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Collaborative Management of Rice Field for Household Food Security: The Case of Santri Tani Sukabumi Regency

Kolaborasi Pengelolaan Sawah untuk Ketahanan Pangan Rumah Tangga: Kasus Santri Tani Kabupaten Sukabumi

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ABSTRACT

The collaborative rice field management that has been carried out in Ciracap Village, Ciracap District, Sukabumi Regency, aims to achieve the level of food security of farmer households. The stakeholders have roles as capital providers, facilitators, and off-takers. This study aims to analyze the extent to which the effectiveness of collaboration can provide positive changes to the level of food security of farmer households in Ciracap Village. This research started from February to August 2021, using mixed methods. The data collected was obtained based on a survey method with a questionnaire instrument for quantitative methods, as well as observations and in-depth interviews for qualitative methods. Quantitative data were processed using a multivariate test with MANOVA analysis, while qualitative data is processed by data reduction, data presentation, and data verification. The results showed that the collaborative process of rice field management was based on a high level of trust between the closest stakeholders. However, based on the administrative data that is not on field conditions, the effectiveness of the collaboration process on the level of household food security is less effective. The effectiveness of collaboration tends to be weak because the program implementation has not yet fully guaranteed the fulfillment of food for farmer households. This is indicated by the socio-economic conditions of farmers that have not changed positively because the quality and quantity of rice production are not in line with the target.

***Keywords**: collaboration, food security, rice field management, Santri Tani*

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INTRODUCTION

The Government of Indonesia is undertaking multi-actor collaboration efforts to open access for small farmers through food security programs. The collaborative process in achieving food security will be achieved if the roles between parties can fulfill the requirements in the collaboration process. This role includes active participation, equality of power, as well as an increase in the competence of the parties involved (Gandasari *et al.* 2015). This is very important because the development of food security must be carried out in a cross-sectoral, comprehensive, synergized, and well-coordinated manner. The Global Food Security Index score for Indonesia in 2015-2019 has increased from 2018 with a score of 54.8 to 62.6 in 2019 (The Ministry of Agriculture of the Republic of Indonesia 2020). This index needs to be continuously improved by strengthening the roles of stakeholders.

Fulfillment of food is one of the strategic priorities of national development as stated in the National Medium-Term Development Plan (RPJMN) for 2020-2024 (Bappenas 2020). To support these efforts, the government carried out a self-sufficiency program for five food commodities consisting of rice, soybeans, corn, sugar, and beef (Suryana 2014). Based on the statistical data on harvested area and rice production in Indonesia in 2020, the amount of rice production in 2020 has increased, reaching 54.65 million tons of Milled Dry Grain (GKG) compared to the production in 2019, which was 54.60 million tons of GKG (BPS 2021). Despite having a surplus, there are still hundreds of millions of people in the world who are hungry and malnourished, especially in Indonesia (Suyudi *et al.* 2020). This is evidenced by data from the Global Hunger Index (GHI) in 2021 that Indonesia still reaches a moderate status in the range of 10.0-19,9 with a score of 18.0. The low-status range in the GHI is less than 9.9, while the GHI range for extremely alarming status is more than 50.0.

Based on this, farmers as an important actor in the agricultural sector are required to continue to increase domestic production to achieve a level of food security. However, there is a paradigm that states that food security still has an import-based character; dependence on food imports without being supported by strong domestic production (Sulistya 2012). This view is evidenced by data on the average import of rice in Indonesia in 2015-2019 that is 662.184 thousand tons and the value of 1.60% Import Dependency Ratio (IDR) of rice which tends to fluctuate. In 2018, Indonesia's import dependence reached 5.18% (The Ministry of Agriculture of the Republic of Indonesia 2020b). This condition indicates that the higher the IDR value, the more dependent Indonesia is on import of rice due to concerns about a shortage of domestic rice stocks because of crop failure. This logic underlies the government to continue to import rice even though domestic rice production can meet domestic needs (Paipan dan Abrar 2020). The basic causes of the food security problem include socio-economic issues due to population growth followed by an increase in demand for national food needs (FAO 2017). In addition, common obstacles often experienced by Indonesian farmers are land conversions, capital farming, agricultural management, and post-harvest distribution (Putra 2020).

According to Gandasari *et al.* (2015), collaboration is one of the factors that can improve the competitiveness of agriculture in the agribusiness sector. Fundamentally, collaboration is designed to solve problems by creating solutions to the limitations of the parties (Agranoff dan McGuire 2004). According to Nuryanti (2005), a collaboration involving farmers, the private sector, and the government in developing agriculture, especially rice and secondary crops, is a process that can integrate the economic, ecological, and socio-cultural aspects of the community. This is in line with the Strategic Plan of the Ministry of Agriculture 2020-2024 that in realizing national development targets in the agricultural sector it is necessary to carry out synergies and collaborations with relevant stakeholders such as the Ministry, Regional Government, academics, extension workers, entrepreneurs, and among farmers to improve economic resilience and food security (The Ministry of Agriculture of the Republic of Indonesia 2020a).

Collaboration in agriculture has been widely studied, including research by Iyoega (2020) which concludes that collaborative governance in advancing the agricultural sector in Bandung Regency has not been implemented optimally. This is due to the still-dominant role of the government in managing agricultural programs, the low contribution of institutions, and the limitations of farmers in accessing modern markets. According to Andayani *et al.* (2016), collaboration in agriculture that has not been implemented properly is caused by collaboration actors who don't do their role according to their respective functions and responsibilities to achieve common goals.

According to Nuryanti (2005), empowering farmers through farmer groups with the collaboration of the government and the private sector can be applied effectively when using an agricultural corporation

model. In addition, to support and achieve sustainable agricultural development, including food security, it is necessary to make it in line with economic, social and environmental goals (Iyoega 2020). Based on this observation, this study aims to analyze the extent to which the effectiveness of collaborative rice field management has a positive effect on food security by looking at the socio-economic conditions of farmer households through the Santri Tani program in Ciracap Village, Ciracap Sub-district, Sukabumi Regency. The Santri Tani program was chosen because it is one of the agricultural corporate programs engaged in advancing the agricultural sector with the aim of food security. This collaborative program not only helps farmers in terms of capital but also helps guarantee agricultural production and distribution from upstream to downstream.

