

AGRICULTURAL EXTENSION IN INDONESIA:
Current Status and Possible Ways to Meeting Emerging Challenges

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I. INTRODUCTION

1.1. Background

Agriculture extension has changed Indonesian agriculture. History shows that Indonesian agriculture has changed, and the change was influenced by agricultural extension. Before 1970 era, Indonesian economy was based on traditional agricultural development economy. Since 1970, Indonesia has modernized its agricultural practice through introduction of modern agricultural input (high yielding varieties, chemical fertilizer and pesticides), agricultural practices (modern agricultural techniques) and services (irrigation, credit, and marketing). All these modern technologies were delivered to Indonesian farmers (more precisely, peasants) through modern and systematic agricultural extension services.

Agricultural modernization program, called the green revolution, was successful in Indonesia. From previously being the biggest rice importer, Indonesia reached self-sufficiency in rice in 1984. Compared to the 1960's, Indonesian agricultural today is very modern, with modern input and modern supporting institutions.

Today, Indonesia is known as a democratic country with a highly decentralized government. The local government, at district level, holds the major role in development. Agricultural development management is also delegated to local government. As a result, agricultural extension, as a part of agricultural development, is faced with changes in Indonesian development. The questions to be dealt with are: how is the status of agricultural extension in Indonesia in the dynamic of Indonesian development? In the future, what is the role of agricultural extension in Indonesia, and how is it carried out.

1.2. Objectives

The objective of this paper is to describe current status and possible ways to meeting emerging challenges of agricultural extension service in Indonesia. In detail, the objectives of this paper are:

- a. to describe the role of agricultural extension in Indonesia and its change
- b. to discuss current and future issues in agricultural extension in Indonesia

1.3. Methodology

To fulfill the objectives, various data collection techniques are applied. These are:

- a. Literature study, include official documents, research results. Most of the researches are PhD dissertation and master thesis from Bogor Agricultural University. Official government documents (reports, regulation etc) are also reviewed.
- b. Interview with agricultural extension experts.
- c. Interview with agricultural extension workers and administrators. In order to obtain the current issues of agricultural extension in Indonesia, a series of formal and informal discussions was done with agricultural officers, i.e. extension workers and

extension administrators from Bogor Regency, officers from Ministry of Agriculture Republic of Indonesia.

II. EVOLUTION AND REFORMS OF AGRICULTURAL EXTENSION IN INDONESIA

Development of agricultural extension in Indonesia can be sorted into: (Abbas, 1995, Saragih, 2007):

2.1. Colonial Era

Systematic agricultural development was initiated by the Dutch Government. In 1817, they built a botanical garden in Bogor, a small city near Jakarta, and planted about 50 commercial agricultural commodities; including new rice varieties, nuts, palm oil, tea, tobacco, coffee, sugar cane, and cassava. After that, they developed many agricultural research centers and educational institutions in the area. They also carried out several agricultural extension efforts to increase agricultural production to fulfill domestic and colonial government needs. During that time, the colonial government discovered that there was a gap between farmer practices and available technologies (Slamet, 2003).

In 1908 the Dutch Government appointed five agricultural advisors and in 1910 they established Office of Agricultural Extension. They conducted an extensive range of work (staple food and commercial commodity), from technical to credit system. This agricultural extension system worked well; educating people and modernizing agricultural system in Indonesia. They linked agricultural research to farmers, and distributed many commercial crops. They also conducted rural training for farmers, constructed demonstration plots, conducted study tours for farmers, and also made farming economic analysis.

During the Japan Colonial era, extension activities were non-existence. The colonial government pushed farmers to plant staple food crops and other plants for the on-going war. They also appointed officers to collect agricultural production for the war.

