Citrus Farming System**

Most of the citrus commodities in this sub-district are cultivated in paddy fields to increase the effectiveness of land used. Siam citrus crops are intercropped with rice in the rainy season or soybean in the dry season until the citrus plant is three years old. Thus, farmers will get additional income while the citrus plants are not yet producing. Study results show that the main obstacle to Siam citrus' development at the research location is the low quality of the seeds used. Cultivation technology is still simple. Therefore, the average productivity and quality are still low on average  $\pm 60$  kg/tree, with production variations ranging from

30 kg/tree to 150 kg/tree (at the time of plants aged 4 - 9 years). The slow rate of farmer adoption of innovative technology is caused by the slow dissemination and transfer of recommended technology and the fragility of the farmer's institution itself. As a result, the production process is less than optimal, fragmented, and uncoordinated resulting in citrus fruit produced from various production centres and low quality [7].

There has been a sharp fluctuation in the planting and production of citrus in Jember Regency in the last ten years due to plant replacement/ rejuvenation or due to attacks from endemic pests in the production area. Observations in the field found the attack of several diseases in plants such as *diplodia*, *thrips*, and *phytophthora sp.* In addition, farmers fertilize with a shallow dose compared to the standard dose required for citrus plants. Most plants appear to experience water stress during the dry season because irrigation water, especially in August-November, is not available. Also, harvesting systems that damage the plants physically disrupt plant growth and short life span of plants.

### 3.2 Market Characteristics

Most of the Siam citrus produced from production centres are traded and consumed in fresh form. More than half of the citrus production is sold to the retailer. This is because they do not need to maintain until the harvest; they do not want to take marketing risks and get money quickly. Whereas if the marketing is carried out based on the weight of the fruit, the selling price obtained will be adjusted to the grade of the fruit, in which at the time of the research, the average price at the farmer level for grade AB is IDR 7,500 / kg, and grade C IDR 5,700 / kg. Low-quality fruit does not have competitive power for the urban and middle-class segments and foreign consumers [8]. Below is the price information on the farmer level.

**Table 1.** Price information and Siam citrus quality at the farmer level

Grade	The Number of Siam citrus per kg	Price (IDR)
AB	5 – 10	7,500
C	10 – 13	5,700
D	13 – 16	2,000
E	>16	1,000

Source: Primary Data (2016)

The harvest period for citrus fruits in this area starts from February to September, with the peak occurring between May to July. During the primary harvest season around May-July, many traders outside the region come directly with trucks, or collectors send orders from traders outside their particular areas from Yogyakarta City (Giwangan and Gamping Market) and Jakarta (Kramatjati Main Market). The delivery of citrus from Jember during the main harvest can reach more than 150 trucks per day with an average weight of 6 tons of citrus per truck. Meanwhile, outside the season, at least two trucks per day are sent out from this area.

The main objective of marketing for this production area is the local market of Jember, other districts in East Java such as Situbondo, Probolinggo, Lumajang, Malang, Surabaya, etc. The main markets located in Yogyakarta, Jakarta, Bandung, and Bali are the primary destinations outside the province. Because there are many marketing channels choices, and consumer demand remains high, even during the peak harvest months, the price of Siam citrus at the farmer level does not fall too much. Another factor that significantly affects the price is that more than half of the farmers in this location have pawned their citrus through the middleman system to local traders or traders outside the region through their trusted people in the field. Hence they are not too affected by external market conditions. The middleman system is a term of money transaction of pre-payment for crops, of money

lending with very high rates, and of pawning. Moreover, Siam citrus is often harvested by collectors who harvest the fruit of all sizes with various levels of fruit maturity without using pruning shears, rotating and pulling the fruit by hand. This condition worsens if the farmer sells the fruit using the bonded system, where the picking of fruit is determined by the middleman [9].

