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Analysis of Learning and Training Needs for Extension Agents in Coffee Development in Kerinci District

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ABSTRACT: In order to optimally support coffee productivity, extension workers are required to play a role related to coffee commodities. However, the problem that arises in the field is the lack of knowledge and skills of extension workers related to coffee commodities. Therefore, this study aims to 1) describe the characteristics of coffee plant extension agents in Kerinci Regency; 2) analyzing the learning and training needs of extension workers in coffee development in Kerinci Regency; and 3) analyzing stakeholder support in learning and training for extension workers in Kerinci District. This research was conducted in Kerinci Regency using descriptive methods. The results showed that generally the extension workers in Kerinci Regency were civil servants, THL-TBPP, and self-help extension workers aged 30-49 years with their latest education from high school to undergraduate. Generally, extension workers in Kerinci Regency have never attended training related to coffee plants. Learning needs are focused on mastering coffee material, strengthening training facilitators, and conducting training. Meanwhile, the support expected from related stakeholders is support in the form of facilities and incentives as well as awards

Keywords -coffee, extension agent, learning, training

I. INTRODUCTION

The coffee plant, known as the Latin name *Coffea* sp., is a strategic plantation commodity. This is because in addition to having high economic value, coffee is also a source of income for farmers and an export commodity as well as a source of foreign exchange. In Indonesia, most of the coffee plants are smallholder plantations which are still limited in the application of both cultivation and post-harvest technology so that they are not in accordance with the principles of sustainable agriculture established by the Directorate General of Plantation in 2014. With a sustainable agricultural system it will produce quality and environmentally friendly coffee production, as well as socially and economically profitable. This system is expected to increase coffee production and at the same time provide a livelihood for farmers, without neglecting the interests of future offspring.

For the success of sustainable coffee development, it requires the availability of planting materials / superior quality seeds sourced from certified seed source gardens and certified seeds. In order to provide services to farmers and consumers / producers of coffee seeds, a Standard Operating Procedure for Determining the Source of Seed Plantation and Certification of Coffee Seeds (*Coffea* sp) is required. In relation to this, the Ministry of Agriculture has issued Regulation of the Minister of Agriculture Number 89 / Permentan / Ot.140 / 9/2013 concerning Standard Operating Procedures for Determining Seed Source Gardens, Certification of Coffee Plant Seeds (*Coffea* sp).

In order to achieve the predetermined production targets, it is necessary to provide counseling and assistance for coffee farmers. Counseling and mentoring is a learning process for coffee farmers so that they are willing and able to organize themselves in accessing technology, capital, resources and market prices for coffee as an effort to increase productivity, business efficiency, income and welfare and increase their awareness in developing sustainable smallholder coffee plantations.

Agricultural instructors as coffee farmers assistants in the field, have a strategic role, namely: as a farmer guide, farmer organizer and dynamist as well as a liaison between stakeholders / stakeholders and coffee farmers (Shinta, 2016). In carrying out their duties, the extension workers also carry out their function as communicators and motivators for coffee farmers. Assistance activities can be carried out with the LAKU work system (training and visits) to community coffee plantation locations. With counseling and assistance, it is

hoped that coffee farmers are willing and able to apply environmentally friendly coffee cultivation according to predetermined standards.

Based on this, it was concluded that the development of coffee commodities needed assistance from extension workers. However, conditions in the field show that so far not many extension workers have mastered the plantation sector. This is because extension workers are generally in the field of food extension. For this reason, this research is important to analyze the learning and training needs of farmers and extension workers in coffee development in Kerinci Regency as one of the coffee production centers in Jambi Province. Therefore, the objectives of this study are: 1) to describe the characteristics of the coffee plant extension agents in Kerinci Regency; 2) analyzing the learning and training needs of extension workers in coffee development in Kerinci Regency; and 3) analyzing stakeholder support in learning and training for extension workers in Kerinci District.

II. MATERIAL AND METHODS

This research was conducted using descriptive methods. Sugiyono (2010) and Nazir (2009) state that descriptive methods are used to describe and analyze research results in the form of human groups, conditions, thought systems or classes of events in the present in a systematic, factual, and accurate manner regarding facts, characteristics, and relationships. phenomena being investigated, drawing conclusions that are not widespread. This research was conducted from July to October 2020 in Kerinci Regency which was selected purposively, on the grounds that Kerinci Regency is one of the best coffee-producing areas in Indonesia. The research sample was selected by multistage random sampling, in which the location of the sample was selected purposively in four districts with the largest land area and production in Kerinci Regency according to Kerinci in Figures 2020 (BPS, 2020). Then, sampling in selected areas was carried out by census, in which there were 64 extension workers consisting of civil servant extension workers, daily freelance agricultural extension assistants (THL-TBPP), and independent extension workers. The details for each sub-district were 15 extension workers in Gunung Raya Subdistrict, Batang Merangin District with 18 extension personnel, Kayu Aro District with 17 extension personnel, and Gunung Tujuh District with 14 extension personnel.

