Communication of Salak Pondoh farmers group in Yogyakarta, Indonesia to addressing climate change

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Abstract. Climate change due to global warming is unavoidable and has wide impacts on various aspects of life, including the agricultural sector which also affects the productivity of salak pondoh. Sleman is the biggest salak pondoh producing area in Indonesia. In 2018, Sleman salak pondoh exports have reached 600 tons to China, Cambodia and Vietnam. This study aims to determine how the communication that occurs in salak pondoh farmer groups in addressing climate change and their impact on the socio-economic development of salak pondoh farmers in Sleman, DIY. The method used in this research is a qualitative method. Research data obtained from field observations and in-depth interviews. The theory used is the Elaboration Likelihood Model. The results of this study are the communication process in salak pondoh farmers groups in dealing with climate change tends to choose the central route. Not many farmers choose the peripheral route, because farmers already have experience and knowledge about how to cultivate salak pondoh, so farmers can receive information conveyed by instructors and can overcome the impact climate change that occurs.

1. Introduction
The development of the agricultural sector in the era of globalization is expected to be in line with the times so it must continue to be pursued to improve the quality of productivity to meet market demand. The narrowing of land cultivated by farmers due to land-use change and climate change is one of the obstacles that often appears to threaten the production of farmers' crops [1]. In line with this, the climate change that occurred is enough to affect the productivity of salak pondoh. Salak pondoh is one of the bark cultivars which is widely grown in Sleman Regency, Special Region of Yogyakarta (DIY). Salak pondoh grows around the slopes of Mount Merapi. Salak pondoh has various varieties, in Indonesia salak pondoh cultivated are red salak pondoh, super salak pondoh, black salak pondoh and yellow salak pondoh.

El Nino, which began to hit Indonesia in 2015, resulted in a lack of rainfall and a long drought. Then in 2016, farmers faced the longer heavy rains. The impact of climate change has triggered a significant development of fruit flies in the salak pondoh plantation area, thereby reducing the production and quality of salak pondoh in 2017. So that in 2018, the Yogyakarta Agricultural Service through the Technical Implementation Unit (UPT) of the Agricultural, Food and Fisheries Counseling Region V Sleman Regency makes the Fruit Flies Control Movement (GPLB) program which is also part of the Low Pesticides Prevalence Area (ALPP) program.

It is very interesting to learn how communication is developed by salak pondoh instructors in
providing information of pest management programs to farmers who are the member of Kusuma Mulya Farmers Group, Sukorejo Hamlet, Girikerto Village, Turi District, Sleman Regency, Yogyakarta, Indonesia. The study aims to know how they communicate in their groups to overcome all obstacles related to the impacts of climate change that occur. Increased productivity and quality must continue to be done because in addition to being an export commodity, it is also an attraction of the tourism village, because Turi District is an agro-tourism area that has the tourism attraction of bark plantations.

2. Review of related literature
This study analyzed how instructors as communicators carry out their function as a source of messages that deliver programs from the UPT Agriculture, Food and Fisheries Region V of Sleman Regency which oversees the Turi regency working area. In addition, this study will also examine the attitudes of salak pondoh farmers in receiving information on ALPP programs, especially the GPLB. In addition, this study will also examine how the attitude of salak pondoh farmers in receiving persuasion information with the communication theory approach.

2.1. Communication in agricultural counseling and salak pondoh farmer group
Agricultural counseling has been carried out since colonial times aimed at increasing agricultural production in order to meet the food needs of colonizers and natives. Until now, extension activities are still being carried out to encourage agricultural development. This was done not only to increase production but also to develop agricultural human resources [2].

Ban and Hawkins said that counseling was taken from the word "torch", it means that there was involvement of extension workers to communicate information consciously to assist farmers in providing persuasion so that farmers could ultimately make decisions from various alternative solutions to problems faced [3]. The communication carried out by salak pondoh instructors covers all matters relating to building awareness of farmers to the problems they face, then the extension officers submit fully to salak pondoh farmers to make optimal decisions, by the goals and conditions of each farmer in the field.

Counseling communication is a form of practice of applied communication. Important elements include source, message, channel, receiver, and effect. Agricultural counseling has long-term goals and short-term goals. The short-term goal of the extension is to foster changes in farming and the knowledge, skills, attitudes, and actions of farmers to manage their farming businesses productively, effectively and efficiently. While the long-term goal of counseling is to improve the welfare of farmers’ welfare by better farming, better business, and better living [2]. There are three counseling methods in conducting effective communication during counseling, namely: (1) the approach to the channel or media to be used, (2) the approach to the relationship between the source of messages and the beneficiaries in counseling, (3) the psychosocial perspective [4].

