



A Corn Planting Area Expansion Program with Added-Value in Pusporenggo Boyolali, Indonesia

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Abstract— In Indonesia, a predominantly agricultural nation, rice shortages are a serious problem. The study's objective is to advance corn's standing in order to increase the supply of food. In order to start a "corn planting movement," the government should extend the corn planting area because it can no longer meet domestic corn demand and its corn import policies always have a negative effect, especially on farmers. This strategy involved inviting farmers to take part, offering incentives including production equipment assistance and harvest failure insurance, buying maize crops at higher prices, enrolling employers as partners, and giving farmers assistance. The results of the work done in Pusporenggo, Musuk Sub District, Boyolali Regency, Central Java Province, Indonesia between November 2019 and March 2020 during the planting season indicated an increasing trend. 103 farmers with a 50-ha area width and an average farming yield of 5 tons/hectare participated in this program. The crop from this planting season can be used by local and national scale national cow breeders, however, it has little added value.

Keywords— areal expansion, food stock, incentive, added-value

1. INTRODUCTION

1.1. Analysis of Situational

The agricultural sector of Indonesia comprises large plantations (both state-owned and private) and smallholder production modes. The large plantations tend to focus on commodities which are important export products (palm oil and rubber), while the small hold farmers focus on rice, soybeans, corn, fruits and vegetables. Farmers make up 68 percent of the population in Indonesia, making it an agrarian state. Furthermore, rice farming product is necessary sustenance for Indonesian people; hence, "rice" signals critical difficulty to Indonesian government. Food stock is a major priority in the government's policy, with "BULOG" serving as the controller of food stability, giving this institution a central role.

Actually, speaking of food stock does not only refer to rice, but also corn, edible tuber, and oat as food materials. Except for oat, food material agriculture has spread significantly in Indonesia because the characteristics of farming material are compatible with those two plant types: corn and edible tuber. Corn and edible tubers are more compatible with dry fields, but rice is more friendly with rice farms. Because corn and edible tubers are not primary foods, these two plants are intended to meet people's secondary needs as well as cattle feed material.



With its vast and abundant fertile soils Indonesia is a major global key producer of a wide variety of agricultural tropical products, and although agriculture's share of the country's gross domestic product (GDP) has declined markedly during the last five decades, it still provides income for the majority of Indonesian households today. In 2012 this sector employed around 49 million Indonesian individuals, which represents 41 percent of the total Indonesian labor force. But although in absolute numbers the agricultural workforce keeps growing, its relative share of the total Indonesian workforce has declined significantly from 55 percent in the 1980s to 45 percent in the 1990s and currently to 41 percent. Only during the Asian Financial Crisis in the late 1990s this share grew significantly because unemployment in both the industry and services sectors was absorbed by the agriculture sector (mostly informally).

Because it may be utilized as both a source of alternative food and a feed for livestock, the corn plant has strategic relevance in Indonesia. There is a big demand for chicken feed because of how much chicken is consumed; also, corn stem and leaf can be utilized as cow and bovine feed. The goods of domestic farmers, such as corn centers in Nusa Tenggara Barat province and other corn-producing areas, cannot satisfy the increased demand for corn by cattle feed companies. The "opening the import tap" policy is intended to satisfy this requirement. Farmers are consequently unable to take advantage of the rising demand for corn on the domestic market.

The government should focus especially on its program of expanding corn plants in dry fields as an early effort to meet domestic corn demand. Through the provision of seed, fertilizer, herbicide/insecticide, insurance for corn farmers in the event of a failed harvest, and the purchase of the corn crop in the event of a successful harvest (panen raya), the government should assist this "corn planting movement". It is possible to do so in order to keep pricing steady. By maintaining a consistent price for corn throughout a plentiful crop, farmers' interest in planting corn can be preserved. Farmers also don't need to worry because the market is consistently absorbing more corn demand. Numerous small- and medium-sized companies produced corn-based goods in addition to being used as cow feed.

