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RISKS OF GINGER FARMING IN KUBU RAYA REGENCY (CASE STUDY IN TELUK EMPENING VILLAGE, TERENTANG DISTRICT)

Resiko Usatahani Jahe Gajah Di Kabupaten Kubu Raya (Studi Kasus Desa Teluk Empening Kecamatan Terentang)

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ABSTRACT

The purpose of this study was to analyze the income of ginger farming and to analyze the production risk and the risk of ginger farming income in Kubu Raya Regency. The research was conducted by survey based on qualitative descriptive method, data was taken directly using cross-sectional data. The selection of the research location was carried out purposively (deliberately) at the location of the horticultural farmer group. The research location is a farmer group in Teluk Empening Village, Terentang District, Kubu Raya Regency. The number of respondents as many as 131 members, are all members of the Empening Mandiri Gapoktan which consists of 6 groups from 15 existing farmer groups. The results of the study found several farming risks, consisting of income risk of 13% followed by production risk of 10.5% and price risk of 1.8%. The value of the coefficient of variation is less than 0.5, meaning that farmers are protected from the risk of loss and the RC ratio of 3.45 means that ginger farming is profitable to cultivate. The reality in the field is that the demand for fresh ginger is always increasing and production has not been fulfilled so that ginger farming is considered to be in accordance with farmers' expectations and is feasible to be developed.

Keywords: farming risk, ginger, ginger farming, white ginger

ABSTRAK

Tujuan penelitian adalah untuk menganalisis pendapatan usahatani jahe serta menganalisis risiko produksi dan resiko pendapatan usahatani jahe di Kabupaten Kubu Raya. Penelitian dilakukan secara survei berdasarkan pada metode deskriptif kualitatif, data diambil secara langsung menggunakan data silang tempat (cross section). Pemilihan lokasi penelitian di dilakukan secara purposive (sengaja) pada lokasi kelompok tani hortikultura. Lokasi penelitian adalah kelompok tani di desa Teluk Empening Kecamatan Terentang Kabupaten Kubu Raya. Jumlah responden sebanyak 131 anggota, merupakan semua anggota dari Gapoktan Empening Mandiri yang terdiri dari 6 kelompok dari 15 kelompok tani yang ada. Analisis data meliputi analisis pendapatan usahatani dan risiko usahatani jahe. Hasil penelitian menemukan beberapa resiko usahatani, yang terdiri dari risiko pendapatan sebesar 13% dikuti oleh risiko produksi sebesar 10.5% dan risiko harga sebesar 1.8%. Nilai koefisien variasi kurang dari 0,5 artinya petani terhindar dari resiko kerugian dan RC rasio sebesar 3.45 artinya usahatani jahe menguntungkan untuk diusahakan. Kenyataan dilapangan saat ini jumlah permintaan jahe segar yang selalu meningkat dan produksi yang belum terpenuhi sehingga usahatani jahe dianggap sudah sesuai dengan harapan petani dan menguntungkan untuk dikembangkan.

Kata kunci: risiko usahatani, jahe gajah, usahatani jahe, jahe putih

INTRODUCTION

Kubu Raya Regency, Terentang District, precisely in Teluk Empening Village, West Kalimantan province has enormous potential to develop ginger cultivation because it is used as a raw material for medicines, nutritious drinks, as a kitchen spice, snacks and other products. Considering the area of Kubu Raya Regency as an agricultural center in West Kalimantan, so that the need for land as an agricultural area is available. Ginger farming in Teluk Empening Village has a prospective market. An ease road transportation makes it easy for harvests to go to various traditional markets besides traders who are ready to accomodate ginger production from farmers at competitive prices compared to other horticultural crops. In addition, with the existence of farmer groups, farmers will be helped in terms of marketing the ginger production that has been produced.

The quantity of product produced through farmer groups affects the income (revenue) that will be received by farmers. The existence of ginger farming carried out by farmers who are members of farmer groups, will help farmers to market their ginger production. The higher the level of production produced by farmers, the income (revenue) will also increase, so that it can provide maximum income from the ginger farming business. This is in accordance with the opinion of Alfiani et al. (2018) which explains that through excessive agricultural production it is expected to obtain high income. Thus, if

the quantity of the harvest is high and the quality is better supported by an appropriate price, the farmers' income will increase (Balkis, 2015).

