APLIKATIF
Journal of Research Trends in Social Sciences and Humanities
DOI: https://doi.org/10.59110/aplikatif.909
Vol. 5 No. 2, June 2025, pp. 137-155

Corn Farmers' Resilience to Crop Failure through Social Capital in Karandu Village, Konawe Regency

Asrani[1*], Hannin Pradita Nur Soulthoni[1]
[1]Universitas Halu Oleo, Kendari, Indonesia
*Asrani@uho.ac.id

ABSTRACT

Corn farmers in Karandu Village, Konawe Regency, repeatedly experience crop failures caused by pest outbreaks, drought, flooding, and unpredictable climate conditions, which undermine household economic stability. This study aims to explain how social capital supports farmers' resilience in facing crop failure, focusing on bonding, bridging, and linking social capital. A descriptive qualitative design was employed involving 12 purposively selected informants, consisting of eight corn farmers, two collectors, the village head, and one agricultural extension worker. Data were collected through in-depth interviews, field observations, and document analysis, and were analysed using an interactive model consisting of data reduction, data display, and conclusion drawing and verification. The findings show that crop failure reduces farmers' incomes, increases dependence on informal loans, and forces households to reduce essential expenditures. However, farmers continue corn cultivation by mobilising bonding social capital through cooperation, seed sharing, and labour exchange; bridging social capital through flexible credit and market relations with collectors; and linking social capital through support from village government, extension workers, and agricultural institutions. These findings indicate that strengthening social capital is essential for enhancing the resilience of smallholder corn farmers in areas prone to recurrent crop failure.

Keywords: *Corn Farmers; Crop Failure; Farmer Resilience; Social Capital; Rural Livelihoods.*

INTRODUCTION

Corn is one of the staple food crops and an important agricultural commodity for many farming households in Indonesia. It contributes directly to household income, family food consumption, livestock feed, and agro-industrial needs. In recent years, however, national corn production has shown instability in both harvested area and output volume. Data from Statistics Indonesia (BPS, 2025) indicate fluctuations and declines in production in several regions, while the demand for corn for food, feed, and industrial purposes continues to increase. This situation indicates that the resilience of corn production remains vulnerable, particularly in production areas that depend on dryland farming systems.

One of the major challenges in sustaining corn production is recurrent crop failure. Previous studies show that corn crop failure is caused by a combination of ecological, technical, and structural factors, including irregular rainfall, prolonged drought, flooding, pest and disease attacks, limited capital, inadequate production facilities, and policy constraints at the farm level (Mnou & Wulakada, 2023). Cases of crop failure have been reported in several rural areas, including villages in Gorontalo that are vulnerable to climate change (Nadi et al., 2024), areas in North Halmahera facing capital and policy constraints (Lahura et al., 2025), and locations in Bali and Sumatra that frequently experience plant pest and disease outbreaks (Herlinda et al., 2022; Nerizza et al., 2025). Similar conditions are also found in major production centres in Java and Sulawesi, indicating that corn crop failure remains a persistent problem despite the promotion of improved varieties and cultivation technologies (Prasetyo et al., 2024).

The impact of corn crop failure is not limited to declining production figures. It is also directly experienced in the socio-economic lives of farming households (Ahmed, 2024; Li et al., 2024). When yields decline, farm income decreases, debt burdens increase, and families' capacity to meet basic needs such as food, education, and health services becomes more limited (Bahiru et al., 2023). In many cases, farmers are forced to sell productive assets, postpone debt payments, reduce household consumption, or cut essential expenditures to sustain their livelihoods (Berhanu et al., 2024; Boansi et al., 2023; Feryanto et al., 2023). Therefore, corn crop failure should not be understood merely as a technical cultivation problem, but also as a socio-economic issue that affects household welfare, farm continuity, and rural community resilience.

Several previous studies have examined farmers' responses to crop failure and production uncertainty. These responses include reducing household expenditure (Padhan & Madheswaran, 2022), borrowing operational funds (Boansi et al., 2023), seeking additional income outside agriculture (Rahut et al., 2021), making long-term financial investments (Carter, 2022), using technical inputs such as pesticides and tolerant varieties (Atube et al., 2021; Berhanu et al., 2024; Mooney et al., 2022), and building partnerships with companies or private networks to reduce vulnerability to production fluctuations (Mbugua et al., 2019). Although these studies provide important insights, many of them still focus mainly on technical adaptation and individual household coping strategies. The socio-ecological dimensions of resilience, particularly those related to networks, trust, reciprocity, local institutions, and collective action, remain less explored in the context of corn farmers in rural Sulawesi.