2.2. Sukarno Era (1945 – 1963)

The first systematic agricultural development conducted by the Government of Indonesia was the Kasimo Plan. However, due to political instability, the development plan was not well implemented. In 1950 the Government of Indonesia began to help farmers increase their farming productivity through the establishment of Rural Community Education Center, to introduce chemical fertilizers and pesticides, new variety of crops, improve irrigation system. Again, political instability created difficulties in implementing the program. However, during this period, the government had developed a new approach in extension. They initiated an intensification project for 1000 hectares of paddy field, and provided financial support for farmers (fertilizers, seeds, and cash). They had hoped that this intensification demonstration be imitated by other farmers.

In 1959 there was a little change in agricultural extension development. The government changed agricultural extension approach from *slow-but-sure* to a rapid personal approach;

olievlek-sijsteem to water drop system, expecting that all people (beneficiaries) will obtain water from agricultural extension service. The government launched *Komando Operasi Gerakan Makmur* (Prosperity Movement Operation Command) to achieve self-sufficiency in rice. However, this movement failed, and at that time, due to the use of “command” approach, farmers had negative perception towards agricultural extension.

During the last years of Sukarno Era, Indonesia faced a serious problem due to lack of food. Many people became ill due to hunger. In 1963, the Faculty of Agricultural University of Indonesia (now Bogor Agricultural University) sent their students and professors to rural area to introduce new rice technology (5 technologies of rice: seeds, chemical fertilizers, pest control, planting space and irrigation) to farmers. This action research was successful in improvement of land productivity. Afterwards, the government took over the approach, and called it BIMAS (Bimbingan Massal = Mass Guidance).

2.3. Suharto Era

Suharto regime continued the BIMAS as its main approach in agricultural development. Besides extension services, the government also provided credit, and low-price agricultural inputs (seeds, fertilizers, and pesticides). The government also provided cooperative institutions to help farmers obtain agricultural inputs and market their products.

During that time, extension workers were recruited from all over Indonesia, and the establishment of a very solid organization system. Around 35.000 agricultural extension workers with various expertises were placed all over Indonesia. Very strong agricultural extension organization existed from central government to village level.

During the three Five-Year Development Program (PELITA) in Suharto Era, economic development was based on agricultural economic. Setiawan (2012) mentioned that in this era agricultural sector held a superior position, and played a core strategy in development grand design. A very important result of agricultural development in this era was self-sufficiency in rice. Food and Agricultural Organization dedicated a special medal to Suharto for the achievement in this effort.

However, there were many criticisms against agricultural development in this era. Even though the government placed many extension workers and established a very strong organization for them, democratic extension education was not demonstrated. Many experts said that the agricultural extension workers used “coercion” to change farmers’ behavior. Slamet (2003) said that agricultural extension was used only as tool to increase agricultural (especially rice) production. Through this approach, agricultural extension activities were in the same position as fertilizers for seeds, only to increase productivity, not to educate farmers (Prabowo 2003).

Saragih (2007) mentioned that agricultural development during Suharto era had successfully overcome first generation problem of agricultural development i.e. production and on-farm problems. According to Fakhri (2000), agricultural development during this era heavily used “modern” agricultural input, such as chemical fertilizers and pesticides. Overuse of this input during the green revolution in Indonesia had deteriorated environment.

2.4. Democracy and Decentralization Era

After Suharto stepped-down in 1998, there were big changes in development approaches in Indonesia. Two of these changes that influenced agricultural extension were democratization and decentralization. With decentralization approach, the main decision makers and executors of agricultural development are local government, especially in regency level.

This development brought about serious problems for agricultural development in general and particularly for agricultural extension. In general, not so many local governments emphasized agricultural sector as main engine of economic development, and agricultural development became neglected.

In line with this, agricultural extension became stagnant. In many local governments, agricultural extension institutions were abandoned. According to Slamet (2003b), decentralization has brought agricultural extension in Indonesia to the worst situation, after 30 years of development. Balai Informasi Penyuluhan Pertanian (House of Information for Agricultural Extension) ceased to exist and extension workers missed their "home".