Salak pondoh instructors use persuasive communication as an approach to delivering information to farmers about ALPP. Persuasion is a symbolic process in which communicators try to convince others to change their attitudes and behaviors about an issue through the transmission of information with an atmosphere of freedom of choice [5]. There are five components of persuasion mentioned by Perloff, namely: (1) Persuasion is a symbolic process, (2) Persuasion communication involves a deliberate attempt by a communicator to influence, (3) Those who accept persuasion basically induce themselves to change attitude or behavior, (4) Persuasion involves transmission of messages, both verbal and non-verbal, delivered interpersonal, or mass media with irrational, factual or emotional nature, (5) Persuasion requires free choice, the key to success is the individual who is free to change his behavior or do what he wants in the communication settings that occur.

The persuasive communication carried out by salak pondoh instructors when delivering information has a purpose, which is to try to ensure that salak pondoh farmers can change their attitudes and behavior by following the recommendations of the information provided to deal with the effects of climate change.
2.2. Elaboration likelihood model

Elaboration Likelihood Model considers that an attitude is a general assessment that people have of themselves, other people, objects and issues. This general assessment can be based on a variety of behavioral, affective, and cognitive experiences, able to influence or guide the affective behavior process, and the cognitive of the recipient of the information.

Elaboration Likelihood Model explains that persuasion communication has two types of assessment pathways that can be passed by the recipient. The first type is the central route, which is an assessment by considering the caution, accuracy, and wisdom of a person about the actual benefits of the information presented. The second type is the peripheral route that is, a result of some simple instructions such as an interesting source that can induce change without requiring accuracy for the actual benefits of the information presented [6].

Salak pondoh farmers who are on the central route will carefully assess the information obtained due to their personal relevance because they have the motivation and ability to process information. Someone is always motivated to have and maintain the right attitude. Because someone is believed to not always be logical in thinking, but it leads to the fact that someone will try his best to not deceive himself in finding the truth and want to maintain a reasonable position [6]. Motivation determines the route of thinking taken by farmers when receiving persuasive information. There is a personal relevance factor and need for cognition that gives influence to a farmer to have a motivation.

After someone can show a tendency to think of information in the form of motivation, the next step is whether the person is able to do it with the knowledge he has. No matter how motivated a person is, he cannot use his critical thinking unless he has an understanding and knowledge of that which he is facing [7]. If the knowledge possessed is not sufficient to support making an assessment, it will be excluded from the central path to the peripheral path.

One way to influence attitudes is to vary the quality of arguments in persuasive information. Another possibility is with simple instructions or cues in the context of persuasion that can influence attitudes with no careful argument processing [6]. Credible or interesting sources can be peripheral cues for receiving persuasion messages, reactions from others who support certain attitude positions on receiving information can also influence one's decisions, and external rewards.

3. Research methods

This research was conducted in Kusuma Mulya Farmers Group, Sukorejo Hamlet, Girikerto Village, Turi District, Sleman Regency, DIY because this group is one of the groups that are active in controlling fruit fly pests. This research was conducted from May to July 2019. This research was conducted from May to July 2019. This study used a qualitative research method, with a case study approach to finding out how the communication that occurs in the salak pondoh farmer groups in addressing climate change and the impact of farmer group communication on the socio-economic development of pondoh salak farmers. Data sources used in this study include primary and secondary data. Primary data obtained through in-depth interviews. Sampling in this study using purposive sampling techniques or deliberate mechanisms. Data validity uses source triangulation. Triangulation can mean the existence of different informants or the existence of different data sources about something [8]. So in this study the researchers chose informants which included agricultural extension workers, Plant Pest Control Organizers (POPT), Chairpersons and Members of the Kusuma Mulya Farmers Group. In this study, the research subjects were salak pondoh farmers who received information about ALPP. Meanwhile, secondary data was obtained through related journals, textbooks and other professional references.

4. Result and discussion

Salak pondoh plants are plants that require a fair amount of water, but these plants cannot store water reserves in their bodies. So that climate change is very influential on the productivity of salak pondoh, especially during the dry season. Some things must be done in the process of salak pondoh cultivation to reduce the impact of climate change, including irrigation, reducing evaporation, and pest management.
The irrigation process originates from a spring from the Krasak River. Irrigation is carried out in turns in each village. The irrigation system agreement was previously agreed by the P3A Group (Farmers, Managers and Water Users) to determine the blocks to be drained every week, then the agreement on the irrigation schedule in each village was determined by the agreement of the farmer group leaders in each village.

Furthermore, to reduce evaporation in the dry season, farmers generally plant shady trees or protective crops such as sengon, coconut, durian, mangosteen, and other annual fruit crops. The plants are planted between salak plants, so that during the dry season it can protect salak plants from the heat, thereby reducing evaporation that occurs in salak pondoh plants.