This type of research data is primary data through questionnaires distributed online via google form and in-depth interviews conducted through discussions on the WhatsApp group. Furthermore, the type of research data is also in the form of secondary data consisting of supporting documents derived from BPS data, previous research journals, and various other reading sources that support this research. The type of research data consisted of the characteristics of the extension personnel including age, education, extension experience, field of expertise, and training experience on coffee; and knowledge of extension workers related to the management of coffee plants as a whole, which consists of extension knowledge related to coffee cultivation, extension knowledge related to coffee planting post-harvest, and extension knowledge related to coffee plant marketing. Furthermore, the data will be analyzed and presented in the form of averages and percentages in the frequency table using SPSS 25.00. The results of the data analysis will be concluded and analyzed in relation to the learning needs and training of instructors which includes materials, methods, tools and materials and skills; and support that can be provided by stakeholders in the form of the involvement of related agencies and institutions in providing support and assistance in the form of material support, methods, tools and materials and skills for coffee extension activities in Kerinci Regency.

III. RESULTS AND DISCUSSION

1. CHARACTERISTICS OF INDIVIDUAL EXTENSION AGENTS IN KERINCI DISTRICT

Characteristics of individual extension workers are characteristics inherent in each individual extension agent from birth, which is then influenced by the environment. The individual characteristics of the extension personnel seen in this study consisted of age, level of formal education, experience in doing extension services, types of extension workers, and participation in coffee training. A general description of the characteristics of individual extension agents in Kerinci District is presented in Table 1.

TABLE 1. Characteristics of individual extension agents in Kerinci District

Individual Characteristics	Description	
	Frequency (numbers of people)	Percentage (%)
Umur		
Muda (17-29 tahun)	1	1,6
Dewasa (30-49 tahun)	57	89,1
Tua (\geq 50 tahun)	6	9,4
Formal education		
High School	40	62,5

Baccalaureate (D3)	8	12,5
Bachelor (S1)	16	25,0
Extension Experience		
1-5 years	25	39,1
6-10 years	22	34,4
>10 years	17	26,6
Type of Extension Agent		
PNS	17	26,6
THL-TBPP	13	20,3
Swadaya	34	53,1
Coffee Training		
Ever	3	4,7
Never	61	95,3
Total	64	100,0

Based on Table 1, it can be seen that the extension workers in Kerinci Regency consist of civil servant extension workers, THL-TBPP, and independent extension workers. Generally, extension workers are in the adult age range with 5-10 years of experience in extension. Riana (2015) and Mardikanto (2010) state that as an individual's age increases, their productive ability will also tend to decline so that generally it will be more difficult to accept new information, so as added by Sadono (2014), one's productive age. In working, especially extension workers in carrying out extension must be considered considering that extension activities to farmers require quality and competence qualified and optimal from the extension. Based on the research results, it is known that in general, extension workers in Kerinci Regency are extension workers with a productive age range, which is around 30-49 years. Productive age of extension workers, supported by long enough experience in extension, which is around 5-10 years, can help improve extension performance in carrying out coffee extension activities in Kerinci District. Extension workers who have been working with farmers for a long time, coupled with most of them are independent extension workers who also have experience in coffee farming, can support the extension's performance in carrying out extension activities so that they become more targeted.

However, it can be seen that generally the formal education pursued by extension agents in Kerinci Regency is up to the senior secondary or high school level. This is good enough, but it is still necessary to encourage extension workers, especially THL-TBPP and PNS extension workers to continue formal education at higher levels such as bachelors and bachelors. This is important because various studies have shown that the level of education affects the ability of individuals, especially extension workers, to provide and receive information. This is as stated by Sadono (2014), Helmy et al. (2013), Lubis (2016), and Tanjung et al. (2017) stated that the level of formal education has a role in influencing individuals in terms of decision making, information acceptance, technology adoption, and so on.