RESEARCH METHODS

This article focuses on the research paradigm of positivistic by analyzing the effectiveness of collaboration based on statistical tests as a basis for data conclusions based on aspects of validity, reliability, and objectivity (Irwan 2018). This research starts from February to August 2021. To begin with the stages of data collection, documentation, management, and data analysis. The case in this study focuses on a collaboration program carried out by Santri Tani in Ciracap Village, Ciracap Sub-district, Sukabumi Regency.

Respondents were selected by a simple random sampling technique of 30 Santri Tani from three collaboration programs involving 1.100 farmers. The determination of the number of respondents considers the implementation of Community Activity Restrictions (PPKM) in Ciracap Village due to the pandemic to anticipate the spread of the Covid-19 virus. Research informants were determined by the snowball sampling method which was considered a key informant, including agricultural capital funders, program coordinators in the field, village officials, Santri Tani leaders, and communities around Ciracap Village.

This research utilizes mixed methods because it uses quantitative data that relies on the results of the questionnaire as the main instrument and is supported by qualitative methods (Samsu 2017). Primary data were obtained from the results of a survey that included the characteristics of farmer households, the effectiveness of collaboration, socio-economic conditions before-after the program, and the level of food security of farmer households. Meanwhile, qualitative data was collected through in-depth interviews, field observations, and Focus Group Discussions (FGD). The data included information about the geographical conditions of Ciracap Village, the initiation of collaboration programs, the collaboration process, and the effectiveness of the collaboration program.

Quantitative data were analyzed by paired sample t-test to determine changes in the socio-economic conditions of farmers before and after the collaboration program. Likewise, the influence of socio-economic conditions and the level of food security of farmer households was analyzed by the multivariate test using MANOVA with an ordinal scale for the independent variable and interval/ratio scale for the dependent variable (Priatna 2007). Meanwhile, qualitative data analysis in this study is based on three stages, that are data reduction, data presentation, and data verification.

Indicators used in measuring the effectiveness of collaboration are level of participation, level of equality rate, and level of competency (Gandasari *et al.* 2015). Socio-economic conditions are measured by determining the total production value and income of farmers (Basri 2018). The total production is the total income that farmers receive from rice production that is sold before entering the costs for production factors (BPS 2015).

The level of food security is measured based on three main aspects according to the Food Security Agency of the Ministry of Agriculture (2019) and additional indicators based on Januar and Sumardjo (2010), which are food availability, food access, food utilization, and food stability. The indicator uses five categories with a Likert scale: (1) Very low; (2) Low; (3) Medium; (4) High; and (5) Very high. The determination of categorization for economic conditions is collected on a ratio scale and grouped by field state by adjusting the research indicators variables of collaboration effectiveness and the level of food security. Categorization is based on the assumption that variables can be distributed normally from the normality test (Hasanah 2019). To complete the condition of food security of farmer households, calculations based on dependency ratios which are measured by the formula of micro-in families according to Kurniasari (2016):

$$DR = \frac{Amount\ of\ non-working\ family\ members}{Amount\ of\ working\ family\ members}\ x\ 100 \ldots\ldots\ldots\ldots (1)$$

DR = Dependency Ratio

RESULTS AND DISCUSSION

Geographical and Socio-Economic Description of the Research Area

Ciracap Village is one of the villages in the Ciracap Sub-district with an area of 1612.5 hectares. Most of the majority use the land for farming (811 ha), which consisted of semi-technical irrigation land (175 ha), rainfed land (153 ha), and unirrigated land (483 ha). Then there is non-paddy farmland (277 ha), and non-agricultural land (547.5 ha) which is dominated by the use of land as housing, offices, and shophouses.

Ciracap Village is located at 07°19'38" South Latitude and 106°25'22" East Longitude. Based on the typology, Ciracap Village is a forest village, because residents live as farmers, planters, ranchers, and craftsmen from forest products (Suparmini dan Wijayanti 2015). The total population in Ciracap Village is 8645 people consisting 4321 of male villagers and 4324 female villagers. Most of the villagers couldn't continue their education to the high school level or equivalent.

The social conditions. The social conditions of households in this study were measured based on the level of cooperation between farmers. Cooperation is one of the social activities in the village community that has existed since ancient times. One of the cooperation is filial work. Meanwhile, the form of cooperation that is usually carried out by farmers in Ciracap Village is the relationship between land-owning farmers and farm workers. According to Basri (2018), the level of cooperation carried out by farmers in an integrated manner can have a positive impact on increasing rice production and employment.

The economic conditions. The economic conditions of households are described by the level of income adequacy in daily needs. According to Canita *et al.* (2017), measuring household income can be analyzed based on income sourced from on-farm, non-farm, and off-farm activities.

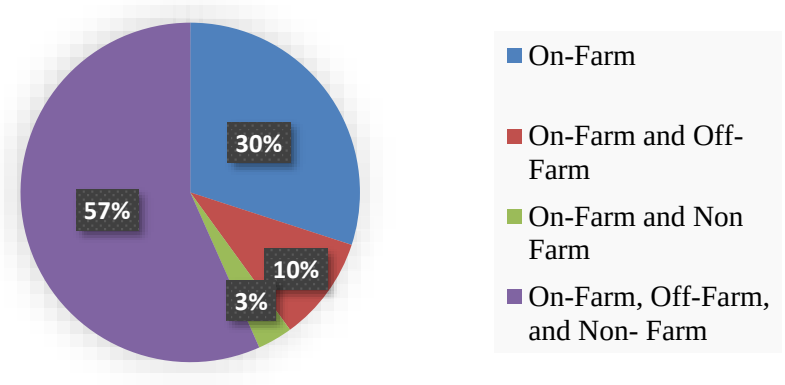

Figure 1. The sources of farmer's income.

