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Optimization of Good Agricultural Practices For Callina Papaya Farming Business

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Abstract

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papaya
farming

Good agricultural practices (GAP) have become a minimum requirement for the implementation of sustainable agriculture and food security. However, the application of GAP still faces several obstacles such as not using quality seeds, undone filing, excessive use of fertilizers, planting that is not in accordance with the recommendations, harvesting and post-harvest activities that do not comply with fruit quality management standards, and so forth. This study was aimed to empirically identifying the sustainability of the application of GAP in papaya farming and optimizes business practices in the GAP for papaya farmer. The number of respondents had taken as many as 35 people through non-purposive sampling with in-depth interview techniques. Research method used was descriptive quantitative using Rap-Papaya and descriptive qualitative with fishbone diagram. The results of the study indicated that the economic dimension with the most sensitive attributes, namely supervision, record keeping, and traceability, needs to be improved. Therefore, the stakeholders need to strengthen farmer groups, do the provision of incentives in the form of inputs for farmers, conduct training and mentoring of farm records on a regular basis, create partnership with the private sectors, establish participatory empowerment with regular meetings, and formulate note taking as an input assistance requirement.

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INTRODUCTION

Horticultural commodities have a strategic role in agribusiness development, especially to meet consumer needs and increase welfare for farmers (Dirjen-Horti, 2014; Juita & Effendi, 2017). The horticulture sub-sector contributed Gross Domestic Product (GDP) of IDR 218,712.4 billion, absorbing 3,318,583 people (Ministry of Agriculture, 2019). One of the main tropical horticultural commodities that are relatively developed in Indonesia is papaya (*Carica papaya L*) (Susanti et al., 2014).

Pontianak city became one of the biggest centers of papaya commodity in Indonesia and papaya has become the one of the featured products in this area (Agricultural Technology Assessment Center -Aceh, 2017; Government of Pontianak, 2015). The percentage growth rate of papaya production in Pontianak City in 2017 was the highest compared to papaya production in other regions in West Kalimantan (12.3%) and increased to 90.57% in 2018 (Central Bureau of Statistics, 2018, 2019). The advantages of papaya farming in this area are geographical and agro-climate suitability (Ismawati, 2015), financially viable (Kurniati, 2013), low market competition, and short supply chains (Ismawati, 2015). The most widely cultivated papaya variety in Pontianak City recently is Callina Papaya. However, the problems that are still often faced by papaya farming are the risk of drought, flooding, relatively excessive use of pesticides, mixing several types of pesticides and fertilizers, not using personal protective equipment, competitors from outside the region, as well as consumer awareness of food safety, environmentally friendly, quality, continuous improvement (field interview, 2019).

Therefore, it is necessary to apply farming that refers to the principle of sustainable agriculture to achieve highly competitive, efficient, productive, useful, sustainable, and competitive farming (FAO, 2015; Mamondol & Taariwuan, 2015; Rivai & Anugrah, 2011). One of sustainable agriculture practices is *Good Agricultural Practices* (GAP) (Sari et al., 2016; Terano et al., 2015) regulated in Minister of Agriculture Regulation No. 48 of 2009 (Ministry of Agriculture, 2009) to produce products that are financially feasible, high quality, safe for consumers, and environmentally friendly in order to increase farming efficiency and productivity (Hidayat et al., 2019; Sukmadjaya, 2019). The variables in this study were GAP indicators: land, seeds and varieties, planting, fertilizer, crop protection, harvesting, post-harvest handling, welfare workers, and has a good archiving method which is grouped according to three dimensions in sustainable agriculture, namely economic, social, and ecological.

Previous research (Setiawan et al., 2015), (Sriyadi et al., 2015), and (Hidayat et al., 2019) stated that GAP can increase farm income and productivity. However, some researches (Sari et al., 2016), (Setiawan et al., 2015) and (Agustina et al., 2017) showed that horticultural farmers' understanding of the principles and benefits of implementing GAP is still lacking. These researches were also researching about horticulture, but did not examine the relationship between GAP and incomes as well as farm productivity as the researches from (Setiawan et al., 2015), (Sriyadi et al., 2015), and (Hidayat et al., 2019). Furthermore, these researches were not only examined the understanding of farmers about principles such as (Sari et al., 2016), (Setiawan et al., 2015) and (Agustina et al., 2017), but also examined that the application of GAP in farming and its application problems was less than optimal,

and formulates recommendations for solutions to resolve the problem. The ecological dimension variables in these researches were also the same as the ecological dimension of GAP in the research from (Salleh & Harun, 2014).