1.2. Site of the Study

The rural environment is rapidly and actively changing. As a result, through the village fund, the Central Government's policy focuses on rural communities. The paradigm of the village has changed from the associational *gesellschafts* society village to the economically oriented *gemeinschaft* society village (patembayan community). Additionally, Pusporenggo Village, which is nearby Boyolali City, will experience a shift in life (suburban). Boyolali City is expanding quickly, thus the village council should create a plan to prepare for its negative repercussions, such as social issues including economic inequality and crime brought on by squatting and social unrest between the city and village that manifests in the suburbs.

Due to the fact that Pusporenggo Village and Boyolali City are geographically connected, they can grow in tandem without encountering any problems. In a suburban setting, the community's lifestyle would shift toward an urban pattern, driven by the growth of the informal and upstream sector, which would be populated by urban residents lacking farming experience, while village residents who had previously worked as farmers would transition their



careers into the informal sector. Due to the expansion of rain-fed land and a shortage of labor in the farming industry, there will definitely be a reduction in the amount of arable land. Therefore, as a preventative measure, the agricultural sector should be strengthened to enable rural residents to survive as farmers.

The village authority has made little effort to make the farming sector interesting to rural people, particularly youngsters, despite the fact that the farming potential in Pusporenggo village is enormous. The results of a survey on Pusporenggo Village potency mapping done by 32 college students on February 29, 2020 reveal the following four potencies:

1. Economic potential: positioned along the main road; bus corridor connecting cities and provinces.
2. Agricultural potential: its soil is dry and suitable for corn production.
3. Potency in animal husbandry: chicken and cow breeding
4. Tourism village potential: there are two wide and large rivers on Mount Merapi's slope, and PPDAM Boyolali has completed 50% of the embung (water reservoir) building plan, as well as a national-scale square.

Corn farming will be the focus of community service in this essay, out of the four previously described potencies.

1.3 Movement of Corn Planting

On August 24, 2016, 103 farmers and farmer groups gathered for socialization in the auditorium of Pusporenggo Village, Musuk Sub District, Boyolali Regency. On an existing 50-hectare property, it has been decided to plant maize during the fruit plant season, which falls during the rainy season in October 2020.

PT SAROTAMA is initiating socialization, which will assist in providing seed, herbicide/insecticide, and fertilizer as insurance against harvest failure. PT SAROTAMA will purchase the output at a price that is higher than the average market price, or at least IDR 3.100/kg (the lowest price). As a result of this early arrangement, PT. SAROTAMA does not obligate farmers to sell their goods to it. Farmers are still permitted to sell their products to third parties.

Only 57 (fifty-seven) farmers are still part of this group, and they have an 11-ha planting area, whereas the other farmers plant individually. They plant on their own since they still have seed and manure and want to sell their produce right away to buyers rather than waiting for it to dry in the sun for two to three days. Individuals who remain part of the organization, however, typically do not have an immediate financial need.

Since farmers are typically willing to produce maize simultaneously, expanding the corn plant area width for both independent and partnership groups do not provide a challenge from the perspective of the initial goal. Ten Sido Makmur farmer groups include members of the farmers in Pusporenggo village.

According to the results of an interview survey, the corn planting movement has been running for a sufficiently long time because the soil in Pusporenggo village of Musuk Sub District is very compatible to corn plant, with a harvest output of 5-6 ton/hectare during the rainy planting season with a 100-day period. Corn planting desire is



bolstered by the presence of local national-scale breeders, with corn consumption needs exceeding Pusporenggo's maize production capacity and even accommodating corn output from beyond this area. Furthermore, corn stem is in high demand for cow bovine feed.