Figure 1 shows the sources of farmers' income in Ciracap Village. The initial impression from the chart is the livelihoods of farmers are greatly diversified. The majority of farmers, work in the on-farm, off-farm, and non-farm sectors of 57%. Furthermore, farmers' income from the on-farm sector reached 30%. Household income derived from off-farm activities comes from outside agriculture but is still within the scope of the agricultural sector, such as agricultural labor, and the profit-sharing system for agricultural land management. Farmer's income derived from the non-farm sector refers more to service activities, trade, and other industrial sectors (Ellis 2008). In addition, income derived from off-farm are businesses from the sale of brown sugar, and coconut dealers. Meanwhile, the income that comes from the non-farm sector is from farmers who have businesses and work as traders such as stalls, cake traders, and ornamental pot crafts. Furthermore, the dominance of second jobs in the non-farm sector is laborer and construction worker.

Food Security Conditions of Farmer Households

Based on the Government Regulation of the Republic of Indonesia Number 17 of 2015 concerning Food Security and Nutrition, food security is a condition of the fulfillment of food for the state up to individuals which is reflected in the adequacy of food, both in quantity and quality as well as safe, diverse, nutritious, equitable, and affordable, not contrary to religion, beliefs, and culture of the community, to be able to live a healthy, active, and productive life sustainably. The level of food security of farmer households in Ciracap Village is shown in Figure 3.

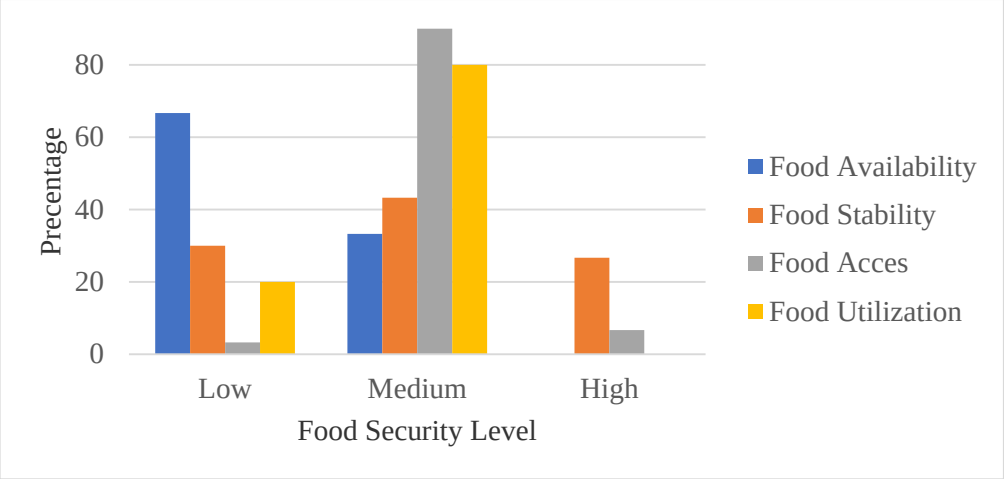

Figure 3. Percentage of farmer households by food security level in Ciracap Village.

The level of food availability. The level of food availability of farmer households is characterized by sufficient production capacity to meet household food needs. However, since the beginning of 2020, farmers in Ciracap Village have experienced a prolonged drought cycle for one year that makes rice yields decrease and even cause crop failure. Therefore, the level of food availability in farmer households tends to be low reaching 66.7%. This is because the average rice yield cannot meet the target, then the production of rice stocks is not enough until the next planting period. This condition resulted in farmers preferring to overthrow (sell) their crops to pay for capital and daily necessities. The reason is that there are farmers who have suffered losses due to crop failure and must have to carry out a livelihood strategy to ensure the availability of household food.

The level of food stability. The level of food stability is measured based on the frequency of occurrence of the famine season. The famine season during the collaboration program occurs in the form of drought, pest infestation, and disease attacks. Based on Figure 3, the food stability of farmer households in Ciracap Village is still 43.3% classified as moderate. This is because farmers are often worried about crop failures which cause insufficient production to be used as food stocks until the next harvest season.

The level of food access. The level of food access for farmer households is still classified as a moderate level with a percentage of 90%. This indicator is measured based on physical, social, and economic access. On physical access, farmers easily access food by buying them at stalls. To buy rice, they generally buy it at the factory for Rp. 8.000 – 9.000 /kg.

Social conditions in supporting food access for farmer households are measured based on the type of activity related to the food supply. Farmers in Ciracap Village routinely hold recitation activities that require them to donate food such as snacks and rice boxes with a rotating system every week. In addition, the majority of residents in Ciracap Village have a culture of giving food to each other's relatives. Farmers who often get food assistance from their neighbors and/or relatives are included in the category of farmers who are easy to access food.

The indicator of food access assessment is also influenced by economic conditions based on the total household expenditure of farmers every month, including food and non-food. In food expenditure, the average farmer spends Rp. 2.000.000/month to buy rice, vegetables, and other side dishes. Meanwhile, the average non-food expenditure incurred by farmers is Rp. 800.000/month.

The level of food utilization. The level of food utilization is used to see the extent of the ability of farming households to utilize appropriate and proportionate food sources. Based on Figure 3, the level of food utilization in Ciracap Village is 80% which is classified as moderate. Animal protein is still

rarely consumed by farmers because they usually consume meat when someone distributes *besek* (rice boxes) for free.

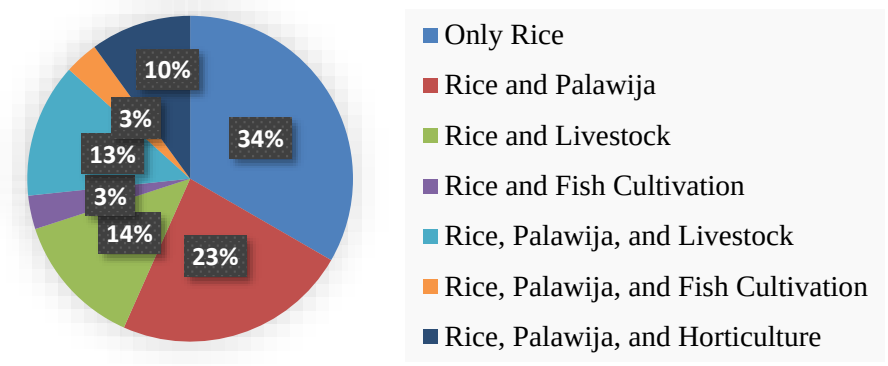

Figure 2. The sources of farmer's income from the on-farm sector.