III. CURRENT STATUS, ISSUE, CHALLENGES

1. Government Policy toward Agricultural Extension

After having been neglected for many years, on June 11, 2005 the Government of Republic of Indonesia launched a program called Revitalization of Agriculture, Fisheries, and Forestry. This program is one of important programs of President Susilo Bambang Yudoyono tagline: pro-growth, pro-job and pro-poor. It acknowledges that agricultural sector is very important in Indonesian economy. It absorbs 46.3 percent of Indonesian employees, contributes 15 percent to Indonesian Gross Domestic Product and 6.9 percent of Indonesian exports (excluding oil and gas).

In line with agricultural revitalization, Indonesia also launched Revitalization of Agricultural Extension in December 3, 2005. Another very important momentum of agricultural extension development is declaration of Law No 16 2006, System of Agricultural, Fishery, and Forestry Extension on November 15, 2006. There are some important points stated in this Law, including:

Firstly, Law No 16/2006 mentioned that there are three types of extension workers: government employee extension workers (penyuluh pegawai Negeri sipil), private extension workers (penyuluh swasta), and farmer-supporting-extension workers (penyuluh swadaya). Under this law, Indonesia provides opportunity for private sector and non government organizations to serve agricultural development. Private sector and NGOs are also allowed to establish their own agricultural extension institutions.

As a fact, in addition to 28,000 government extension workers, Indonesia has private extension workers. They are hired by business entities, i.e. agricultural supplier companies.

(Purnaningsih, 2009, Hapsari, 2012). Indonesia also has many experienced farmers and acknowledges them as extension workers. They serve their farmer friends. Many NGOs also place their facilitators at village level and work as agricultural extension workers.

Another implication of the Law is the empowerment of agricultural extension institutions. The law obligates local government to organize agricultural extension institutions at provincial and district levels. Prior to this, decentralization policy allowed local government to abandon agricultural extension institution. Whereas in Suharto Era all provinces and districts had strong agricultural extension organization, during decentralization era this organization ceased to exist. In May 2001, most districts disregarded the agricultural extension institution. Fortunately, under the Law almost all provinces and districts have revitalized their agricultural extension institutions.

2. Profile of Indonesian Farmers

In recent years, the number of farmers in Indonesia tends to increase. In 2010 there were more than 39.4 million farmers. Unfortunately, their land ownership became smaller (Kementerian Pertanian, 2010). About 44 percent of Indonesian farmers have only less than 0.5 hectare of land; 23 percent have 0.5 to one hectare of land. In term of level of education, 75 percent farmers had elementary school education, 15 percent finished secondary school, and only 1 percent finished university. Most of them (45 percent) are 25 – 44 years old, and 41 percent are above 45 years old.

As implication of these figures, many Indonesian farmers also earn additional income from non-farm and off-farm activities. More than 45 percent of male farmers work less than 35 hours a week, while 64 percent of female farmers work less than 35 hours a week.

3. Decentralization and Agricultural Development

Since 1999, under the Law No 22/1999, Indonesia has decentralized almost all sectors, including agricultural sector, to province and district level. Prior to implementation of this act, Ministry of Agriculture had direct network with 32 Agricultural Training Centers and 343 Rural Extension Centers. These centers were well organized with human resources and communication equipment. After the implementation of this law, many personnel and hardware were transferred to other offices (Flor, 2008).

Furthermore, local government did not provide appropriate budget for agricultural development. The decentralization has weakened the information and communication capabilities of the agricultural extension forces. In many provinces and districts, Agricultural Training Centers and Rural Extension Centers were closed.

The Law No 16/2006, Agricultural Revitalization and Agricultural Extension Revitalization provided hope for agricultural extension. Under this Law, many provinces and districts have revitalized their agricultural extension service. Today, almost all provinces and districts have offices of agricultural extension.