According to economic theory, there is still a large gap in meeting market demand, whether local or regional, at a competitive price, in terms of the market rule of demand and supply. Corn growers must benefit in this case, despite a small profit margin, because corn prices do not fall throughout the massive crop. Farmers' traditional scenario entails failing to make a suitable profit while expecting a loss owing to harvest failure and dealing helplessly with significant financiers (including chicken breeder).

The chicken breeder, as the huge financier, controls the price of the product, despite the fact that it is lower than the production price, and farmers stay marginalized with poor profit and even lower exchange value (Kompas, April 3, 2020). The purpose and role of the community service performed here is "to enhance the farmers' bargaining position in order to enjoy appropriate profit, so enabling the corn-planting farmer to live by growing the corn-planting area width toward corn self-sufficiency.

1.4 Model of Trisula Facilitation

The goal of this corn planting effort is to strengthen farmers' bargaining power. It is possible to use an "upstream-downstream" approach, involving three stakeholders.

PARTNER COMPANY	PRODUCER	CONSUMER
Support: <ul style="list-style-type: none"> ● Seed ● Herbicide/insecticide ● Fertilizer ● Simple technology ● Insurance 	Support: <ul style="list-style-type: none"> ● Food processing/ home industry ● Ready-to-mill corn ● Split corn 	Support: <ul style="list-style-type: none"> ● Gift and souvenir center ● Cattle feed producer ● Chicken breeder

- I. **PARTNER COMPANY:** Establishing connections between farmers and media partners who are prepared to donate industrial space, basic technology, and insurance. Despite the fact that farmers' simple selling to the press is not binding in nature in this case, PT. SAROTAMA is willing to meet the farmers' demands and is even willing to purchase their produce at a price of at least IDR 3,100,- / kg or larger than the market price.
- II. **PRODUCER:** Producers of corn-based products like marning (fried corn) and emping jagung (corn chips) are involved in maize production to suit the needs of cattle feed producers as well as to instruct villagers.
- III. **CONSUMER:** Merchandise and souvenir store offering locally produced goods made from corn. Acquiring chicken breeders without splitting or processing.



The study's goals are as follows: 1) reinforce maize's position as a food stock, 2) increase the availability of basic cattle feed material, 3) add value by processing corn into Boyolali traditional snacks, and 4) develop simple corn-splitting technology.

2. METHODOLOGY

The Pusporenggo community service group went through several stages. The author conducted study on farmers and villages.

The first stage (getting in: arriving at the research site) includes the approach to village apparatuses such as the village head, other village authorities, and community leaders. Furthermore, the author contacted the partner company, PT SAROTAMA, and after determining program compatibility, the author sought information on whether or not Pusporenggo village is suitable with this corn planting movement program.

In the second stage, the author approaches the parties deemed required and important to the corn planting operation (getting a long or contacting the subject of research). The author does not invite the farmer community of Pusporenggo Village to sow grain on the spur of the moment. Following an observation, the author arranged a meeting with community members, particularly community leaders, with the help of village apparatuses, commencing with a narration about the program's goal and objectives and exploring residents' shared expectations (want). Some needs and demands were discovered as a result of a meeting facilitated by The Head of Village (Kepala Dusun), Mr. Sriyono, and Government Program, author's, and citizen's needs were synchronized. As a result, the author adopted an integrated method. It all began with the citizens' need for clean water, which prompted the organization of a development program for dug wells. Because of this, the author was able to secure funding from KKL (field practice) students to aid in the construction of a dug well. Additionally, we offer free dental exams to people, reforest the area by planting guava and avocado trees, engage citizens to explore the possibilities of Pusporenggo Village, and ultimately, offer them a way to accept our presence through the Field Practice Study and Community Service program.

We include 32 students in the third stage (logging or data collecting) to collect data by filling out a questionnaire that we have designed. The question list is completed in the Pusperenggo village office, Musuk Sub District, Boyolali Regency, with the assistance of Hamlet Head, Mr. Alif Muktiono, SE., M.Si.