Studies conducted in Sulawesi have also provided important but still limited insights into agricultural vulnerability and resilience. Arifah et al. (2022) showed that the livelihood vulnerability of rice farmers in South Sulawesi varies according to access to irrigation, with recommended strategies largely centred on infrastructure development and non-farm activity training. Dewi and Hajrah (2025) found that rainfall variability significantly affects corn production in Southeast Sulawesi and highlighted the role of education, capital availability, human resources, farming experience, and extension services in shaping corn farming development. Meanwhile, Zulkifli et al. (2025) emphasised the importance of social capital within farmer groups and cooperatives for sustaining household food security. However, these studies have not specifically examined how social capital operates in helping corn farmers face recurrent crop failure and continue cultivation under conditions of climate and pest-related uncertainty.

Social capital offers a useful perspective for understanding how farmers build resilience in such conditions. Theoretical and empirical studies show that relational networks, norms of reciprocity, and trust can become important resources for farmers in managing risk and developing survival strategies (Chang et al., 2025; Dadzie et al., 2022). Putnam's framework conceptualises social capital through three main dimensions: bonding social capital, which refers to strong ties within relatively homogeneous groups; bridging social capital, which refers to horizontal relationships across different groups; and linking social capital, which refers to vertical connections with formal institutions and actors in positions of authority (Putnam, 1994). Recent studies in agricultural communities also show that social capital can facilitate extension programmes, strengthen cooperation, improve access to assistance, and support innovation in the face of environmental change and production disturbances (Boansi et al., 2023; Priya et al., 2025; Saleh et al., 2024; Slijper et al., 2022).

Despite these developments, empirical studies on corn crop failure in Indonesia have only begun to incorporate the three-dimensional framework of bonding, bridging, and linking social capital into analyses of farmers' resilience. Research on corn farmers in Sulawesi has also rarely discussed in depth how relationships among farmers, connections with market actors, and linkages with government institutions shape farmers' capacity to continue planting after repeated crop failures (Arifah et al., 2022; Dewi & Hajrah, 2025; Umiyati et al., 2023; Zulkifli et al., 2025). This gap is important because farmers' resilience is not formed solely through individual decisions or technical interventions, but also through the social and institutional relations that enable them to access labour, seeds, credit, markets, information, and government support.

Against this background, the present study examines the relationship between social capital and the resilience of corn farmers in Karandu Village, Konawe Regency, Southeast Sulawesi. Karandu Village was selected because it is one of the active corn-producing areas where farmers continue to cultivate corn despite repeated crop failures caused by pest attacks, drought, flooding, and unpredictable climate conditions. Local reports indicate that corn farmers in Karandu continue planting with limited operational capital while receiving support through farmer groups, village programmes, and plant-protection initiatives (Karandu Village Government, 2024; Sultra Protection Agency, 2023; Ministry of Home Affairs, 2025). Although Karandu is not the largest corn-producing centre in Southeast Sulawesi, it remains a strategic site for examining farmers' resilience because corn farming continues to support the local village economy and household livelihoods.

This study contributes to the literature by showing how bonding, bridging, and linking social capital operate simultaneously as resilience resources among corn farmers facing recurrent crop failure. Unlike previous studies that mainly focus on technical adaptation, climate risk, or household economic coping strategies, this study highlights the role of trust-based networks, market relationships, farmer-group solidarity, and institutional linkages in sustaining corn cultivation. Specifically, this study aims: first, to describe the forms of crop failure and their impacts on the socio-economic lives of corn farmers in Karandu Village; second, to identify and analyse the forms of bonding, bridging, and linking social capital that develop among corn farmers; and third, to explain how these three dimensions of social capital contribute to the economic, social, and production resilience of farmers in the face of crop failure.

METHOD

Study Site/Location and/or materials

The research was conducted in Karandu Village, Wawotobi District, Konawe Regency, Southeast Sulawesi, with data collection carried out from November 2025 to January 2026. The site was selected purposively because a substantial proportion of residents in Karandu Village are engaged in corn farming, and the village represents one of the active corn-producing areas in Konawe Regency. Despite repeated crop failures caused by pest attacks, drought, flooding, and climatic variability, corn farmers in Karandu Village continue to cultivate corn as a major source of household livelihood. The village is also supported by approximately 90 hectares of corn-farming land, 14 farmer groups, and environmentally friendly pest-control innovations introduced by the Southeast Sulawesi Plant Protection Centre (Karandu Village Government, 2024; Sultra Plant Protection Centre, 2023; Ministry of Home Affairs, 2025). Therefore, Karandu Village provides a relevant empirical setting for examining how social capital contributes to farmers' resilience in dealing with recurrent crop-failure risks.