Farmers are interested in cultivating ginger farming because the price of ginger is relatively stable and relatively high when compared to other types of horticulture. This is in accordance with the opinion of Eka Saputra et al. (2017) which states that ginger is a plant for consumption whose selling price is relatively stable compared to other plant prices. In fact, the price of ginger is expected to continue to rise along with increasing demand. The selling price of ginger tends to rise from year to year (Makmur, 2016). Based on initial observations made in several traditional markets, sub-district markets, district markets and even markets in Pontianak City (the main market), the price of ginger at the consumer level is Rp. 20,000 – Rp. 22,000/Kg. production costs used for ginger cultivation. However, it is not impossible if the price of ginger will increase. Meanwhile, the current demand for fresh ginger every week is 15-20 tons for the Pontianak City Flamboyan wholesale market (interview with the Pontianak City Market Service).

According to information from the Head of the Kubu Raya Agriculture Office, the opportunity for exports is wide open. The demand for ginger commodities to Kuching/Sarawak Malaysia currently can only meet up to 20 tons per week. Seeing increasingly promising opportunities for the development of medicinal plant areas, especially ginger in Kubu Raya Regency, the Directorate General of Horticulture, for the 2020 budget year has provided a budget allocation for the development of 500 hectares of medicinal plant areas in 30 districts in 11 provinces in Indonesia, including Kubu Raya district (Thahir, 2019).

Based on the results of interviews with one of the ginger farmers who are members of a farmer group (Gapoktan Empening Mandiri), Farmers need a large area for ginger cultivation, because ginger cultivation can only be done on land or plantation areas. On average, farmers ginger only have a total plant area of about 0.5 ha in one harvest period, which can produce production of 8-10 tons per ha. If the product produced is around 10 tons at a price of IDR. 20,000 per Kg, farmers will get a gross income of IDR. 200,000,000 or even more before deducting production costs in one production process (harvest). However, the income they receive is very varied and uncertain. With the planted area, farmers hope that the quantity of product produced is peaked, so that the income obtained is greater than the expenditure or production costs. This is in accordance with the opinion of Widyastuti et al. (2015) and Sudiarmini et al. (2018) who explained that if the demand for production is high, the selling price at the farmer level will be high, so that at the same cost, farmers will get maximum income.

According to an interview with the Head of the Kubu Raya Agriculture Office, that the potential for ginger area that can be planted in Kubu Raya

ranges from 200–250 ha. Currently, only 64 hectares have been cultivated with a productivity of 18–20 tonnes per hectare. In recent years the leading horticultural commodities in this area are white ginger or ginger. Hopefully in the future the Terentang District can maintain its existence as a center of ginger cultivation (Kementrian Pertanian, 2019).

Table 1. Harvest Acreage and Commodity Production of Ginger in Kubu Raya Regency year 2019

No	Districts	Acreage (m^2)	Harvest Acreage (m^2)	Production (kg)	Productivity (%)
1	Batu Ampar	2,585	60	120	2.00
2	Terentang	15,500	7,500	30,000	4.00
3	Kubu	6,000	900	900	1.00
4	Telok Pakedai	240	87	87	1.00
5	Sungai Kakap	2,585	60	120	2.00
6	Rasau Jaya	1,015	712	1,130	1.59
7	Sungai Raya	175,000	15,000	14,231	0.5
8	Ambawang	16,000	2,000	3,250	1.63
9	Kuala Mandor B	16,100	15,000	69,300	4.62

Source : Kubu Raya in Figures 2019

Based on Table 1., the largest planted area and harvested area are in Sungai Raya District when compared to others. Meanwhile, the highest production amount was 69.3 tons in Kuala Mandor B District, followed by Terentang District with 30 tons. The productivity of the two sub-districts is not too much different, namely 4.62% and 4%, but the two sub-districts are in a superior position. With a limited planting area but able to produce production in maximum quantities, it means better productivity. In accordance with the results of research Alfiani et al. (2018) that this condition illustrates by maximizing production factors can maximize production.

Obstacles faced by farmers such as shifting the function of agricultural land into settlements, pests and diseases that attack ginger plants as well as climatic and weather conditions affect the development of ginger plants. Farmers have problems in marketing ginger because the demand and price received from the market is uncertain. The role of middlemen in determining the selling price when repaying capital loans. Along with this, there is a relationship between the risks faced and the income of ginger farming (Widyastuti et al., 2015).

