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MANGO AGRIBUSINESS DEVELOPMENT IN WEST JAVA PROVINCE, INDONESIA

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ABSTRACT

Indonesia is a tropical country that has the fourth largest level of mango commodity production in the world, with a contribution rate of 4.8% to world mango production. One of its production centers in the Province of West Java. West Java has many opportunities and potential to develop the mango agribusiness sector. This study aims to see the extent of the development of mango agribusiness in West Java Province, thus providing an overview of the carrying capacity of the mango agribusiness subsystem in dealing with various current agricultural economic problems. The research method uses a survey method. The data analysis of this research used descriptive statistical analysis. The selection of the research location was done by using multi cluster random sampling method. Four mango production centers were selected as sample locations, namely Indramayu, Cirebon, Majalengka and Kuningan districts. Respondents in this study amounted to 200 farmers who were taken randomly. The results of the study illustrate that farmers are facing a significant increase in the price of production factors, facing the problem of decreasing production and productivity from the mango farming results. However, even so the condition of the marketing and supporting subsystems is still in a good state of development, so that mango farming carried out by farmers is still profitable and feasible to continue to be developed.

Keywords: Agribusiness, Development, Mango.

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1. INTRODUCTION

Indonesia is a tropical country that has the potential of natural resources as well as good climate and weather for carrying out agricultural processes. So, in Indonesia a lot of people who choose to become farmers. One of the commodities that have been chosen for cultivation that has the potential to provide benefits is mango. Indonesia has the potential as the world's fourth largest mango producer. According to FAO data in 2017, Indonesia contributed 4.8% to world mango production with a fairly high productivity level of 10.5 tons/hectare. Seeing the large quantity of mango production and involving many farmers in the process, mango commodities have the potential to improve farmers' welfare, because mango products have a high selling value (Esperanza, 2018). Indonesia has a number of mango production which tends to increase every year. According to data from Central Bureau of Statistics Indonesian, mango production from 2015 to 2021 has increased every year with an average production increase of 5.04% annually.

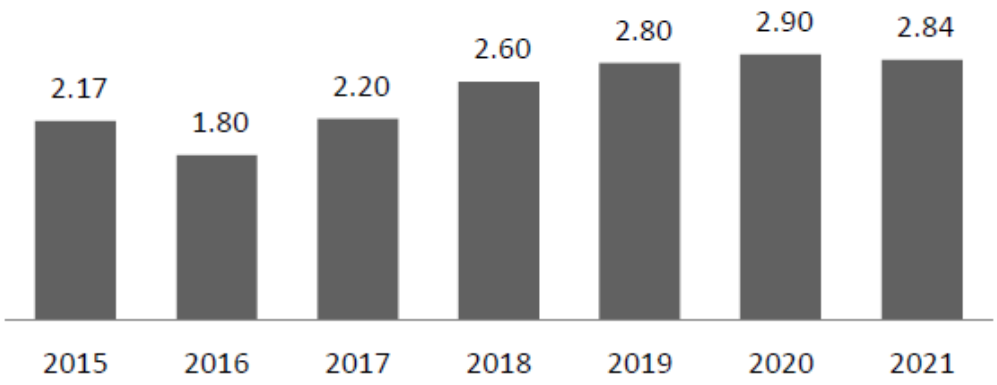

Fig 1: Produksi Mangga Indonesia (Juta ton)

The majority of Indonesian mango production can be absorbed by the national market and only about 0.11% can be exported. Indonesia's mango export destinations include Singapore, United Arab Emirates, Saudi Arabia, Oman, Bahrain, Qatar, Kuwait and Hong Kong. Several internal factors that affect the low export volume are the limited number of mangoes that meet export quality criteria, seasonal shifts resulting in delays or crop failures, the scale of small farmers' businesses, limited application of mango postharvest technology, low exporters' promotional capabilities, limited knowledge of market characteristics, pest and disease attacks on mango trees (Purnama & Najib, 2014).

West Java Province as one of the mainstay areas for mango development in Indonesia is able to contribute the third highest production after East Java and Central Java. According to BPS data, West Java Province has a contribution rate of 15.64% of mango production to the total production of Indonesian mangoes. Given the potential and opportunities of several regions in

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West Java as centers of mango production, government policies are needed to strictly regulate the development of mango agribusiness for farmers and have a direct impact on improving the welfare of farmers.