A good cultivation program through GAP Certification of papaya farming has become the target of the Pontianak City government. However, until 2019 it had not been achieved because there were many attributes of GAP practices that had not been implemented properly. Even though the related agencies had conducted counseling, provided assistance, implemented GAP schools, it has not yet been successful. This makes the fruit competitiveness of papaya products from outside the region becomes low, papaya prices are relatively unfavorable for farmers, difficulties to be accepted in the modern market, declining fruit quality, and no guarantee of environmentally friendly farming. Therefore, this research urges to identify the continuity of GAP application in the cultivation of papaya and outlines solutions to optimize the effort of papaya farmers in the application of GAP. This research is expected to encourage farmers to obtain GAP certification so as to encourage increased product competitiveness, open new market opportunities, and make the papayas from Pontianak City become export standard products, thereby overcoming oversupply that is not absorbed by the market, increasing farmers' welfare, region competitiveness, as well as the absorption of the labor force.

RESEARCH METHODS

This research was conducted in Pontianak City as one of the largest papaya production centers in Indonesia and has made GAP as a regional program, especially in the northern Pontianak District as the Papaya production center in Pontianak City. This research was conducted from January to February 2020. The research sample consisted of 35 people consisting of 32 active papaya farmers and 3 key informants namely the Head of Food and Horticulture Department of Agriculture in the City of Pontianak, the head of the Pontianak Agricultural Extension Center, and 1 researcher from Institute for Agricultural Technology Assessment, West Kalimantan. The number of the farmer samples was in accordance with the rules of multivariate analysis, namely the sample should be ten times greater than the number of variables (Sugiyono, 2017). The method of determining the sample was using purposive sampling (Sugiyono, 2017), i.e farmers who have been farming papayas for at least 2 years.

The method used was quantitative method with descriptive approach to analyze the suitability of the principles of *good agricultural practice* to papaya farming using existing variables and quality methods with descriptive approach formulating recommendations for improving the application of the principles of *good agricultural practices* that have not been optimized (Sugiyono, 2017). The data used were primary data in the form of in-depth interviews and secondary data in the form of literature studies related to GAP attributes and determine GAP practice problems. Techniques for data collection in the form of in- depth interviews with farmers to determine the suitability of papaya farming with GAP practices, causes, and solutions, and key informants to formulate causes and solutions of GAP practices that were less than optimal were using questionnaire, field observations to get feedback and information related to research, and literature studies that support the problems and solutions faced (Sugiyono, 2017).

The study was conducted in two steps, namely identifying problems using *Rap-papaya* from the *Rapfish* program with *Microsoft Excel* program, which consisted of *Multidimensional Scaling* (MDS), Monte Carlo, and *Leverage* analysis. *Multidimensional Scaling* (MDS) was used with poor, insufficient, and good criteria to measure the level of sustainability of papaya farming business GAP practices. MDS eligibility requirements was S- *stress* values less than 0.25 and R2 ² close to 1 (Bursamin et al., 2018). Furthermore, the Monte Carlo analysis was used to measure the validity of the results of the sustainability analysis with the difference criteria that must be less than 5 (Ramdhani & Hardjomidjojo, 2019). Leverage analysis to determine the most sensitive attributes of each dimension by looking at the largest percentage of root mean square (RMS) (Ramdhani & Hardjomidjojo, 2019). The second stage was the analysis of fishbone diagrams to optimize GAP practices through the improvement of dimensions that were not or less continuous from the results of MDS analysis by finding solutions to increase the value of the most sensitive attributes of the leverage analysis results of these dimensions. The variables used in this study, namely:

Table 1. Research Variables and Sub Variables

Variable	Sub - variable	Score	Good	Bad	Scale	Justification
Social	The Workers' Welfare	0-2	2	0	Likert	(Minister of Agriculture No. 48 year 2009, Asandhi, et al., 2006; BAFRA, 2015)
	The workers	0-2	2	0	Likert	
	Worker Hygiene and Health Facilities	0-2	2	0	Likert	
Ecology	Plant Protection	0-2	2	0	Likert	(Chan, 2016; Shobri , et al., 2016)
	Irrigation	0-2	2	0	Likert	
	Disposal Sites	0-2	2	0	Likert	
Variable	Sub Variable	Score	Good	Bad	Scale	Justification
The economy	Land	0-2	2	0	Likert	(UNDP, 2004)
	Fertilizer	0-2	2	0	Likert	
	Planting	0-2	2	0	Likert	
	Harvest	0-2	2	0	Likert	
	Harvest Handling and Post-harvest	0-2	2	0	Likert	
	Use of total seeds and crop varieties	0-2	2	0	Likert	
	Agricultural tools and machinery	0-2	2	0	Likert	
	Internal evaluation	0-2	2	0	Likert	
	Complaint	0-2	2	0	Likert	
	Supervising, record keeping, and backtracing	0-2	2	0	Likert	

Sources: (Asandhi et al., 2006; BAFRA, 2015; Chan, 2016; Ministry of Agriculture, 2009; Shobri et al., 2016; UNDP, 2004)

RESULT AND DISCUSSION

Characteristics of Respondents

The sources of information in this research were the owner of a farm and processor farmers who had papaya plants that have been produced at least 2 years, as well as key informants, namely the Head of Food and Horticulture Department of

Agriculture in the City of Pontianak, agricultural extension officers, and researchers from Institute for Agricultural Technology Assessment, West Kalimantan.

All respondents in this study were men because in general they had strengths related to physical abilities and strong stamina that were needed in accordance with the characteristics of the work area of the workers and extension workers who were scattered in relatively distant locations (Yani et al., 2019) (appendix 1). Furthermore, the respondent farmer age group was dominated by age 41-60, including the age that has the maturity of mindset, high level of experience, was still able to understand new information, and the productivity was still relatively good (Artawan et al., 2017; Kurniati & Jumanto, 2017; Mahyuda et al., 2018; Nurfathiyah, 2019) (appendix 1).

Farmer's education level was dominated by elementary school graduates (52.5%) due to the lacking of education facilities, infrastructure, and economic abilities. This level of education relatively limiting the ability of farmers to follow economic opportunities, technology adoption, and decision rationality (Kurniati & Jumanto, 2017; Mahyuda et al., 2018; Sriyadi et al., 2015) (appendix 1). Meanwhile, Key Information education was dominated by scholars since the degree and education were important to become a counselor or head of the current field (State Staffing Agency, 2011). Farming experience was dominated by farmers in age 31-40 years (28.1 percent) and less than ten years (28.1 percent). Extensive experience showed excellent knowledge of their business and would have a positive impact on farmers' income (Kurniati & Jumanto, 2017). Meanwhile, farmers whose experience was under 10 years were caused by changes in employment from the private sector to farmers (appendix 1).

Number of Dependents in respondent's family was dominated by 4-6 people (71.9%). The number of productive family members would help to improve family earning or serve as the helper in the family. (Kurniati & Jumanto, 2017; Mahyuda et al., 2018). The average size of the respondent farmer's production area was 0.5 hectares. Spacious garden production of respondents classified in a narrow area (0.5-1.5 ha), so that the provision of the means of production, labor and capitals were more less (Mahyuda et al., 2018; Sriyadi et al., 2015) (attachment 1).

Sustainability of GAP Papaya Farming Business Implementation

Rap-Papaya in this study fulfilled good fit because R2 of all dimensions approached 1, S-stress value of all dimensions ≤ 0.25 and the difference in Monte Carlo value of all dimensions met less than 5 (Ramdhani & Hardjomidjojo, 2019). Then the elevated diagram can be analyzed showing the value of MDS in the inter-economic, ecological, and social dimensions simultaneously presented in Figure 1 below.