The unstable price of ginger (price risk) has an impact on an inefficient marketing system. The risks faced by farming actors have resulted in a decrease in business interest which has an impact on plant area. The risk of ginger production is indicated by fluctuations in production at each harvest which has

an impact on the uncertainty of farmers' income from the farming. Meanwhile, income risk is the result of the price level and the amount of production (Juwitaningtiyas, 2018).

Fluctuating production and fluctuating price levels result in unstable revenues. High farming costs cannot be covered by crop income or farming loses. Based on this description, it indicates that ginger cultivation has risks in farming, which can result in reduced income of ginger farmers due to the unstable level of production and selling price of ginger.

RESEARCH METHODS

The study used a survey method in a case study of the risk of ginger farming in Teluk Empening Village, Terentang District, Kubu Raya Regency. Primary data sources are through questions to individual respondents to representative farmer group members and informants (Surakhmad, 2010) While secondary data is sourced from sub-district/district BPS offices, field officers, village offices, reports and other literature related to research, including information from informants consisting of neighborhood heads, village heads and field facilitators (Sugiyono, 2013).

The target population in this study were all ginger farmers, totaling 265 people. All ginger farmers are included in 15 farmer groups. Respondents were taken using purposive sampling method on several farmer groups, then 6 groups were selected from 15 farmer groups. The unit of research analysis is individuals who are members of the Empening Independent Gapoktan (6 farmer groups with 131 members). The sample must match the requirements that ginger farmers have harvested at least two times, ensuring that farmers are participating in farmer groups, in order for the research to meet the desired aim. Efforts to meet representative standards, avoid data inequity, and maintain homogeneity in the study sample can be checked and replicated (Sugiyono, 2013). Based on the population in several locations, the minimum sample target is 100 people according to Roscue (Sakaran, 2011).

Table 2. Distribution of Research Samples (Gapoktan Empening Mandiri)

No	Farmer Group	Number of Members	Percentage (%)
1	Tani Merdeka	20	15.27
2	Pajar Harapan	20	15.27
3	Harapan Bersama	22	16.79
4	Kelola Berjaya	28	21.37
5	Gaya Baru	21	16.03
6	Sinar Pagi	20	15.27
	Number of samples	**131**	**100.00**

Source: Gapoktan Empening Mandiri, 2021

Data processing through Microsoft Office Excel application which is used in coding and grouping data. Designing a cross table so that it is easy to understand when displayed, and evaluating the data to find possible data errors. While SPSS software is used to perform statistical tests (Sakaran dalam Makmur, 2016). Meanwhile, data analysis used farm income analysis (Saptana, 2010) and risk analysis (Saputra et al., 2017).

The variables in this study are: 1) Production risk is the risk caused by uncontrolled events, generally pests and diseases, floods and droughts; 2) Price risk related to a decrease in selling price that is not in line with farmers' expectations; and 3) Income risk, is the risk caused by fluctuations in the price of an item as well as fluctuations in farm production (Harwood at, al. in Naftaliasari et al., 2015).

According to (Soekartawi, 2016), ginger farming income analysis is obtained by calculating the difference between the income received by ginger farming and the total ginger production costs incurred. Revenue is influenced by the amount of ginger produced and the price level that applies when the ginger is sold. Meanwhile, the risk analysis is in accordance with the opinion of (Karsidi, 2010) and (Darmawi, 2013). Here are 6 formulas used in ginger farming analysis.

Revenue analysis

$$\begin{aligned} Pd &= TR - TC \\ TR &= Y.Py \\ TC &= FC + VC \end{aligned} \qquad (1)$$

Description:

Pd	= farm income	Py	= Price Y
TR	= Total revenue	FC	= Fixed cost
TC	= Total cost	VC	= Variable cost
Y	= Yield of ginger obtained		

Analysis of the balance of revenues and costs (R/C) is carried out :

$$R/C = \frac{PT}{BT} \qquad (2)$$

Description :

R/C	= Ratio of revenue and costs	BT	= Total cost incurred
PT	= Total revenue		

If R/C > 1, then the business being managed is profitable

If R/C < 1, then the business that is being carried out suffers a loss.

