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ANALYSIS OF COMPETITIVENESS AND GOVERNMENT POLICIES ON INDONESIAN WHITE JASMINE (*Jasminum sambac*) FARMING

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ABSTRACT

Floriculture is a sub-sector of horticulture that has great potential as a business. One type of floriculture is white jasmine (*Jasminum sambac*) known as the flower of the nation (*Puspa Bangsa*). This plant is widely used by the Indonesian society for both traditional and religious ceremonies. In addition, it is also a commodity that potentially increases the volume of national exports. The central production of white jasmine flowers is Central Java Province, specifically in Depok Village, Kandeman District, Batang Regency. The planting area of jasmine flowers in Batang Regency has decreased. This is caused by the lack of young people to continue white jasmine farming, the land conversion of white jasmine flower to rice, or rented out to other utilities. These conditions indicate that white jasmine flower activity is no longer a top priority for farmers in Depok Village. Therefore, this study aims to analyze the competitiveness of white jasmine flowers. This is quantitative research. The sampling was determined by applying purposive sampling with those 30 farmers who are members of the Barokah Farmers Group Association. Data was collected through interviews using a questionnaire. Furthermore, the data were analyzed using the Policy Analysis Matrix. The results showed that white jasmine farming has both competitive advantage (PCR<1) and comparative advantage (DCR<1). The government has protected production inputs (NPCI<1), but has not protected output (NPCO<1).

Keywords: c*omparative advantage, competitive advantage, Depok Village, Jasminum sambac, white jasmine flower*

BACKGROUND

Jasmine flower is one type of ornamental plant that grows well in Indonesia. This plant has been cultivated on a small scale, namely as a plant to beautify the yard. Several regions in Indonesia have cultivated jasmine as a plantation crop for sale. Rahayu & Adji (2005) said that essential oils from jasmine flowers can be applied to various industries, including the cosmetic industry, the food and beverage industry, the aromatherapy and spa industry, the soap and shampoo manufacturing industry, as well as the air freshener manufacturing industry, and many other kinds (Sabharwal, 2013 and Sengar et al., 2015).In addition to the needs of industrial raw materials, jasmine flowers are also used as equipment for various cultural and religious events by the people of Indonesia (Mutaqin, 2018).

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Tarigan (2018), says that the types of jasmine plants that are commonly found in Indonesia are white jasmine (*Jasminum sambac*) and gambir jasmine (*Jasminum officinale*). White jasmine flower production centers in Indonesia are spread over the islands of Sumatra, Java and Kalimantan as shown in the table 1.

Table 1. Regions of Jasmine Flower Production Centers in Indonesia (2015-2020)

Province	Year						Average
	2015	2016	2017	2018	2019	2020	
Central Java	27,790,759	27,521,237	20,600,849	28,102,176	21,782,288	23,619,301	24,902,768
East Java	2,674,237	2,722,576	2,598,940	3,316,371	3,062,098	2,254,169	2,771,399
South Kalimantan	407,850	502,091	788,471	971,000	756,160	1,165,761	765,222
North Sumatra	398,737	231,007	41,911	14,598	2,386	3,722	115,393
DKI Jakarta	33,118	27,270	309,794	44,272	34,840	17,298	77,765

Source: BPS, 2020

The average national production of jasmine flowers in the 2015-2020 period according to BPS (2020) is 28,843,449.17 kg/year. Meanwhile, in Table 1, information is obtained that the highest production of jasmine flowers is in the Province of Central Java, namely 24,902,768 kg/year. This shows that domestic production of jasmine flowers is a contribution from Central Java Province of 86.34%. According to Central Java BPS data (2020) that the white jasmine flower production center area in 2019 -2020 is Batang Regency with an average production of 15,413,358 kg/year followed by Pemalang Regency, Tegal Regency, Pekalongan Regency and Pekalongan City. This information is presented in the table 2.

