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# The empowerment of indigenous peasants through agricultural extension in Indonesia, 1900–1940

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## ABSTRACT

During colonial government, large plantations in Indonesia used indigenous peasants as unskilled laborers. In 19th century, the government began to pay attention to empower indigenous peasants by the establishment of agricultural extension service. One important thing was how the success of agricultural extension program can sustain the Indonesian economy that occurred after the Second World War. However, very little writing in detail about the history of empowerment activities conducted in agricultural extension. Therefore, this paper is expected to fill the vacant historiography. It is intended to analyze the birth of agricultural extension and the efforts made by the agricultural extension services to empower indigenous peasants. By using the history method, the sources used in this study were colonial archives, journals, or magazines published in the period 1900–1945. The findings indicated that through the agricultural extension services, the government provided guidance to indigenous peasants in the form of providing superior seeds, as well as guidance in the use of technology and agricultural economics. In 1894 the export value of indigenous agricultural products was only 11%, however in 1937 it increased significantly to 45.8%, indicating that indigenous agriculture can support the economy of the colonial when facing the crisis. This means that indigenous peasants can be empowered through agricultural extension services. The success of extension model carried out in the colonial period which empower peasants to become independent and had a better quality of life, was adopted continuously until Indonesia became independent.

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## 1. Introduction

Until the end of the 19th century, most of the population of the Dutch East Indies (Indonesia), which numbered nearly 90 million, only lived on their land. Almost every industry, settlement, and trade were related to agricultural products. There was no industry in Java that can survive except the agricultural industry (Lindblad, 2018). Land in the Dutch East Indies was used by different communities. Indigenous communities cultivated land for the benefit of daily life. They were subsistence farmers who cultivated their land just to make a living. On the same land, Dutch companies cultivated land for export crops (Blink, 1926).<sup>1</sup> Much of the attention of the Dutch Colonial government in agricultural development in Java focused on exporting crop agriculture, both carried out by government companies through forced planting systems, as well as large-scale private plantation companies after a forced planting system, such as sugar cane, rubber, quinine, and coffee. Most of the plantation's products were exported to world markets both in Europe and America. The communities that enjoyed the produce of the plantation were not a farming community in Java, but the owners of plantation companies, which were generally Europeans.

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The large plantation companies were supported not only by large capital, but also by study centers and nurseries. Sugar factories in Java, for example, had *Proefstation voor de Java Suikerindustrie* (an experimental center for sugar industry in Java) based in Pasuruan, East Java. This center conducted research to get the best sugarcane seeds that were suitable for planting in the area. All sugar factories in Java became members of this experimental center. To face competition in the world market, sugar cane plantation owners also joined in *Het Algemeen syndicaat suikerfabrikanten in Nederlandsche-Indie*. The tea, quinine, coffee and rubber plantation companies in Java formed an organization called *Algemeen landbouw syndicaat*. Tobacco companies in Sumatra formed the *Deli Planters Vereeniging*, and the rubber plantation company founded *De Algemeen Vereniging van Rubberplant at Ooskust van Sumatra* (Stroomberg, 2018, 181). As a result, the production of export crops in Java during the forced planting period achieved increasing profits.<sup>2</sup> The forced planting system involved so many workers. According to Djuliaty, not less than 75 percent of the population was involved in the forced planting system in 1840, while the land area used for the system reached 6% of the total land area in Java (Suroyo, 1993, 150).

In contrast to European plantations, producing export crops that were so exploitative and expansive, indigenous agriculture had been stagnant for centuries. They did not have much time to plant their lands because the time was used to fulfill the mandatory work required by the government. Their time according to existing rules must carried out compulsory work for 58 days, but in some cases, they did mandatory work longer than that. They did the mandatory work to meet the needs of export plantations, and the needs of other authorities. The colonial government did not give serious attention to indigenous agriculture. It run with patterns of subsistence agriculture, which were only to fulfill life's needs. Because of their dying living conditions, they were not able to innovate which risked their survival. Scott described their condition as being submerged in water to the neck, so if there were just a few waves, they would sink. This condition caused them did not have the courage to speculate to plant risky plants, especially export crops whose markets were controlled by large plantation owners. Once crop failure, they will not be able to meet the needs of their families (Scott, 1976).

The contradiction that occurs between large plantation systems and smallholder agriculture had led to the birth of economic dualism, between western economies which were supported by a system of capitalist economies and eastern economies based on subsistence farming systems (Boeke, 1953). The products from large plantations were sent to Europe and enjoyed by the colonial state or the Dutch to build his kingdom. Population growth in Java cannot be absorbed in the world of non-agricultural work such as in Japan. They all worked in the agricultural sector whose land was increasingly picking up.

While the high growth of labor due to population growth was not absorbed into other business sectors. They all worked in the agricultural sector of the people whose land was increasingly picking up. Starting from Boeke's economic dualism theory, Geertz described that what happened in Java was not outward growth, but rather developed inwardly. Agricultural industrial products were not used for the development of other industrial sectors in Indonesia that enabled the employment of indigenous Indonesians. As a result, each resident who was born must return to work on their increasingly narrow agricultural land. Mouths that must eat from the subsistence agriculture sector were increasing, while the available land was getting smaller. Thus, the indigenous peasant's agricultural sector did not develop, but instead experienced involution (Geertz, 1976).

The period of 1900–1941 was the initial period which became the basis of agricultural extension programs for indigenous agricultural development, which later became the basis for agricultural development after Indonesia's independence. This condition was supported by extension workers who had the tasks to assist peasants in adopting innovations, starting from the stages of knowledge, persuasion, decision, implementation, and confirmation. During this stage the individual was first exposed to an innovation but lacks information about the innovation. The task of extension workers in assisting farmers was part of efforts to empower farmers to be independent and have a better quality of life. With this empowerment effort, the economy will grow, creating a new social class which later gave rise to awareness of the national movement.

In relation to the economic development of the Indonesian population, Sutomo<sup>3</sup> stated that in order to make the people's economy healthy, it should start from the village, namely from the farmers. Sutomo's statement was delivered at the founding meeting of the Indonesian National Party (PNI) in March 1928 (SRI, 14 Mart, 1928). This party was founded and led by Sukarno.

This period in Indonesian historiography was referred to as a period of historical movement. The historical works in this period, wrote more political and social history with the theme of the struggle to make Indonesia as a nation. Very little writing about the history of agriculture, let alone about the history of agricultural extension. Therefore, this paper was expected to fill the vacant historiography of Indonesia in the field of agricultural history. Even more interesting was how the success of the people's agricultural development program can sustain the Indonesian economy (and the Dutch kingdom) when the country faced the world economic crisis that occurred after the Second World War.

From the description above, this paper is intended to describe the history of the birth of agricultural extension and its main tasks and functions during the colonial administration; the empowerment of indigenous peasants through agricultural extension workers; as well as the results achieved by extension programs in empowering indigenous farming in Indonesia, especially in Java. By using the historical method, the sources used in this paper were colonial archives, reports, or writings published in various journals, magazines, and newspapers which were circulated between 1900 -1941. This timeframe was chosen because it was the first milestone of agricultural extension programs implemented to improve the quality of life of indigenous peasants.