Determining the average value of income :

$$E = \frac{\sum_{i=1}^{n} E_i}{n} \qquad (3)$$

Description :
E = Average income (Rp) n = number of seasons
E_i = income in season i (Rp)

Calculating the value of income risk using variance and standard deviation :

$$V^2 = \frac{\sum_{i=1}^{n} (E_1 - E)^2}{(n-1)} \qquad V = \sqrt{V^2} \qquad (4)$$

Determining the percentage value of income risk :

$$CV = \frac{V}{E} \times 100 \qquad (5)$$

Description :
CV = Coefficient of variation (%)
V = Standard deviation (Rp)
E = Average Income (Rp)

Determine the lower limit of income (L) :

$$L = E - 2.V \qquad (6)$$

Description :
L = lower limit of income (Rp) E = Average income (Rp)
Decision making criteria:
The value of CV ≤ 50% or L ≥ 0, indicates that the business avoids losses.
CV value > 50% or L < 0, indicates that the business suffers a loss

RESULTS AND DISCUSSION

The results showed that most of the farmers were of productive age and were still able to carry out their farming activities. Farmers' education is at the elementary level (SD) and non-formal education (pesantren), but they are able to read, write and count. The experience of farming for more than 16 years shows that he is very experienced, according to the opinion of Naftaliasari et al. (2015) that the number of working hours in shows experience in the field, so that they are very mastered in the procedures for determining something/activity at the right time and amount. The average number of members of a farmer's household is 3 people, which is a sufficient number, the more members of the farmer's family are good in helping their business activities, according to Kurniati (2015) that the number of family members can be used to help family business activities. Most of the farming land is owned by themselves with an average planting area of 0.25 ha this season, which is an area that farmers and their families can afford to cultivate.

Farming risk can occur because it is caused by production risk caused by external factors (Darmawi, 2013). Based on interviews with farmers, information was obtained that the production risk in ginger farming generally comes from pest/disease attacks, dry season, floods, land degradation, poor seeds, limited subsidized seeds, and limited labor. Data on production risk, price and income are shown as follows.

Table 3. Ginger Farming Risk

No	Farming Risk	Respondents (ppl)	Percentage (%)
1.	Production Risk		
	Long Drought	65	49.62
	Flood	45	34.35
	Pests and Disease Disturbance	93	70.99
	Area Degradation	44	33.59
	Low Quality Seeds	52	39.69
	Unavailability of Subsidized Seeds	112	85.50
	Lack of manpower	58	44.27
2.	Price Risk		
	Selling Price	85	64.89
	Seeds Price	75	57.25
	Fertilizers and Pesticides Price	82	62.60
	Labor Wages	65	49.62
3.	Income Risk		
	Fluctuative yields quantity	67	51.15
	Fluktuative yields quality	110	83.97

Source : Primary Data, 2021

Based on the production risk, the main obstacle is the unavailability of subsidized seeds. The availability of good seeds is one of the successes of farming, but for ginger seedlings it has several criteria, namely a longerr harvest age and superior in production, resistant to pests and diseases (Setyaningrum & Saparinto, 2013). So, with this specificity causing the price of seeds to be expensive, the hope of farmers with subsidized prices can help reduce production costs.

Other production risks are in the form of pest disturbances in the form of: 1) ladybugs that attack plant leaves until they have holes; 2) root-rubber

caterpillars attack the roots of ginger plants to cause the ginger plants to dry out and die; 3) beetles. While the disease is in the form of rhizome rot disease that can inject the ginger rhizome seeds through the wound. Coping with the use of pesticides and fungicides is the last hope, but the use of chemicals will have an impact, especially an increase in production costs, according to the opinion Saadudin et al. (2017) that additional costs for controlling pests/diseases will reduce income and production is not optimal because pests/diseases cause plants to stagnate and do not develop properly.

Price risk is a decrease in selling prices due to the difference in prices at the farmer level with prices at the level of collectors and retailers. The length of marketing channels has resulted in lower prices at the farm level, according to Ratnasari et al. (2016) the marketing channel should be shortened. There is still the availability of the services of middlemen who insert ginger farming in the research location. In accordance with Azizah (2018) that the weakness of farmers in business capital incurred third parties, especially middlemen, to participate in farming activities. Another obstacle is that the quality of ginger for export needs cannot be met by farmers' crops, according to Sudiarmini et al. (2018) that the quality level of export needs is not fulfilled so that prices adjust or decrease prices.