2. EXTENSION KNOWLEDGE ABOUT COFFEE PLANT MANAGEMENT

Extension knowledge related to the management of coffee plants is the extension's insight and knowledge on the management of coffee plants which consists of various subsystems, starting from the cultivation subsystem which includes land management, nurseries, planting, fertilization, management of plant pests and diseases, and maintenance; coffee plant harvesting subsystem post harvest subsystem starting from sorting, drying, and storing coffee beans; to the coffee marketing subsystem. A general description of extension agents' knowledge about coffee plant management in Kerinci District is presented in Table 2.

TABLE 2. Extension knowledge about coffee plant management in Kerinci Regency

Aspects of Knowledge	Frequency (numbers of people)	Percentage (%)
Cultivation		
Very know	9	13,84
Know enough	10	14,9
Do not know	45	70,3
Harvest		
Very know	7	10,9
Know enough	-	-
Do not know	57	89,1
Post-harvest		

Very know	13	20,3
Know enough	13	20,3
Do not know	38	59,4
Marketing		
Very know	20	31,3
Know enough	-	-
Do not know	44	68,8

The management of coffee plants, from the aspects of cultivation, harvest, post-harvest, to marketing, should be well known and become the basic knowledge for morning extension workers who want to do counseling related to coffee plants. The same thing also applies to extension workers in Kerinci Regency who will provide counseling for coffee farmers. Extension knowledge about coffee plant management can also encourage the improvement of extension skills so that they can carry out their duties as extension agents appropriately, quickly, effectively, and efficiently, as is the finding of Shinta (2016) that extension skills can increase efficiency and effectiveness in carrying out extension activities.

However, contrary to this, the findings in the field as presented in Table 2 show that in general, extension workers in Kerinci District have a fairly low level of knowledge related to coffee management. This can be seen from the various management aspects studied, from cultivation, harvesting, post-harvest, to marketing. Table 1 shows that almost all extension workers in Kerinci Regency do not know various aspects related to coffee cultivation, such as the suitability of coffee plant land, growing requirements for coffee plants, how to open new land for coffee plants, fertilizing robusta coffee plants, how to make compost from waste coffee gardens, how to cut the shape of coffee plants, how to cut production for coffee plants, pruning for rejuvenation of coffee plants, management of temporary and permanent shelters, how to observe parasitic nematode attacks, how to observe coffee pod borer attacks, how to control the main coffee pest, and methods implement safety and security of pesticide use. The knowledge of all aspects of coffee cultivation is mostly recognized by independent extension workers who are generally experienced coffee farmers. This is as expressed by one of the research respondents who is a self-help extension as follows:

"Most of us know how to grow coffee, care for it, and harvest it because we have been coffee farmers for decades. Although some are still new. But yes, maybe those who don't know how to fight pests and diseases that make our crops deteriorate, I see." (ED, Kayu Aro District, 9/12/2020)

The statement emphasized that although for several matters related to cultivation, a small proportion of extension workers knew well enough, they also did not have good knowledge regarding other matters such as controlling pests and diseases, managing coffee plant waste into compost, and so on. In fact, in carrying out its role as facilitator, advisor, technical, liaison, organizer and reformer agent for farmers as stated by Sundari et al. (2015), extension workers must have basic knowledge of the aspects to be provided, including knowledge of coffee plants.

Extension knowledge in the management of coffee plants, from the aspects of cultivation, harvest, post-harvest, to marketing, is one of the main competencies that becomes the basis for extension workers to carry out their functions, especially in providing education to assisted coffee farmers. In line with the findings of Wardhani et al. (2018), in carrying out its function as an educator, it is necessary to have basic knowledge of the topic to be provided. This will affect the skills and abilities of assisted farmers, including coffee farmers in Kerinci Regency.

Apart from the cultivation aspect, Table 2 also shows that the extension workers' knowledge on aspects of harvest, post-harvest, and marketing is still lacking. This can be seen from the number of extension workers who still do not know things related to good harvesting methods, post-harvest practices that are in accordance with the regulations, and do not yet know where or how the coffee beans will be marketed. Yet as stated by Ardita et al. (2017), extension agents as agents of change must be able to transfer knowledge in order to empower assisted farmers, including coffee farmers in Kerinci Regency. In addition, extension workers must also have a minimum knowledge of how they can help farmers obtain farm inputs to build and get a decent market for farmers to market their coffee production at prices that match the quality of the products offered (Ardita et al., 2017; Abugu et al., 2013).