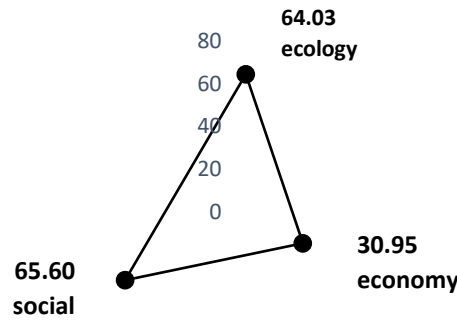
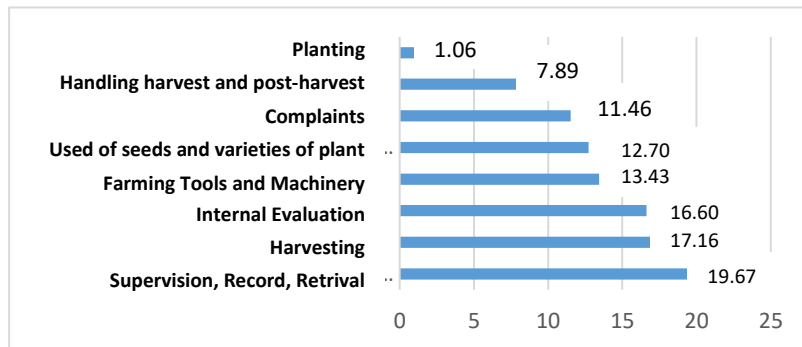


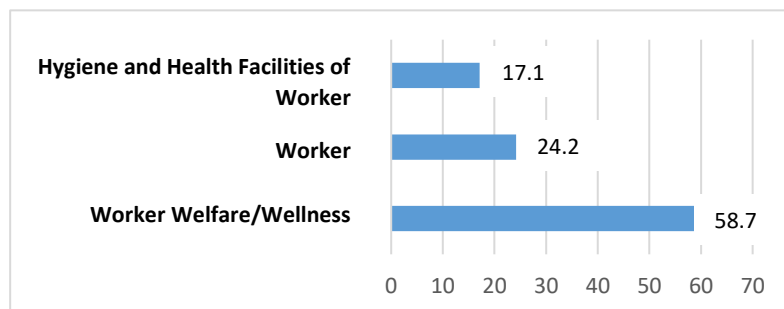
Figure 1. Flow Chart of Rap- Papaya Analysis

Source: Primary Data Analysis (processed), 2020

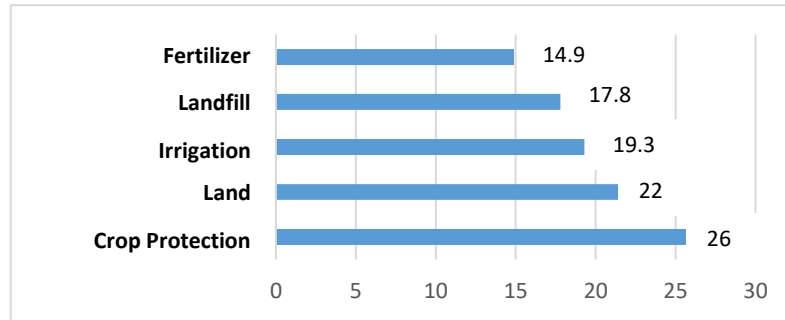
Figure 1 shows the sustainability status of the GAP practices of papaya farming in general is quite sustainable because the social and ecological dimensions are sustainable, while the economic dimension is less sustainable. The sustainability of a dimension is caused by the attributes that make up that dimension. Each row has a different percentage contribution to the sustainability of a dimension. The percentage contribution of each attribute can be seen from the results of the *leverage* analysis. The higher the percentage of these attributes, the greater the contribution given to the sustainability of a dimension (Ramdhani & Hardjomidjojo, 19). Measurement of the level of sensitivity / *leverage* in this study was carried out on three dimensions, namely economic, ecological, and social dimensions. Percentage of attributes on the *leverage* of economic, ecological, and social dimensions are presented in Figure 2.



