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FARMERS' RATIONALITY IN DRYLAND CROP COMMODITIES IN SINGOSARI, TANGGAMUS

RASIONALITAS PETANI LAHAN KERING TERHADAP TANAMAN KOMODITAS DI SINGOSARI, TANGGAMUS

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ABSTRACT

The agricultural sector plays significant role to rural communities in Indonesia. Farmers are active agents in responding to market dynamics and agricultural commodity trends, and a key aspect to examine in this regard is the rationality of a farming community. This research analyzes the rationality of dryland farmers concerning crop commodities. It employs qualitative methods with a case study approach conducted within the context of dryland farmers applying mixed cropping farming patterns in the village of Singosari, Talang Padang District, Tanggamus Regency. Primary data were collected through interviews, participatory observations, and documentation, while secondary data were obtained through a nine-month literature review. The study finds that Singosari's dryland farmers exhibit rational behavior, both economically and in ecologically when engaging with external crop commodities. Farmers carefully evaluate risks and benefits when deciding on the types of crops to cultivate, taking into account environmental and economic conditions. However, there's a possibility that farmers' choices in cultivating crops may not always remain sustainabe relative to their initialproduction plan. Therefore, dryland farmers need to consider the specific conditions of their farming systems.

Keywords: *Dryland agriculture, farmer rationality, farming systems, Singosari, commodity crops.*

ABSTRAK

Sektor pertanian berkontribusi penting bagi masyarakat pedesaan di Indonesia. Petani adalah aktor yang aktif dalam menanggapi dinamika pasar dan komoditas pertanian, dan salah satu aspek penting yang perlu diperiksa adalah rasionalitas suatu komunitas petani. Penelitian ini menganalisis rasionalitas petani lahan kering terhadap tanaman komoditas. Penelitian ini menggunakan metode kualitatif dengan pendekatan studi kasus yang dilaksanakan pada konteks petani lahan kering yang menerapkan pola usaha tani tumpang sari. Studi kasus dilakukan di Desa Singosari, Kecamatan Talang Padang, Kabupaten Tanggamus. Pengumpulan data primer dilakukan melalui wawancara, pengamatan partisipatif, dan dokumentasi, serta data sekunder melalui studi literatur dalam kurun waktu 9 bulan. Penelitian menemukan bahwa petani lahan kering Singosari bersifat rasional, baik secara ekonomi maupun pertimbangan ekologis terhadap tanaman komoditas dari luar. Para petani dengan hati-hati mengevaluasi risiko dan manfaat saat memutuskan jenis tanaman yang akan ditanam, dengan mempertimbangkan kondisi lingkungan dan ekonomi. Namun, tidak menutup kemungkinan bahwa pilihan petani terhadap tanaman budidaya juga tidak berkelanjutan sebagaimana kalkulasi yang telah direncanakan dari awal. Dengan demikian, petani lahan kering perlu mempertimbangkan kondisi spesifik pola usaha tani.

Kata Kunci: pertanian lahan kering, petani rasional, pola usaha tani, Singosari, tanaman komoditas.

INTRODUCTION

This study examines the rationality of a farming community in relation to commodity crops. Economic, social, and environmental factors influence farmers' decisions in choosing the types of crops to cultivate. The literature suggests several factors driving farmers to switch crops: (a) to increase household income; (b) specific experience, interest, and skills; (c) self-development; (d) the pursuit of a better social status; and (e) to avoid monotony (Sitorus, 2007; Mosher, 1987). Transitions in cultivating crops on drylands are shaped by environmental conditions (Zúñiga et al.,

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2021), such as climate and pest attacks on their crops. Hence, it is important to understand the rationality of a farming community towards commodity crops in present-day Indonesia.