The participants in this study consisted of corn farmers, corn collectors, and local institutional actors in Karandu Village. These actors were selected because they are directly involved in corn production, marketing, agricultural support, and decision-making processes related to crop-failure responses.

Research Design

This study employed a descriptive qualitative research design to explore the lived experiences of corn farmers in Karandu Village in facing crop failure and maintaining their farming activities through social capital. A qualitative approach was considered appropriate because the study aimed to understand farmers' perceptions, coping strategies, social relationships, and institutional interactions in depth rather than to measure variables statistically. The analysis was guided by the concepts of bonding, bridging, and linking social capital, which were used to examine how trust, reciprocity, networks, and institutional relations support farmers' economic, social, and production resilience. Data were collected through semi-structured interviews, field observations, and document analysis.

Informants were selected purposively based on their direct involvement in corn farming, marketing, or agricultural support activities in Karandu Village. In total, this study involved twelve (12) key informants: eight corn farmers, two corn collectors, one village head, and one agricultural extension worker. The eight farmer informants consisted of landowners and sharecroppers who had experienced crop failure in one or two recent planting seasons. The two collectors were included because they regularly purchase farmers' corn harvests and, in some cases, provide informal credit or advance capital. The village head and agricultural extension worker were selected because of their roles in coordinating agricultural assistance, distributing subsidised inputs, facilitating training, and connecting farmers with government or technical programmes.

The corn-farmer informants were selected based on three criteria: (1) they had actively cultivated corn in Karandu Village for at least three consecutive planting seasons; (2) they had experienced a significant decline in yield or complete crop failure in one or two recent planting seasons; and (3) corn farming was one of their main sources of household income. The selection of informants was continued until the collected data showed recurring patterns and no substantially new information emerged, indicating that data saturation had been sufficiently reached for the scope of this qualitative study.

Table 1. Profile of key informants in Karandu Village

Code	Role	Land status (farmers)	Farming/working experience (years)	Notes on crop-failure experience
F1–F8	Corn farmers (owners and sharecroppers)	Owners or tenants, 0.25–1.5 ha	5–25	Repeated crop failures due to drought, floods, and pest attacks
C1–C2	Corn collectors	–	8–15	Purchase corn from Karandu farmers and provide informal credit
VH	Village head	–	>5 in current position	Coordinates agricultural assistance and local infrastructure
AE	Agricultural extension officer	–	>5 in extension work	Provides technical guidance and links farmers to protection programmes

Data collection was carried out through semi-structured in-depth interviews, participant and non-participant observations, and document analysis. Individual interviews lasted approximately 60–90 minutes and were conducted at locations agreed upon by the informants, such as their homes, corn fields, or the village office. Before each interview, the researcher explained the purpose of the study and obtained verbal informed consent from the informants. With permission from the informants, interviews were audio-recorded and supported by detailed field notes.

The semi-structured interview guide for corn farmers covered several themes: (1) farming history, land size, and access to production inputs; (2) experiences of crop failure, including perceived causes, frequency, and severity; (3) socio-economic impacts on income, debt, and household expenditure; (4) support received from family members, neighbours, farmer groups, collectors, village government, and agricultural institutions; and (5) coping, recovery, and continuation strategies after crop failure. Interviews with collectors focused on marketing relations, informal lending arrangements, harvest purchasing practices, and farmers' repayment mechanisms. Interviews with the village head and agricultural extension worker explored village-level programmes, institutional support, subsidised input distribution, pest-control interventions, and responses to crop-failure events.

Field observations were conducted to complement the interview data and to understand the social and agricultural context of corn farming in Karandu Village. Observations focused on cultivation practices, mutual-assistance activities during land preparation, replanting and harvesting, farmer-group meetings, labour-exchange arrangements, and interactions among farmers, collectors, village officials, and extension workers. Both participant and non-participant observations were used, depending on the situation in the field. These observations helped the researcher verify interview statements and capture everyday practices of cooperation, trust, and collective action among farmers.

Document analysis was also conducted to enrich the empirical context of the study. The documents reviewed included village profile reports, local agricultural statistics, records of seed and fertiliser distribution, programme reports from the Southeast Sulawesi Plant Protection Centre, and national statistics on corn harvested area and production published by Statistics Indonesia (BPS). These documents were used to support, compare, and contextualise the information obtained from interviews and observations.