Table 2. Central Java Province Jasmine Flower Production Centers (2019-2020)

Regency/City	Production		Average (kg/yr)
	2019	2020	
Stem	14,341,789	16,484,927	15,413,358
Malang	2,176,724	4,024,860	3,100,792
Tegal	3,142,270	2,452,674	2,797,472
Pekalongan	2,020,290	431,321	1,225,806
Pekalongan city	63,000	12,000	37,500

Source: BPS, 2020b

The information obtained from white jasmine flower cultivators is that the farming activities of this commodity are less attractive to farmers, even though, according to Palupi et al., (2019) that white jasmine farming activities in Batang Regency are able to provide an average income of Rp. 3,330,909/0.51 ha/month, which is higher than the Batang District Minimum Wage (UMK) in 2021 of Rp. 2,132,535.02. The community has also recognized that the market situation is not supportive, such as very fluctuating prices, jasmine flower production not being fully absorbed by the market, and a lack of manpower because younger farmers choose to work as factory workers. Apart from that,

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some farmers also converted land that was originally planted with jasmine flowers into gardens for fruits such as guavas and mangoes. This phenomenon is a problem that needs to be addressed so that the production of white jasmine flowers in Indonesia does not decrease. According to Tarigan (2018), the country's white jasmine flower production is only able to meet approximately 22% of the world market's need for jasmine.

This is a sign that there is a need to analyze the competitiveness of white jasmine flowers and the impact of government policies on farming activities so that they can survive, meaning they will not be replaced by imported jasmine flowers. The ability to maintain the competitiveness of white jasmine flower commodities will also contribute to the sustainability of farmers' income sources and ensure the welfare of farmers, especially white jasmine flower farmers.

RESEARCH METHODS

This research was conducted in Depok Village, Kandeman District, Batang Regency, Central Java Province in May 2021. This research is a quantitative research using a purposive sampling technique, namely farmers who are members of the Barokah combined farmer group (GAPOKTAN) who cultivate jasmine flowers and are able to understand the questions from the researcher. Based on these criteria, the chairman of GAPOKTAN determined as many as 27 farmers and became respondents for this study. Data was collected through interviews using a questionnaire. Furthermore, the data was analyzed using the Policy Analysis Matrix (PAM).

Research using PAM was first carried out by Monke & Pearson (1989) regarding the development of the agricultural sector which subsequently, was adopted by various studies from various countries to measure the competitiveness of agricultural commodities including Mohanty et al., (2003), Mamza et al., (2014), Elsedig et al., (2015), Saad et al., (2019), Soetriono et al., (2020), and Saputra et al., (2020). The process of implementing PAM follows the following stages, namely: 1) identifying private costs, 2) identify social costs, 3) calculating PCR (Private Cost Ratio) and DRCR (Domestic Resource Cost Ratio) to find out whether there is competitive and comparative advantage in white jasmine flower farming, 4) calculating financial and economic benefits, 5) calculate the NCPI (Nominal Protection Coefficient of Tradable Input) and NPCO (Nominal Protection on Output) values to determine the effect of government policies on input and output price protection for white jasmine flower farming. In detail, these stages are presented in the table 3.

Table 3. Policy Analysis Matrix (PAM)

	Income	**Farming Costs**		**Profit**
		Tradable Inputs	**Non-Tradable Inputs**	
Private Cost	A	B	C	D
Social Cost	E	F	G	H
Divergence	I	J	K	L

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Information:
A = Individual acceptance (production multiplied by market price),
B = Tradable input multiplied by the market price,
C = Domestic factor input multiplied by market price,
D = Private profits or individual income A-(B+C),
E = Social acceptance (production multiplied by social price),
F = tradable input multiplied by social price,
G = Domestic factor input multiplied by social prices,
H = Social profit or social income (E-(F+G),
I = Output transfers (AE),
J = Input transfer or tradable input transfer (BF),
K = Domestic transfer factor (CG),
L = Net policy transfer or net transfer (DH)
Source: Monke & Pearson (1989)

The policy analysis matrix is not limited to the provisions in Table 3. The following indicators are an extension of the policy analysis matrix referring to PAM.