Lack of knowledge of extension workers regarding the basic aspects of commodity farmers who will be assisted is a separate problem for extension workers in Kerinci Regency, especially regarding coffee commodities. This of course can have a negative impact both on the performance of the extension personnel in carrying out counseling related to coffee commodities, as well as on the coffee farming of the assisted farmers themselves. Therefore, extension workers in Kerinci District need learning support and training to improve their skills and performance related to coffee farming. Because, as mentioned by Putri et al. (2016) and Shinta (2016),

learning and training provided to extension workers will be able to increase their knowledge, attitudes, skills, and competencies regarding an aspect that is learned, including related to coffee plant management.

3. LEARNING AND TRAINING NEEDS FOR EXTENSION OFFICERS IN COFFEE DEVELOPMENT IN KERINCI DISTRICT

Learning and training is a process to get the skills needed by individuals in carrying out their jobs. Rivai (2009) states that training activities are part of the educational process involving the learning process to acquire and improve skills outside the formal education system in a relatively short period of time and methods that prioritize practice rather than theory. In this case, as mentioned by Dessler (2009), learning and training functions to increase a person's productivity and work performance in carrying out their duties and obligations.

The development of the Jambi Province coffee commodity is one of the most promising because it is always in the top five of the national coffee growth in Indonesia (Indonesian Coffee Statistics, 2018). Kerinci Regency as the largest producer of coffee in Jambi Province has the responsibility to continuously improve its productivity and quality so that it can continue to survive as one of the largest and best coffee producing regions in Indonesia. In order to maintain this, it needs complete capability from coffee farmers, which of course must be supported and facilitated by extension workers who have the knowledge and capability to be able to increase one of the main potentials of the region. Table 3 provides a description of the needs of agricultural extension agents for learning and training on coffee plants.

TABLE 3. Description of the agricultural instructor's needs for learning and training on coffee plants

Indicator	Percentage (%)	
	Requires learning and training	Does not require learning and training
Cultivation of coffee	76,56	23,44
The coffee harvest	89,1	10,9
Postharvest coffee	76,56	23,44
Coffee marketing	68,8	31,3

Table 3 shows that in general, agricultural extension workers in Kerinci Regency still do not know much about coffee plants. Extension workers who help develop coffee as one of the main commodities with the potential to promise that they do not have sufficient knowledge of coffee management itself, from cultivation, harvesting, post-harvest, to marketing. This causes them to need learning and training about coffee plants. Regarding this, one of the THL-TBPP extension agents stated the following:

"During the debriefing (initial / basic training, red), we were only given general materials such as how to map the area, map the potential of the area, how to provide assistance to the assisted groups, how to make a business plan, and basic things like that. We have not been provided with specific things in connection with agricultural commodities that are run by the farmers we assist. That's why at most we even ask a lot of senior farmers or independent extension workers, most of whom already understand better about this aspect of cultivation. " (AP, Batang Merangin District, 9/20/2020)

Strengthening the research results in Table 1 regarding training experiences on coffee plants, the statement of the THL-TBPP extension agents also showed that the lack of knowledge of extension workers in Kerinci Regency regarding coffee plants was due to the fact that most of them only had general skills and expertise related to agriculture, plantations, and horticulture. In fact, general knowledge is still not sufficient if you want to develop a regional commodity, group, or assisted farmers optimally. Therefore, as emphasized by Putri et al. (2016) in the results of their research, learning and training need to be provided to extension workers to improve their competence and skills in providing assistance to assisted farmers.

Learning and training needs for extension workers based on MOA No. 3 of 2018 concerning Guidelines for the Implementation of Agricultural Extension generally includes material, conducting training, as well as facilitating learning and training activities. This also applies to the implementation of learning and training for coffee commodities for agricultural extension agents in Kerinci Regency. Adjusting to MOA No. 3 of 2018, the materials that can be given to agricultural extension agents in Kerinci Regency related to coffee plants include; 1) basics of coffee commodities (related to cultivation, harvest and post-harvest); 2) benefits and functions of the coffee commodity; 3) identification of potential areas for coffee commodities; 4) agricultural extension programs for coffee commodities; 5) communication techniques in conducting counseling for coffee commodities; 6) methods and media required for coffee commodity extension; and 7) evaluation.