## 2. Literature Review

Indigenous agricultural products such as rice, cassava, peanuts, soybeans, corn, vegetables, and fruits did not receive much attention from the Dutch East Indies government until the end of the 19th century. Exports of agricultural products were dominated by agricultural products such as sugar, coffee, tea, rubber, indigo and the like. The colonial government's attention to indigenous agriculture only began at the beginning of the 20th century, with the formation of the Ministry of Agriculture (Departement van Landbouw) in 1905, which was established in the context of increasing indigenous people's agriculture. This department then launched an agricultural extension program in 1911 which was marked by the establishment of the Agricultural Extension Service (*landbouw voorlichtingsdienst*).

Agricultural extension was developed by the government to empower indigenous agriculture. Agricultural extension was a collection of activities that were to inform, to assist, to educate, and to influence those who worked in the agricultural sector. These activities aimed to influence decision making by increasing knowledge, as well as by changing, or strengthening their attitudes or deepening understanding (Zuurbier, 1984, 13). Slamet (2003) defined agricultural extension as non-formal educational services provided by government and private extension organizations to farmers and their families so that they were able to help themselves in an effort to achieve a more prosperous life.

In its early days, extension was seen as a transfer of technology from researchers to farmers. Now the role of extension is seen more as a process of helping farmers to make their own decisions by adding choices to them and helping them develop insight into the consequences of their choices. Thus, the most important goal of extension programs was to change farmer behavior (Ban and Hawkins, 1999).

The first agricultural extension studies were published in the first issue of Landbouw magazine in 1926. This magazine was published by the Dutch East Indies Agricultural Consultants Movement (*Vereeniging van Landbouwconsulenten in Nederlandsch-Indie*). In an article entitled 'De Landbouwvoorlichtingsdienst en de aanstaande bestuursorganisatie' Koens revealed the decentralization of agricultural extension services along with the decentralization of the Dutch East Indies government. With the establishment of West Java Province, agricultural extension services were no longer centered in Batavia (Jakarta) but were handed over to the province. There were three phases of the development of the agricultural extension program from 1911 to 1925. The first phase was the childhood phase, which was characterized by unsystematic education, unclear problems experienced by farmers, especially those related to the people's economy. The second phase was the *Sturm un Drang* period, which was marked by a high enthusiasm for conducting research, and a thirst for knowledge to improve smallholder agriculture. The third phase, which began in 1922, was characterized by mature knowledge and purposeful work (Koens, 1926a, 93–93).

In another article, Koens (1926b) described three ideas in agricultural education. Firstly, a simple education that can make farmers understand the economic value of farming work. As a result of

this education, farmers can make a business out of their agricultural products. Secondly, simple agricultural education that can make farmers formulate what was needed in developing an agricultural business. Education helped farmers to know what was happening around the world of agriculture, think about what was happening, and acted wisely to achieve the highest profit. Thirdly, agricultural education adhered to methods that had social value. Referring to Koens' view, agricultural extension was also a community empowerment program. Through extension programs, farmers were taught to be able to understand the added value of the agricultural system. Farmers were taught how to calculate the profit of agricultural products to improve their agricultural business.

Extension program and empowerment cannot be separated since the empowerment itself was the goal of the extension program. The term empowerment in Indonesia became popular in 1998 and continued to grow in the new order era (Bahua, 2015). Community empowerment was a process to make the community self-sufficient in accordance with their abilities so that they can improve their welfare. The empowerment process placed the community as the main party or development center (people or community centered development). It was generally aimed at rural communities that have minimal human resource potential but were rich in natural resource potential.

The extension program as a farmer empowerment program was delivered by some experts. Slamet (2003) stated that empowerment was making people (in this context farmers) able to build themselves or improve their own lives. In this case what was meant by 'able' was the same as empowered. Empowerment will produce a society that was dynamic and progressive in a sustainable manner because it was based on both intrinsic and extrinsic motivation. Extension aimed to empower the community, improve welfare independently, and build civil society. Extension was to produce beneficial behavior change and action. Through the empowerment process, it was hoped that the lower-class community groups will be elevated to become middle and upper class. This can happen if they were given the opportunity as well as facilities and assistance by related parties.

As stated earlier, the purpose of community empowerment was to shape individuals and communities to become independent. This independence included the independence of thinking, acting, and controlling what they do. Community empowerment should lead to the formation of a better community cognitive. Cognitive conditions were essentially the ability to think based on the knowledge and insight of a person or farming community to find solutions to the problems they faced. The conative condition was the attitude of the community's behavior that was formed which was directed at behavior that was sensitive to the values of development and empowerment. Affective conditions were mental attitudes possessed by the community which were expected to be intervened to achieve empowerment in attitudes and behavior. Psychomotor abilities were skills possessed by the community as an effort to support the community in carrying out development activities. The occurrence of empowerment in these four aspects (cognitive, conative, affective, and psychomotor) will be able to contribute to achieving the desired community independence (Sulistiyani, 2004). Community empowerment aimed to make people self-sufficient, in the sense that they have the potential to be able to solve the problems they face and be able to meet their needs by not depending on outside assistance, both government and non-governmental organizations.

Narrowing of indigenous agricultural lands was not solely due to population growth which was not absorbed in other business sectors outside agriculture as described by Geertz. The narrowing of ownership of agricultural land was also caused by the policy of the colonial government to obtain labor in western plantations. To meet the amount of labor needed by Western plantations, the village government divided land to people who had the ability to do compulsory work. Land on Java was very much related to labor. People who own or work on land had mandatory work obligations. Mandatory work was originally intended for indigenous rulers. After the colonial rulers planted their power strongly, compulsory labor was also intended for the interests of the colonial rulers, including for plantations owned by colonial rulers. Social stratification of the peasant community in Java was divided into peasant who owned land and who did not own land. They were often referred to as *kuli kenceng* or *gogol kenceng*, *kuli setengah kenceng*, and *bujang*. *Kuli kenceng* was a peasant who owns a house, yard, and large land. They were a group of peasants who had a full obligation to carry out compulsory work according to the government, which was 58 days a year. The class below was *setengah kenceng* who was a peasant who owned a house and yard. They got a burden to do mandatory work for 49 days. Whereas the *bujang* was those who do not have a house and land. They lived in the homes of rich farmers who were in the

category of *kuli kenceng*. The relationships between rich peasants and people who hitched were patron-client. They got a mandatory work obligation for 45 days, but they also had to be a substitute for carrying out compulsory work which became the burden of the *kuli kenceng* who became the patron.<sup>4</sup> The development of agriculture in the form of large European plantations was the reason for the non-development of private land ownership and entrepreneurship of the pre-capitalist rural natives in Java (Geertz, 1976).<sup>5</sup>

Land ownership in Java in the 19th century was very complicated. In general, in the traditional kingdom concept it was stated that the land belonged to the king. Peasants who had the right to cultivate land had an obligation to do compulsory work for the benefit of the authorities. Periodically, the village head divided communal lands against those who can do obligatory work. There was also land owned by individuals that can be inherited from generation to generation. This type of land was usually obtained from clearing new land from the forest into rice fields. Although the land was traditionally recognized as inheriting land ownership, it was not uncommon for village heads to take part of their land to share with others. This description was conveyed by van Vleuten<sup>6</sup> who conveyed the testimonies of two farmers. Those were *Kyai* Nurwahid from Tulungrejo Village, Sukorejo District, Kediri, East Java, and Rasmu from Sumberingin village, Pakis district, Malang residency, East Java. They were community leaders in his village who had managed to open up new land for agriculture. However, after the farmland functioned properly, the village head asked him to share it with others. In the case of Rasmu, from 50 *bahu* (1 *bahu* approximately 0,7 hectare), the land he controlled, divided into 38 newcomers. Rasmu complained that the land he acquired could not be sufficient to meet the needs of his family. This method was carried out by the village head to get additional new workers brought in from outside his village. To meet the needs of the workforce in his village, the village head often invited residents from other villages to move to his village by providing a plot of arable land (Wahyono, 2018). This was in line with the opinion of Onghokham, who said that the power of a nobleman, including the head of the village, was not determined by the extent of the territory controlled, but was determined by the amount of the number or population he owned. The size of the population in a village had a political and economic impact (Onghokham, 2018). The forced planting system that lasted from 1830–1960 had destroyed the system of individual land ownership, because it was converted into communal land.<sup>7</sup>