The agricultural sector remains vital in the 21st-century development with a dual role in five main pillars: economic growth, poverty alleviation, gender equality, food security, and environmental sustainability (Byerlee et al., 2009; Mursalat, 2022). It is also a key to sustainable development (Stanciu et al., 2019; Volkov et al., 2021), despite exerting pressure on the environment while simultaneously contributing to biodiversity conservation and enhancing landscape quality (Wiśniewski et al., 2021; Marinov, 2019). Indonesia is projected to become the world's fifth-largest food provider by 2050 (Kementerian Pertanian, 2020). The agricultural sector provides employment for millions of small-scale farmers (Byerlee et al., 2009), significantly contributes to Gross Domestic Product (GDP), and remains the largest source of employment, accounting for an average of 32.21 percent (Pusat Kajian Anggaran Badan Keahlian DPR RI, 2021). Despite the impact of the Covid-19 pandemic, the agricultural sector remains resilient, recording a positive growth of 2.59 percent and contributing 13.70 percent to the GDP amid a national economic contraction (Pusat Kajian Anggaran Badan Keahlian DPR RI, 2021; Kompas.com, 2021; Uly, 2021).

The perspective of farmers' rationality is fundamental to understanding shifts in agricultural commodities in dryland areas. Farmers face price fluctuations with rational decisions-making, taking into account production costs and profit potential (Khamimiya, 2023). Developing agriculture in drylands requires a rational environmental approach, following environmental preservation principles for sustainable agriculture (Nuryati et al., 2019). The application of technological innovations in drylands can enhance farming productivity, potentially improving farmers' welfare (Mamat & Sukarman, 2020). Farmers' rationality involves logical and adaptive decision-making concerning economic, environmental, and technological changes. Understanding this perspective provides valuable insight for designing more efficient and sustainable agricultural strategies in drylands.

Previous studies have examined the rationality of dryland farmers from various perspectives. However, agricultural development programs initiated by supra-village actors often fail to align with dryland farmer’s rationality. When faced with price hikes, decisions of dryland farmers are influenced by economic conditions, including the income potential from crops suitable for the land (Khamimiya, 2023). There's variation in farmers' rationality when choosing the most suitable crop types (Nuryati et al., 2019). A study evaluated farmers' participation in dryland conservation efforts based on specific factors, such as the Land Conservation Index (Suwarto & Anantanyu, 2012). These studies explore various aspects of dryland farmers' rationality, such as decisions in cropping patterns, agroecosystem management, and considerations of profitability in farming practices (Katharina, 2007; Abdurrahman, 2019). Several studies emphasize the importance of understanding dryland farmers' rationality to enhance productivity, sustainability, and farmers' well-being, addressing agricultural challenges in those regions (Abdurrahman, 2019; Nuryati et al., 2019; Suwarto & Anantanyu, 2012; Mamat & Sukarman, 2020; Septeri, 2023).

Building on these insights, the present research examines farmers' rationality in relation to crop commodities within the specific context of dryland agricultural

communities. This particular case is chosen due to the heterogeneous agricultural system in drylands, characterized by unique livelihood assets and farming practices (Haileslassie et al., 2016). Drylands are dynamic locations for commercial agricultural production (Li, 2002: 333). In Lampung, dryland agriculture is characterized by commercial-oriented farming practices, including mixed cropping systems. Therefore, exploring the rationality of farmers concerning crop commodities in the context of dryland agriculture presents an intriguing research focus.

Lampung Province is one of Indonesia's key agricultural centers, with dryland farming playing a major role in its regional economy. Among its most important agricultural commodities are coffee and cocoa. Lampung is among the largest second Robusta coffee-producing provinces in Indonesia (Jolviansyah, 2022; Hardiantoro, 2022; Kementerian Pertanian, 2021). Coffee has been an essential commodity since the 19th century and to serve as a profitable crop cultivated primarily by small-holder farmers (Kusworo, 2013). Meanwhile, cocoa is an export commodity (Khoiriah, 2022) and is among the six major cocoa-producing provinces in Indonesia (Anwar, 2021; Kementerian Pertanian, 2021).

In Tanggamus, a prevalent practice is intercropping coffee and pepper, approximately 79% to 86% (Prasmatiwi et al., 2023). Similarly, in one village in the Talang Padang sub-district, the majority of Singosari Village's population work as farmers, employing intercropping on drylands. According to the Singosari Pemerintah Pekon Singosari (2021), a significant part of Singosari consists of productive dryland farming areas yielding rice, salak fruit, cocoa, coffee, bananas, corn, aren trees, and pepper. These characteristics made Singosari an ideal site for this study.