Another price risk is that volatile and expensive fertilizer prices can burden farmers, especially non-subsidized fertilizers sold at the farm level. The use of inorganic fertilizers, especially NPK/KCL/Urea, requires sufficient or optimal amounts for each plant area. If the application is reduced from optimal requirements or given in minimal quantities, it will result in production (Tedjaningsih et al., 2017). The same thing applies to the price of medicines/herbicides which tend to be expensive at the farmer level.

The income risk regarding fluctuations in the quantity of harvest that occurs is a change in the amount of production that is not stable during the last few seasons. This is due to changes in the price of high seeds so that the need for planting area is not fulfilled by the number of seeds so that the amount of production decreases. In line with the research of Maharani et al. (2019) that the number of seeds/seeds that are not optimal can reduce production in a certain area. Likewise, the price of fertilizers and high prices of drugs/poisons reduce the purchasing power of farmers, so that the optimal needs of plants are not met. Subsidized fertilizers are becoming scarce while non-subsidized fertilizers are circulating, but the price is up to 3 times the price of subsidized fertilizers. According to research Yuliana et al. (2015) and Li et al. (2010) scarce subsidized fertilizers should be replaced with other alternatives such as the use of organic fertilizers.

Another income risk is fluctuations in the quality of crop yields which can lower the selling price, because the production quality standard is not achieved so that the selling price drops resulting in reduced farmers' income. The decline

in the quality of crop yields can be caused by many factors, according to Ermiati (2011) such as the use of low seeds quality, the use of fertilizers that are not optimal or unbalanced, climate influences, pest attacks that are not handled properly. The quality of ginger can decrease due to the wrong way of harvesting or the wrong time of harvest. According to Renthiandy (2014) reduced quality can be caused by scratching the ginger rhizome during harvest, abrasions or peeling of the rhizome skin. Meanwhile, the wrong harvest time causes the rhizomes/tubers to not be of optimal size.

Based on the data obtained (Figure 1), the amount of production per Ha in the last growing season for each sample varied with the distribution of the production range from 8,000 kg per Ha per year to 12,500 kg per Ha per year, the average production was 10,196 Kg per Ha. The number of different production shows that the farming treatment of each sample varies (internal) and is also influenced by weather conditions, pest and disease disturbances (external). The farming treatment in question is the effectiveness of the use of fertilizers, the use of seeds, medicines and herbicides as well as cropping patterns. In line with the research of Mutisari & Meitasari (2019) dan Sudiarmini et al. (2018) that plants will become less/unhealthy due to excess water in case of flooding, lack of water during dry season, excess dose of medicine or fertilizer.

Price fluctuations (Figure 1) are caused by changes in the market supply and demand for horticultural commodities, including ginger. Prices will rise if demand rises while supply falls, as it does from the start of the growth season to the end of maintenance. Prices, on the other hand, fall when supply exceeds capacity, which occurs during the harvest season. The data shows that the price of ginger at the farm level changed during a five-year period (2017-2021), with a price range of Rp. 19,500 per kg to Rp. 20,500 per kg.

Income risk comes from production risk and price risk itself. A good combination when prices are high and production is high, but if prices are down and production is high or prices are high production is down then income will decrease. According to the data (Figure 1), ginger farmers' lowest income is Rp. 105 million and their maximum income is Rp. 207 million. The average annual income is Rp. 146.9 million.

The following is a compilation of data on production, prices and farmers' income in the last growing season based on the research sample.