Geertz also did not explain how the Javanese peasant community overcame the problem of narrowing agricultural land. Newspapers published by the Bondowoso Residency Extension Service, East Java, *Sinar Tani* (1926), illustrated how peasants tackle increasingly agricultural land by intensifying and diversifying crops, and by using agricultural technology to produce better yielding crops. Agricultural extension services provided extension services to peasant through agricultural courses to get better agricultural products. The peasants were given information on how to use agricultural tools such as plows and fertilizers so that the plants were fertile so as to produce a better crop. The peasants were also guided to use superior seeds of various types of plants from the experimental results developed by the Ministry of Agriculture.<sup>8</sup> Agricultural instructors not only guided peasants to grow rice as a staple food, but also grew fruits and vegetables, and even plant sugar cane for the sugar industry for the needs of the community. In the October 1926 edition, *Sinar Tani* reported that there were two peasants who managed to plant sugar cane to be ground into sugar, the results of which were sold to the local community. They were *Haji* Samsuri in *Plalangan* village, Wonosari and Murdiman districts from *Sumberjeruk* village, Tamanan district. Samsuri grinded the sugar with his own sugar cane mill made from wood, while Murdiman grinded the sugar cane with a mill borrowed from the Department of Agriculture office. The sugar produced was sold to the surrounding community.<sup>9</sup>

Rice yields in Java in the inter-war decade were actually almost the same as in Thailand, Burma, India, which were significantly lower than in Japan, Taiwan and Korea. However, the failure to avoid a significant increase in rice yields in the inter-war era cannot only be attributed to the neglect of food crop farming in part of the colonial administration. Boomgaard discussed the background of the formation of the Ministry of Agriculture in 1905 as an effort to increase the productivity of indigenous peasant agriculture. Six years later an extension service was established to serve food crop farming on Java, which, among other innovations, became a land for recruiting and training children or peasants rather than traditional *priyayi* elites. In turn, extension services organized village agricultural courses where information about agricultural practices was better disseminated, as well as 'farmer circles' where peasants

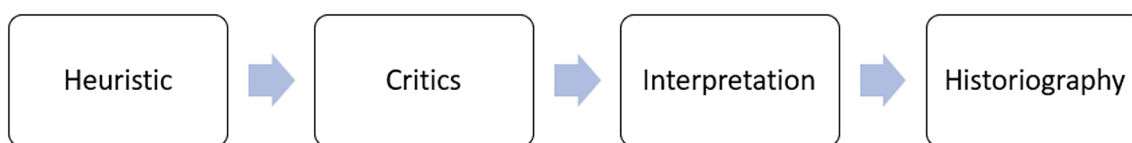
themselves can exchange advice and experience. Barker, Herdt and Rose (in Booth, 1988) went further by claiming that all colonial governments in tropical Asia in the pre-1940 era, the Dutch in Indonesia seem to have made the most progress in researching new rice varieties, even though they recognized that the full impact from their work not realized until after World War II (Booth, 1988, 130–131). As a country that depended on the agricultural sector, the development of Indonesian society should focus more on the agricultural sector. Agricultural development was interpreted as an effort to transform traditional agriculture into advanced agriculture, whose productivity continued to increase.<sup>10</sup> The attention of the Dutch East Indies government towards the development of indigenous agriculture began to appear since the government established the Department of Agriculture (*Department van Landbouw*) in 1905. The new department then developed work programs to improve indigenous agriculture.

The success of agricultural development depended on several aspects. Nevertheless, experience in many countries showed that agricultural extension workers had an important role in agricultural development. They were directly related to peasants. They were peasants' partners in empowering them to improve their quality of life. Functionally, agricultural extension in Indonesia had existed since the colonial administration of the Dutch East Indies. This institution began to run in accordance with its duties and functions in 1911. Agricultural extension during the Dutch East Indies government could be said to have succeeded in growing indigenous agriculture.<sup>11</sup> In 1928, the contribution of indigenous agricultural products to the export of Dutch Indies agricultural produce reached more than 34%. The success story of agricultural extension services continues to be inherited until Indonesia became an independent country. In its development after Indonesia's independence, the existence of agricultural extension institutions in Indonesia experienced ups and downs significantly. In the 1980s, agricultural extension in Indonesia experienced a success story because it succeeded in elevating Indonesia to become a country that self-sufficiency in food. Various policy changes in the agricultural development sector had an impact on the work system and agricultural extension organizations. These changes and developments occurred in accordance with government needs and programs in empowering the farming community. However, in some cases the change did not develop linearly towards a better one, but rather a setback. The result was a discontinuity in the development of agricultural extension programs, especially after the 1990s. This happened because of the low understanding of the history of agricultural extension. Policy makers did not know much about what was done in the past, so they did not know the direction to be done to achieve perfection (Wahyono & Huda, 2015). The importance of this research was to enrich Indonesian historiography, especially the history of agriculture which was not much in demand, especially by Indonesian historians.

### 3. Method

The method used in this research was a historical method. The historical research method relied on four steps of activity, namely heuristics, criticism, interpretation, and historiography (Gottschalk, 1983, Abdurahman, 2007, Ikhsan & Saidin, 2023). Heuristics was a data collection process, which was carried out through research carried out in 2019 and 2022, at the National Archives of the Republic of Indonesia, the National Library of the Republic of Indonesia, and the Agricultural Library in Bogor. Historical sources were found in the form of unpublished written sources such as archives, and published ones such as annual reports of the agricultural extension service (*Jaarverslag van den Landbouwwoorlichtingsdienst*), annual reports of the agricultural department (Department van Landbouw, Nijverheid, and Handel), *coloniale verslag*, agricultural extension news presented in various colonial newspapers between 1900–1940, and secondary sources from various journals and magazines published between 1900–1940, as well as writings from various contemporary sources.

After the data were collected, the next step was to carry out criticism, so that authentic sources were obtained. Criticism was a technique for verifying sources found so that the validity and authenticity of a historical source can be determined. Interpretation of historical sources was carried out through analysis and synthesis. Historical source analysis itself aims to synthesize a number of historical sources so that authentic historical facts were prepared (Abdurahman, 2007; Kuntowijoyo, 1995) which were ready to be compiled into historiography. These steps can be described as the following flow:



## 4. Findings

### 4.1. The birth of agricultural extension

The history of agricultural development will provide knowledge of the efforts made by various parties in agricultural development activities. Each country had a different history of the agricultural development according to the background of their respective countries. This was in line with Wilson who stated that it may be assumed at the outset that there was no universal rural pattern in American agricultural history. There have been obvious variations, both regional and chronological (Wilson, 1964). However, the history of a country's agricultural development can be used as a lesson learnt.