Analysis

Data analysis followed the interactive model of Miles and Huberman, which consists of data reduction, data display, and conclusion drawing or verification. Interview recordings were transcribed verbatim and read repeatedly to obtain a comprehensive understanding of the data. The researcher then conducted open coding to identify meaningful units related to crop-failure experiences, socio-economic impacts, forms of social capital, and farmers' resilience strategies. These initial codes were grouped into broader categories, such as "types of disturbance", "income and debt dynamics", "mutual assistance practices", "market relations", "institutional support", and "production recovery strategies".

The categories were then refined into core themes that reflected the research objectives, namely: (1) forms and impacts of crop failure experienced by corn farmers; (2) manifestations of bonding, bridging, and linking social capital; and (3) the contribution of social capital to economic, social, and production resilience. Data display was carried out through thematic descriptions and summary tables to organise the findings systematically. Conclusion drawing was conducted continuously during and after fieldwork by comparing patterns across informants and data sources. Emerging interpretations were repeatedly checked against interview transcripts, observation notes, and documents to ensure that the findings were grounded in the data.

Validity and Research Ethics

To enhance the credibility of the findings, this study applied source triangulation and methodological triangulation. Source triangulation was conducted by comparing information obtained from corn farmers, collectors, the village head, and the agricultural extension worker. Methodological triangulation was conducted by comparing data from interviews, field observations, and document analysis. In addition, limited member checking was carried out by sharing brief summaries of preliminary interpretations with several key informants. The informants were invited to confirm, clarify, or correct the researcher's understanding of their experiences, particularly regarding crop-failure impacts, social support, and institutional assistance.

Ethical considerations were maintained throughout the research process. All informants participated voluntarily after receiving an explanation of the research aims, procedures, and use of the data for academic purposes. Verbal informed consent was obtained before each interview. To protect confidentiality, informants are identified using codes rather than real names, such as F1–F8 for corn farmers, C1–C2 for collectors, VH for the village head, and AE for the agricultural extension worker. The data are reported in aggregate form to avoid exposing personal or sensitive information. These procedures demonstrate that the study was conducted with attention to credibility, transparency, and research ethics.

RESULT

This section presents the main findings obtained from interviews, field observations, and document analysis in Karandu Village. The results are organised into three main themes: the forms and impacts of crop failure, the forms of bonding, bridging, and linking social capital, and the contribution of social capital to farmers' resilience strategies. Selected interview quotations are included to support the presentation of the findings and illustrate farmers' lived experiences in dealing with recurrent crop failure.

Forms of Crop Failure and Their Socio-Economic Impacts on Corn Farmers

The findings show that corn farmers in Karandu Village experienced repeated crop failures caused mainly by pest attacks, irregular rainfall, drought, and flooding. These disturbances affected corn production at different stages of cultivation, particularly during the vegetative, flowering, and harvesting phases. Farmers reported that caterpillar attacks, rat infestations, prolonged dry periods, and excessive rainfall caused plants to dry prematurely, rot, or fail to produce marketable yields. As a result, crop failure was not experienced merely as a technical farming problem but as a serious socio-economic shock for farming households.

Crop failure directly reduced farmers' income and weakened their ability to cover production and household expenses. One farmer explained that pest attacks and erratic rainfall left almost no harvest to sell. He stated:

"When our corn was eaten by caterpillars and the rains were erratic, there was barely anything to sell. Normally, one season would be enough to pay for fertilizer and my children's school fees, but when the harvest failed, I doubled my loan to the collectors, double the amount from the previous season, just to cover my daily needs and cover old debts." (F1, corn farmer, interview November 2025)

This statement indicates that crop failure forced farmers to rely more heavily on informal loans, particularly from corn collectors. The loan was not only used to finance the next planting season but also to meet daily household needs and repay previous debts. This finding shows that crop failure creates a cycle of financial pressure in which farmers must borrow more even when their repayment capacity declines.

The decline in income also affected household consumption and family welfare. Another farmer described how crop loss reduced the family's ability to meet basic needs:

"Our income has dropped significantly, almost gone because many of the crops in our fields have rotted. We've been forced to cut back on spending, especially on side dishes and medical expenses. Sometimes my child can't even attend extracurricular activities because the money is used to buy rice." (F2, corn farmer, interview November 2025)

The quotation shows that crop failure affected not only production income but also household food consumption, health expenditure, and children's educational participation. Farmers had to prioritise essential needs such as rice, while reducing spending on nutrition, healthcare, and children's activities. Therefore, the impact of crop failure extended beyond the agricultural sector and entered the daily social and economic life of farming families.