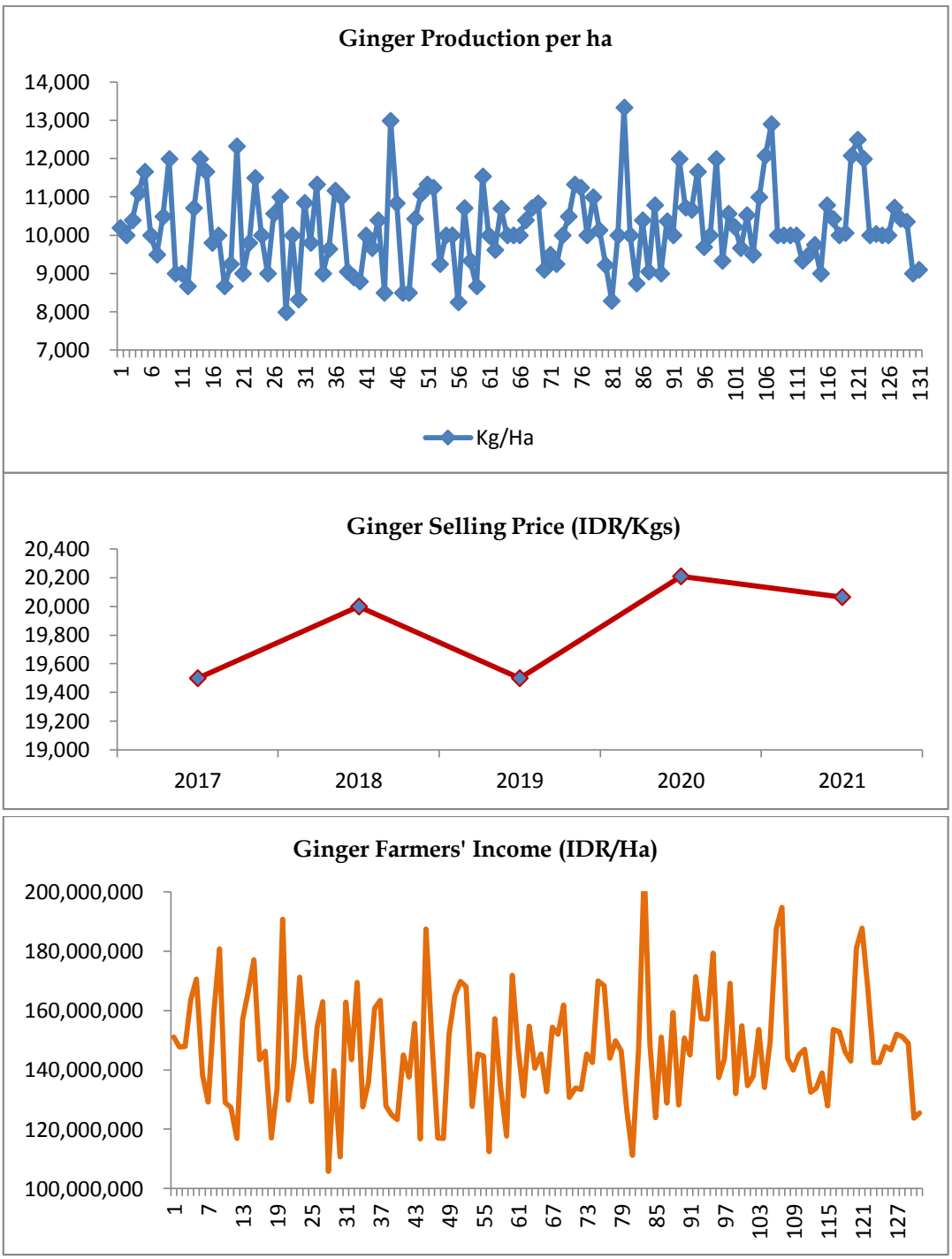

Figure 1.
Production Level, Price and Income of Ginger Farming research sample data (Gapoktan Empening Mandiri)
Source : Primary Data, 2021

The result of research data compilation calculation presented in the table below.

Table 4. Production, Price, and Income Risk of Ginger Farming

No	Details	Value
1.	Production Risk	
	- Mean (Qi)	10,196.520
	- Varian (Va^2)	1,145.000
	- Standard Deviation (Vα)	1,069.870
	- Coeffition of Variation (CV)	0.105
	- Lower Limits (L)	8,056.780
2.	Price Risk	
	- Mean (Qi)	20,064.890
	- Varian (Va^2)	1,284.000
	- Standard Deviation (Vα)	358.400
	- Coeffition of Variation (CV)	0.018
	- Lower Limits (L)	19,348.090
3.	Income Risk	
	- Mean (Qi)	146,935,663.730
	- Varian (Va^2)	3,636.000
	- Standard Deviation (Vα)	19,068,785.237
	- Coeffition of Variation (CV)	0.130
	- Lower Limits (L)	108,798,093.250

Source : Processed, 2021

The value of the coefficient of variation (CV) of ginger farming production is at 10.5% in the range of CV values of ≤ 50% or the lower limit of 8056.78 kg/ha is in the range of values of L ≥ 0. Based on the decision-making criteria, it is stated that the business avoids losses, it is assumed that the risk of failure of ginger production is low and the production level is high. According to Makridakis et al. (2010) the production value is above the loss threshold and the average production is high. In line with the research of Saadudin et al. (2017) that production is an income factor, the higher farm production is directly proportional or in line with the increase in revenue.