In Indonesia, agricultural extension was born because of the government's desire to increase indigenous peasant's agricultural products. Agricultural products from Indonesia were the main attraction of the Dutch government to colonize Indonesia. Nevertheless, the Dutch East Indies government until the end of the 19th century did not seriously paid attention to indigenous peasant's agriculture. For decades, the colonial government only focused on fostering large plantation companies that had the ability to produce export crops that sell well in the world market. The indigenous peasant community was only exploited in order to obtain cheap land and labor.

Because of its characteristic and its very traditional nature, the government only dare to orient indigenous agricultural development to meet the needs of the domestic market. Its share in the export trade was very small. Nonetheless, over the course of time indigenous agriculture experienced a very significant advance (Stroomberg, 2018, 117). The impact of the policy was the declining welfare of indigenous peasants. Peasants were exhausted to carry out various mandatory work required by the government, both colonial government and indigenous government. The government did not provide guidance, and knowledge related to the development of agricultural technology. Indigenous agriculture was only allowed to fulfill its own needs. And even then, it was often lost and crop failure because the available agricultural land was not properly processed. In 1950 Berger recorded a famine in Central Java. According to Minister of Lands Affairs, Fransen van de Putte, the famine was caused by the poor local government leaders, and excessive labor (Atmosudirdjo, 1957, 223). Peasants were mostly mobilized to work on large plantations rather than to manage their own land. Indigenous peasant communities practically lack agricultural knowledge. Their knowledge of agriculture was based solely on his experience and trust, inherited from their predecessor. The low level of agricultural knowledge in the community had an impact on the low level of peasant productivity. Therefore, to improve the welfare of peasants, it was necessary to first try to increase the level of knowledge of indigenous pesants. This can only be done by guiding peasants through agricultural extension workers Figure 1.<sup>12</sup>

The fate of peasants in the countryside was getting worse. The government realized that attention to indigenous agriculture must be the responsibility of the government. Knowledge of indigenous peasants about agriculture needed to be improved. For this reason, it was necessary to educate peasants to improve modern agricultural knowledge and techniques. These counseling and supervision were the duty of agricultural consultants. The government expanded the agricultural consultancy corps by increasing the budget to expand the formation of low and middle staff field extension workers. The activities of agricultural leaders in the area were given to low level employees.<sup>13</sup>

The birth of agricultural extension institutions cannot be separated from the formation of the Department of Agriculture (*Department van Landbouw, Nijverheid, en Handel*). This department was founded on January 1, 1905, based on the second article *Koloniaal Besluit* (colonial decision) No. 28, July 28, 1904.<sup>14</sup> Before 1905, agricultural affairs were handled by several departments. Agricultural affairs related to education and agricultural research were under the Department of Agriculture, while the technical affairs of agriculture were under the Department of *Van Binnenlandsch Bestuur* (Ministry of Home Affairs).





**Figure 1.** The extension Van for Sumatra's West Coast.  
Sources: *The Netherlands Indie* vol. 4 (3), 1937.

The background of the formation of the agriculture department was because of the deteriorating level of indigenous peasant welfare. The decline in the welfare was evident in a letter delivered by the Dutch East Indies governor-general Rooseboom to the minister of colonies in 1902. In his letter, Rooseboom stated, 'without exaggeration, one can say that the welfare of the Indies was closely related to the prosperity of its agriculture.' Rooseboom also said that agricultural products were planted by indigenous peasants, and the level of competition was declining. This can be a threat to the welfare of the indigenous population. Urgent action was needed in the form of welfare policy. The letter received a positive response. After going through a long debate in the Dutch parliament, finally the department of agriculture was born in 1905.<sup>15</sup>

The focus of work of the Ministry of Agriculture was increasing indigenous agricultural output. Indigenous agricultural development was a major concern in addition to overall agricultural development, including European plantations.<sup>16</sup> Initially what was done by this new institution was conducting scientific research relating to indigenous agriculture, in addition to the department's administrative affairs. Under Treub, the Ministry of Agriculture intensified research and cultivation of rice plants. With his background as a biologist and agronomist, Treub placed research as his focus. He made many experimental gardens to develop various varieties of rice plants (Mat, 2011).

In 1908 the department of agriculture was led by H.J. Lovink with his main task of increasing the transfer of agricultural knowledge to the indigenous population. Because of the assignment, he focused his work on agricultural extension issues. Initially this task experienced various obstacles, mainly related to insufficient amount of energy. To address the needs of counseling experts, Lovink sent young people to study at Agricultural College Wageningen, Netherlands to study tropical agricultural science. Graduates from these schools got priority for being appointed as employees in agricultural extension services (Prince, 1993, 172).

Many agricultural consultants were recruited as agricultural extension workers. Their tasks included conducting research on indigenous agriculture and developing various pilot plants for indigenous agriculture. Nevertheless, their direct involvement in providing counseling to indigenous peasants was still very limited. In their limitations, they tried to be involved in agricultural counseling. This was due to the very limited mastery of regional languages.<sup>17</sup>

The focus of this new department was still the problem of plant pests. This was motivated by crop failures in several regions, which were generally caused by plant pests. On 11 December 1905 the director of the agriculture department asked the heads of regional administrations in Java and Madura to immediately report if they found a disaster or failure of harvest to the department. A similar circular was conveyed again on September 19, 1906. Director of the Department of Agriculture, Treub asked the heads of government in Java and Madura to submit regular reports on crop failures, loss of indigenous agriculture, and other matters that caused losses to peasant's agriculture. In addition to plant pests, Treub also established experimental sites or rice nurseries. Harvest failure was a scourge at that time

because it was the cause of the occurrence of equipment in Java in the late 19th and early 20th centuries. Many things caused crop failures, such as pests, irrigation systems, traditional planting technology, and the abandonment of plants. Many peasants were mobilized to work on large plantations owned by European companies. Research on plant pests and the establishment of nurseries and the dissemination of information to the community were the main considerations of the need to establish agricultural extension institutions. This institution was expected to provide training guidance to farmers in seed selection, fertilization, and land management.

Initially agricultural extension programs were run by agricultural consultants. In general, they were graduates of Wageningen agricultural engineers. This extension group first existed before it was formed by the Ministry of Agriculture. This group existed because its expertise was needed by private plantations which began to invest when the Dutch East Indies government adopted liberalization and free market policies. With this policy, many European and American development companies invested in the Dutch East Indies. To develop superior seeds of various types of plants and good planting systems, they need agricultural experts, who were generally brought in from Wageningen. From there the profession of agricultural consultancy developed, even had a professional organization, namely *Vereeniging van Landbouwconsulenten* (Association of Agricultural Consultants). When agricultural extension agencies were founded in 1911, many agricultural consultants were involved in agricultural extension programs.

Although they had long been agricultural consultants on private plantations, it turned out they cannot do much when they were placed as agricultural extension workers. They were not only constrained by the problem of mastering local languages, but also their ignorance of the indigenous peasant's agricultural system. When deployed to the field as extension agents, they could not simply apply the extension method as was commonly done in Europe or what they used to do on private plantations in the Dutch East Indies. In the field, they also faced a lot of arrogance from the local government officials. Government officials were still reluctant to give up their responsibility to increase the prosperity of indigenous peasant to extension workers, even though they cannot do their own work.<sup>18</sup> This made them frustrated. Therefore, at the beginning of working as agricultural extension workers, they acted more as expert advisors to the local government, conducted research, and developed experimental gardens.<sup>19</sup>

From the government side, the difficulties were mainly due to the government's attitude in the region in the first decade of the existence of the agricultural extension service. Many of the officials in the regions were unable to receive the presence of extension workers. Poor cooperation made agricultural counseling in villages not optimal. After agricultural counseling was submitted to the local government in the form of an agricultural extension service, extension workers work in well-organized services. In various technical problems, extension workers can request assistance from the General Experiment Center. If there were difficulties in supervision in the field, extension workers can also request agricultural inspection assistance.<sup>20</sup>

Agricultural extension services in an area were led by a senior and experienced agricultural instructor. He carried out all tasks related to agricultural counseling assisted by junior counselors who were in every part of the region. All extension workers in each region and their sub-area must submit directly to the head of the agriculture department as far as pure agricultural affairs, while their outside agricultural affairs were subject to the regional heads including their working area. Therefore, agricultural extension workers must work with local governments.