Farmers are active agents in responding to market dynamics and agricultural commodities. Several studies indicate that crop rotation in farming is influenced by factors such as harvest timing, prices (profitability), farming experience, and farmer income (e.g., Kaizan et al., 2014; Harahap, 2018; Samosir, 2015; Rajagukguk et al., 2018; Halimah, 2013; Zulkarnain & Sukmayanto, 2019; Suchato et al., 2021; Setiani et al., 2019; Sitorus, 2007; Mosher, 1987; Arsi et al., 2021). Consequently, fluctuations in agricultural commodities are closely related to the sustainability of farming practices and community livelihoods.

METHOD

This research employs a qualitative method using a case study approach. Conducted over nine months, from August 2022 to April 2023, in Singosari Village, Talang Padang Sub-District, Tanggamus Regency, the study gathered data through participatory observation, interviews, literature review, and documentation. The research involved the village government and farmers as informants. The researcher applied Miles, Huberman, and Saldana's interactive data analysis model (Miles et al., 2014) consisting of three components: (1) data condensation, (2) data display, and (3) conclusion drawing. Data authenticity was validated through triangulation, cross-verifying information from different sources and times. The researcher utilized participatory observation, interviews, and documentation as simultaneous data sources.

RESULTS AND DISCUSSIONS

Farming Systems and Agricultural Commodities

Farmers in Singosari practice intercropping systems. In their drylands, they cultivate

perennial crops such as coffee, cocoa, and pepper as primary crop commodities, alongside seasonal intercrops such as taro, cassava, bananas, and other short-term plants. Additionally, these intercropped plots also contain various hardy plant species, including coconut, nutmeg, teak, mahogany, and other types of timber.

The diversity of crops in the above intercropping system reflects the community's adaptive agricultural strategy, integrating food, non-food, and commercial crops to sustain household livelihood needs. As per the study by van Ginkel et al. (2013), dryland farming involves an intricate blend of staple crops, vegetables, livestock, trees, and fish interrelated in a complex and mutually influential manner. Effectively managing risks and enhancing productivity through sustainable diversification and intensification play a crucial role in securing and improving rural livelihoods (van Ginkel et al., 2013).

Cassava and taro are harvested once a year, with a planting-to-harvest period ranging from eight months to one year. Crystal guava is subsistence-oriented, as only a few trees are found in the front yard of the house, although some wealthier farmers Cultivate it commercially. Other crops such as coffee, pepper, nutmeg, and cocoa can only be harvested once a year. On the other hand, banana plants are usually harvested every 15-20 days, hybrid corn can be harvested every 3-4 months, and snake fruit and papaya are typically harvested weekly depending on the quantity of fruit.

Most households are surrounded by home yard planted with both perennial species (such as avocado, cocoa, crystal guava, and others) and seasonal crops (legumes: long beans, eggplant, and others). Therefore, sometimes, there is little difference between the household yard and the garden because they are planted with relatively similar crops. The plants grown in the house yard and dryland are both commercial and subsistence crops. During the avocado harvest season, collectors from the surrounding areas frequently come to purchase. Besides avocados, crystal guavas are occasionally found, although the quantity is usually limited and more subsistence-oriented than commercial.

The rhythm of community life in Singosari is closely tied to agricultural activities conducted across two different landscape settings. For work activities in dry fields, residents begin work early in the morning. Various activities are performed, ranging from *ngoret* (clearing grass), *nderes* (tapping palm trees), planting vegetables, to harvesting coffee, taro, and pepper. For instance, a smallholder farmer, Rokayah (a pseudonym, 32), begins her day by carrying a basket containing a sickle and drinking water. She returns when approaching the Dhuhr prayer time, and after Dhuhr, she returns to the garden to continue her work activities until the evening, before the Asr prayer time. When they return home, they bring animal feed (*ramban*) for their goats.

For those who work as farm laborers in plowing the land with hand plows (rotary), like a small farmer, Rizki (a pseudonym, 39), they leave for the garden early in the morning. Rizki doesn't bring food supplies as the landowner has already provided them. The duration of their work ranges from one to three days, depending on the size of the field. The same goes for laborers who work in felling teak, sengon, and meranti trees as commercial crops. However, such commercial tree remains relatively uncommon because the majority are used for subsistence and building houses.