The value of the coefficient of variation (CV) of ginger farming prices is at 1.8% in the range of CV values of ≤ 50% or the lower limit of Rp. 19,348.09 in the value range L ≥ 0. Based on the decision-making criteria, it is stated that the business avoids losses, it is assumed that the risk of failure of the selling price of ginger is low and the production level is high. According to Makridakis et al. (2010) the selling price is above the loss threshold and the average selling price is high. In accordance with research Naftaliasari et al. (2015) and Mutisari & Meitasari (2019) that changes in the price level are often influenced by uniform or simultaneous harvests so that abundant harvests result in a decrease in price levels.

The value of the coefficient of variation (CV) of ginger farming income is at 13% in the range of CV values of ≤ 50% or the lower limit of Rp. 108.8 million in the range of values L ≥ 0. Based on the decision-making criteria, it is stated that the business avoids losses, it is assumed that the risk of failure of ginger income is low and the income level is high. According to Makridakis et al. (2010) the income value is above the loss threshold and the average income is high. In accordance with the research of Maharani et al. (2019) that the amount of income in farming is influenced by many factors, but a good price level accompanied by adequate production is able to provide a higher value. While Lawalata et al. (2017) give the opinion that risk is uncertainty, risk is in line with the benefits it offers, meaning that the risk is high, the benefits offered are also high and directly proportional.

Obstacles in farming always accompany, but to succeed requires maximum effort so that the obstacles encountered can be controlled or the damage is minimized (Dahmayantim, 2018). According to the study's findings, a variety of challenges are encountered during the ginger farming process, including a shortage of water during the dry season, flooding during the rainy season, pest/disease disturbances, inferior seeds, and others. Meanwhile, farmers' preventive and countermeasures are still simple, involving the use of low-cost but effective alternatives. The challenges that ginger producers face and the greatest efforts they make to overcome them as see in table 5.

Table 5. The source of risks and Ginger Farmers' Action to Overcome

No	Risks Source	Farmers' Action	Number(ppl)	Percentage
1	Long Drought	Rainy Season Cultivation	131	100
2	Flood	Cultivating on dry land or higher laand	43	32.82
3	Pest and Disease Disturbance	Optimal Used of Pesticides/Fungicides	131	100
4	Area Degradation	Using Organic Fertilizer	131	100
5	Low quality seeds	Using seeds from previous harvest	131	100
6	Unavailability of Subsidized seeds	Buying non-subsidized seeds forcely.	41	31.3
7	Low selling price	Holding the yields and looking for higher price	82	62.6
8	Fluctuative Yields	Adjusting each stage with the weather, choosing the good seeds, applying enough fertilizer and pesticide	131	100

Source : Processed, 2021

Farmers in Teluk Empening Village did not have an adequate strategy before the risk occurred. Everything is done during the production period or also known as interactive strategy. The strategy adopted by farmers is a

strategy of spontaneity, meaning that farmers only take countermeasures when an attack or shock occurs. This is done to minimize the resources or operational costs of farming with the intention that the impact of risk on production can be minimized. According to the opinion (Juni, 2017) effectiveness and efficiency in farming are always sought in order to minimize costs, but the activities carried out must be right on target on the problems faced so as not to cause new problems.

In an effort to avoid water shortages for ginger plants, farmers generally avoid planting in the dry season and choose to plant in the rainy season. Planting time is around March to August every year with the hope that it coincides with the rainy season. Another effort made by farmers is to build water reservoirs on the planting land. The water reservoir is expected during the dry season to become a source of water supply for watering plants.