Table 2. Forms of crop failure and their impacts on corn farmers in Karandu Village

Main disturbance type	Typical pattern as described by farmers	Main economic impacts	Social and household impacts
Drought and irregular rainfall	Dry seasons last longer and rainfall occurs outside the expected planting schedule, disrupting planting and flowering phases.	Corn yields decline sharply; production costs are not fully recovered; farmers increase borrowing from collectors or neighbours.	Household spending is reduced, especially for food variety, health, and children's educational activities.
Flooding and waterlogging	Heavy rainfall causes some low-lying plots to remain inundated, leading to rotting crops.	Plants are damaged or lost completely; farmers lose expected seasonal income.	Families depend more on relatives, neighbours, and village assistance.
Pest attacks	Caterpillars, rats, and other pests attack plants during critical growth stages.	Productivity declines; pesticide costs increase; some farmers harvest below the break-even point.	Farmers experience anxiety, uncertainty, and greater dependence on informal support networks.

The findings indicate that crop failure in Karandu Village produced three main consequences: declining farm income, increasing dependence on informal credit, and reduced household expenditure. These conditions created economic vulnerability among corn-farming households, but they also activated various forms of social support that helped farmers continue planting in the following season.

Bonding Social Capital: Cooperation among Farmers, Families, and Neighbours

The first form of social capital found among corn farmers in Karandu Village is bonding social capital. This form of social capital appears in close relationships among family members, neighbours, and fellow farmer-group members. Bonding social capital is reflected in mutual labour exchange, seed borrowing, tool lending, collective replanting, and emotional support after crop failure.

Farmers stated that when one household suffered severe crop failure, other farmers usually helped clean the field and replant the land. One farmer explained:

"If a neighbor has a severe crop failure, we usually come and help clean up and replant their land. We also lend them corn seeds and then replace them when they harvest the next season. The important thing is that no one stops growing corn just because of a single crop failure." (F3, corn farmer, interview December 2025)

This statement shows that mutual assistance among farmers functions as an informal recovery mechanism. Farmers do not face crop failure individually; instead,

they rely on kinship, neighbourhood solidarity, and farmer-group support. Seed borrowing and labour exchange reduce the cost of replanting and enable affected farmers to resume cultivation without immediately depending on formal credit.

Bonding social capital also strengthens psychological and social resilience. The statement that "no one stops growing corn just because of a single crop failure" indicates that social support helps maintain farmers' confidence and motivation. In this context, cooperation is not only economic assistance but also a moral resource that encourages farmers to continue farming despite repeated losses.

Bridging Social Capital: Relationships with Collectors and Market Actors

The second form of social capital is bridging social capital, which appears in farmers' relationships with corn collectors, traders, and actors outside their immediate kinship networks. In Karandu Village, collectors do not only function as buyers of corn harvests but also as providers of informal credit and flexible repayment arrangements.

One collector explained:

"Many farmers in Karandu pay us for fertilizer and spraying costs first and then pay after the harvest. If the harvest fails, we offer flexibility, allowing them to pay in installments the following season, if they continue planting. So, our relationship isn't just about buying and selling, but also about mutual trust, so farmers don't turn to loan sharks with high interest rates." (C1, corn collector, interview December 2025)

This quotation shows that bridging social capital helps farmers access production capital when formal financial resources are limited. The relationship between farmers and collectors is based on repeated transactions, trust, and mutual dependence. Collectors provide advance capital or delayed payment schemes, while farmers maintain long-term selling relationships with them.

Although this arrangement may create economic dependence on collectors, it also serves as an informal safety net during crop-failure periods. Flexible repayment allows farmers to continue planting in the next season rather than abandoning corn cultivation. Therefore, bridging social capital supports farmers' economic resilience by maintaining access to inputs, credit, and market channels.

Linking Social Capital: Institutional Support from Village Government and Agricultural Agencies

The third form of social capital is linking social capital, which refers to farmers' vertical relationships with formal institutions and actors in positions of authority. In Karandu Village, linking social capital is reflected in farmers' access to the village government, agricultural extension workers, agricultural offices, and the Southeast Sulawesi Plant Protection Centre.

The village head explained that institutional collaboration became important when farmers experienced repeated crop failures:

"When in recent seasons, farmers experienced frequent crop failures due to flooding and pests, the village tried to connect farmer groups with the Protection Center and the agricultural office. We helped arrange seed assistance and subsidized fertilizer and created a joint spraying schedule. Without this kind of collaboration, farmers would have a hard time recovering on their own." (VH, village head, interview December 2025)

This statement indicates that the village government acts as a connector between farmer groups and higher-level agricultural institutions. Through this connection, farmers gain access to seed assistance, subsidised fertilisers, pest-control programmes, and collective spraying schedules. Such support would be difficult for individual farmers to access without institutional mediation.