Coffee has long been a prominent commercial crop in Singosari, tracing its roots to the colonial periods. Coffee plantations and factories were established in Sidomulyo

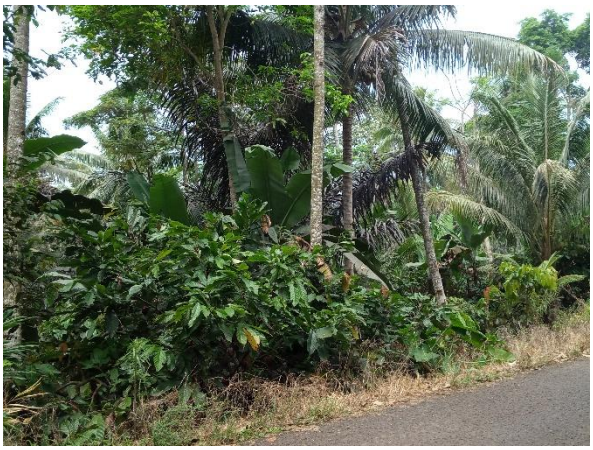
between 1942 and 1949, and gradually, coffee became a primary commodity distributed evenly in every village. In recent years, however, coffee cultivation has declined due to decreasing market value of coffee as a source of annual income. Nevertheless, coffee plants are now often grown in combination with other crops such as pepper, cocoa, taro, and cassava. Additionally, it is crucial to prune coffee plants to ensure fruit production. However, over time, its productivity has been declining.

In general, there are many types of coffee, but in Singosari, the majority is robusta coffee. In Singosari, there are varieties discovered by local farmers. In 2017, a type of coffee was found in the Air Naningan area, then tested for cultivation in Singosari, and the results were good. Additionally, a new variety was discovered by Mr. Sugiman and named "Sugiman Coffee."

For coffee plants, from the planting time (sowing seeds), not from germination, the seedlings can be planted after about 4-6 months. Typically, for plants in fertile land, they may start bearing fruit in 2-3 years. However, for plants three years and older, it is normal for them to bear fruit. In Singosari, it's uncommon to plant coffee from the beginning. On average, plants are grafted to induce fruiting, more precisely "grafted," either bud grafting or top grafting (upper stem). The top of an old plant is cut, its bud is sought, and then grafted with a new variety known for its good fruits. Coffee cherries can be harvested only once a year although in 2023, the harvest season began earlier than usual, typically in April-June for coffee and then in June-August for pepper.

The application of lateral and apical grafting in cocoa cultivation serves as a rejuvenation strategy.

The cocoa variety cultivated in Singosari is a local strain. Cocoa plants do not follow a fixed annual cycle, as fruiting occurs continuously, similar to fruits like salak and coconut. Cocoa planting seasons typically occur twice a year, from September to April, depending on weather conditions. In Singosari, two types of grafting are known: branch grafting and bud grafting. Branch grafting produces leaves shaped like umbrellas, whereas bud grafting yields shoots resembling ordinary leaves. In contrast, superior varieties have broader and greener leaves. The application of lateral and apical grafting in cocoa cultivation as a rejuvenation strategy (Pasandaran et al., 2017: 8).



Source: Field Documentation, 2022

Figure 1. Cocoa Plants

In 2018, cocoa plants were affected by fruit fly infestation and fungal rot, causing extensive damage. To tackle this, Singosari farmers sought cocoa seedlings from Sulawesi to graft onto their existing plants. With California papayas fetching high prices, locals began planting them, leading to the removal of coffee and cocoa plants to make way for papayas. For instance, Pak Tugino, a mid-level farmer, switched to papaya cultivation. Papaya plants usually take up to 8 months before harvesting, resulting in a surplus harvest schedule necessitating daily rotations for picking. Harvesting occurred every three

days, both during the day and at night, due to the abundance of papayas, as revealed in the interview excerpt.