Although rain is needed to irrigate ginger plants, sometimes it rains for a long time and can cause the land to become inundated. Most of the land for planting ginger does not have adequate terraces and irrigation channels so that water can collect in one particular place. In the rainy season the quantity of water is abundant, water absorption on the land is not good, causing stagnant water that is held for a certain time. Some farmers plant ginger on hillsides to avoid inundation of rainwater, but have difficulty preparing the terraces, according to Wahyunto & Dariah (2014) that gradually rainwater erosion or erosion of the topsoil will occur. The risk of planting on hillsides is that the location is far from settlements, transportation is not yet available using only footpaths so that it is difficult to mobilize crops and maintain them.

Constraints One of the factors affecting ginger production in Teluk Empening Village is plant pest organisms. Farmers' pest-control practices include cultivating the soil to expose it to sunlight, sowing healthy seeds, soaking ginger seeds/rhizomes in antibiotics before planting, and applying insecticides and fungicides on a regular basis. Poisons and agricultural pharmaceuticals are used in active pest management, necessitating the need for and manufacturing of drugs and plant poisons (Rukmana, 2010)

Land degradation is a common thing in land planted with monoculture cropping patterns, this happens in Teluk Empening Village. Nutrients contained in the soil continue to be depleted due to the monoculture cropping pattern. To prevent degradation that has already occurred, it is necessary to apply manure and liming to agricultural land (Yuliana Y et al., 2015).

Farmers still use superior seeds but they have been derived (more than 5 times) so that the superior properties of ginger are starting to decrease. In addition, the resulting rhizome becomes smaller in size so that it does not meet the standard size expected by exporters which has an effect on decreasing the selling price level. Meanwhile, the ability of farmers to buy expensive seeds is still very limited. However, some farmers buy improvised/slightly superior

seeds to develop them into seeds in the next planting season. According to research Balkis (2015) attempts to propagate seedlings independently by harvesting at a longer age to produce ginger rhizomes that are quite old.

The fluctuating and varied selling price of ginger causes farmers to experience uncertainty or risk, both in terms of price and income. To reduce the price risk, some farmers choose to look for exporters/collectors/agents who offer the highest prices. Often, farmers delay selling their harvest for a while until the market price of ginger is in line with expectations according to research (Alfiani et al., 2018) that for certain commodities, delays in harvesting and storage of harvest can be done in order to adjust the selling price.

The unstable harvest is more due to the different treatment of each farmer on the land and his ginger plants. This causes the production per hectare become various. Planting in a small area of plant treatment becomes more controlled/optimal so that yields are higher. On the other hand, planting large areas causes less control/optimality, resulting in lower yields. One form of neglect of maintenance is when there is a pest/disease disturbance and it is known after the plant shows symptoms, prevention should be better than treatment (Balkis, 2015).

CONCLUSIONS AND SUGGESTIONS

Conclusion

The risks of ginger farming in Teluk Empening Village, Terentang District, Kubu Raya Regency include the risk of production in the form of lack of water during dry season, pest/disease disturbances, land degradation and poor use of seeds, resulting in decreased production. Meanwhile, the price risk comes from the selling price of ginger to exporters/agents/gathering traders which tends to decrease. Income risk is influenced by production risk and price risk based on fluctuations in harvest yields and fluctuations in the price of ginger.

Based on the data obtained, the highest risk is income risk with a coefficient of variation (CV) of 13%, then production risk of 10.5% and the last is price risk of 1.8%. However, ginger farming is considered to have a low risk and a high level of income so that it can be continued.

Many risk management actions are taken by farmers but all of these actions are carried out during the production period, not before the production period. Farmers use their experience and knowledge such as waiting for high rainfall to avoid drought. Avoid planting land that is often submerged during floods. Provide organic fertilizer for soil to improve land degradation. Using local superior seeds, save the harvest until the price is higher. Striving to work on his farming with weather, seeds, fertilizers and pesticides, although not optimal.

Suggestion

Ginger farmers should maximize their activities so that the quality and quantity of ginger yields can be improved, such as; making water reservoirs, irrigation, terracing on sloping land; periodically carry out integrated pest control; using superior seeds.

The government is expected to provide subsidized superior seeds to farmers and supervise the distribution of subsidized seeds to ensure that the subsidized seeds reach farmers, and the government is expected to provide counselling to farmers on how to minimize risk on a regular basis so that farmers are increasingly protected from risk and can increase production and his income.

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