Ideally, every time mango production continues to increase according to the continued growth of the mango tree. But mango production has decreased at certain times. The decline in the level of mango production according to (Ganeshamurthy, 2018) can occur because several things, among others, due to climate and weather changes, the presence of pests and diseases that attack mango trees, low levels of nutrients absorbed by plants, soil conditions and environmental conditions, the low level of farming management applied by farmers and the lack of good post-harvest handling. On the other hand, according to (Rasmikayati, 2019) adding that another factor that causes a decrease in mango production at the farmer level is the behavior of farmers who are still poorly in the mango farming process.

The development of mango production is inseparable from the carrying capacity of the agribusiness system to support it. The agribusiness systems are interdependent with each other from the upstream subsystem to the downstream subsystem. The upstream subsystem plays a role in accommodating the needs of mango cultivation production factors such as fertilizers, seeds, labor and agricultural equipment. The cultivation subsystem is a mango production process. The marketing subsystem includes the post-harvest handling, packaging, distribution and marketing processes. The supporting subsystem is a subsystem that supports the mango farming process such as capital institutions, extension services, academics and farming institutions that are followed by farmers. This study aims to see the extent of the development of mango agribusiness in one of its production centers in Indonesia, thus providing an overview of the carrying capacity of the mango agribusiness subsystem in dealing with various current agricultural economic problems.

2. DESIGN OF THE STUDY

The research was conducted by survey method. Analysis of the data used in this study used descriptive statistical analysis to describe the development of mango agribusiness. This descriptive statistical analysis tool is in the form of statistical measures, table presentations, cross tabulations, diagrams and graphs. This research was conducted in West Java Province as one of the centers of mango production in Indonesia. Sampling technique used multi-cluster random sampling. The research population is mango farmers in the manga center area in West Java. Sampling was carried out in the mango center cluster stage in the province of West Java. The second stage is the mango center cluster in the district, the third stage is the mango center cluster in the sub-district. The results of random sampling showed that the research location was Cirebon Regency, Sedong District, Sedong Lor Village, Majalengka Panyingkiran District, Pasir

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Muncang Village, Kuningan District, Japara District, Cengal Village and Indramayu, Cikedung District, Jatisura Village. In each village 50 farmers were taken randomly as a sample, samples taken in this study amounted to 200 mango farmers.

This research design uses several variables that are measured to answer the research objectives. The variables analyzed in this study are listed in Table 1.

Table 1: Research Variable

Concept	Dimension	Variable
Characteristics of Farmers	Demograpich	1. Age 2. Education 3. Experience of Farming 4. Land Area 5. Number of Trees Owned
Agribusiness Development	Input subsystem	1. Availability of Farming Production Factors 2. Price of Factors of Production 3. Fulfillment of Capital Needs
	On-farm subsystem	1. Development of Production Results 2. Productivity Development 3. Development of Mango Farming Science
	Marketing subsystem	1. Marketing Partner Cooperation 2. Infrastructure Condition 3. Condition of Mango Selling Price
	supporting institutions subsystem	1. Financing Institutions 2. The Role of Extension 3. The Role of Academics 4. The Role of Farmer Groups
Agribusiness Performance	Farming Yield Performance	1. Profitability of Mango Farming 2. Effectiveness of Mango Farming

3. RESULT AND DISCUSSION

The results of the study describe the development of the agribusiness system in the mango production center area in West Java Province. The development of the agribusiness system includes the development of demographic and socio-economic conditions of mango farmers, input subsystem conditions, farming subsystem conditions, marketing subsystem conditions, supporting subsystem conditions and mango farming performance conditions.

3.1 Characteristics and Socio Economics Conditions of Mango Farmers

The results of the research on the demographic characteristics of farmers in Table 2 show that currently, 66.5% of mango farmers are in a productive age condition, ranging from 20 to 56

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years old. This age will greatly affect the productivity and adaptability of farmers to new information, knowledge and technology in mango farming.