> "The first interviewee, S. Fajriyanto, discusses how papaya California farming is leading among all crops. They harvest a certain tonnage per week, with 500 plants yielding around 1 ton. Each papaya weighs about 2 kilograms, and due to their density, the goal is relatively small at 500 plants. Farmers have demonstrated consistency in the yield. Comparatively, they've evaluated papaya against crops like cocoa and peanuts (Interview with S. Fajriyanto, January 24 2023). The second interviewee, H. Kuswanto, reflects on the papaya boom in 2017-2018, where some coffee farms transitioned to papaya cultivation for quicker turnover. Papayas can be harvested 2-3 times a year, with fruits appearing mid-year after planting. In 2021, papayas were affected by yellowing disease, causing interruptions. There are ongoing trials to resume cultivation, although uncertainty remains about future disease outbreaks. Some farming focus has shifted from papaya to corn (Interview with H. Kuswanto, 8 December 2022)".

The beginning of papaya seedlings was purchased from a store with California and Alin varieties. These papayas were only sold to collectors in Singosari; there were many papaya collectors, and they were taken to Java's island market. Initially, papayas were priced between Rp 3,000.00 to Rp 4,000.00 per kilogram; currently, they remain expensive at Rp 4,000.00 per kilogram. Many have started growing papayas again, unsure if the diseases persist. Diseases strike when the fruit is ripe, showing yellowing shoots, stem rot, and black spotted fruits, making them unsellable. Papayas are sold semi-ripe (*nyadam*), treated with calcium carbide to endure travel and ripen to full yellow upon arrival. Previously, each collector could transport three cars daily.

Many papaya crops failed due to diseases, replaced by hybrid corn. Corn plants are harvested every four months, usually yielding thrice a year. These corn plants can be seen as a "refuge" from disease attacks on papaya plants. Rather than leaving the land empty, landowners rent it out. For example, a corn collector and wealthy farmer, Hendra (a pseudonym, 34), has been leasing land for corn cultivation for the past two years (since 2020). Coincidentally, Hendra also owns his own corn-shelling machine. The corn collected is distributed to factories in Metro, Tanjung Karang, Natar, and Sribawono. Hendra also frequently purchases young corn (*janten*) to take to the Talang Padang market, sourced from other farmers.

The conclusion drawn from the above facts is that changes in crop commodities occur due to farmers' profit orientation toward commercial crops and the occurrence of pest and disease attacks. Most farmers merely follow trends in planting, so when pest and disease attacks occur and crops fail, farmers struggle to handle it, compounded by the lack of specific intervention programs to address these issues. Farmers speculate and calculate on various types of crops they will plant. This can be observed from the interview excerpts with Mr. Heri and Mr. Herman (wealthy farmers).

> "In the early '90s, our relative returned from Jogja bringing salak seeds and started planting salak. Until Singosari became the icon for salak. People planted salak because it was easy to market, the price was decent, and turnover was quick. As time passed, many started planting salak, not just in Singosari, so naturally, when it became common, the price dropped. So, speculating to find something new with economic potential, some salak was replaced with papaya because papaya was seen to grow faster.

> Also, not knowing that papaya has many diseases. Salak is planted only once and can produce until 25-30 years old, but with papaya, every 3-4 years, replanting is necessary. It's an economic issue; papaya has a quick turnover since seeing neighbors planting papaya yields tons, hundreds even, it's a village thing. When a neighbor succeeds with a certain crop, others follow suit" (Interview with H. Kuswanto, 8 December 2022).

> "The majority was coffee, but after a while, people now no longer focus on the crops that were previously sought after; they prioritize the economic value. Spent 4 years there, so the coffee plantation was replaced with papaya even though there were group farming discussions, it just meant that farmers are reluctant to follow orders nowadays. Meaning, they still plant crops with higher economic value; now many are trying to plant papaya again. I monitored the diseases; there were none recently. That was the majority, supporting the economy, but due to the yellow virus, its economic value isn't as high as papaya. If I open a papaya, I'll return to coffee and bananas. Since salak emerged, people stopped planting rice. Salak is continuously replaced with papaya and other crops" (Interview with Herman, January 8 2023).

Singosari farmers thus face a dilemma in determining which agricultural commodities to cultivate. Moreover, this likely results in farmers opting for intercropping patterns within one field. Hence, the rationale behind farmers' decisions to grow certain crops or not cultivate others is evident that farmers are rational in the sense that they aim to maximize income while minimizing or avoiding risks associated with agricultural crops.