The impact of climate change began to be felt by salak farmers during the fruit fly pest attack in 2017. Therefore, the UPT of the District of Agriculture, Food and Fisheries Counseling in Sleman Regency began intensive counseling for ALPP. ALPP is a movement to make farmers aware of the importance of dealing with chemicals without supporting the production of organic pondoh salak which is now successfully entering the export market, counseling about making fruit fly traps and the destruction of fruit fly breeding sites has begun intensive since 2018. Making fruit fly traps is done using used mineral water bottles, wire, cotton and petrogenol. Petrogenol serves to attract male fruit flies into the trap. Can be seen in the following picture:

![Figure 1. Equipment for making fruit fly traps](image)

Furthermore, the destruction of breeding sites can be done by harvesting salak at a maturity level of 65-70% because basically, new fruit flies breed in salak whose maturity is above 70%. Farmers tend to harvest salak pondoh with a maturity level of 80% because they are waiting for prices to rise. Besides, the habit of salak pondoh farmers who are also as salak collectors, throwing salak pondoh that is not suitable for sale to the garden, so that the salak pondoh trash can become a breeding ground for fruit flies, has been educated and given plastic bag facilities.

The communication process in the Kusuma Mulya farmer group in receiving messages from instructors tends to choose the central route. From the types and lines of messages that occur in the process of providing this information, it is known that salak pondoh farmers have a high motivation in elaborating messages given by salak pondoh instructors. Salak pondoh farmers pay close attention to the content of persuasive messages given by salak instructors on how to deal with pests due to the effects of climate change. The purpose of providing this information is for salak pondoh farmers to apply how to make fruit fly traps, cut off fruit fly breeding grounds and eradicate pests without chemicals.
Farmer's experience and knowledge about how salak pondoh cultivation can be linked to the truth of the information conveyed, so farmers can receive the information conveyed. This is also related to the farmers' need for information to be conveyed. The strength of the argument from the extension agent to the farmers who are quite critical of the information makes communication run effectively. It is necessary to compose a convincing message argument and to attach the message to the recipient's interests in delivering the message to the target group of highly motivated individuals [9]. In this case, the communicator (the messenger), namely the salak pondoh instructors conveyed the importance of overcoming fruit fly flies and other pests without chemicals because it links them with the productivity of salak pondoh and as one of the conditions for salak pondoh exports, so that the communicant (information recipient) is interested and follows what recommended by the instructor. Increasing salak pondoh productivity will certainly add to the economic value received by salak pondoh farmers.

Table 1. Data on the average salak pondoh production in the 2016-2019 Farmer Group

| Year | Pollination | Production | Production/Family |
|------|-------------|------------|-------------------|
| 2016 | 1181        | 1069 kg    | 6.20 kg           |
| 2017 | 1322        | 789 kg     | 6.03 kg           |
| 2018 | 1207        | 1106 kg    | 6.51 kg           |
| 2019 | 1378        | 1025 kg    | 6.20 kg           |

Source: Report of the Kusuma Mulya Farmer Group

In the table above, it can be seen that climate change that occurred in 2016 resulted in a decrease in pondoh salak production in 2017. In 2017, fruit fly pest management has begun and intensive cultivation has been carried out in 2018, thereby increasing the productivity of pondoh salak in 2018. In 2019 a decline in production due to pollination that occurred in 2018 decreased compared to the previous year.

Not many farmers who take the suburban route, those who take the suburban route because of encouragement from fellow salak pondoh farmers who already know about this program. Farmers who have practiced this information disseminate information to salak pondoh farmers who do not participate in farmer groups. So that quite a lot of farmers who are not members of farmer groups participate in making fruit fly traps.

5. Conclusion
The results of this study indicate that active extension agents provide counseling on how to control fruit fly pests. This is done to help farmers overcome the impact of climate change on the productivity of salak pondoh in order to reduce the risk of damage in the quality and production of salak pondoh. Kusuma Mulya Farmer Group has applied the information conveyed by the instructor to the central route. Some members inform the program to other salak pondoh farmers who do not know the information, so they receive the information via the peripheral route. They felt the results of the implementation of the program by increasing productivity and raising the selling price of salak pondoh. Salak Pondoh instructors continue to educate collectors by asking them to bury those which are not worth for sell, so that they do not become breeding grounds for fruit flies.

6. Suggestions
Salak Pondoh Farmers Group Kusuma Mulya was very enthusiastic about the ALPP program, especially with the GPLB because it has been proven to reduce the attack of fruit flies, so that the productivity of Pondoh Salak can increase amid the impacts of climate change. It is expected that Pondoh Zalacca farmers who are part of the Pondoh Zalacca farmers group or farmers who are not part of Pondoh Zalacca Farmers groups are given counseling to implement the program. If only some farmers implement the program, there is a possibility that fruit flies will re-occur because fruit flies will breed in salak pondoh farmers who do not implement the program.
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