CORRELATION OF FLOWER TAXATION AND PRODUCTIVITY ROBUSTA COFFEE (COFFEA CANEPHORA) AGAINST RAINFALL

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Abstract - Robusta coffee (Coffeacanephora), is one of the important export commodities of the plantation. Indonesia is ranked 4th in the country that produces the largest coffee production in the world, which is 635,000 tons / year worth 8% of world coffee production with a composition of 72.84% is robusta coffee. Distribution of rainfall is more important than the amount of rain per year for flower primordia formation, floration, and pollination. The purpose of this study was to determine the relationship between: 1) rainfall and rainy days with the amount of coffee flowers, 2) rainfall and rainy days with the productivity of coffee fruit, and 3) the amount of interest with the productivity of coffee fruit. This research was conducted in 7 coffee gardens in the PTPN XII plantation area in East Java. This research was conducted using secondary data including: realization of coffee productivity, amount of coffee interest, and data on the amount of rainfall and rainy days from 7 robusta coffee plantations in the PTPN XII plantation area in East Java. The data used in this study are data from the last 10 years from 2005 to 2017. The results of the study show that the correlation between the number of flowers and the productivity of coffee fruit has a very significant correlation, with a p-value of 0,000

Keywords - Distribution, export commodities, floration, pollination. .

I. INTRODUCTION

Background

Robusta coffee (Coffea canephora), is one of the important export commodities of the plantation. Indonesia is ranked 4th in the country that produces the largest coffee producer in the world, which is 635,000 tons /year worth 8% of world coffee production with a composition of 72.84% is robusta coffee.

Indonesian coffee exports in 2018 amounted to 450,000 tons /year, valued at Rp. 1.68 trillion.Robusta coffee is more resistant to leaf rust, requires mild maintenance, has a stronger and bitter taste compared to arabica coffee, and its production is much higher than that of coffee.

Robusta coffee is planted at an altitude of 0-1000 m above sea level with an optimal height of 400-800 m above sea level. The average temperature between 21oC - 24oC, optimal rainfall for coffee plants between 2000 to 3000 mm per year. Robusta coffee is a cross-pollinator, requiring a dry period of approximately 3 months for cross-pollination.

Distribution of rainfall is more important than the amount of rain per year for flower primordia formation, flotation, and pollination. Rainfall stimulates the bloom of the bud as a candidate for Robusta coffee flower. grow into adult flowers after 7-8 days. If rain does not come, prospective flowers fail to bloom into mature flowers.

When the flowers bloom and are ready for pollination, they want dry weather and do not rain for more than 1 month. If it rains during pollination, pollen can clot and the flowers can be damaged until they fail to become cherry Robusta coffee dominates the high demand for Indonesian coffee so it needs to be investigated further to determine the relationship between rainfall and the number of rainy days with flowering and robusta coffee production.

Procedure for Paper Submission

Objective

This study aims to determine the relationship between:

1. rainfall and rainy days with the number of coffee flowers
2. rainfall and rainy days with the productivity of coffee cherry
3. the amount of interest with the productivity of coffee cherry

II. METHODOLOGY

This research was conducted in 7 coffee gardens in the PTPN XII plantation area in East Java