Agricultural extension workers also played an important role in strengthening farmer groups and improving adaptive farming practices. One extension worker stated:

"In every farmer group meeting, we emphasize the importance of planting in unison and managing drainage to reduce the risk of flooding and pest infestations. In addition to providing technical materials, we also encourage farmers to continue sharing experiences and supporting each other, because without a strong social network, technical recommendations alone are insufficient to address current climate change." (AE, agricultural extension officer, interview January 2026)

This quotation shows that institutional support is not limited to technical training. Extension activities also strengthen social learning, collective action, and cooperation among farmers. Planting in unison, drainage management, and shared pest-control efforts require coordination among farmer groups. Thus, linking social capital contributes to production resilience by connecting technical recommendations with existing local social networks.

Social Capital and Farmers' Resilience Strategies

The findings show that corn farmers in Karandu Village use three main resilience strategies in response to crop failure: economic strategies, production strategies, and social strategies. Economic strategies include reducing household expenditure, borrowing capital from collectors or neighbours, and seeking additional income outside corn farming. Production strategies include replanting, changing planting schedules, using pest-control information, managing drainage, and participating in collective spraying. Social strategies include mutual assistance, seed borrowing, labour exchange, farmer-group meetings, and cooperation with village institutions.

Table 3. Social capital and resilience strategies among corn farmers in Karandu Village

Form of social capital	Main actors	Practices found in the field	Contribution to resilience
Bonding social capital	Farmers, families, neighbours, farmer-group members	Labour exchange, seed borrowing, tool lending, replanting assistance, emotional support	Reduces production costs, strengthens solidarity, and helps farmers continue planting after crop failure
Bridging social capital	Farmers, collectors, traders, other farmer groups	Informal credit, delayed repayment, market access, price and demand information	Maintains access to capital and markets during periods of declining harvest
Linking social capital	Farmers, village	Seed and fertiliser assistance, pest-	Improves access to institutional resources,

	government, extension workers, agricultural agencies, plant-protection institutions	control programmes, joint spraying, technical guidance, drainage support	technical knowledge, and collective risk management

These findings indicate that farmers' resilience is not built by individual effort alone. Instead, resilience emerges from the interaction between household strategies, community solidarity, market relations, and institutional support. Bonding social capital provides immediate assistance within the community, bridging social capital maintains access to credit and markets, while linking social capital connects farmers to formal support systems. Together, these three forms of social capital enable corn farmers in Karandu Village to recover from crop failure and continue their agricultural activities.

DISCUSSION

The findings of this study show that the resilience of corn farmers in Karandu Village is shaped not only by individual coping strategies but also by the quality of social relations that connect farmers with families, neighbours, farmer groups, collectors, village authorities, extension workers, and agricultural institutions. Crop failure caused by climatic variability, flooding, and pest attacks creates serious economic and social pressure on farming households. However, farmers can continue corn cultivation because they activate different forms of social capital. In this discussion, the findings are interpreted through Putnam's typology of bonding, bridging, and linking social capital, and are related to previous studies on agricultural resilience, livelihood vulnerability, and social networks.

Bonding Social Capital and Household Resilience

The findings in Karandu show that close social ties, or bonding social capital, form the first layer of support for farming households when crop failure occurs. Kinship relations, neighbourly ties, and farmer-group solidarity make it easier for villagers to organise collective action, such as clearing damaged plots, replanting corn, lending seeds and fertilisers, sharing labour, and helping families that experience severe harvest losses. These forms of assistance reduce production costs and provide immediate support when household income declines due to failed harvests.

From Putnam's perspective, bonding social capital refers to inward-looking ties that strengthen solidarity, reciprocity, and trust among relatively homogeneous group members (Häuberer, 2011; Putnam, 1994). This finding is also consistent with Fukuyama (2001) and Woolcock and Narayan (2000), who emphasise that trust, mutual-help norms, and family-based networks can function as social resources when formal economic support is limited. In Karandu Village, bonding social capital does not only provide material support but also emotional and moral encouragement. Visits, everyday conversations, shared prayers, and mutual assistance help reduce psychological stress and maintain farmers' motivation to continue planting in the next season.

Thus, bonding social capital contributes directly to household resilience in two ways. First, it supports economic resilience by reducing the cost of replanting and helping farmers access seeds, labour, and small informal loans. Second, it strengthens social resilience by maintaining solidarity and preventing social fragmentation during periods of economic pressure. However, bonding social capital also has limitations because it relies on resources within the same community. When crop failure affects many farmers simultaneously, the capacity of neighbours and relatives to provide support may become limited. Therefore, bonding social capital needs to be complemented by wider networks and institutional support.