Table 2: Socio-Economic Characteristics of Mango Farmers

	Frequency (People)	Percentage (%
Age (years)		
20 ≤ age < 38	42	21
38 ≤ age < 56	91	45,5
≥ 56	67	33,5
Total	200	100
Gender		
Male	186	93
Female	14	7
Total	200	100
Education		
Primary School	10	5
Junior high School	115	57,5
Senior High School	33	16,5
Undergraduate	42	21
Total	200	100
Farming Experience (years)		
< 10	56	28
10 ≤ experience < 21	96	48
≥ 21	48	24
Total	200	100
Land Area (m2)		
≤ 1500	42	21
> 1500 - 10000	100	50
> 10000	58	29
Total	200	100
Number of Ownership of Mango Trees		
≤ 80 trees	111	55,5
81 - 160 trees	40	20
≥ 160 trees	49	24,5
Total	200	100

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According to the results of research Otekhile (2017) shows that age has an influence on income, where if age is getting older, productivity will be lower because the physical condition of someone with an older age will be weaker to work.

On the other hand, 93% of the majority of farmers who cultivate mangoes are men, this happens because mango farming involves a lot of heavy physical work, so that the majority of those who choose to become mango farmers are men. On the education level, 57.5% are junior high school graduates and 16.5% are high school graduates, the remaining 24% are undergraduate graduates. Overall, there are still a few farmers who continue to a higher school level, even though this school level is very influential for farmers in carrying out their farming business. According to (Andriani, 2019) education provides a level of understanding and ability for farmers to find solutions to the problems they face.

The experience of mango farming shows that 28% of farmers have less than 10 years of farming experience, 48% have 10 to 21 years of business experience and the remaining 24% have more than 21 years of farming experience. Ideally, the longer the farmer has farming experience, the better the mango cultivation process will be, so that the higher the profit obtained from the results of his farming.

The area of land owned by mango farmers currently shows that as many as 21% of farmers have quite narrow land, which is less than 1,500 m2, this happens because mango farmers plant their mangoes only in their yards or on vacant land around settlements.. As many as 50% of farmers have land with an area of 1,500 m2 - 10,000 m2 and the remaining 29% of farmers have land more than 10,000 m2. Farmers with larger land areas usually cultivate mangoes by monoculture on lands far from settlements, which are specifically for mango gardening. The number of mango tree ownership is 55.5% of farmers still only have trees under 80 trees, as many as 20% of farmers have mango trees between 81 to 160 trees and 24.5% have mango trees totaling more than 160 trees. Ownership of this number of trees greatly affects the ease of farmers in accessing capital, the application of off-season technology, the percentage of good harvests, determining selling prices, payment systems in mango marketing and membership in farmer groups (Rasmikayati, 2020).

3.2 Input Subsystem Condition

The condition of input subsystems in mango agribusiness in this study includes the availability of production facilities, price conditions and the fulfillment of farming capital, the data are presented in Table 3. Regarding the availability of production facilities, 69% of farmers feel that agricultural production facilities such as fertilizers, seeds, pesticides and growth stimulants used

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in mango farming are always available at the nearest farm shop, so farmers do not have any significant problems with that.

However, the condition of the price of agricultural production facilities, as many as 67% of farmers complain that the price of production facilities every year always increases. Fertilizer prices have increased quite significantly, not only that the prices of pesticides, insecticides and others always increase every year. Farmers are very hard to deal with farming financing. On the capital requirement side to finance mango farming, 69.5% of farmers said they were able to fulfill it, even 15% said they were very capable of meeting these capital needs. This happens because farmers generally already have their own capital from the profits of the previous harvest season, then many farmers are able to access capital loans from banks, the rest of the farmers can access capital loans from collectors/ dealers who have capital loan services for farmers.