The year of 1918 was a crucial year for the Agricultural Extension Service. This year the government formed a new bureau, called the agricultural economic bureau. The establishment of this bureau was a realization of the welfare report, which stated that the economic aspects of agriculture needed to get the same attention as the technical aspects. The extension service must change its curriculum, which was not only emphasized in agricultural engineering, but also on the aspects of its agricultural economy. Therefore, in the agricultural extension education curriculum in the villages, trade calculation lessons were also taught.<sup>21</sup> With regard to developments in the Dutch East Indies, the Agricultural College in Wageningen was also changed from becoming Agricultural University. The aim was to educate agricultural experts and make graduates highly trained to be placed in the Indies (Prince, 1993, 173).

The director of agriculture provides learning opportunities to Dutch people who were interested in becoming agricultural consultants and placed in agricultural extension services in Indonesia. However, graduates of agricultural education from Wageningen, cannot work directly in the agricultural extension service. The problem of language and local culture was a major obstacle. Peasants who were used to old traditions were difficult to change to manage the agricultural system with a modern farming system (Koens, 1925b).

Therefore, since 1918 there had been a new orientation carried out by the extension services department in providing counseling in the field. Farmers were not only taught agricultural techniques, but also knowledge of agricultural economics. Agricultural lessons were not given to old peasants, who were already well-established with existing farming systems, but were given to young children, children peasants who will replace their parents to become peasants. They were more receptive to new thoughts. Extension Service hoped that children peasant who had received agricultural education can work as peasants with new minds and can cultivate agricultural fields more perfectly, in accordance with modern principles (Kertosomo, 1928).

The seriousness of developing peasant's agriculture can also be seen by the publication of *Landbouw* magazine in 1925. This magazine was published by *Vereeniging van Landbouwconsulenten*. In the preface written by the editor, it was stated that this magazine did not intend to focus its attention on agricultural methods but would provide much room for problems related to economic aspects of agriculture. After 1925, this magazine focused its attention on research on rural agricultural economics and agronomy, which was associated with research on technical agriculture and the agricultural economy of the indigenous population (Prince, 1993, 174).<sup>22</sup>

*Landbouw* magazine was written in Dutch and was very theoretical. By extension officers in the field of this magazine it was considered difficult to be digested by the farming community in general. Therefore, in some areas the Agricultural Extension Service published its own newspaper which was considered capable of conveying its messages to the local farming community because it contained agricultural programs that were appropriate to the needs of local farmers. In Manado, North Sulawesi, for example, the local Agricultural Extension Service published the *Pedoman Tani*. This magazine was first published in 1926. In the same year, the Agricultural Extension Service at Bondowoso Residency, East Java also published *Sinar Tani* Magazine. Both were published in Indonesian (Malay). The contents of the magazine included information about various activities related to agriculture, such as news about agricultural produce exhibitions, agricultural produce competitions, and short articles about folk farming such as how to plant bananas, pineapples, oranges, and various vegetables. Long before that, in Semarang, Central Java, a series of agricultural counseling was called *Mitraning Among Tani*, which was published using Javanese. This book contained practical guidance on how to plant good rice, starting from selecting seeds, using agricultural tools such as plows to loosen soil, using fertilizers, and knowing how to manage crops so that they were not only to be eaten alone but can be sold for needs clothing and housing, as well as other necessities of life including paying taxes. Apart from that, the Ministry of Agriculture published many small books in the form of booklets containing practical guidelines on how to cultivate fruits and vegetables, and other crops that can be sold on the international market.

#### **4.2. Empowerment of indigenous peasant through agricultural extension**

The function of the agricultural extension service according to Koen could be seen from two sides. Firstly, the agricultural extension service served the central interests of the Dutch East Indies government regarding to state responsibility for indigenous agriculture. They function to provide advice relating to agricultural affairs both technically and economically to the government or high-ranking state officials, carried out government duties for government actions needed in agricultural affairs, agricultural research, and dissemination of information about agriculture. Secondly, the agricultural extension service must be able to serve local interests, which directly arise from the needs of farmers. The agricultural extension service not only provided information relating to local agriculture, but also provided agricultural education. They supplied local interests, satisfy people's desires and provide solutions to local problems in the field of agriculture both technically and economically (Koens, 1925a).

Since the failure of the development model that glorifies growth too much, many groups had shifted their focus to development that focused on the people. Since then, 'empowerment' which was introduced in Indonesia in the early 1990s has become the foundation of hope for many parties. At the beginning of its implementation, empowerment often strayed from its initial concept. Developing community independence actually tend to create community dependency. But now, community empowerment had been accepted and developed. Conceptually, community empowerment was an effort to increase the dignity of layers of society which in current conditions were unable to escape the trap of poverty and backwardness. In other words, empowering was enabling and making society independent (Mardikanto, 2010).

In the annual report on agricultural extension services in 1925,<sup>23</sup> it was stated that the main tasks of agricultural extension workers included fertilization experiments, counseling for indigenous peasants about demonstration plants, special research, plantation extension, and inland fisheries. In addition, this service also required to handle agricultural education, Agricultural Middle Schools in Buitenzorg, plantation schools in Sukabumi and Malang, and education efforts in Muara, Buitenzorg (Wahyono & Huda, 2020). Another task that must be carried out in service was the trial of new land. This work included land exploitation, processing, irrigation, cultivation of land, exchange of seeds and so on. Besides agriculture, agricultural extension workers also provide counseling in the fields of fisheries and animal husbandry. The agricultural extension service also repaired irrigation systems in the Cihea, Bogor. After the Extension Department joined the Ministry of Finance, the extension service added its function to improve the indigenous agricultural economy.<sup>24</sup>

In the first edition of *Sinar Tani* magazine in 1926, it was explained that the tasks of agricultural counseling included:

1. Broadcasting knowledge about agriculture through courses, lessons, advice etc.
2. Demonstrating and broadcasting agricultural equipment and superior seeds, and ways to prevent and treat plant diseases, etc.
3. Giving advice on irrigation, land rent, and others
4. Collecting all information related to indigenous agriculture
5. Announcing plants and rules for planting new ones that had been successfully planted elsewhere.<sup>25</sup>

From this explanation it can be said that one of the tasks and functions of extension workers was the communication process, namely conveying messages or information to farmers. The message delivery system itself consisted of several components which were elements of communication. These components were bound together to convey the message from the communicator (extension worker) to the communicant (peasants).

From this communication process, the role of the extension agent was very prominent, so that the extension material can be known, understood and applied by farmers. In carrying out their role, extension workers often experience communication problems, especially in terms of communication competencies that an extension agent should have.

In carrying out this communication, agricultural extension workers used media as tools that help them in conducting extension services that can stimulate extension targets to be able to receive extension messages. This media can be printed, projected, visual or audio-visual media (Widodo & Nuraini, 2013).