Table 4. Indicators of PAM

Indicators	Formula
1. Output Nominal Protection Coefficient (NPCO)	A/E
2. Input Nominal Coefficient of Protection (NPCI)	B/F
3. Profitability Coefficient (PC)	D/H
4. Private Profit	A-(B+ C)
5. Social Advantage	E-(F+ G)
6. Effective Protection Coefficient (EPC)	(AB)/(EF)
7. PCR (Private Cost Ratio)	C/(AB)
8. DCR (Domestic Cost Ratio)	G/(EF)
9. SRP (Subsidy Ratio to Produce)	L/E

Source: Monke & Pearson, 1989

The description of the indicators used in this PAM is as follows:

Table 5. Indicators Criteria of PAM

Criteria	Meaning
NCO > 1	Farmers receive protection
NCO < 1	Farming does not receive protection
NPCI > 1	Use of actual domestic prices for tradable inputs > national prices.
NPCI < 1	Use of actual domestic prices for tradable inputs < national prices.
PC > 1	Government intervention makes farmers' profits > consumers
PC < 1	Government intervention makes farmers profit < consumers
EPC > 1	Government policy is protective
EPC < 1	Government policies are not protective
PCR	The smaller the value the more competitive (competitive)

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DCR	The smaller the value the more competitive (comparative)
SRP	Value positive, policy distortions can increase profits
SRP	Negative value, policy distortions can reduce profits.

Source: Santoso et al., 2020

The data and data sources used for PAM analysis in this study are summarized in the table 6.

Table 6. Data and Data Sources for PAM Analysis

No	Data	Unit	Data source	
			Private Cost	**Social Cost**
1	Jasmine production	kg/ha	Farmer	Farmer
2	Selling price of white jasmine	Rp/kg	Farmer	World Bank
3	The price of white jasmine seeds	Rp/bundle	Farmer	Farmer
4	Fertilizer	Rp/kg Rp/l	Farmer	Shopee+Freight+Insurance
5	Pesticide	Rp/l	Farmer	Shopee+Freight+Insurance
6	Labor wages	Rp/HOK	Farmer	Farmer
7	Rupiah exchange rate	Rp/US$	exchange rates.org.uk	exchange rates.org.uk

RESULT AND DISCUSSION

Production and Acceptance of White Jasmine Flower Farming at Research Sites

The productivity of white jasmine flowers in Depok Village, Kandeman District, Batang Regency, Central Java Province is 4.1 kg/ha. This figure is low because it is based on information from Tarigan (2019) that the average production of jasmine flowers per day per hectare ranges from 5-20 kg. The decrease in productivity was caused by a lack of care, especially in handling weeds on jasmine cultivation land. These weeds become competitors of white jasmine flower plants to get full sunlight. According to Justiningsih (2019), sunlight affects plant growth and productivity. In addition, weeds and white jasmine plants will also compete to obtain nutrients from the soil which affects the adequacy of nutrients absorbed by white jasmine plants to produce flowers. White jasmine flower farmers tend to focus on caring for new commodities, namely other perennial plants that are considered more profitable, such as manga trees. In addition to a decrease in productivity, a decrease in production also occurred. According to Palupi et al. (2019) that the north coast region often experiences tidal disasters, this is an obstacle that causes a decrease in jasmine flower production due to damage to jasmine flower fields. The increased salt content in the soil makes it difficult to plant jasmine. Another obstacle that arises is the problem of irrigation, when in the summer the jasmine plants cannot produce due to the lack of water availability, fluctuations in the selling price and the large role of the middleman towards the farmers. These problems make farmers not want to manage their land and switch to other jobs such as laborers or fishermen, some farmers choose to plant other commodities, sell or rent their land.