From the institutional point of view, Siam citrus does not have good quality; thus, marketing citrus do not have a strong bargaining position. They are still controlled by local traders and traders outside the region. Local traders also do not know the information on the regional citrus market. Therefore, the price information only came from the retailer market (especially in Giwangan Yogyakarta and Kramat Jati Jakarta Main Market).

### **3.3 SWOT Analysis of Production and Marketing Systems**

#### **3.3.1 Strengths**

Siam citrus commodity market potential is enormous. Demand is from local and regional, and if good quality can be achieved, the export potential is wide open. Apart from that, the price of citrus is always in a favourable position. The economic conditions of Siam citrus farmers are much better than other food crop farmers in general.

In addition, the market network has already developed and is formed with each player taking a reasonable profit margin. So, it is not too detrimental to farmers. Siam citrus has penetrated areas outside the province and big cities such as Jakarta, Bandung, Denpasar, etc. Day by day, Jember Siam citrus' image is also getting better because the taste is sweeter than the Siamese citrus from other production areas.

#### **3.3.2 Weaknesses**

By handing over the management of citrus a few months before harvest to outside traders or local intermediaries, the slash system results in low quality. What often happens is, traders will exploit crops and harvest incorrectly. So that frequent stress and crop damage will often be obtained after the harvest is over. This results in the quality and quantity of fruit in the following season will significantly decrease and cause the plant life to be short. Another thing that becomes a weakness of the Siamese citrus marketing chain process in the production area is that the price taker is outside the production area. When it comes to production areas, traders from other districts bring large capital and pressure farmers to release their commodities immediately at the price they set. Traders from Jember can only accept prices that have been determined by traders outside the area. If this continues to happen, it is possible that the profit margin received by Jember traders will be smaller in the future, so they will also reduce the purchase price from farmers. Therefore, in the end, the losers are the citrus farmers [10].

#### **3.3.3 Opportunities**

Increasing the efficiency of agribusiness in production centres can be improved by improving the marketing chain management and the soft system methodology. There is a need for a local marketing centre or Agribusiness Sub Terminal (STA) specifically for citrus commodities at production sites. This can make the production area a central place for exchanging price information, aggregate information on the quantity of supply demanded by outside consumers, and a variety of per-transaction information.

On the positive side, agro-clinics can be found in production sites independently established by local citrus farmer groups. The agro-clinic is expected to become a

technology information node and an institution for providing information services for dredging, capital, and product marketing. The citrus farmer groups themselves manage this institution.

### **3.3.4 Threats**

In general, citrus farming in this production centre is determined by rainfall, especially in terms of flowering, so it is still very dependent on the local climate. Some farmers whose land is irrigated can regulate the citrus' flowering and fruiting time in minimal numbers. However, some lands do not have the right irrigation channel.

Farmers still cultivate citrus traditionally. Moreover, undesirable things, such as simultaneous attack by pests and malignant diseases or the low quality of citrus produced, can occur. In this location, the citrus orchard is a small scale that combines gardens with an area of less than 1 hectare and forms a production bag, and each production bag aggregates to form a production centre area.

## **4 Conclusions and Recommendations**

The commodity that was studied was the Siam citrus from the Jember area, which has enormous potential and has been proven to provide economic benefits to farmers directly and provide a multiplier effect to the surrounding community. The potential that exists today can still be developed to bring more significant economic benefits. The marketing system has been running, involving many players in it, or is known as the perfect competition market. However, it is necessary to increase farmers' bargaining value by strengthening farmer institutions, capital institutions, and accurate and fast market and technology information systems.

There are still many problems in the cultivation aspect for citrus commodities at the siam citrus production centre in Jember. Empowerment of agro-clinics in production areas needs to be supported by extension workers, Agricultural Service Officers, and research institutions as disseminating citrus farming technology and information. Local governments need to activate marketing networking at the production site by building a commodity market, especially Siam citrus, seeing the existing economic potential. Besides providing a multiplier effect to the community around the market, it can also provide local revenue in market fees, procurement of market facilities, lodging, and others.

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