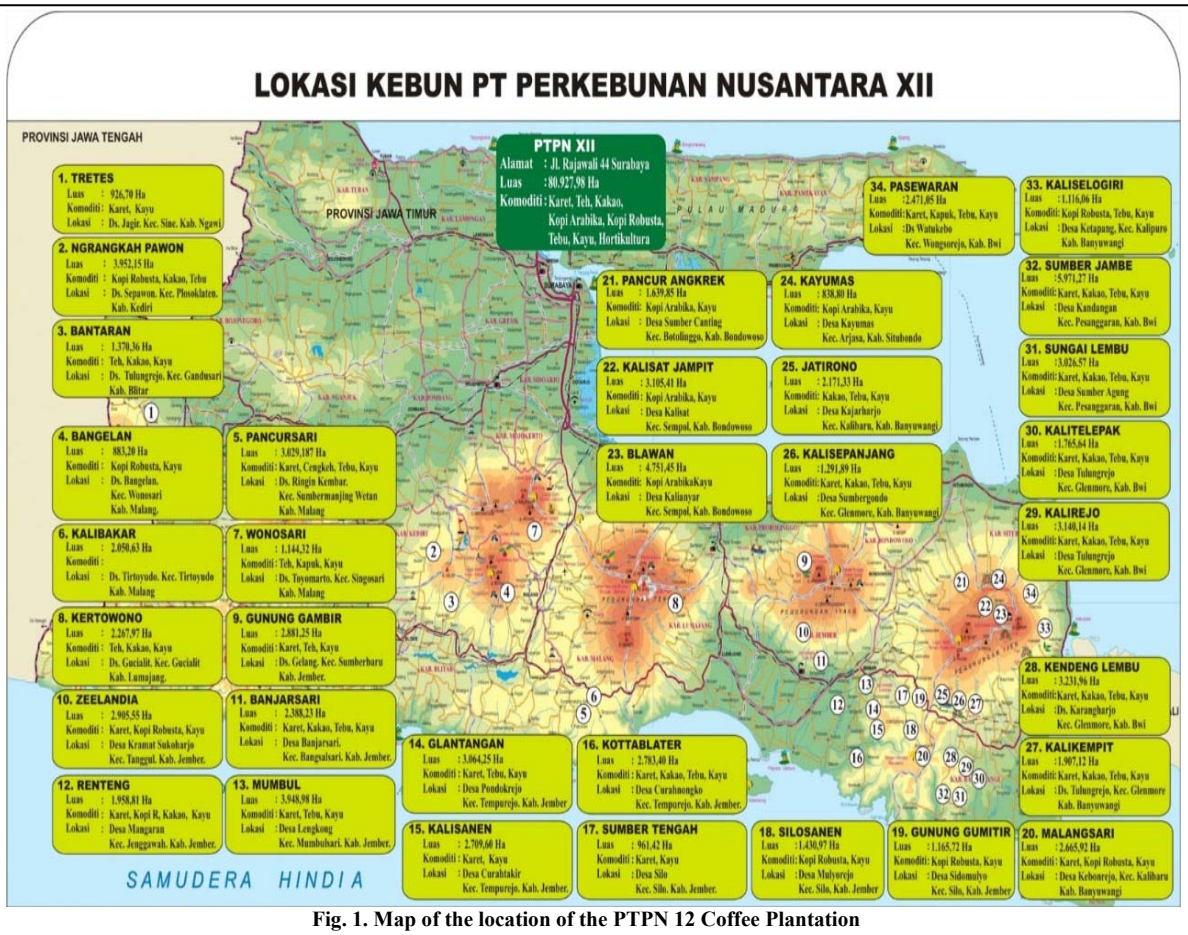


Fig. 1. Map of the location of the PTPN 12 Coffee Plantation

III. TOOLS AND MATERIAL

The tools and materials used in this study include : Laptops, stationery, Minitab programs, and data.

The data used in this study were: data on the realization of coffee productivity, data on the amount of coffee interest from taxation results, and rainfall and rainy day data in several coffee gardens, namely: Kaliselogiri, Gunung Gumitir, Malangsari, Silosanen, Renteng, Bangelan, and Ngrangkah pawon gardens.

IV. IMPLEMENTATION METHOD

This research was conducted using secondary data, namely data on several variables including: the realization of coffee productivity, amount of coffee interest, and data on the amount of rainfall and rainy days from 7 robusta coffee gardens in the PTPN XII plantation area in East Java.

The data used in this study are data of the last 10 years starting from 2005 until 2017. Other data are obtained from literature studies and reports on research results listed in the Bibliography. The data is collected and grouped based on coffee cherry and by year. Data processing is done by adding, dividing, percentage and calculating an average of 10 years based on the name of the garden and the year.

The results of data processing are presented in sytem histograms. Data processing is done by using data processing assistance in the form of the Pearson Correlation Bible. Based on the results of the "Pearson Correlation" correlation test explained variables that have a real relationship.

V. RESULTS AND DISCUSSION

The results showed that the highest productivity of Robusta coffee from 7 gardens in the last 10 years was 902.804 tons/ha produced by Malangsari gardens and 178,938 tons/ha was the lowest productivity, produced by GunungGumitir gardens. The highest rainfall occurs in Ngrangkahpawon gardens, on average 2816 mm / year and the lowest rainfall occurs in Silosanen and Renteng gardens, averaging 1789 mm. request color printing.
Do not use color unless it is necessary for the proper interpretation of your figures. There is an additional charge for color printing. The taxation results showed that the number of Malangsari garden flowers was highest, namely 1234,265 florets, while the Gumitir mountain garden produced coffee flowers of 322,773 florets. Complete data on results of estimated coffee interest,coffee cherry productivity, amount of rainfall, and rainy daysin the study locationare shown in Figure 2.