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Information in the form of the amount of production and acceptance of white jasmine flowers at the research location is presented in the table 7.

Table 7. Analysis of White Jasmine Flower Farming, Depok Village, Kec. Kandeman, Kab. Trunk of the Year 2020

No	Production Inputs	Average	Cost Percentage (%)
1	Land area (ha)	0.64	-
2	Fertilizer costs (Rp)	971,981.48	22.87
3	Cost of pesticides (Rp)	94,185.74	2.22
4	Seedling costs (Rp)	929,629.63	21.88
5	Labor costs (Rp)	2,253,481.48	53.03
Total Percentage of costs			100
Production (kg)/year		941.9	
Production costs (Rp)/year (2+3+4+5)		4,249,278.33	
Revenue (Rp)/year		13,948,024.44	
Income (Rp)/year		9,698,746.11	
R/C ratio		2.58	
B/C ratio		2.28	

Source: Primary Data Processed, 2021

The cost components in white jasmine farming are mostly allocated for labor costs, namely 53.03%, followed by fertilizer costs (22.87%), seed costs (21.88%) and pesticide costs (2.22%). Labor in white jasmine farming consists of labor within the family and labor outside the family. Labor in the family is not given wages. The cost of labor that is taken into account in this study is the wages of labor originating from outside the family.

The high allocation of labor costs is caused by the low adoption of technology in the form of agricultural machinery so that it spends a great deal of time in every stage of cultivation activities starting from land preparation, planting, weeding, spraying pests and diseases to harvesting. The more days required for each cultivation activity, the greater the costs incurred.

Workers outside the family who are involved in white jasmine farming are jasmine flower farmers who also live in the research location. At this location there is still a paid power system. That is, when a farmer is involved in cultivating land for 5 days, his labor will be paid by participating in helping the farmer in cultivating the land for the same number of days. Wage payment transactions occur when farmers who want to pay labor to other farmers do not have time. Even though no wages are paid, the number of days spent is very inefficient because it is done manually. For example, the average number of days needed to cultivate land at the research location is 14.5 days with a workforce of 3 men and the average working hours per day is 5 hours. This shows the inefficient use of time in white jasmine farming activities.

The second largest cost component is the cost of fertilizer, which is 22% of the total cost. The types of fertilizer used by the respondent farmers are very diverse, such as NPK, Urea, Phonska, Dolomite, Taburmas, Granul, Poska, Pupuk Daun, Multitonik and Gandasil. The types of fertilizers used routinely by all farmers are NPK fertilizer and urea fertilizer. Fertilization is carried out twice a year.

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The third largest cost component is seeds at 21.88%. The type of seed cultivated is the Emprit Bandar Arum Melati variety which has been certified by the Ministry of Agriculture (Palupi et al., 2019). The seeds are already available at the research location and according to the farmers, the seeds have a strong and lasting fragrance. The least cost component is pesticides, which only reaches 2.22% of the total costs incurred by farmers. This is because the varieties cultivated in this research location have the advantage of pest resistance. The types of pesticides used by farmers consist of Demosil, Abacil, Dangke and Klensect.

The R/C ratio value of white jasmine flower farming is 2.58 indicating that this activity has the potential to be developed because the ratio between income and costs is greater than 1. The B/C ratio value is 2.28 meaning that every Rp. 1 costs incurred by farmers for white jasmine farming, it will provide a profit of Rp. 2.28. In addition to the feasibility of farming shown in the calculations, the farmers in the study locations continued to carry out jasmine cultivation activities because the farmers already had experience in this work.

Policy Analysis Matrix of White Jasmine (*Jasminum sambac*) Farming

The following presents the results of PAM calculations and indicators that can determine government policy interventions for white jasmine farming in Depok Village, Kandeman District, Batang Regency, Central Java Province.