Table 3: Input Subsystem

	Frequency (People)	Percentage (%)
Availability of Agricultural Production Facilities		
Not available	9	4,5
Limited	52	26
Available	139	69,5
Total	200	100
Prices of Agricultural Production Facilities		
Expensive	134	67
Affordable	59	29,5
Cheap	7	3,5
Total	200	100
Fulfillment of Capital Needs		
Not met	30	15
Fulfilled	139	69,5
Very Fulfilled	31	15,5
Total	200	100

3.3 Farming Subsystem Conditions

In the mango farming subsystem, this study describes the conditions related to the development of production yields, productivity and knowledge capacity of farmers in developing knowledge of mango cultivation as listed in Table 3. The results show that almost 53% of farmers admit that

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the mango plants they cultivate have decreased production and 51% of farmers admit that the productivity of their mango trees has also decreased in the last 5 years. Many things have caused the decline in production, including the influence and changes in weather and climate, attacks by pests and diseases, and unwise cultivation practices. This unwise cultivation practice can be seen from the way farmers apply pesticides too often and give growth stimulants every year. However, as many as 58% farmers claim that their knowledge has very increased because their always seek information and learn about new knowledge related to the latest mango cultivation techniques, along with internet access, farmers begin to find out about the latest knowledge through digital searches based on audio and visual literacy. Not only that, farmers often take advantage of the latest cultivation knowledge that comes from local extension workers as well as from the results of discussions with other farmers. This is done so that the hope of increasing mango production.

Table 4: Farming Subsystem

	Frequency (People)	Percentage (%)
Development of Mango Production		
Decreasing	105	53
Not change	44	22
Increase	50	25
Total	199	100
Development of Mango Productivity		
Decreasing	102	51
Not Change	43	21,5
Increase	55	27,5
Total	200	100
Mango Farming Knowledge		
Not increase	31	15,5
Slightly increase	53	26,5
Very Increase	116	58
Total	200	100

3.4 Marketing Subsystem Conditions

In the marketing subsystem, the results of the study provide an overview of several conditions, including the condition of the number of partners who cooperate with farmers for the distribution

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of mango to consumer, the condition of infrastructure for marketing, the use of packing house facilities to sort and grade mangoes, as well as the condition of the selling price. Table 5 shows that as many as 35% of farmers do not have networking to sell their mangoes, farmers usually just wait for collectors who come randomly to buy their mangoes. As many as 33% of farmers claim to have few marketing partners and 31% say they have many partners, so farmers have a choice of markets to sell their mangoes. There are several factors that influence farmers in choosing a market to sell their mangoes. The results of the study (Andriani R, 2019) suggest that several factors influence farmers in choosing market markets, including the level of education, frequency of participating in extension activities, access to information about mango marketing, ease of entering the market, the percentage of good quality harvests and farmers' interest in sources of financing.

Table 5: Marketing Subsystem

	Frekuensi (Orang)	Persentase (%)
Marketing Cooperation Partner		
None	71	35,5
Slightly	66	33
Lot	63	31,5
Total	200	100
Infrastructure Condition		
Not good	35	17,5
Good	126	63
Very good	39	19,5
Jumlah	200	100
Use of Packing House Facilities		
Never	164	82
Rarely	16	8
Often	20	10
Total	200	100
Condition of Selling Price		
Unprofitable	64	32
Profitable	69	34,5
Very Profitable	67	33,5
Total	200	100

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The condition of marketing infrastructure includes the condition of roads, bridges and markets in the mango production center area, as many as 63% of farmers claim to be in good infrastructure condition, even 19.5% are in very good infrastructure condition This provides an illustration where the marketing of mangoes can be carried out properly because it is supported by good infrastructure conditions.

As many as 82% of farmers claimed to have never used the packing house facility, or in other words around the farming area until now had no packing house facility, so the majority of farmers did not carry out sorting and grading activities for their mangoes. Even though these activities are very important to increase the selling value of mangoes to consumers. The behavior of farmers who ignore the post-harvest handling process occurs because of several factors that influence it, according to (Rasmikayati B. R., 2018) namely the technological factors used by farmers, institutional factors and cultural factors.

Regarding the condition of the prevailing mango selling price, as many as 32% admitted that the price was not profitable for farmers, but 34% admitted that the farmers had quite benefited from the price, the remaining 33.5% of farmers claimed to have received a profit commensurate with the price.

3.5 Supporting Subsystem Conditions

The supporting subsystem is an activity carried out to support agribusiness. The supporting system is the support of facilities and infrastructure as well as a conducive environment for agribusiness development. The institutions involved in this support subsystem include financial institutions, counseling, research and farming groups. This subsystem has a very big role for farmers to run mango farming well. Supporting subsystems for mango farming are shown in Table 6.