3. RESULT AND DISCUSSION

The analysis of the outcomes of community service in Pusporenggo village about corn plant movement in an effort to meet the demand for corn through expansion focuses on the challenges faced by farmers in the service location, the strengthening of the village, and the projection of corn farmers' future by involving other citizens (upstream-downstream approach), particularly the private sector. Although it focuses more on the village's capability and potential with all strengths held, the SWOT analysis is utilized as a guide.



This service focuses on strategies to increase the wealth of farmers and communities in Pusporenggo, Musuk Sub District, Boyolali Regency, while simultaneously growing Boyolali City without abandoning traditional traits or capacities. First and foremost, we want the people present to recognize themselves in terms of the limitations that have arisen, as well as to raise people's consciousness through education about the possibilities available through green and sustainable development principles, as well as to include the people (participation). This concept of early-stage development is comparable to people's daily activities, the majority of whom are farmers. As a result, agriculture is the cornerstone of every service activity. Later, we encourage people to think about creatively developing the village's potential, with secondary activities such as farming and added-value focus.

Farmers have hitherto focused entirely on the corn crop to meet primary market demand, which means they sell the grain without changing its shape, variety, or product. Because the bulk of farmers are always faced with the fulfillment of daily necessities, the crop money will be spent directly to buy daily necessities. Farmers' position is marginalized, and their exchange value is decreasing with time. Farmers' month-to-month (m-to-m) exchange value falls by 1.22%, and even by 1.30% in the food plant subsector, according to statistics released by the Central Bureau of Statistics (BPS: March 2020).

Farmers have yet to identify an appropriate way for limiting their production yield over a longer period of time. Farmers with a capital reserve and the ability to limit (store) their produce can earn an additional IDR 4,000,000 per kilogram, or 12.5%. Mathematically, the profit of a corporation with a bank loan at 2% interest remains highly advantageous for farmers. The community service mindset seeks to bridge or connect financiers to profit-sharing schemes. The restriction of a 6% (small) profit each planting season (100 days) is unappealing to investors. Mr. Musclich, a farmer with 1 ha of property, stated in an interview:

"I can limit my harvest for 1-2 months and increase the selling price by IDR 500,00 per kg." Thus, with a crop amount of 5 tons, the price difference is $IDR 500 \times 5,000 \text{ kg} = IDR 2,500,000$."

The People's Business Loan (Kredit Usaha Rakyat or KUR) program, which is intended to meet the need for production facilities only, with the expectation that it will be repaid after harvest, tries to connect farmers to Bank BPR in light of this situation, but the technical requirements of banking are difficult for farmers to meet. A different strategy is to include BUMDES (Village-Owned Enterprise). The meeting room and the rotating savings-loan fund in Pusporenggo Village are managed by BUMDES. As a result, luring investors with profit-sharing capital is a very practical approach to deal with the corn traders/bakul jagung in the village, allowing farmers to benefit from increased corn output maps. Furthermore, farmers require assistance in increasing the value of their maize production. According to the findings of a survey done on gift and souvenir shops in Boyolali Regency, the demand for corn-based foods such as marning and emping mlinjo is fairly high, with each store selling an average of 800 kg of food supplied by Home Industry.

Craftsmen and corn farmers have not explored the possibility of meeting the need for corn-based cuisine. Mr. Iskandar, the owner of a gift shop in Boyolali, stated during the interview:



"His store has the capacity to sell 800 kg of corn-based food product, but the stock is frequently depleted since the supplier cannot complete the order."

We examine the provider of corn-based food in Winong Village, Boyolali Sub District, based on the information, and acquire the following information from the owner of a home industry:

"Due to limits such as the rainy season and limited capital and human resources, the domestic sector cannot meet the demand for corn-based meals."

Based on the information provided by the owner of the home industry, this service program seeks a capitalization partner to meet the need for more than IDR 18,000,000-fund per production with 800 kg output volume in the first stage and 600 kg in the second stage, at a selling price of IDR 20,000 per kg, for a total sale volume of IDR 28,000,000 for one harvest season (100 days).