Bridging Social Capital and Economic Coping Strategies

Beyond internal community ties, bridging social capital also plays an important role in farmers' economic coping strategies. In Karandu Village, bridging social capital is reflected in the relationships between farmers, corn collectors, traders, and other farmer groups. These relationships are not limited to buying and selling corn. They also involve advance capital, delayed payment schemes, information exchange, and flexible repayment arrangements when harvests decline.

The findings show that collectors often provide working-capital loans for fertilisers, pesticides, or spraying costs and allow farmers to repay after harvest. When harvest failure occurs, repayment may be postponed or paid in instalments in the following season. This arrangement enables farmers to continue preparing for the next planting season without being completely trapped in a liquidity crisis. In this sense, bridging social capital helps farmers maintain access to capital and market channels during periods of production uncertainty.

This pattern is consistent with Boansi et al. (2023), who found that reducing household expenditure, using operational loans, and seeking alternative income sources are common responses among farmers facing harvest failure. Similarly, Kangogo et al. (2020) and Manyise and Dentoni (2021) argue that relationships with business partners and value-chain actors can strengthen farmers' adaptive capacity in the face of climate change and production fluctuations. In Karandu, relationships with collectors and traders help farmers access information on prices, demand, and marketing opportunities outside their immediate community.

However, bridging social capital should also be interpreted critically. Although relationships with collectors provide an informal safety net, they may also create dependence if farmers have limited access to alternative credit or markets. Farmers who rely heavily on collectors for both capital and market access may have weaker bargaining power, especially when harvest quality declines. Therefore, bridging social capital can strengthen economic resilience, but it should be supported by fairer, more transparent, and more diversified market relations.

Linking Social Capital and Production Resilience

The third dimension, linking social capital, is reflected in farmers' relationships with actors and institutions that hold authority or formal resources, such as the village government, agricultural offices, extension workers, and the Southeast Sulawesi Food Crop and Horticulture Protection Centre. Through these vertical relationships, farmers in Karandu gain access to improved seeds, subsidised fertilisers, pest-control programmes, technical guidance, and environmentally friendly innovations such as the

"Si Manja" programme. The village government and technical agencies also support infrastructure improvements, including farm roads and drainage systems, which are important for reducing flood risks and facilitating the movement of inputs and harvests.

This institutional support is in line with Hendrawan et al. (2024) and Saleh et al. (2024), who show that targeted extension and technical programmes can enhance farmers' adaptive capacity by improving access to knowledge, innovation, and agricultural resources. Studies by Slijper et al. (2022) and Priya et al. (2025) also underline that connections with formal organisations and producer groups can strengthen learning capacity and collective responses to external disturbances. In Karandu Village, these vertical linkages make it possible for farmers to participate in collective pest-control activities, coordinate planting schedules, normalise drainage channels after flooding, and obtain technical advice from extension workers.

The findings indicate that production resilience does not emerge from technical intervention alone. Technical recommendations such as simultaneous planting, joint spraying, drainage management, and pest control require collective participation and institutional coordination. Therefore, linking social capital becomes important because it connects local farmer groups with formal actors who have access to resources, authority, and technical expertise. This shows that farmers' ability to recover from crop failure depends not only on their farming skills but also on the strength of their institutional relationships.

Interlinkages between Bonding, Bridging, and Linking Social Capital in Building Resilience

The experience of corn farmers in Karandu Village demonstrates that resilience to crop failure is produced through the interaction of bonding, bridging, and linking social capital rather than through individual decisions alone. Bonding social capital provides immediate assistance and emotional support through kinship, neighbourly relations, and farmer-group solidarity (Fukuyama, 2001; Putnam, 1994). Bridging social capital connects farmers with collectors, traders, and wider market actors, enabling access to informal credit, market information, and flexible repayment arrangements (Boansi et al., 2023; Kangogo et al., 2020; Saleh et al., 2024). Linking social capital opens access to government institutions, extension services, agricultural agencies, and plant-protection programmes that provide technical assistance, subsidised inputs, and policy support (Priya et al., 2025; Slijper et al., 2022; Woolcock & Narayan, 2000).

The combination of these three forms of social capital enables farmers to continue cultivating corn, reorganise household livelihood strategies, and maintain social cohesion despite recurring crop-failure risks caused by climatic variability and pest attacks (Nadi et al., 2024; Taus & Tukan, 2022; Yusdar et al., 2025). Bonding social capital helps farmers absorb immediate shocks at the household and community levels. Bridging social capital supports economic continuity by connecting farmers with credit and market actors. Linking social capital strengthens production recovery by connecting farmers with formal institutions and technical resources.