In the past, the media most preferred by extension workers was direct contact, namely lectures, chats or visit, in addition to holding courses and training in villages. In addition, media such as magazines were also used to help and increased attractiveness [Figure 2](#). However, as the population increases, development of science and technology, and development of communication tools, extension workers have many choices in using suitable media (BPLPP, 1978).

Agricultural extension services, in accordance with their duties, not only develop subsistence agriculture, which was only to meet the livelihoods of farmers, but also develop export-oriented smallholder agriculture. Therefore, educational materials for counseling had trade counting material.<sup>26</sup> In Palembang (West Sumatra) agricultural extension officers also provided consultations in developing cooperatives and



Figure 2. Magazines as extension media.

the establishment of community rubber factories. Outside Java, farmer's export crops were very dominant than food crops. Traditional types of annual plants (smallholder plantations) that occupied important positions compared to food crops. All coffee exports and rubber from the Indies, more than 25% came from farmer's plants.

Regarding counseling in the plantation sector, the agricultural extension service placed special employees stationed in Buitenzorg, Pasar Minggu, Sindanglaya, Cirebon, Surakarta, Pamekasan, Punten, Banyuwangi, Kabanjahe (Karo highlands), and Makassar. They got the task of developing a trial garden for good quality vegetables and fruit for the area. In Buitenzorg (Bogor) the agricultural extension service had a complete type of banana collection. In this area and also in Pasar Minggu, pineapple, soursop, avocado, rambutan, kapulasan, dukuh, durian, jackfruit, cempedak, kemang, srikaya, blimbing, guava and so on were also planted. In Cirebon agricultural counseling developed mango plants, while Surakarta (Bulukerto) with oranges.<sup>27</sup> In the Residency of West Borneo and South and East Borneo, the agricultural extension service also provided information on smallholder rubber. Whereas in Flores the service also had the task of providing counseling to cotton farmers.<sup>28</sup>

In Java, agricultural extension services also developed nursery centers outside of rice plants. For example, in the Residency of Pasuruan. A major influence on the development of native agriculture in Pasuruan district was the presence of trial centers, nurseries and garden demonstrations in Sukarameh in the village of Simomulyo, in Penanggungan district. There was 0,5 *hectar* garden. Much attention was paid to the improvement of plant material. Around it, agricultural information has provided instructions for the maintenance of citrus trees. Landowners and gardens had become more and more familiar with the work in the experimental garden area and the number of visitors has increased. In addition to citrus nurseries, soil testing was also useful to encourage horticulture especially flowers and vegetable planting. In this area, there were also many cultivated Javanese coffee plants. With several prominent farmers from Karangpolo, Daoe, and Princi, agricultural instructors were asked to be mediated for the construction of fruit and vegetable gardens. Agricultural instructors were asked to be mediated for the construction of fruit and vegetable gardens.<sup>29</sup>

Agricultural business was very closely related to irrigation. Therefore, the agricultural extension service had a close relationship with the irrigation service. Agricultural extension services must be able to provide advice both in terms of agriculture and economics whether an irrigation project can bring benefits or not from the farmer's side.<sup>30</sup> To make it easier for farmers to get seeds, fertilizers and agricultural tools such as plows, agricultural extension workers also help farmers how to raise credit from the farming facilities provided by the government (van der Stock, 1925).

In a meeting discussing the reorganization of agricultural extension in Bandung in 1924, new tasks were discussed. In the agricultural sector, agricultural extension tasks included increasing farm credit. Agricultural credit was used by the proliferation of more modern farming tools such as the use of an iron plow. This tool was imported from Europe and then modified in the Dutch East

Indies according to local needs. Iron plows were produced by Inlandche Christian in the village of Kertorejo, and Kediri. Then European companies in Surabaya made general wholesalers. In Bogor they produced Mocara Plows which were more suitable to local needs. Another issue of concern to agricultural extension is fertilizer. Most fabricks in Java supplies fertilizer for farmers as credit for providing superior seeds (van der Stock, 1925).

All these tasks were not possible without the support of adequate human resources. For this task, the agency placed each of the agricultural officials, who were placed with this particular assignment. Agricultural extension staff in 1925 consisted of 27 agricultural consultants, 6 agricultural experts, 2 employees for inland fisheries, 6 for plantation experts, 64 agricultural consultants and aspirants, 29 agricultural supervisors, 4 plantation supervisors, and 1 *mantri* for nurseries fruit. All of them under the head of the agriculture department and divided into 21 regions, each of 14 people in Java and Madura, and 7 people outside Java.<sup>31</sup>

Since its establishment in 1911 until 1925, Koen saw three phases of the development of agricultural extension. The first stage was the initial period which was characterized by unsystematic counseling. Almost all of the energy was devoted to local work, especially in education and agricultural cooperatives, while the guidelines relating to counseling were unclear. The second period was the trial phase which was characterized by high enthusiasm for researching agricultural problems at the local level. The third period which began in 1920 was said to be a period of work maturation, which was marked by the appearance of regulations relating to counseling. Services in the form of counseling and education were provided systematically in accordance with existing regulations. Although the agricultural extension service in this period received various acknowledgments, Koen admitted that he had not been able to know the direction of the agricultural extension service. The world outside agriculture always offered something new, which always required a study of its impact on the world of agriculture. One of them was changes related to reorganization in government. This reorganization demanded study and great attention from the ministry both at the central and local work (Koens, 1925b).

The success of the agricultural extension program was also recognized by *De Indische Courant*. In the April 17 edition of 1941 the newspaper reported that in 1930 extension services in the area were already underway. In the 1930s there were more than 1000 types of rice seeds. The most popular types of rice seeds at that time were 'paddy rice' from China and 'Srivimankoti' from Suriname. Giving the name 'paddy profit' may be the rice seed can provide more benefits compared to other types of rice. The second type of rice was very small. This rice was also called 'rice jas' because the researchers in Suriname use suits. *De Indische Courant* reported that the activity of using these new seeds was very high. In East Java in 1940 the application of new seeds reached 140,000 hectares, or 13% of all paddy fields. The application of new seeds not only occurs in rice plants, but also soybeans and potatoes. In the same proposal, planting new seeds for soybeans reaches 100,000 *hectares*, and potatoes for 15,000 *hectares*.<sup>32</sup> Rice cultivation provided satisfactory results everywhere in the region, especially in the Banyuwangi and Jember divisions, from which rice was exported outside. Banyuwangi Rice had a good name in trade. In addition to rice, corn occupied the first place among the second crop, while cassava, peanuts, soybeans, and similar plants were also planted.

Indigenous farmers used of the results of trials of superior plant seeds in accordance with their respective regions. Indonesia was very broad and had the characteristics of land and plants that were different from one region to another. Therefore, the Dutch East Indies government established agricultural areas to develop various plants that were in accordance with the character of the land in each region. In a letter from the Director of Agriculture dated 5 December 1923, which was addressed to all agricultural extension agents in the Dutch East Indies, regarding the reorganization of the agricultural extension service, it was mentioned that there were seven agricultural regions in Java and five outside Java (Table 1).