(a) *Leverage* in the economic sector



(b) *Leverage* Economic dimensions

(c) *Leverage Ecological Dimensions***Figure 2. Leverage Economic, Social and Ecological Dimensions**

Source: Primary Data Analysis (2020)

The economic dimension (Figure 2a) is less sustainable due to the most sensitive sub-variables namely supervision, records, and retrieval, which are followed by harvesting, internal evaluation, farming tools and machinery, use of seeds and varieties of plants, complaints, handling harvest and post-harvest, and the most insensitive is planting. Farmers had not conducted surveillance, recording, and retrieval (19.6%) because they were considered difficult. Furthermore, harvesting activities (17.2%) do not yet have guidelines for preventing product contamination for harvesting and also harvesting still uses hands which are considered more practical, while farmers should use knives or scissors to reduce the risk of fruit damage (Suyanti, 2011). Another attribute that still needs attention is internal evaluation (16.6%) that has not been carried out by farmers. Farmers also do not use modern agricultural tools and machinery (13.43%) in land management because they are deemed not according to farmers' needs. The use of tools and machinery per farm can increase the efficiency and productivity of farming (Aldillah, 2016). However, it must be adjusted to the land agroecosystem (Heriawan et al., 2016).

Furthermore, the use of seeds and plant varieties (12.7%), where the seeds used have been degraded genetically and not superior seeds and because the price is relatively expensive. Therefore, the plants planted are less healthy and low productivity (Sejati, 2015). Complaints activity for customer satisfaction (11.51%) also does not yet exist. Harvesting and post-harvest handling (7.89%) is also poor because the fruit is placed in a location that is not shaded, does not labeled, no fruit cleaning, and the fruit sorting and welding is also have not done yet. The fruit packaging is also not coated with paper or other coating material that is can reduce impact with blunt objects. Such packaging has the risk of causing bruising and injury to the fruit, thus accelerating the process of fruit rot (Hairunnisya, 2014; Ministry of Agriculture, 2013; Samad, 2006). The last sub-variable namely planting (1.06%) is relatively good because the number of seedlings used is as recommended by one per planting hole (Deptan, 2005), but has not followed the recommended distance and depth of the planting hole.

The social dimension (figure 2b) is quite continuing due to the most sensitive sub-variable namely the welfare of workers, followed by workers and the least sensitive is the relatively good hygiene and health facilities of workers. Worker welfare (58.70%) was measured by good communication between farmers and farm workers. Good communication, especially related to the provision of adequate wages and in

accordance with the workload provided, thereby increasing the performance and enthusiasm of workers (Sari, 2015). Workers (24.20%) also have good knowledge about types of fertilizers and pesticides, but lack knowledge about the ideal fertilizing method, fertilization time for pest control, personal safety when using pesticides, hazardous waste, and still mixing various pesticides. Mixing pesticides can damage the environment and damage consumer health (Giri, 2016; MG Catur Yuantari et al., 2013).

Worker hygiene and health facilities (17.10%) provided by farmers are standard facilities such as soap and simple first aid. The location of a nearby residence also makes access to hygiene and health facilities easy. Nevertheless, personal protective equipment such as gloves or masks are not provided because they are considered less needed and add to costs. The cause of low use of self-protection equipment is due to lack of knowledge and awareness of farmers (Ediana & Putra, 2017; Yuantari et al., 2015). The risk of worker health problems can be reduced by the use of gloves and masks, especially in breathing and peasant skin (Budiawan, 2013; Devereux et al., 2017; Sitanggang et al., 2017).

The relatively continuing ecological dimension (figure 2 c) is caused by the most sensitive sub-variable, namely crop protection, followed by land, irrigation, landfills, and the least sensitive is a relatively good fertilizer. Plant protection (26%) has used registered pesticides; pesticides are also stored in their original packaging and placed in a safe location, however, pesticide containers that have been used are still burned by farmers, while containers should be damaged and buried in lands far from settlements (Adriyani, 2006). Farmers also should not be dependent on chemical pesticides because they have the potential to poison the environment, reduce crop productivity in the long run, as well as replace the body's health (Fatmawati & Suparmin, 2015). Reducing the use of pesticides can be done through the use of varieties and seeds that are resistant to pests, good planting, perfect tillage, use of organic matter, balanced fertilization, and crop irrigation (Burhanuddin & Nurmansyah, 2012; Nuryanto, 2018).