In Singosari, during the colonial era, rubber, coffee, and pepper were prominent cultivated crops holding significant economic importance at that time. Additionally, cocoa, corn, and bananas often became the focus of rural industries. The neoliberal approach often involves interventions in agricultural and rural development programs, particularly for cocoa and coffee crops. These interventions aim to promote market-oriented practices and enhance productivity in this sector. Finally, crops like pulses, papaya, and salak are extensively cultivated as popular crops for the domestic market. Similarly, papaya and salak are popular fruit crops often grown in small home gardens or small-scale orchards by individuals or communities for personal consumption and sale.

Farmers' Rationality in Dryland Crop Cultivation

Echoing Schrauwers' perspectiveThe rationality underlying Singosari farmers' decisions is shaped by both environmental and economic considerations. Ecologically, farmers' rationality in selecting crop types in dryland areas is influenced by past experiences with pest and disease infestations (compare with Lin 2011 and Tesfaye & Seifu 2016). Economic factors also play a crucial role, where Singosari farmers practicing mixed cropping on their dryland have specific considerations regarding the types of crops they'll plant to maximize profits. This mixed cropping practice reflects a rational approach in diversifying commercial crops alongside household consumption crops within one land area (see Makate et al. 2016; Barman et al. 2022; Schroth & Ruf 2014; Khanam et al. 2018).

Farmers act with rationality, weighing the pros and cons of each decision they make (Setiani et al., 2019; Popkin, 1979; Popkin, 1986; Mosher, 1991). Echoing Schrauwers' perspective, farmers are essentially

"economic beings" whose decision-making is based on cost-benefit calculations (Li, 2002: 194). Following Popkin's rational farmer perspective, Singosari farmers maximize their agricultural outputs by considering factors such as selling prices, profits, market changes, and environmental risks. The farmers declined Nestle's offer to convert their Singosari crops into a coffee experimental garden due to the lengthy annual coffee harvest time and the obligation to sell coffee harvests. This indicates farmers' concerns about long-term economic impacts and the impracticality of a farming model that requires excessively long harvesting times. Farmers express dissatisfaction with the entanglement in coffee sales due to a partnership with Nestle, which may restrict their freedom to sell harvests. Farmers always maximize their rationality in managing farming businesses and tend to assess the value of items to be exchanged (Waters, 1994).

Farmers prefer cultivating crops deemed more economically beneficial than cocoa. Many switch to papaya cultivation as it's seen as more economically advantageous and effective against pests and diseases (refer to studies by Kaizan et al. 2014, Harahap 2018, Samosir 2015, Rajagukguk et al. 2018, Halimah 2013, Zulkarnain & Sukmayanto 2019, Suchato et al. 2021, and Arsi et al. 2021). This reflects their response to programs influenced by rational considerations of gains and losses (compare with Setiani et al. 2019).

While farmers anticipate high initial profits from commodity crops, their expectations are not always supported by local agroclimatic conditions, environment constraints, or the volatility of agricultural market. Their actions often involve trial and error in crop choices, which, when viewed through the Scoones analysis framework, may not always be economically and environmentally sustainable (Scoones, 2009; Scoones, 2020).

The above phenomenon is highly visible in papaya cultivation. When the selling price of papayas skyrockets, reaching around Rp 3,000 to Rp 4,000 per kilogram with a weekly harvesting frequency, farmers simultaneously rush to plant papayas. Many farmers in Singosari even replace their coffee and cocoa plantations with papayas. Farmers see that the productivity of papayas is much more profitable compared to other crops. Even the iconic Salak Pondoh Singosari has been replaced by papayas. Besides the price advantage, the papaya's fruit production time is shorter than that of salak, and its marketing process is smoother. Such decisions reflect farmer's rational responses to the open market opportunities, leading to dynamic changes in land-use patterns across this dryland area (see Li, 2002: 333).

Source: Field Documentation, 2022
Figure 2. California Papaya Plant

Aren (palm) trees play an important economic role for all farmer groups in Dusun Pucungrejo and Padalarang by providing stable and relatively high income. Their presence has made these two hamlets the primary destination for collectors of palm sugar and palm fruit from outside the village.