It indicates that the profit obtained in two months is IDR 10,000,000 (it still leaves capital leftover in the form of cooking oil and fuel wood, which cannot be measured in rupiah). To satisfy the requirement for human resources, his team is willing to train residents who are interested in learning. They continue to receive numerous requests for corn-based food production from gift shops in the Boyolali area.

Finally, the community service team returned to Pusporenggo village to meet with the residents. We agree to find some people to attend the marning production training. In the future, in addition to meeting the need for gift food in Boyolali, the communities surrounding it will be targeted.

It is possible to do so by recalling the availability of grain as a basic industrial material in the local village. The addition of value to the village's corn production output in order to meet the demand for corn-based meals is predicted to result in a higher price, IDR 5,000 per kg, compared to the non-processed corn's price of IDR 3.500,00, and the processed corn can be sold for IDR 20,000 per kg. With a production cost of IDR 13,000, a profit of IDR 7,000/kg is possible, implying that a volume capacity of 1.5 ton for a 100-day harvest period can offer job opportunities for villagers because it can be done at home.

The first step is to form a group of villagers who will be trained on how to create marning using resources (skilled in creating marning) from other areas, using an apprenticeship technique for one week in rotation. This stage will continue in the second stage based on the results of the evaluation conducted after the training in the first stage is completed. This training in the production of "marning" is expected to boost the capacity of "marning" production in meeting the demand of gift stores in Boyolali regency.

There are two varieties of maize gift food products: marning and emping jagung (a corn-processed food made by grinding the corn using simple technology instrument). However, because home industries in Boyolali do not have the instrument (tool), emping jagung has been supplied from locations beyond Boyolali Regency. Mr. Widodo, the owner of marning home industry in Winong, stated in an interview:



"He has not yet created emping jagung since he focuses on marning production, which is no longer able to meet the demand from gift stores due to a lack of human resources and money." Meanwhile, IDR 50,000,000 is required for the purchase of an emping jagung production technology tool."

As a result, "emping jagung," a product with more potential than "marning," has an unexplored market. Due to the farmers' lack of a corn shelling machine and the constraints imposed by primitive technology, maize shelling is still done by hand.

Furthermore, a corn splitting technologically based machine is required, with the split corn being sold directly for chicken feed. The procurement of maize shelling and splitting machines will take place during the second stage of the community service program. The figure below depicts this.

4. CONCLUSION

The endeavor to expand the land toward corn self-sufficiency for the farmers' health in Pusporenggo Village, Musuk Sub District, Boyolali Regency shows significant benefits. It is clear from the 50 ha of available land and the typical production rate of 5 tons of dry corn per ha between December 2019 and March 2020. In the first week of April, corn costs IDR 4,000/kg. The goal for the 50 ha-wide land has been achieved, and the price is more than IDR 4,000, but the partner company's standard still needs to be raised to 6-7 tons of dry maize, compared to the province of Nusa Tenggara Timur's production output of 6 tons per hectare this harvest.

In addition to achieving corn self-sufficiency, the corn planting movement program aims to add value to maize production output by processing corn into Boyolali-typical gift foods, marning and emping jagung." However, due to a shortage of prepared human resources with the aptitude of creating "marning" and a lack of maize grinding machinery for producing emping jagung, this food processing industry has not been finished. Furthermore, maize splitting equipment remain unavailable, and corn shelling machines are still seen as a non-urgent requirement. As a result, the farmers continue to do everything by hand.

To facilitate the farmers' access to Farmers- Owned Enterprise (BUMP) at Regency level, where BUMP can facilitate the farmers' need and buy the farmers' production yield with standardized price higher, the recommendation is to develop cooperation to bridge the farmer members and those providing credit and production facility, and to accommodate the farming product before being sold to the company.

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