However, this political movement is still insufficient. During many extension workers meeting, many opinions said that the political will of local government for agricultural development is inadequate. For many local governments, agricultural development does not contribute

directly to local government revenue. Thus, they give priority to manufacturing and non agricultural industries,, because these sectors contribute direct revenue for local government. For example, in one district, 35 percent of its people live in agricultural sector, but the local government allocates only 3 percent of its local budget for agricultural development. More over, while in Suharto Era agricultural development movement was directly headed by Bupati (district head); today, it is delegated to a lower level that coordination between offices at district level becomes difficult.

III. INFORMATION AND COMMUNICATION TECHNOLOGY FOR AGRICULTURAL EXTENSION

Today, the Government of Indonesia promotes information and communication technology (ICT) for rural development. Internationally, this movement is called Information and Communication Technology for Rural Livelihood (ICT4RL). Based on his research in South East Asia, including Indonesia, Flor (2008) concluded that specific outcomes that link with ICT are:

- a. Increased access to information and communication technologies.
- b. Increased rural group capacity, particularly rural women, to offer marketable skills
- c. Increased community knowledge and access to government services, in area of agriculture, health, education, micro-finance, and disaster preparedness sectors
- d. Increased incomes among families
- e. Increased marketing network
- f. Increased social capital, generated through information sharing and networking among groups.

However, ICT for extension agricultural should be used carefully. Based on past experiences, we have learned that communication service can increase the gap between information rich and information poor. Rogers (1977) warned that for many decades, agricultural extension was focused on rich farmers and created greater gap between the rich and the poor. The rich receive more information and more benefit from it. Thus, ICT should be used wisely.

To avoid such negative effects, there are some principles in implementing ICT4RL, (Flor, 2008):

- a. Adapting to local content
- b. Constructed in existing system
- c. Diversity
- d. Capacity building
- e. Ensure access equality and empowerment
- f. Build network for cooperation
- g. Adopt realistic technology
- h. Sharing information cost

There were some pilot projects in using ICT for rural development in Indonesia. For examples:

1. Microsoft Community Training and Learning Center

This project was initiated by Microsoft. They cooperated with seven non-profit organizations in Indonesia. They inaugurated 33 Community Training and Learning

Center in Indonesia villages. In these centers, there are computers connected with internet, and they train villagers to use them. The alliance organizations help the villagers to organize the center.

A report said, that through this project in Bali, farmers have used them to learn how to produce organic fertilizers, broaden marketing, and other agricultural technologies (Sumardjo, et.al., 2010)

2. Partnership for e-Prosperity for the Poor

This project was implemented by National Development Planning Board in cooperation with UNDP. They created tele-centers all over Indonesia, with computers connected with internet. They also trained the rural poor capacity to use computers.

As result, farmers use information from internet to improve agriculture practice. The farmers also use internet in marketing their product. After the pilot project, government of Indonesia replicated the tele-center in 33.000 villages.

3. Poor Farmers' Income Improvement through Innovation (PFI3)

The PFI3 project is collaboration between Ministry of Agriculture and Asian Development Bank. By this project, Ministry of Agriculture develop national farming website in national level. They also persuaded office of agriculture in district level to construct their own website. These websites provide information about agricultural technologies and market. They also invite private sector to involve in this project.

4. Farmers' Empowerment through Agricultural Technology and Information (FEATI)

This project also teach the farmer to use ICT to empower them and their organizations. Studies conclude that this project increase farmers' access to technology, market, and capital. Another important result of this project is linking agricultural research and extension.

5. Center for Agricultural Information

By this project, government of Indonesia again put agricultural information in district level by using ICT. The project widens farmers' access to agricultural information. The center is also documenting indigenous knowledge, and put them at website. The center is designed as one stop shop for knowledge exchange among agricultural development stakeholders

After implementation of such pilot projects, ICT4RL grow fast to serve the rural people. Internet service is available in many villages, provided by government and private sector. Many website provide information about agricultural technologies. Ministry of Agriculture has his own website on cyber extension. Local governments (especially office of agriculture or office of extension agricultural service) also have their own website with agricultural information. In some places, even extension workers construct his/her website, provide agricultural technology.