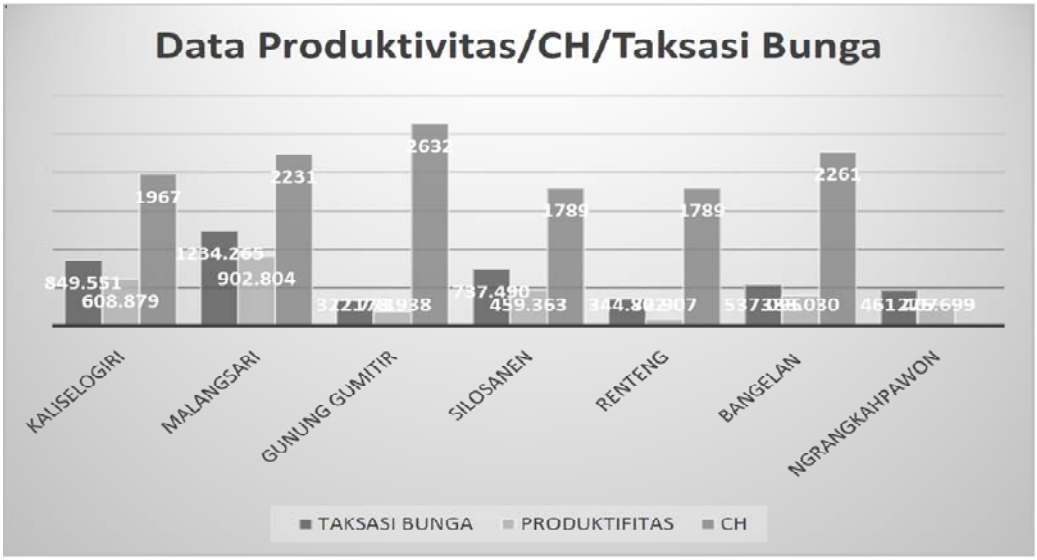


Fig. 2 Flower Relaxation and Productivity of Coffee Cherrys and Amount of Bulk and Rainy Days in PTPN 12 Coffee Plantation.

The results of statistical tests show that between the number of rainy days and the number of coffee flowers is negatively correlated, so is the correlation between the amount of rainfall and the amount of coffee interest. The correlation between the amount of rainfall and rainy days with the amount of coffee cherry productivity also shows a negative relationship.

This means that when the number of rainy days and rainfall is high, the amount of interest and productivity of coffee cherry is low, and vice versa. Robusta coffee is a cross-pollinator, requiring a dry period of approximately 3 months for cross-pollination. Distribution of rainfall is more important than the amount of rain per year for flower primordia formation, flotation, and pollination. Rainfall stimulates the bloom of the bud as a candidate for Robusta coffee flower.

Based on these exposures, the amount of coffee interest should be greater when the number of rainy days is higher Coffee flowers grow into adult flowers after 7-8 rainy days, when the rain doesn't come, prospective flowers fail to bloom into mature flowers. Conversely, when the flowers bloom and are ready for pollination, they want dry weather and do not rain for more than 1 month. If it rains during pollination, pollen can clot and the flowers can be damaged until they fail to become cherry.

Based on these exposures, it can be explained that when the flower formation becomes a coffee cherry, that is, when the pollination is high and the rainy day is Other Recommendations Use one space after periods and colons. Hyphenate complex modifiers: “zero-field-cooled magnetization.” Avoid dangling participles, such as, “Using (1), the potential was calculated.” [It is not clear who or what used (1).] Write high it will reduce the amount of coffee cherry. This explains that the correlation between the amount of rainfall and rainy days is negatively correlated with the productivity of coffee cherry. High rainfall can cause pollen to rot and not to have more stabilization, the pistil's head can become rotten due to high humidity. It is this pistil and pollen head damage that causes a flowering failure that causes crop failure.

The statistical test results show that there is a positive correlation between the number of coffee flowers and the productivity of coffee cherry. This correlation shows that high coffee interest will be followed by high coffee productivity.

This explanation is reinforced by the results of statistical tests between the amount of interest with the productivity of coffee cherry has a very significant correlation, with a p-value of 0,000. While the amount of bulk and rainy days with the amount of interest and productivity of coffee cherry did not show a significant relationship.

Correlation data that exists can be concluded that that has a very large influence on the productivity of cherry is the estimated interest, which has a level of closeness of 0.984 that is very close and positive or in the same direction that can be interpreted the greater the estimated value of interest in a coffee plantation then the productivity value of the cherry they have is gettingbigger. Whereas for the influence between the high productivity of robusta coffee with rainfall and rainy days there is a correlation value of -0.149 and -0.135 which means that the closeness that occurs or the relationship between productivity and rainfall and rainy days has negative or opposite values direction, as well as the correlation between the estimated interest and rainfall and rainy days which also have a negative value or opposite direction. This can be caused because indeed during the flowering process of Robusta coffee low rainfall is required where the dry season is needed or the weather does not rain for ± 1.5 month, so that flowering is not disturbed.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The most closely related relationship affects the productivity of robusta coffee based on data obtained from PTPN XII cherry in East Java, on the high number of robusta coffee flowers, while the relationship between Robusta coffee production and rainfall and rainy days does not show a close or no related relationship. significant, but despite the insignificant linkages but the linkage of robusta coffee production with rainfall and rainy days shows negative or opposite direction values, as well as the relationship between the number of flowers and rainfall and rainy days. This can be interpreted that if the interest rate is high, the coffee cherry production is also high, and if the rainfall and rainy days of coffee are high, it can reduce the yield of interest and robusta coffee production.

Recommendations

Further research to find out other factors besides rainfall and rainy days to the low and high number of flowers and productivity of robusta coffee, needs to be done so that if there is a decrease in the amount of interest and productivity of Robusta coffee, it can be addressed immediately based on these factors.

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