Land used (22%) has been free from contamination and in accordance with the map of the commodity area. Farmers have also used ash to reduce soil acidity because ash is an environmentally friendly ameliorant (Noor et al., 2016; Sutrisno & Heryani, 2013). Furthermore, irrigation farming (19.3%) uses privately owned and safe groundwater because it is more resistant to drought and is easily accessible (Rengganis, 2016). However, it risks landing subsidence (Putra nto & Kusuma, 2009). In addition, farmers are also lacking in waste disposal facilities (17.8%), whereas disposal of waste can damage and pollute the soil ecology (Nurman et al., 2019). Fertilizers (14.9%) used have also been registered and human waste is not used as fertilizer because it is susceptible to diseases (Anwar et al., 2017). However, the use of fertilizer is not in accordance with the guidelines and is not balanced by organic fertilizer such as manure which has the same function for growth. Dependence on the use of chemical fertilizers can damage soil quality, decrease microorganisms, and damage soil water due to nitrates in fertilizers (Iskhouruddin et al., 2019; Kadja, 2015; Rusydi et al., 2015).

Optimization of GAP in Papaya Farming Enterprises

The results of the analysis of the sustainability of the Good Agricultural Practices of papaya farming show that the ecological and social dimensions are quite sustainable, while the economic dimensions are less sustainable. Therefore, it is necessary to improve the economic dimension so that at least it is sufficiently sustainable to correct the inequality in the sustainability of papaya farming.

Optimization of the economic dimension was using causal analysis (fishbone). Causal analysis uses the Pareto principle which generally applies 20/80, meaning that 80 percent of the problems that arise come from causes that are equal to or close to 20 percent of the overall problem (Raman & Basavaraj, 2019). The results of the sensitivity analysis in Figure 2a show that the 20 percent forming the sustainability of the economic dimension are supervision, recording, and back tracking. Therefore, the optimization of the economic dimension focuses on the attributes of supervision, recording, and tracking.

Fishbone analysis uses management elements to describe the cause of the problem (Yoap, 2006). The results of the field interviews show that farmers do not have problems with the method because these activities are relatively easy to do and do not cause difficulties for farmers. Furthermore, the tools used (pen and paper) are also easy to obtain. In addition, materials and form-making are also provided and demonstrated by related agencies, so it is relatively easy to obtain and make by farmers. The main problem lies in the human resources who are difficult to carry out these attributes consistently because farmers are included in the characteristics of individuals who are difficult to accept innovations that are not in accordance with the habits of farmers, farmers feel they were running out of time (low time managerial), and farmers also feel supervision, recording, good tracking is lacking useful for farmers, so the motivation of farmers to do this is low. Therefore, the elements analyzed using fishbone diagrams to formulate solutions to problem solving are the human elements as presented in table 2.

Table 2 . Problems and Solutions to Supervision, record keeping, and back tracking practices

Root Problem Human	The solution
Individual characters who find it difficult to accept new innovations	Institutional strengthening of farmers and farmer groups in coordinating the recording and administration of farming activities
Low managerial ability	Conduct training and assistance related to management and farm recording on a regular basis Conducting partnerships with private parties that have good managerial skills
Farmers are less motivated	Improved extension capacity and empowerment processes involving farmers through regular meetings Give aid incentives or make recording a condition of receiving assistance

Source: Primary Data Analysis (2020)

Supervision, recording, and tracking back are recorders of farming activities, decision making, and evaluation of all farming activities (Aminah et al., 2018). Table

1 shows the main causes of these attributes are not done by farmers are human factors, such as individual characteristics that are difficult to accept new innovations, low managerial ability, or farmers are less motivated.

The first problem is the characteristics of farmers who find it difficult to accept new innovations due to low education and old age. These factors make the adoption and literacy of farmers low (Leatemia & Sari, 2012; Mwangi & Kariuki, 2015; Oo, 2016). The solution given is strengthening farmer group institutions to make it easier for farmers to access knowledge and information through training. The role of the papaya farming group is not yet apparent and is only as a recipient of assistance. Farmer groups have an effect on increasing the capacity, knowledge and awareness of farmers (Desiana & Aprianingsih, 2017; Dudafa, 2013; Fadhilah et al., 2018; Guddanti, 2015; Triwidarti et al., 2015), and enabling farmer groups to manage farmer administration (Nugroho et al., 2017).