Table 8. Table of PAM and PAM Indicators of White Jasmine Flower Farmingin Depok Village, Kandeman District, Batang Regency, Central Java Province in 2020

	Reception	Farming Costs		Profit (Rp.)
		Tradable Inputs (Rp.)	Non-Tradable Inputs (Rp.)	
Private Cost	13,948,024.44	1,995,796.85	2,253,481.48	9,698,746.11
Social Cost	232,224,508.81	3,372,029.65	2,253,481.48	226,598,997.68
Divergence	(218,276,484.37)	(1,376,232.80)	0	(216,900,251.57)
PCR				0.19
DCR				0.01

Source: Primary Data Processed, 2021

Private Benefits and Social Benefits of White Jasmine Flower Farming

White jasmine flower farming has advantages that are positive privately and socially. This means that the value of revenue obtained by farmers is greater than the production costs that must be incurred. The divergence of private profits to social benefits is negative with a very large difference, namely Rp. 216,900,251.57. This is because the export price of white jasmine flowers is much higher than the selling price at the farm level. The export value of Indonesian white jasmine flowers at CIF prices is Rp. 246,428.61/kg while the selling price of white jasmine flowers at the farm level is Rp. 25,000-30,000/kg on weekdays and reaches Rp. 120,000-150,000/kg on Eid al-Fitr. According to Saptana et al. (2002) the phenomenon where the amount of private benefits enjoyed by farmers is lower than the social benefits is an indication that the input prices paid by farmers are higher and/or the output prices received by farmers are lower than social prices.

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Competitive Advantage

Saptana (2015), argues that competitive advantage is a tool to measure the feasibility of private activities or benefits which are calculated based on the market price of the valid official money value (based on financial analysis). Commodities that have a competitive advantage are also said to have financial efficiency. Competitive advantage is the ratio between non-tradable inputs with private added value of farming or revenue minus costs (revenue-tradable input).

The level of competitive advantage of certain commodity farming is determined by calculating the Private Cost Ratio (PCR) value. The PCR value of white jasmine farming is 0.19 < 1 indicating that white jasmine farming has a competitive advantage. The PCR value < 1 means that to get an added value of Rp. 1, additional domestic costs are needed < Rp. 1. The value of the competitive advantage of white jasmine farming expressed in the PCR value can be used as a benchmark for developing this farming in order to meet the needs of white jasmine flowers in Indonesia. domestic. In this study, the value of private profits is positive, according to Irfanda & Yuliawati (2019) if the value of private profits is positive then the market position is in perfect competition and farming activities can be continued because it is profitable.

Cost efficiency for producing certain commodities and obtaining profits is one indicator that shows the competitive ability of an industry or country in producing and commercializing these commodities. One of the strategies implemented by companies or manufacturers in order to have a competitive advantage is a low cost strategy. Low cost strategy as proposed by Merliana & Kurniawan (2016) to provide healthy competition in running its business. Based on the PCR formulation of white jasmine farming in this study, the difference between the amount of revenue for tradable inputs is greater than the costs for non-tradable inputs. This means that the income earned is greater than the costs incurred by farmers, both expenditures for tradable and non-tradable input costs.

Comparative Advantage

This theory of comparative advantage is about the specialization of a company or country in producing commodities. Specialization is created when the opportunity cost of producing that commodity is less than the opportunity cost of producing other commodities. In the PAM analysis, the comparative advantage of a commodity is determined through the calculation of the Domestic Cost Ratio (DCR) where if the value is < 1 then the commodity has a comparative advantage.

The DCR value of white jasmine farming is 0.01 indicating white jasmine farming has a comparative advantage. This means that the opportunity cost sacrificed for producing white jasmine flowers is smaller than for producing other commodities. In other words, to save one unit of foreign exchange, it is necessary to sacrifice domestic costs with a social price of less than one unit. Farmers who were respondents in the study were farmers who cultivate jasmine flowers as well as rice. Based on the DCR value, it can be seen that the sacrifice of domestic costs for jasmine cultivation is less than the sacrifice for rice cultivation.