Figure 2 reveals the sources of farmers' income from the on-farm sector in Ciracap Village. The majority of sources of farming household's income is from rice (34%). This indicates that not all households in Ciracap Village depend on rice. The farmers rotate by planting crops after the rice harvest. This soil rotation system aims to maintain the level of productivity of agricultural land by increasing crop production and improving soil fertility so this is expected to strengthen the income level of farmers (Sukma 2015). Generally, the types of palawija grown by farmers in Ciracap Village are chili, peanuts, green beans, cucumbers, oyong, and mustard greens. In addition, 10% of farmers also cultivate horticultural crops such as watermelon, and another 14% of farmers are livestock. The type of livestock is goats, chickens, and ducks.

Collaborative Management of Rice Field

The initiation of the Collaboration. The initiation of the Collaboration that is seen in this program involving Santri Tani is one of the strategies to empower the community, especially farmers in Ciracap Village. Community empowerment is defined in the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration Number 17 of 2019 concerning General Guidelines for Community Development and Empowerment is a strategy made to develop community independence and welfare by increasing knowledge, attitudes, skills, abilities, awareness, behavior, and utilizing resources through related policies and mentoring programs following the priority needs of the community in the Village.

The Santri Tani collaboration program began in 2020. This collaboration started from piloting project with the Baitul Maal Foundation of Bank Rakyat Indonesia (YBM BRI) which formed five Santri Tani groups in April 2020. Then it continued with the Social Trust Fund (STF) program by Dompet Dhuafa into 10 Santri Tani groups with a total of 100 farmers living around the PPA Al-Muhtadiin Area. The STF program aimed to increase the productivity of 50 ha of paddy fields during the second planting period (*baku*) and the first harvest was evaluated in August 2020. After that, from October 2020 to April 2021, it was continued with a strategic partnership program through the rice cultivation corporation program involving collaboration between Insan Tani dan Nelayan Indonesia (INTANI), TaniHub Group through TaniFund which was supported by State-Owned Enterprises of Indonesia (SOEs), and Non-Government Organization (NGO) engaged in advancing the agricultural sector.

The participation of Santri Tani is a fostered farmer group under the guidance of Alim Ulama in PPA Al-Muhtadiin. There are seven villages involved: (1) Cikangkung village; (2) Ciracap village; (3) Ujung Genteng village; (4) Pangumbahan village; (5) Gunung Batu village; (6) Mekarsari village; and (7) Purwasedar village with a commitment to return capital with *the yarnen* system (paid for harvest) following the agreed amount, as well as participate in all activities or programs required PPA Al-Muhtadiin. One of the advantages for farmers to join Santri Tani is the management of their paddy fields can be guaranteed with the help of capital through collaboration with multi-stakeholders to increase productivity.

The collaboration process. The collaboration process is the core of a collaborative governance model. These indicators are initial conditions, institutional design, and facilitator leadership (Ansell dan Gash 2007). Based on the initial conditions of the collaboration program, the determining indicators that need

to be considered must be based on unbalanced resources or gaps in strengths between parties, incentives, and history or cooperation as a step in gaining the trust of each party. The initial condition of this collaboration process began with the restless feeling of farmers who got a source of capital from middlemen at low production prices. This condition encourages the PPA Al-Muhtadiin Foundation to empower farmers through agricultural capital assistance without draining production resources.

Actors involved in this collaborative management are the Government, NGOs, and the community. The role of the stakeholders can be seen in Table 1.

Table 1. Stakeholders in rice field management programs.

No	Institution	Stakeholders	Role
1	Government	Village and Subdistrict Governments	Motivators, facilitators, and evaluators of program implementation
2	NGO	● YBM BRI	Agricultural capital givers
		● Dompet Dhuafa	Agricultural and *off-taker capital givers* through the STF program
		● INTANI	Forming a rice cultivation farmer corporation
3	SOEs	PT. MBN (Mitra BUMDES Nusantara)	*Off-taker*
4	Agricultural Start-ups	TaniHub Group-TaniFund	Agricultural capital givers
5	Institution	Al-Muhtadiin PPA Foundation	Agricultural capital distributors and providers of facilities and infrastructure supporting activities
6	Community	Farmer (Santri Tani)	Recipients of agricultural capital

Based on the facilitator's leadership dimension, transformational leadership patterns are formed to influence and facilitate group dynamics productively. According to Belem *et al.* (2014), transformational leadership patterns in Farmer Groups are defined by the leader's ability to encourage the realization of independence in the group.

Structurally, the program that collaborates in empowering Santri Tani in Ciracap Village is based on a two-way communication between the closest stakeholders. The collaboration process runs following the stages in the implementation of the collaboration that is not linear, starting from face-to-face dialogue, trust-building, commitment to the process, shared understanding, and intermediate outcomes (Ansell dan Gash 2007). The face-to-face dialogue stage takes when the Foundation has obtained a source of capital, the Alim Ulama doing some meetings to discuss the problem while in regular recitations at the Foundation. Based on the results of the agreement, Alim Ulama is responsible for distributing capital from the Foundation to Santri Tani as head of the farmer group.

Farmers who receive capital must meet several requirements, including income, land, and commitment to return capital after harvest (*yarnen*). The face-to-face dialogue process can be seen based on the stages of face-to-face dialogue in Table 2.

Table 2. Stages of face-to-face dialogue between stakeholders in the collaboration of Santri Tani.

Stages	Stakeholders	Purpose
Phase I	Foundation with Village and Sub-district Governments	Coordinating agricultural programs held in Ciracap Sub-district
Stage II	Foundation with NGO	Partnering with farmer empowerment programs
Stage III	Foundation with Santri Tani (group leader)	Making deals for the distribution of agricultural capital
Stage IV	Santri Tani with prospective Santri Tani (farmer)	Providing capital assistance agreements that can be borrowed based on requirements of land, income, and farmer commitment to pay the capital that has been given

After the sense of trust between stakeholders is strong, the collaborating party must commit to the process. These commitments include: (1) the Santri Tani must carry out their obligations to return capital; (2) they must attend regular meetings and recitations; and (3) they must save 10 kg of grain.