The second problem is low managerial ability caused by farmers who are oriented towards meeting their daily needs rather than getting optimal benefits, so supervision, recording, and feedback are considered by farmers to be less useful. Such problems can also arise due to wrong attitudes, perceptions, and behaviors (Terano et al., 2015). Therefore, extension workers need to make training to change the mindset and perception. The training that can be given is understanding the concept of agribusiness (Vaughan, 2018) and the benefits of supervision, recording, and back tracking, so as to change the farmer's business orientation and encourage farmers to increase productivity through supervision, recording, and back tracking (Ratnawati) et al., 2017; Veronice et al., 2018) .

The materials that can be provided are understanding group administrative functions and delegation of tasks, farming activities that need to be recorded, the number of farm inputs used, the amount of costs incurred , and making the recording form (Nugroho et al., 2017; Wulandari et al., 2019). However, the training must also be followed by assistance so that farmers can begin to get used to (Leatemia & Sari, 2012), maintain and enhance the knowledge and skills that have been provided (Kusuma & Wuryanto, 2019; Leatemia & Sari, 2012; Wulandari et al., 2019), furthermore, establishing cooperation with partnerships with the private sector that has good managerial skills. Partnerships can create an exchange of farmers' abilities and information (Mahyuda et al., 2018; Pasaribu, 2015; Tham-agyekum et al., 2010). The intended partnership is not in the form of market access because there are collectors near the plantation, but in the form of technical guidance, namely good management and more competitive prices compared to the price of collectors because the selling price at the level of collectors is relatively low. This role is very dependent on the relevant agriculture office as a facilitator (Pasaribu, 2015).

The third problem is that farmers are less motivated to carry out these attributes due to lack of government support, especially related to agricultural inputs, considered less profitable for farmers and troublesome, so that the farmers rely more in their experience. Benefit and complexity factors are still the main factors that make farmers less motivated to carry out a program including supervision, recording, and back tracking (Charina et al., 2018; Dudafa, 2013; Mahyuda et al., 2018; Virianita et al. , 2019) . What can be done is to undertake participatory empowerment periodically to adjust the needs of more modern media. Empowerment

that involves farmers and in accordance with the needs of farmers is proven to be able to increase the motivation of farmers (Raya et al., 2017; Vaughan, 2018). The benefits of participatory empowerment also foster farmers' sense of trust and increase adoption decisions, as well as strengthen cooperation between farmers and related agencies (Ahmad, 2017; Ratnawati et al., 2017; Sunartomo, 2016). Supervision, recording, and tracking of assets also need to be a requirement for receiving assistance, so that farmers can experience tangible benefits. Incentives that lead to farmers' benefits can help improve farmers' motivation (Daliani & Nasriati, 2017; Saefullah & Mukti, 2016).

CONCLUSION

The social and ecological dimensions of implementing GAP in papaya farming in Pontianak City are excellent, while the economic dimension of implementing GAP is not sufficient enough. The attributes that have most contribution to the sustainability of the three dimensions of the GAP practices of papaya farming are supervision, recording, and retrieval (economic dimension); plant protection (ecological dimension); and work welfare (social dimension). Furthermore, it is necessary to improve the economic dimension of GAP, especially supervision, recording, and retrieval of the problems in supervision, recording, and retrieval in the human element, namely the characteristics of individuals who have difficulty accepting new innovations, low managerial ability, less motivated personnel.

RECOMMENDATION

Efforts that can be made by the government, farmer groups, and other policy makers are to encourage the strengthening of farmer groups to carry out monitoring, recording, joint tracking, increasing the role of extension workers in socialization and training as well as mentoring or monitoring farming activities regularly (at least once a week, conducting Participatory counseling involving farmers and through regular meetings, increasing the added value of products, opening access to partnerships with the private sector, especially modern markets, and making papaya an export commodity that will also have an impact on the stability of papaya prices. that carries out every GAP requirement well by providing agricultural production facilities from the government, but further research is still needed in terms of priorities and policy strategies to motivate farmers to supervise, record, and trace back for strategy analysis and analytic decision approach, effectiveness of training in supervision, recording, and back tracking.

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