The results showed that as many as 52.5% of farmers still feel they are not supported by any capital institutions. This happens due to several factors, because the condition of the farming is still not commercial in nature so that it does not yet require the role of capital institutions in mango farming. Commercial farming is characterized by the existence of working capital loans to banking institutions (Sulistyowati & Natawidjaja, 2016), farmers still find it difficult to get capital loans from formal institutions and farmers have a fear of not being able to pay their capital loans because of the many risks of farming.

On the extension service side, as many as 45.5% of farmers feel that they have rarely received counseling related to mango farming. This happens because there are still many farmers who manage mango farming not intensively, so extension agents prefer to provide counseling related to the condition of agricultural commodities that are intensively occupied by farmers. However,

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even though that was the case, as many as 22.5% of farmers admitted that they had received counseling but it was occasional. The remaining 32% of farmers admit that they often get counseling, usually this happens to farmers who cultivate mangoes intensively so that extension agents provide counseling continuously.

The role of research institutions and academics is felt by farmers differently, some feel that they have a very important role in mango farming, some feel that they have a small role and some feel that research institutions have no role in mango farming. This happens because not every information on research results is can be channeled properly to farmers scattered in various regions, so their responses regarding the role of academics and researchers are still lacking for the development of mango farming.

Table 6: Supporting Sybsystem Conditions

	Frequency (People)	Percentage (%)
Financial Institution		
None	105	52,5
Informal Institution	20	10
Bank/Cooperative	75	37,5
Total	200	100
Extension Service		
Never	91	45,5
Rarely	45	22,5
Often	64	32
Total	200	100
Support from academics		
None	78	39
Little	70	35
Lots of role	52	26
Total	200	100
Farmer Group Activeness		
Off	86	43
Rarely	28	14
Very active	86	43
Total	200	100

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Regarding the activity of farmer groups, as many as 43% of farmers claimed not to be active in farmer groups, as many as 14% of farmers admitted that they were rarely active and 43% of farmers admitted that they were very active in participating in every farmer group activity. Farmer groups on the other hand have many benefits for farmers. Farmer groups are a medium for farmers to be able to learn together, collaborate and become a facility to provide production factors that are very influential on farmers' income (Pramono & Yuliawati, 2019).

3.6 Mango Agribusiness Performance Conditions

The business performance of business activity can be seen from how much business activity generates profits and how efficiently mango farming is carried out. The results showed that 53.3% of farmers felt that their mango farming was able to generate profits, but with a fairly small level of profit for them. This happens because various kinds of risks sometimes occur. Today's farmers are faced with rising prices for agricultural production facilities, climate changes, small scale of business and fluctuations in selling prices so that the profits obtained by some farmers are still felt to low from their mango farming. However, as many as 43% of farmers admitted that mango farming was able to generate height profits.

Table 7: Mango Farming Agribusiness Performance

	Frequency (People)	Percentage (%)
Mango Farming Profitability Level		
Low	6	3
Medium	107	53,5
Height	87	43,5
Total	200	100
Mango Farming Efficiency Level		
Low	15	7,5
Medium	133	66,5
Height	52	26
Total	200	100

Looking at the level of efficiency of farming, as many as 66.5% of farmers admitted that their farming is still in a fairly efficient condition, where the condition of receiving farm products is sufficient to cover production costs. In fact, as many as 26% of farmers claimed to have a high level of efficiency in carrying out their mango cultivation. This indicates that mango farming is still contributing a lot to farmers' income. This is evident from the results of research (Umyati &

Dinar, 2020) which shows that mango farming activities can provide a level of profit for farmers, these profits will increase if farmers apply off season techniques.

4. CONCLUSION

The conclusion from the results of this study provides an explanation that the development of mango agribusiness in West Java Province still faces several potential conditions and obstacles in the development of mango agribusiness. The potentials include the farmer's long farming experience, the farmer's willingness to seek the latest knowledge regarding mango cultivation and good infrastructure conditions. The most common obstacles include the condition of the price of production facilities which continues to increase, the decline in the level of production and productivity of the mango harvest, the post-harvest handling is still minimal, the selling price often fluctuates, the small number of farmers who can access capital, the extension services are still small. , and the lack of enthusiasm of farmers in their farmer groups.

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