NGO also serves the farmers with agricultural information through their websites. Bogor Agricultural University also piloting an internet based video streaming, provide agricultural technology information.

As happened all over the world, cell phone is also popular in Indonesia. Today, there are 180 million cell phone users in Indonesia, or 75 percent of population. (The fourth in the world after China, India, and United States of America).

Internet users is also grow very fast. Interestingly, most (61.9 percent) of the internet users use their cell phone for it. The cell phone user is also were spread out in rural area.

Hapsari (2012) and Mulyandari (2011) said that cell phone is also popular among farmers. Cases in West and South Java, showed that 85 percent vegetable farmers own cell phone. Besides the use of cell phone as telephone and for texting, it is also used to access radio, internet, and as camera. Farmers use cyber extension (especially cell phone) for information sharing among farmers, marketing, and to access agricultural technology.

The research also proved that information in agricultural cyber extension is appropriate for farmer needs. The farmers said that using cell phone as telephone and texting are easy, but as in the case for accessing internet is difficult. They need training and better access (in term of speed) in using internet.

The farmers also get information about agriculture faster. They can ask market situation faster, and know how to market their product, especially vegetables and fruit. In other words, cell phone widens farmer marketing network

However, most of the extension workers lack the capability in facilitating farmers to use cyber extension. They realized, their function in cyber extension is not same with traditional extension. In cyber extension, their role is to help farmer using the media. Training is needed for extension worker in facilitating farmers learning process in using ICT.

Many researches also suggest to form *forum media* as arena for the farmers to discuss what they have get from ICT. (Flor, 2008; Sumardjo, 2011, Mulyandari, 2011, Grimshaw and Kala, 2011). They also concluded there are a need to improve farmers' and extension workers' capability in using cyber extension

IV. HORTICULTURE AND OTHER HIGH CROPS: EXTENSION NEED

Horticulture is one important sub sector in Indonesian agriculture. Indonesia is exporting and also importing fruit and vegetables. Kementerian Pertanian (2010) mentioned that about 2.4 million (6.3 percent) horticulture farmers in Indonesia. Purnaningsih (2006), Mulyandari (2011), and Hapsari (2012) mentioned that horticulture farmers need more up dating information due to nature of these commodities. The farmers need to change their commodities due to changing of consumers need. They also need information about market due to various prices among markets. However, they also mentioned that such information is not available at farmer level. In many cases, information came late or out of date.

Private sector uses this opportunity. In term of technology, traders (seed, pesticides, and fertilizer trader) play very important role. Hapsari (2012) mentioned that traders are the most important information source for agricultural inputs.

Some of private sectors build partnership with farmers. They provide technologies and all inputs needed by the farmers, and then they buy the products. For this partnership, the private sectors provide extension workers to help the farmer managing their farm.

V. CONCLUSION

1. History shows that Indonesian dynamics of agricultural extension is related with political dynamics in Indonesia. During Suharto Era, the government made agriculture as an important engine for economic development, and agricultural extension was also

developed quantitatively and qualitatively. However, in this decentralization era, in many districts agricultural development (and agricultural extension) was abandoned.

2. The Law No 16, 2006 on System of Agricultural, Fishery, and Forestry Extension revitalized agricultural extension in Indonesia. Local government in province and district levels established agricultural extension offices. This Constitution also gives opportunity for private sector and NGO become involved in agricultural extension.
3. Through various projects, the government of Indonesia is advocating the utilization of ICT for agricultural development. The information in website is very useful for farmers, and farmers are capable of learning how to use it. However, there is a need to train farmers and extension workers on how to use ICT. There is also a need to compose *forum media*, to make this media work more effectively.

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