The stage of building shared understanding occurs when a meeting has been held to carry out exchange activities between fellow farmers and equalize perceptions of each other (Phase IV). But in this stage,

there is a possibility of biased information. This is because there is a diversity of information obtained by farmers as third parties from the Foundation (the first party) and Alim Ulama (the second party) which has responsibility for capital distribution. Based on the flow of collaboration, there is a pattern of communication with the letter Y that is formed, that is, although information comes from one source, the dissemination of information does not have to go through him but can be shared by the group leader or other members (Jill 2003). Therefore, the intermediate outcome or temporary success obtained is not so following the targeted. This temporary success will be used as a reference for the next rice field collaborative management program. The collaboration flow is shown in Figure 4.

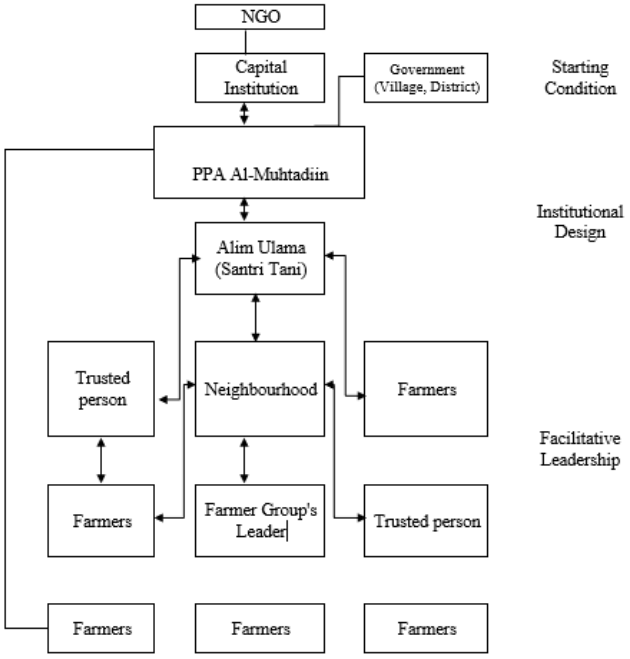

Figure 4. The flow of Santri Tani collaboration in Ciracap Village.

The effectiveness of collaboration. The effectiveness of collaboration is demonstrated by the achievement of collaboration goals. According to Gandasari *et al.* (2015), there are three prerequisites for the success of the collaboration process, that are the level of participation, the level of equality of power, and the level of competence of the actors involved. The effectiveness of collaboration is shown in Figure 5.

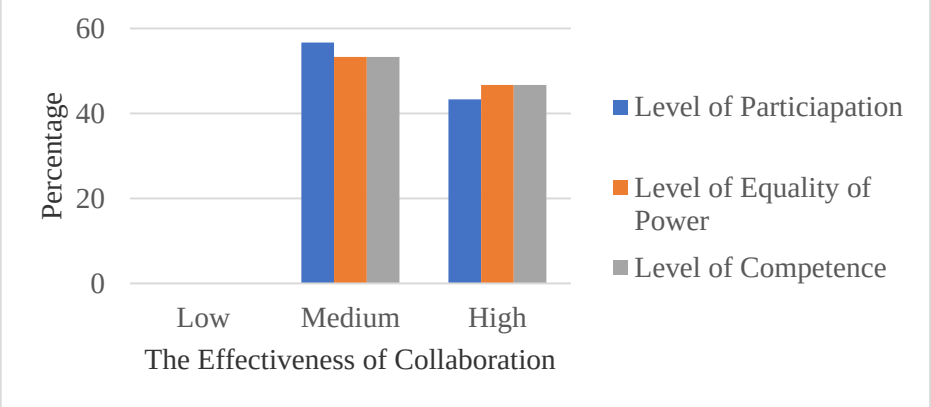

Figure 5. The effectiveness of rice field collaborative management in farmer households in Ciracap Village.

Figure 5 shows that the involvement of farmer households in the collaborative process of rice field management as measured by the participation rate is still classified as moderate with 56.7%. In **the level of participation**, farmers generally only participate in the planning and implementation stage if they get a call from the leader in their area.

The level of equality of power. The level of equality of power in the collaboration process is still relatively moderate at 53.3%. This indicator is calculated based on the rights and obligations to get equal opportunities. During the collaboration process, the farmers in Ciracap Village felt that there were no

differences and boundaries for them to have the same opinion and get the same information because there was a culture of mutual respect and mutual trust in the person in charge of the region. However, based on the flow of collaboration between farmers, it is possible to have biased information because farmers do not fully get the same information from the leader in their area.

The level of competence. The level of competence in this collaboration process is still relatively moderate at 53.3%. The level of competency is measured through the knowledge, expertise, and abilities of respondents. The farmers felt that the level of competence they got was quite improved after joining Santri Tani in Ciracap Village. This knowledge is in the form of respondents' understanding of the Santri Tani program, rice field management, and the collaboration process that occurs in it. The information obtained between farmers will always be shared when they are gathering or accidentally meeting with other farmers who are experiencing problems in managing their fields.

The Effectiveness of Rice Field Collaborative Management on the Social and Economic Conditions of Farmer's Households

The rice field collaborative management program that has been implemented in Ciracap Village indirectly does not significantly affect the social and economic conditions of farmer households (Table 3). The obstacle to the insignificant effectiveness of collaboration is the lack of competence that farmers have in paddy field management.

Table 3. The effect of the effectiveness of collaboration on the social and economic conditions of farmer households based on multivariate tests.

Variable	df	F	Itself	Information
Social conditions	17	0,890	0,598	Insignificant
Economic conditions	17	1,643	0,193	Insignificant

Description: α at the level of 5%

Farmers who participate in the Santri Tani program know how to overcome crop failure. However, limited capital resources to meet the needs of production factors cause a high risk of crop failure. These production factors include fertilizers, pesticides, seeds, land area, and the number of workers (Asni 2016). For example, when the need for fertilizer should be 25 kg per peg, farmers reduce it to 5 kg to save fertilizer costs. This is caused by the price of fertilizer which is not proportional to the yield obtained, and it often even harms farmers. In addition, pest and disease control of rice plants is carried out only when an attack has occurred without taking precautions. Therefore, rice production is less than optimal and does not show significant changes in conditions before and after the collaborative management program, as presented in Table 4.