Furthermore, facilitators who provide training for coffee commodities must have competencies, including (Permentan No.3 of 2018), 1) mastering material related to coffee commodities (knowledge and

skills); 2) mastering the methods for training (the ability to communicate to answer questions); 3) have the ability to use tools for practice related to the material provided (use of facilities, tools, and materials); 4) able to enforce the discipline of trainees (attendance, tidiness, attitude); and 5) have clear learning objectives (the relevance of the material with indicators of success in achieving goals). Meanwhile, the implementation aspects of learning and training on coffee commodities for agricultural extension agents in Kerinci Regency include: 1) registration / registration of coffee plant learning and training participants; 2) materials submitted during the training (bags, books, pens, pencils, etc.); 3) professionalism and friendliness of the training participants; 3) professionalism and friendliness of financial service officers for training participants; 4) cleanliness and comfort of the hostel; 5) cleanliness and comfort of the learning room for the training participants; 6) cleanliness and comfort of the dining room; 7) friendliness and tidiness of hostel / inn staff; 8) friendliness and tidiness of the dining room staff at the training location; 9) completeness of practical facilities to support learning and training materials for coffee commodities (lab / land / tools and machines); and 10) availability of teaching and training aids (LCD, laptop, OHP, screen).

The implementation of learning and training for agricultural extension agents for coffee in Kerinci District requires these three things along with a series of supporting indicators. Appropriate materials, professional facilitators, as well as the implementation of learning and training tailored to the needs of extension workers as participants are important keys to improving the competence and performance of agricultural instructors in mentoring coffee farmers to achieve the goal of empowering assisted farmers. This is consistent with the findings of Putri et al. (2016) stated that the suitability of the material, the availability of infrastructure, and effective methods affect the success of training in improving the performance of agricultural instructors. In addition, Saylor (2006) and Warisdiono (2012) state that the substance of the material and lesson plans that are appropriate and relevant to the target activities also encourage the improvement of agricultural instructor performance.

4. STAKEHOLDER SUPPORT IN LEARNING AND TRAINING OF EXTENSION OFFICERS IN KERINCI DISTRICT

The support of extension stakeholders has an influence on the learning and training activities of extension workers in Kerinci Regency. Stakeholder support in this research, in particular, is the support of related institutions and agencies as their role in extension activities, such as the Food Crops and Horticulture Department. In line with the research of Putri et al. (2016), support from the institutions referred to in this study is support in the form of facilities and incentives / awards for agricultural extension agents in supporting the facilitation of coffee commodities in Kerinci Regency.

As the research results are presented in Table 1, most of the extension workers have never received learning and training related to coffee commodities. Therefore, learning and training activities are needed for extension workers by relying on the support of the relevant institutions. The support that is expected is support in the form of facilities and incentives for extension workers. The expected facilities include the availability of a comfortable place for training, tools and materials, availability of facilitators, and adequate instructional and training media. This is as expressed by one of the civil servant extension agents who became research respondents as follows:

"We certainly want to be given training. But no one has organized this yet, so our ability about coffee in particular is lacking. If there is an agency that facilitates, is given a training place like other trainings, of course we will be happy to follow it "(EZ, Gunung Tujuh District, 9/20/2020)

In addition, providing incentives and rewards also provides greater motivation for extension workers in conducting training. As the findings by Hartanto et al. (2018) and Putri et al. (2016) stated that incentives have a significant effect on improving the performance of agricultural instructors. The higher the incentives and rewards obtained, the higher the motivation of the extension agents to improve their performance. The motivation obtained by agricultural extension agents because of providing incentives and rewards will be able to improve their performance in mentoring coffee farmers in Kerinci Regency. This is as expressed by Zainal and Saleh (2017) that the appreciation and recognition of the institutions concerned can support the formation of motivation of extension workers so that they can improve their performance in order to empower coffee farmers in Kerinci Regency.

IV. CONCLUSION

Based on the discussion, it is concluded that in general the individual characteristics of agricultural extension officers in Kerinci Regency are individual extension workers who have an age range of 30-49 years; graduated from high school to undergraduate with extension experience ranging from 5-10 years; consisting of civil servant extension workers, THL-TBPP, and independent extension workers; and generally have never attended training on coffee. Therefore, the knowledge of agricultural extension agents in Kerinci Regency

regarding coffee management from the aspects of cultivation, harvest, post-harvest, to marketing is still weak. This encourages the need for learning and training, especially related to the coffee commodity for extension workers in Kerinci Regency. The learning and training needs consist of material needs, facilitators, and training implementation. Learning and training for agricultural extension agents in Kerinci District requires support from stakeholders, especially from related institutions for their success. This support is mainly in the form of support for facilities such as facilities and infrastructure, as well as support for incentives and awards for agricultural extension workers.

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