Each instructor head must submit a budget for his own territory. The budget was addressed to the Department of Agriculture, through the heads of regional administrations, governors, and residents. The staff of Agricultural extension services was appointed by the Department of Agriculture. The placement and supervision of employees of the agricultural extension service were determined

**Table 1.** Agricultural regions in Java and outside Java.

No	Agriculture area	Position
<b>Java</b>		
1	Priangan, Banten, and Batavia	Bandung
2	Cirebon	Cirebon
3	Semarang, Rembang, and Pekalongan	Semarang
4	Yogyakarta, Surakarta, Kedu, and Banyumas	Yogyakarta
5	Madiun and Kediri	Kediri
6	Surabaya, Pasuruan, and Madura	Surabaya
7	Besuki	Bondowoso
<b>Outside Java</b>		
1	East coast of Sumatra, Aceh, and Tapanuli	Medan
2	West coast of Sumatra	Padang
3	Palembang	Muara Enim
4	Celebes and surrounding	Makassar
5	Manado	Tondano

Source: Wahyono and Huda (2015).

based on the decision of the Department after negotiating with the regional government and agricultural extension officers who were tasked with leading all agricultural areas (Wahyono & Huda, 2015).

Every agricultural area served agricultural extension lead by a consultant staff consisted of one European national counselor in Bondowoso, one indigenous agricultural teacher in Jember, two indigenous supervisors in Bondowoso and Situbondo, and two *mantri* who served in Jember and Banyuwangi.<sup>33</sup> Then in 1929, the agricultural extension services in *afdeeling* consisted of one agricultural counselor, located in Bondowoso, two assistants to the agricultural counselor, and 11 foremen. They have worked for years by providing good seeds and by showing better land preparation and using green fertilization to increase rice production.<sup>34</sup>

Another activity carried out by extension services in addition to the development of plant nurseries, was the introduction of green manure because phosphate fertilizer was very expensive. Extension agents also taught farmers how to use agricultural equipment such as iron plows and pig fangs to attract rakes in regulating rows of rice plants. Furthermore, farmers were also taught how to store canned seeds, application of artificial fertilizers (sulfuric ammonia) to rice and corn. An important part of the extension service was the construction of seed barns and plant seed shops. Seedling granaries must pay attention to the availability of seeds and ensure seedlings were available.

In 1941 it was noted that the area of the seedling barn reached around 6–7 *hectares* and produced 200 quintals of seeds. This amount was only able to plant 400 *hectares* of land. As such, there was still a lot of need for new barns. To meet market needs, the agricultural extension service provided the public, both individuals and corporations to build seed barns. Seedling institutions continued to grow because these activities benefit farmers.<sup>35</sup> The efforts carried out by the agricultural extension service in improving indigenous peasant's agricultural products have brought positive results. In 1894 the Dutch East Indies agricultural export commodities originating from the indigenous agricultural sector were only 11%. With the introduction of modern technology, indigenous agricultural products experienced a significant increase. The share of indigenous agriculture in the 1913 East Indies export trade reached 25%. This percentage continued to increase to 34.63% in 1928 (Stroomberg, 2018, 177).

Rice was the main crop of indigenous peasants and 100% of rice production came from indigenous folk plants. Rice was also a subsistence plant, which was generally planted by farmers to meet the needs of their families. Although in the table above there was an export of rice of 34,873,000 kg with a value of 2,806,000.00 guilders, the Dutch East Indies government severely limits the export of rice. This was intended to maintain that domestic rice needs could meet the needs of the population of the Dutch East Indies. In 1911 the government had raised the rice account because of the high price of rice on the world market due to bad harvests in China and Japan. However, after it turned out that rice supplies did not meet domestic needs, the government, on the advice of the agriculture department, closed rice exports in September 1911. The government's efforts to ban rice exports were to encourage farmers to increase rice in the available rice fields. In addition, the

government also encouraged residents to plant field rice (*gogo*). The government also requested sugar plantations to reduce the area of sugar plantations by 25%. The fields were used to expand the rice planting area (Prince, 1993, 167–168), both land in the form of rice fields drained by irrigation water, and in the form of dry land.

Water affects the productivity of agricultural land. Because of this, irrigation land can be planted twice for rice, which was interspersed with secondary crops, meanwhile, rusting land can only be planted in the rainy season. To produce more rice, the Dutch East Indies government built a dam whose water could be channeled to the fields through irrigation channels.<sup>36</sup> These steps were taken to deal with the crisis due to World War II. To guarantee the availability of rice to meet the living needs of the Dutch East Indies population, the government tried to expand rice cultivation, especially in Java and Madura.<sup>37</sup>

To control the price of rice to be affordable by the public, the government took over the entire rice trade by buying all the rice harvested by farmers. In addition, the government also banned the import of rice. The period 1929–1936 which was often a period of the world economic crisis, placed rice production as the most crucial problem in the Indonesian economy, so that the government felt obliged to intervene. The interventions included the prohibition of importing rice, so that the domestic market was completely cut off from the international rice market. In this way, the government can control the price of rice which was the main consumption of the Indonesian people [Figure 3](#). With this policy, the government succeeded in controlling domestic rice prices (Prince, 1993, 168).

In addition, the government also encouraged indigenous farmers to grow crops outside of rice. Agricultural instructors guided indigenous farmers to grow vegetables and fruits that can be exported. The institute also published various brochures or practical guidebooks on how to grow vegetables and fruit so that the results were satisfactory. The results indicated that indigenous agricultural production was increasing year by year. At the end of the 19th century the crops of indigenous farmers did not have a significant contribution to the East Indies agricultural exports. This was different from the late days of indigenous rule, where the crop production of indigenous farmers contributed significantly to the exports of agricultural products in the Indies. Until 1937, the production contribution of indigenous farmers reached 46 percent of the total East Indies agricultural exports. [Table 2](#) provided an overview of the development of indigenous agricultural exports since the late 19th century until the end of Dutch colonial rule in Indonesia.

[Table 2](#) indicated that indigenous Indonesian agricultural production continued to increase and almost equal to the yields of large Western-owned private plantations. The efforts of the Dutch East Indies government to encourage indigenous peasants to grow export crops other than rice, indicated positive results.



**Figure 3.** Rice harvest.

Source: *The Netherlands Indie* vol. 4 (7–8), 1937.



**Table 2.** Crops total value of exports, millions of guilders.

Year	Java						Outer java (outer-provinces)						The Netherlands Indies					
	Estate		Native		Total		Estate		native		total		Estate		Native		Total	
	mill	%	mill	%	mill	%	mill	%	mill	%	mill	%	mill	%	mill	%	mill	%
1894	116	94,3	7	5,7	123	100	21	67,7	10	32,3	31	100	137	89	17	11	154	100
1898	115	95,8	5	4,2	120	100	23	68,3	10	31,7	33	100	138	89,9	15	10,1	153	100
1902	123	90,4	13	9,6	136	100	23	48,7	24	51,3	47	100	146	79,7	37	20,3	183	100
1906	148	90,2	16	9,8	164	100	21	43,5	27	56,6	48	100	169	79,7	43	20,3	212	100
1910	187	84,2	35	15,8	222	100	18	30	42	70	60	100	205	72,7	77	27,3	282	100
1913	231	84,6	42	15,4	273	100	88	60,3	58	39,7	146	100	319	76,1	100	23,9	419	100
1917	339	91,6	31	8,4	370	100	89	62,4	54	37,6	143	100	428	83,1	85	16,9	513	100
1921	516	88,8	65	11,2	481	100	133	56,4	103	43,6	236	100	649	79,4	168	20,6	817	100
1922	401	89,7	46	10,3	447	100	121	50,2	120	49,8	241	100	522	75,9	166	24,1	688	100
1924	675	89,8	77	10,2	752	100	205	48	222	52	427	100	880	74,6	299	25,4	1179	100
1925	625	86,1	101	13,9	726	100	297	40,6	434	59,4	731	100	922	63,3	535	36,7	1457	100
1926	541	87,7	76	12,3	617	100	276	46	324	54	600	100	817	67,1	400	32,9	1217	100
1927	604	88,2	81	11,8	685	100	284	46,8	323	53,2	607	100	888	68,7	404	31,3	1292	100
1928	583	81,2	135	18,8	718	100	225	43,4	294	56,6	519	100	808	65,3	429	34,7	1237	100
1929	484	82,3	104	17,7	588	100	201	41	289	59	490	100	685	63,5	393	36,5	1078	100
1930	404	85,2	70	14,8	474	100	170	47,4	189	52,6	359	100	573	68,8	260	31,2	833	100
1931	234	80,7	56	18,3	290	100	108	49,8	109	50,2	217	100	342	67,5	165	32,5	507	100
1932	165	77,1	49	22,9	214	100	82	48	89	52	171	100	247	64,2	138	35,8	385	100
1933	115	75,2	38	24,8	153	100	66	43,1	87	56,9	153	100	181	59,2	125	40,8	306	100
1934	123	79,9	31	20,1	154	100	88	51,2	84	48,8	172	100	211	64,7	115	35,5	326	100
1935	102	76,7	31	23,3	133	100	86	53,4	75	46,6	161	100	188	63,9	106	36,1	294	100
1936	112	73,2	41	26,8	153	100	117	56	92	44	209	100	229	63,3	133	36,7	362	100
1937	175	75,4	57	24,6	232	100	183	42,8	245	57,2	428	100	358	54,2	302	45,8	660	100