Government Policy on White Jasmine Flower Farming

The influence of government policies on white jasmine flower ushatani activities can be measured based on the following PAM indicators:

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Table 9. PAM Indicators for Assessing Government Policies in Depok Village, Kandeman District, Batang Regency, Central Java Province in 2020

No	Indicator	Mark	Information
1	Output Nominal Protection Coefficient (NPCO)	0.06	No output protection
2	Input Nominal Coefficient of Protection (NPCI)	0.59	There is input protection
3	Profitability Coefficient (PC)	0.04	Farmer's profit < consumer
4	Effective Protection Coefficient (EPC)	0.05	Government policies are not protective
5	SRP (Subsidy Ratio to Produce)	- 0.93	Policy distortions can reduce profits

Source: Primary Data Processed, 2021

Government policy is very necessary for farmers, especially in white jasmine flower farming to maintain the selling price of output while simultaneously reducing the price of input costs. The protection provided by the government for farming provides an opportunity for farmers to earn higher incomes. The form of protection provided by the government can be in the form of subsidies for tools, as well as farming inputs as well as protection for the price of crops. In relation to the cultivation of white jasmine flowers at the research location, the government has subsidized fertilizers where the subsidized fertilizers are actually for food crop commodities, but some of it is allocated by farmers for jasmine flowers.

The NPCO result of white jasmine farming is 0.06 < 1, meaning that in terms of price, white jasmine farming has a lower selling value compared to the selling price of white jasmine flowers in the international market. This shows that there is no protection against the output price of white jasmine flower farming or if there is protection, this protection has not been able to have a positive impact on farmers. This price difference has an impact on farmers' income, where local white jasmine flower farming has a lower income contribution of Rp. 25,000 - Rp. 30,000/kg compared to white jasmine flowers on the international market which reaches Rp. 246,428.61. This is further emphasized by value of Profitability Coefficient (PC) is 0.04 < 1. The low value of NPCO and PC indicates that the competitive advantage obtained by individual farmers is far less than the comparative advantage obtained by consumers of white jasmine flowers. That is, the profit earned by farmers is smaller than the profit earned by consumers. Although farmers receive subsidies for production inputs, this does not guarantee higher private profits. This is because there is no protection for the selling price of jasmine flowers at the farm level. According to Rums (2010), NPCO value will increase if the government has a policy to protect output such as determining import duties on import activities and determining trade taxes on export activities.

The NPCI result of white jasmine farming is 0.59 < 1, meaning that the government provides protection for white jasmine farming from the production input side. The existence of protection by the government has significantly affected the actual production input costs (private costs) of Rp. 4,249,278.33 which is less than the social cost of production of Rp. 5,625,511.13. The subsidies on production inputs in question are specifically fertilizers. Fadly et al. (2017) explains that subsidies on input prices cause input costs at actual prices (private costs) to be lower than social prices (social

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costs) so that farmers receive tradable input prices that are cheaper than the prices that should be paid in the absence of government policy intervention.

Subsidy Ratio to Producer (SRP) is an indicator that can be used to measure the effect of government intervention on the income of local farmers (Lindawati et al., 2021). SRP shows whether government intervention is able to increase or even reduce income. The SRP value in this study is negative, which is -0.93, meaning that government intervention has not been able to increase the amount of farmers' income. This is because the intervention is given only on production inputs, not at the same time on output. The government has not made a policy that is directly related to setting the selling price of white jasmine flowers during the main harvest season or when demand is high due to holidays.

CONCLUSION AND SUGGESTION

White jasmine farming in the research location has competitive and comparative competitiveness. The government has intervened to assist farmers in obtaining production inputs but has not intervened on the selling price of white jasmine flowers. There needs to be a government policy in setting the price of jasmine flowers during the main harvest and when the number of requests increases during the holidays. This will help farmers and consumers.

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