Table 4 shows the accumulation of the 23.3 % of farmers who experienced a decrease in production and 14.8% of farmers who experienced an increase in production and 63.3% of farmers whose production was stable. The data shows that after the collaboration program for rice field management, the productivity produced by farmers was still relatively the same as the previous conditions with an average total production below Rp 4.000.000.

Table 4. The number and percentage of farmer households based on changes in rice production in Ciracap Village.

The total production value of farmers before the program		Total production value of farmers after the program				
		Low (<Rp 2.515.538)	**Medium** (Rp 2.515.539-14.284.462)	**High** (Rp 14.284.463-26.053.387)	**Very high** (>Rp 26.053.387)	**Total**
Low (<Rp 222.814)	n	4	2	0	0	6
	%	13,3	6,7	0	0	20
Medium (Rp 222.815-8.477.186)	n	6	13	1	1	21
	%	20	43,3	3,3	4,8	70
High (Rp 8.477.187-16.731.558)	n	0	1	0	0	1
	%	0	3,3	0	0	3,3
Very high (>Rp 16.731.559)	n	0	0	0	2	2
	%	0		0	6,7	6,7
Total	n	10	16	1	3	30
	%	33,3	53,3	3,3	10	100

Declining, Fixed, Increasing

Based on the rice production results, the average production before the program is 1.45 tons from 0.36 ha or 4.03 tons/ha, which increased after the program, 2.09 tons from 0.32 ha or 6.53 tons/ha. Production results that differed from before and after were influenced by differences in the area of land managed by respondents during *the porekat* and *baku* planting period. Although it has increased, the normal production per land area of 400 m^2 is 350 kg or around 8.5 tons/ha, while the production results after the collaboration program takes place do not cater to what farmers expect. In this case, the farmers do not have a large amount of profit; it can even incur losses.

The results of such products have an effect on the level of farmers' income based on the accumulated income in Table 5. The accumulated income is still classified as moderate from the percentage of 26.7% of farmers who experienced a decrease in income, 16.6% of farmers who experienced an increase and 49.9% of farmers whose income was stable. The data shows the income generated by farmers after the collaboration is still relatively the same as the average income before, namely Rp 4.203.310.

Table 5. The number and percentage of farmer households based on changes in income in Ciracap Village.

Total income of farmers before		**Total income of farmers after**				
		Low (<Rp 1.128.035)	**Medium** (Rp 1.128.036-7.445.280)	**High** (Rp 7.445.281-13.762.526)	**Very high** (>Rp 13.762.527)	**Total**
Low (<Rp 1000)	n	1	1	0	0	2
	%	3,3	3,3	0	0	6,7
Medium (Rp 1000-8.249.291)	n	8	13	4	0	25
	%	26,7	43,3	13,3	0	83,3
High (Rp 8.249.292-15.507.946)	n	0	0	1	0	1
	%	0	0	3,3	0	3,3
Very high (>Rp 15.507.947)	n	0	0	0	2	2
	%	0	0	0	6,7	6,7
Total	n	9	14	5	2	30
	%	30	46,7	16,7	6,7	100

Declining, fixed, increasing

The Effectiveness of Rice Field Collaborative Management on Food Security of Farmer Households

The main purpose of this rice field collaborative management program is to improve the status of food security of farmer households in Ciracap Village. Table 6 shows the effect of collaboration effectiveness on the level of resilience of farmer households after the collaboration program is implemented.

Table 6. Effect of collaboration effectiveness on the level of food security of farmer households based on multivariate tests.

Variable	df	F	Itself	Information
Food security of the household	17	2,674	0,04	Significantly weak

Description: α at the level of 5%

Table 6 shows that *the p-value* (0.04) is smaller than *the sig. alpha* (0.05), and the calculated F value at df 17 is 2.674 which means it is greater than Table F (2.580), thus H_0 is rejected. The results that have been carried out by the multivariate test are interpreted that the data provided by the primary research have a significant effect, but are weak.

The weak effect of the effectiveness of collaboration on the food security of farmer households is due to the fulfillment of insufficient rice production capacity for food and non-food consumption of household members until the next planting period. According to Meliala *et al.* (2013), households have high access to food if the number of dependents in the family is less than three, while households that have a dependent number of more than five have low access to food, and household dependents consist of three to five people have moderate access to food. Based on this, food access for farmer households in Ciracap Village is included in the moderate category because the average is four to five household members.

The results of this study are in line with the results obtained by Suyudi *et al.* (2020), the number of household members in the family affects the level of food security as measured by the availability of food stocks. The more unproductive household members, the greater the burden of dependents on the backbone of the family. As evidenced by the average dependency ratio score of farmer households, the burden of dependents of the head of the family in the farmer household in Ciracap Village is included in the high category with a score of 156.4, which is more than 41. The high dependency ratio can be seen in Table 7 that as many as 61% of members in the household are not working so the fulfillment of food and non-food still depends on the livelihood strategy of the head of the family. The household members include housewives (19%), members who have not yet entered the productive age to work (22%), and the remaining 20% are those who are already productive for work but do not have a job.

Table 7. The main and side occupation of family members in the household in Ciracap Village.

Type of Work	Main Occupation		Side Occupation	
	Sum (n)	Amount (%)	Sum (n)	Amount (%)
On-farm				
- Farmer	32	32	2	2
- Breeder	0	0	5	5
Off-farm				
- Entrepreneurial	5	5	5	5
Non-farm				
- Construction workers	1	1	11	11
- Entrepreneurial	1	1	0	0
- Housewives	19	19	0	0
Unproductive age of work	22	22	0	0
Doesn't work	20	20	77	77
Total	100	100	100	100

The amount of dependent burden is very influential on the level of food stability, especially in times of famine. Farmers who experience crop failure during famine experience losses so they have to struggle with living strategies. According to Popkin (1979) in Utari (2020), the rational strategies carried out by farmers are based on considerations about opportunities and risks to improve their welfare. Based on this, farmers have the willingness to improve the food security of their households by having a side occupation. Side occupations are carried out because farmers realize that the income from the harvest cannot meet their daily needs. For them, the most important thing in this condition is the availability of rice because the side dishes can be easily accessed such as cassava leaves and other plants.