Source: The Exportcrops of the Netherlands Indies in 1937, *Bulletin of the central bureau of statistics*, No. 157, Departement of Economic Affairs (1937).

## 5. Conclusions

The Dutch East Indies government began to pay attention to the indigenous agricultural economy at the end of the 19th century. This was due to various reports showing that the level of welfare of the indigenous peasant had declined. After going through extensive discussions in the Dutch parliament, finally the Dutch government decided to form the Ministry of Agriculture in the Dutch East Indies. This department was formed to plan precisely what actions should be taken in advancing indigenous agriculture in the long term. The department planned to increase rice and secondary crops in paddy fields and dryland and encouraged the growth of dry agricultural industries.

For this reason, it was necessary to transfer knowledge to indigenous peasants about agricultural technology and agricultural economics. Workers who have expertise in agriculture were needed. They were then assigned to rural areas to provide agricultural counseling. They could not work without cooperation with government officials in the area. This problem was then resolved by the establishment of an extension agency which was institutionally under the Ministry of Agriculture. The extension workers were initially filled by agricultural consultants, who had previously existed as agricultural consultants on large plantations. In addition, the government also recruited graduates of agricultural schools in Wageningen Netherlands to be appointed as extension workers.

They empowered indigenous peasants by several activities, such as providing guidance or education to rural farmers about agricultural techniques, land processing techniques, nurseries, development of demonstration gardens, fertilization, and irrigation. Indigenous farmers were also provided with knowledge about agricultural economics. Therefore, in the education curriculum for extension workers in the villages, trade calculation subjects were given. Other knowledge provided to indigenous peasants was about village banks, cooperatives, and small agricultural industries.

The empowerment carried out can be said to be successful as indicated by an increase in the quality and quantity of agricultural activities carried out by farmers. The success of agricultural development programs through agricultural extension services can be seen from the increase in indigenous agricultural products. In 1894 the contribution of the native agricultural sector to the export of agricultural products of the Dutch East Indies did not have a significant value. Only 11% of the Indies agricultural export commodities originated from the indigenous agricultural sector. The introduction of modern farming techniques to indigenous peasants in the countryside has had a positive impact. The success

of extension model carried out in the colonial period which empower peasants to become independent and had a better quality of life, was adopted continuously until Indonesia became independent.

## Notes

1. 'Studien over het Javaansch Grondbezit', *Tijdschrift voor Nederlandsch Indie* (1881), Vol. 3, p. 81.
2. According to Fasseur, the period between 1850–1860 colonial government profits with forced planting systems produced an average of 24 million guilders. See C. Fasseur, *Kultuurstelsel en Colonial Baten* (Leiden, 1975).
3. Sutomo was the founder of Budi Utomo, the first modern Indonesian movement organization.
4. See 'Dorpsonderzoeksrapport in het Distric Malang in 1928', *Mailrapporten*. 2411x/1929; Ongkhokham uses the term *sikep* and *numpang*. *Sikep* is a person who owns land and a house, and *numpang* is a person who does not own land and a house so that they live in a crib on the path that becomes his path. Ongkhokham, *Madiun dalam Kemelut Sejarah: Priyayi dan Petani di Karesidenan Madiun Abad XIX* (Jakarta, 2018), ina. 157–159.
5. Geertz's opinion has been widely refuted, among others by Elson, Knight, Robinson, and Gordon.
6. See Van Vleuten, 'De Invloed van Heerendiensten en Hoofden op het Grondbezit', *Tijdschrift voor Nederlandsch Indie*, vol. 1 (1872), 294–299.
7. Cultivation systems according to van Niel have inherited three main things that have an impact on the development of the agricultural economy in the following period, namely the formation of capital, cheap labor, and changes in the rural economy. See Robert van Niel, *Sistem Tanam Paksa di Jawa*, (Jakarta, 2003), ina. p. 277.
8. 'Bab pekerjaan kaodem tani', *Sinar Tani*, vol 1 (4), 1926.
9. 'Cursus-landbouw dea di Bondowoso', *Sinar Tani*, vol 1 (5), (1926).
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11. See A.J. Koen, 'De landbouwvoorlichtingendeienst de aanstande bertuursreorganisatie', *Landbouw Tijdschrift Vereeniging an Landbouw Consulente in Nederlandsch Indie* (1925–1926) volume 1. Some authors call agricultural institutions established since 1910, see Sinar Tani, (2001); Harijati & N. Huda, Fundamentals of agricultural extension (Jakarta, 2005); Mardikanto, *Extension of Agricultural Development* (Jakarta, 2009); Ge Prince, 'Economic policy in Indonesia', J. Thomas Lindblad (Ed), *New Challenges in the Modern Economic History of Indonesia* (Leiden, 1993), 172; Meanwhile, there are also authors who say that agricultural extension in Indonesia was established at the same time as the establishment of the Extension Department in 1905, see Abas, *90 Penyuluhan Pertanian di Indonesia 1905–1995* (Jakarta, 1995); while the Ministry of Agriculture itself stated that agricultural extension institutions were established in 1908. See, BPLPP, *70 Penyuluhan Pertanian di Indonesia* (Jakarta, 1978).
12. 'Landbouw en irrigatie', *Bataviaasch Nieuwsblad*, 22 Nov 1922.
13. See 'Landbouw voorlichtings', *Het nieuws van den dag voor Nederlandsch Indie*, 16 June 1938.
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21. *Jaarverslag Landbouwvoorlichtingsdienst*, 1928.
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33. J.P.H. Fessevier, 'Memorie van Overgave Resident Besuki', 1 August 1922.
34. A.H. Neys, 'Memorie van Overgave Resident Bondowoso', 25 July 1929, *Mailrapporten* no. 2527/29.
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36. The description of irrigation canals in Indonesia in the 1930s can be seen in J. Stroomberg, 2018, *Op. Cit.* p. 226–235.
37. 'Het werk van economische zaken', *De Indische Courant*, 4 July 1936.

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No potential conflict of interest was reported by the author(s).

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