Additionally, some small and medium-scale farmers with only household plot have utilized this opportunity by planting aren trees to produce palm sugar and palm fruit. For instance, Mbah Waginah, a medium-scale farmer, optimizes a leased land of 0.25 hectares planted with aren trees, now serving as the main income source for the household. Meanwhile, Mbah Marketi, a small farmer engaged in trade, utilizes her home yard to grow aren trees as an additional source of income alongside her commercial work.

Source: Field Documentation, 2022
Figure 3. Coffee and Sugar Palm Plants

From a household perspective, income derived from palm sugar and palm fruit is generated on a daily and weekly basis, unlike crops such as coffee and pepper, which require a year for seasonal harvests. Additionally, avocado plants, being perennial, provide promising annual income for households. Consequently, aren and avocado trees play a strategic role as backyard crops in Singosari, effectively enhancing household food security and nutrition, consistent with the findings of Galhena et al. (2013).

Farmers' rationale in considering aren trees combines environmental and economic aspects. Aren trees exhibit ecological resilience, capable of growing without intensive care, as highlighted by Bernhard (2018). The sustainability of cultivating aren trees in Singosari is supported by land suitability and the topography of highlands, with planting systems in gardens and steep slopes. Aren trees also possess resistance to pest and disease attacks, especially on steep slopes where their strong roots help reduce erosion and maintain soil fertility. From an economic perspective, farmers' experiences, particularly in Dusun Pucungrejo, in cultivating and marketing aren tree products have been beneficial. The high market demand for palm sugar and palm fruit is evident in the frequent visits of collectors to households, with demand peaking during Ramadan. This situation aligns with the findings of Pinem et al. (2022) in Kabupaten Karo, demonstrating ease in selling and marketing production results.

Farmers' rationality in selecting crop types is influenced not only by profitability but also marketability. Singosari farmers demonstrate a distinctive form of rationality in identifying and utilizing market opportunities. Due to the abundance of agricultural middlemen, handling products like bananas, corn, coconuts, and papayas, these goods are marketed to be transported to Java or to food processing factories in the Lampung region. Because of the imbalance between agricultural productivity and market demands, many middlemen transport these goods to Java. This finding contrasts with Popkin's view that farmers are rational but lack the opportunity to access markets to sell their produce directly (Popkin, 1979; Popkin, 1986).

Singosari farmers are commercially oriented and select crops in drylands based on profitability, market access, income, and personal farming experience. When agricultural programs are introduced, they carefully weigh the risks and benefits. Past experiences with environmental dynamics,

including pest attacks, influence their attitude toward new programs that should provide effective solutions. These findings are relevant to research on the rationalization of crop selection in dryland farming in Indonesia (see, Miyata, 2003; Klock & Sjah, 2007; Sjah et al., 2021), as well as in a global context (see, Anderson & Dillon, 1992; Moschini & Hennessy, 2001; Sadras et al., 2003; Just et al., 2003; Aimin, 2010). Farmers' rationality in making decisions regarding the sustainability of their business management faced with limitations (Riptanti et al., 2022).

CONCLUSION

Commodity crops in the dryland of Singosari include sugar cane, California papaya, cocoa, and coffee. Sugar cane provides significant economic and ecological benefits. California papaya serves as an example of farmers' responsiveness to market dynamics, while cocoa and coffee, as traditional commodity crops, remain connected to the global market. Farmers in Singosari, especially those from the wealthy and middle-income groups, rationally shift to new and more profitable commodity crops. The openness of wealthy and middle-income farmers to market opportunities is one of the main drivers of this change.

Singosari farmers are rational and market-oriented, prioritizing profitability, income, and their own farming experience. Farmers carefully evaluate risks and benefits when deciding on the types of crops to cultivate, considering environmental and economic conditions. However, it's possible that farmers' choices regarding cultivated crops are not sustainable as initially planned calculations. Intercropping practices on arid lands reflect the rationalization of crop diversification for maximum benefit. Singosari farmers are cautious about accepting new programs that don't offer effective solutions to their agricultural challenges, especially due to their past experiences with crop pests.

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