Furthermore, some farmers still buy rice from factories or stalls, not from their crops because the production is not enough for their rice stocks even though the majority are farmers. Some farmers even prefer to sell all their crops to pay debts, buy other goods or services that, they do not produce, and they use it as as an investment to open paddy fields in the next growing season by utilizing the same paddy management, meaning reducing production inputs that are at risk of crop failure. Because of this, the possible impact is a decrease in the level of welfare of farmer households in terms of their income which is caused by fluctuating production values, and finally it causes malnutrition (Darwanto 2009). If this continues to occur throughout Indonesia, this condition will support the concept of food security which has an import-based character, that is dependence on food imports without being supported by strong domestic production as the government's efforts to maintain the level of food security (Sulistya 2012).

In addition, the weak effectiveness of Santri Tani's collaboration in Ciracap Village is also caused by administrative data management that is not adaptable to field conditions. Administrative data is an important element in the collaboration process. The agricultural capital provided will be distributed based on the information in the administrative data. However, the results showed that after the distribution of agricultural capital, there were differences in beneficiary data because the distributor prioritized the beneficiaries of this agricultural capital to be reachable by all farmers in Ciracap Sub-district.

Partially, the amount of capital distribution is also felt to be uneven because of the wide coverage of the targeted area in the rice field collaborative management program. It is proven at the research site that some farmers who have more land and need more capital assistance only get the same capital as farmers who have a land area of less than 0.49 ha. Finally, those farmers who lack capital resources borrow

additional capital from middlemen and continue to suppress production factors in their agricultural management. As a result, the quantity and quality of rice production are less than optimal.

Based on the results of observations, each farmer in Ciracap Sub-district has a different character, especially the physical condition and the area of land he owns. There is farmers' land that has a good irrigation system, while others have difficulty to reach water so the risk of crop failure due to drought is very high. In spite of the farmers' conditions, the effectiveness of collaboration has not fully paid attention to the factors causing crop failure and the lack of production due to drought, pest attacks, and diseases. This condition is due to special requirements for farmers who can receive agricultural capital, that is owning land and being able to return production capital.

Turning to the issue, farmers who need higher capital in their farming business still borrow a little capital because they are worried that they cannot return the capital they borrowed. According to the concept of using agricultural credit Popkin (1979) in Utari (2020), the way farmers regulate capital resources or credit funds is different because it is influenced by environmental demands and dependents in farmer families. In conclusion, although the effectiveness of the collaboration has a significant effect on the main objective, that is the level of food security of farmer households in Ciracap Village, the level of food security of farmer's households is still low due to weak support for social and economic conditions (Iyoega 2020).

CONCLUSION

The collaborative process for rice fields management in Ciracap Village has been going quite well and there is a mutually beneficial relationship. However, the effectiveness of collaborative rice field management on the level of food security of farmer households is still less effective (significantly weak). After the collaboration program, the socio-economic conditions of the Santri Tani participants in the collaboration program did not change significantly. This is indicated by the rice production capacity that is not in line with the target. When the quality and quantity of food production are disturbed, the level of availability and food consumption will decrease. This condition encourages farmer households to have livelihood strategies outside the agricultural sector to maintain the level of household food security. Based on these conclusions, to ensure household food security in a multi-actor collaboration process, it is necessary to focus on adaptive aspects of the socio-economic conditions of farmer households in order to ensure capital in upstream-downstream production activities to reduce the risk of crop failure.

BIBLIOGRAPHY

[Bappenas] Badan Perencanaan Pembangunan Nasional. 2020. *Presidential Decree No. 18 Year 2020*. https://www.bappenas.go.id/id/data-dan...dan.../rpjmn-2015-2019/.

[BKPKP] Badan Ketahanan Pangan Kementerian Pertanian. 2019. *Indeks Ketahanan Pangan Indonesia 2019*. Jakarta: BKPKP. http://bkp.pertanian.go.id/storage/app/media/Bahan 2020/IKP 2019 FINAL.pdf.

[BPS] Badan Pusat Statistik. 2015. *Pedoman Pencacahan Nilai Tukar Petani dengan Metode Nilai Produksi (NP)*.

[BPS] Badan Pusat Statistik. 2021. Luas Panen dan Produksi Padi di Indonesia 2020.

[FAO] Food and Agriculture Organization. 2017. *The Future of Food and Agriculture-Trends and Challenges*. Rome.

[Kementan] Kementerian Pertanian Republik Indonesia. 2020a. *Outlook Komoditas Pertanian Padi*. Pusat Data dan Sistem Informasi Pertanian.

[Kementan] Kementerian Pertanian Republik Indonesia. 2020b. *Rencana Strategis Kementerian Pertanian 2020-2024*. Kementerian Pertanian Republik Indonesia.

Agranoff R, McGuire M. 2004. *Collaborative Public Management: New Strategies for Local Governments*. Georgetown Univ Pr.

Andayani SA, Sulistyowati L, Azisah SN. 2016. Analisis Kolaborasi Pada Pengembangan Kemitraan Usahatani Mangga di Kabupaten Majalengka. *AGRICORE-Jurnal Agribisnis dan Sos Ekon Pertan*. 1(1):1–94. doi:https://doi.org/10.24198/agricore.v1i1.22685.

Ansell C, Gash A. 2007. Collaborative Governance in Theory and Practice. *J Public Adm Res Theory*. 18(4):543–571. doi:10.1093/jopart/mum032.

Asni N. 2016. Analisis Faktor-Faktor yang Mempengaruhi Produksi dan Pendapatan Usahatani Jambu Mete di Kecamatan Parangloe Kabupaten Gowa. Makassar: Universitas Negeri Makassar.

Basri Z. 2018. Evaluasi Program Optimasi Lahan Petani Ditinjau dari Aspek Sosial Ekonomi Petani di Desa Batetangnga Polewali Mandar. *AGROVITAL J Ilmu Pertan*. 3(1):28. doi:10.35329/agrovital.v3i1.218.

Belem W, Hariadi SS, Wastutiningsih SP. 2014. Pengaruh Kepemimpinan Transformasional terhadap Kemandirian Gapoktan. *JSEP*. 7(2). https://jurnal.unej.ac.id/index.php/JSEP/article/view/1448.

Canita PL, Haryono D, Kasymir E. 2017. Analisis Pendapatan dan Kesejahteraan Rumah Tangga Petani Pisang di Kecamatan Padang Cermin Kabupaten Pesawaran. *J Ilmu-Ilmu Agribisnis*. 5(3):235–241. doi:http://dx.doi.org/10.23960/jiia.v5i3.1635.

Darwanto DH. 2009. Ketahanan Pangan berbasis Ketersediaan Produk dari Petani Subsisten. *Ilmu Pertan*. 12(2):152–164.

Ellis F. 2008. The Determinants of Rural Livelihood Diversification in Developing Countries. *J Agric Econ*. 51(2):289–302. doi:10.1111/j.1477-9552.2000.tb01229.x.

Gandasari D, Sarwoprasodjo S, Ginting B, Susanto D. 2015. Proses Kolaboratif Antarpemangku Kepentingan Pada Konsorsium Anggrek Berbasis Komunikasi. *MIMBAR*. 31(1):81. doi:10.29313/mimbar.v31i1.1109.

Hasanah M. 2019. Pemilihan Jumlah Kategori Terbaik pada Model Rough-Regresi Berdasarkan Mean Square Error. Pekanbaru: Universitas Islam Negeri Sultan Syarif Kasim Riau. http://repository.uin-suska.ac.id/24233/.

Irwan. 2018. Relevansi Paradigma Positivistik Dalam Penelitian Sosiologi Pedesaan. *J Ilmu Sos*. 17(1):21–38.

Iyoega RR. 2020. Collaborative Governance dalam Pembangunan Sektor Pertanian di Kabupaten Bandung. *Perspektif*. 9(1):55–65. doi:10.31289/perspektif.v9i1.2864.

Januar M, Sumardjo. 2010. Peran Kelompok Tani dalam Ketahanan Pangan Rumahtangga Petani (Desa Banjarsari dan Desa Tanjungsari, Kecamatan Sukaresik, Kabupaten Tasikmalaya, Propinsi Jawa Barat). *J Penyul*. 6(2). doi:doi.org/10.25015/penyuluhan.v6i2.11448.

Jill G. 2003. *Customer loyalty : How To Earn It, How To Keep It*. Jakarta: Erlangga.

Kurniasari DA. 2016. Pengaruh Pendapatan, Dependency Ratio dan Tingkat Pendidikan Nelayan terhadap Pola Konsumsi Rumah Tangga Nelayan di Pesisir Pantai Depok Yogyakarta. Yogyakarta: Universitas Negeri Yogyakarta. http://eprints.uny.ac.id/id/eprint/41144.

Meliala MA, Salmiah, Sihombing L. 2013. Akses Pangan Rumah Tangga Petani Padi Sawah (Studi Kasus di Desa Sempung Polding Kecamatan Lae Parira Kabupaten Dairi). *J Soc Econ Agric Agribus*. 2(6):1–19.

Nuryanti S. 2005. Pemberdayaan Petani dengan Model Cooperative Farming. *Anal Kebijak Pertan*. 3(2):152–158.

Paipan S, Abrar M. 2020. Analisis Kondisi Ketergantungan Impor Beras Di Indonesia. *J Perspekt Ekon Darussalam*. 6(2):212–222. doi:10.24815/jped.v6i2.15000.

Popkin SL. 1979. *The rational peasant : the political economy of rural society in Vietnam*. University of California Press. [diakses 2022 Mei 13]. https://books.google.com/books/about/The_Rational_Peasant.html?id=b7UwDwAAQBAJ.

Priatna BA. 2007. Teknik-Teknik Analisis Multivariat Terkini yang Sering Digunakan dalam Penelitian.

Putra DA. 2020 Mar 12. Moeldoko Ungkap Tantangan Pertanian di Asia dan Indonesia. *Liputan6.com*., siap terbit. [diakses 2021 Apr 17]. https://www.liputan6.com/bisnis/read/4200213/moeldoko-ungkap-tantangan-pertanian-di-asia-dan-indonesia.

Samsu. 2017. *Metode Penelitian: (Teori dan Aplikasi Penelitian Kualitatif, Kuantitatif, Mixed Methods, serta Research & Development)*. Ed ke-1. Rusmini, editor. Pusat Studi Agama dan Kemasyarakatan (PUSAKA). [diakses 2022 Mei 12]. http://repository.uinjambi.ac.id/468/1/06_Metode Penelitian %28Teori %26 Aplikasi Penelitian Kualitatif_ Kuantitatif_ Mixed Methods_ serta Research and DEvelopment%29 - Samsu %281%29.pdf.

Sukma VE. 2015. Pengembangan Model Penjadwalan Penanaman Mempertimbangkan Rotasi Tanaman Pada Pertanian Perkotaan. Intitut Teknologi Sepuluh Nopember.

Sulistya. 2012. dari Ketahanan Pangan Menuju Kedaulatan Pangan. *Agros*. 14(1):125–132.

Suparmini, Wijayanti AT. 2015. *Masyarakat Desa dan Kota (Tinjauan Geografis, Sosiologis, dan Historis)*. Universitas Negeri Yogyakarta.

Suryana A. 2014. Menuju Ketahanan Pangan Indonesia Berkelanjutan 2025: Tantangan dan Penanganannya. *Forum Penelit Agro Ekon*. 32(2):123. doi:10.21082/fae.v32n2.2014.123-135.

Suyudi, Nuryaman H, Mamoen MI, Tedjaningsih T. 2020. Kajian Ketahanan Pangan Rumah Tangga Petani Mendong dan Petani Padi. *J Agribisnis Terpadu*. 13(1):91–107. doi:http://dx.doi.org/10.33512/jat.v13i1.7631.

Utari S. 2020. Pola Maksimalisasi Keuntungan dalam Prespektif Samuel L. Popkin di Kalangan Petani Gapoktan Sugihwaras Kecamatan Ngoro Kabupaten Jombang. Universitas Airlangga. [diakses 2022 Mei 13]. https://repository.unair.ac.id/104703/1/2. Abstrak .pdf.