These findings reinforce the argument that social capital should not be understood merely as informal social support. In the context of crop failure, social capital functions as a strategic resource that enables farmers to absorb shocks, adapt production practices, and continue farming activities. The case of Karandu Village shows that resilience is

socially organised through trust, reciprocity, cooperation, market relations, and institutional linkages.

Supporting Factors for the Socio-Economic Resilience of Corn Farmers

The socio-economic resilience of corn farmers in Karandu Village is supported by several interrelated factors. First, strong local norms of cooperation encourage farmers to help one another during periods of crop failure. Labour assistance, seed sharing, fertiliser borrowing, and collective replanting reduce the financial burden of affected households and allow them to continue farming in the following season. These practices show that social capital operates as an informal economic safety net.

Second, farmer-group meetings and extension activities create spaces for collective learning. Through these forums, farmers exchange experiences about pest attacks, planting schedules, improved varieties, and drainage management. This process strengthens community-level adaptation because farmers do not rely solely on external technical advice but also learn from one another's practical experiences. Such deliberative and learning-based activities are consistent with Putnam's (1994) view that strong social relations can become productive resources for solving collective problems.

Third, collaboration between farmer groups, collectors, village government, and agricultural institutions strengthens the connection between local initiative and formal support. Farmer groups act as bridges between individual farmers and external programmes, including seed distribution, subsidised fertilisers, training, pest-control activities, and infrastructure support. In this way, social capital materialises in concrete practices such as mutual assistance, seed sharing, joint spraying, collective decision-making, and collaboration with village institutions.

Overall, the findings suggest that the resilience of corn farmers in Karandu Village is built through a combination of social solidarity, economic cooperation, and institutional support. Technical interventions remain important, but they become more effective when embedded in strong social networks. Therefore, strengthening social capital should be considered an integral part of agricultural resilience strategies, especially in rural communities facing repeated crop-failure risks.

Theoretical and Practical Implications

Theoretically, this study contributes to the literature on social capital and agricultural resilience by showing how bonding, bridging, and linking social capital operate simultaneously in a smallholder corn-farming community. Previous studies have often discussed farmers' responses to crop failure in terms of technical adaptation, household coping strategies, or access to institutional assistance. This study adds that farmers' resilience is formed through the interaction of community solidarity, market relations, and vertical institutional linkages. In line with Putnam's theory, social capital, understood as networks, norms, and trust that facilitate collective action, can be seen clearly in the everyday practices of corn farmers in Karandu Village.

Practically, the findings imply that agricultural resilience programmes should not focus only on seeds, fertilisers, pest control, or infrastructure. Such programmes need to be implemented through existing farmer groups and local networks so that technical interventions are socially accepted and collectively practised. Farmer groups can be strengthened as platforms for mutual assistance, seed sharing, labour exchange, collective pest control, and farmer-to-farmer learning. Village governments and

extension workers should also integrate crop-failure risk into local agricultural planning through planting-calendar coordination, drainage management, pest-warning information, and regular farmer-group meetings. In addition, agricultural agencies need to combine technical assistance with institutional strengthening by improving coordination among farmer groups, collectors, village governments, extension workers, and plant-protection institutions. In this regard, social capital is not only a social asset but also a practical foundation for sustaining agricultural production and household livelihoods in vulnerable rural areas.

CONCLUSION

CONCLUSION

This study concludes that the resilience of corn farmers in Karandu Village is shaped not only by technical cultivation practices but also by the strength of social capital embedded in their everyday farming activities. Repeated crop failures caused by unpredictable climate patterns, prolonged drought, local flooding, and pest attacks have reduced household income, increased dependence on informal borrowing, and placed pressure on farmers' ability to meet basic needs. However, farmers continue cultivating corn by mobilising social networks that help them cope with economic difficulties, maintain production activities, and recover after crop failure.

The findings show that bonding, bridging, and linking social capital operate simultaneously in supporting farmers' resilience. Bonding social capital is reflected in kinship ties, neighbourly support, labour exchange, seed and fertiliser sharing, and interest-free loans among farmers. Bridging social capital appears in farmers' long-term relationships with collectors and traders, which provide access to markets, informal credit, and flexible repayment arrangements. Linking social capital is shown through farmers' connections with village government, agricultural extension workers, agricultural agencies, and plant-protection institutions, which provide access to subsidised inputs, technical assistance, pest-management programmes, and infrastructure support.

The Karandu case confirms that social capital is an essential foundation for the economic, social, and production resilience of smallholder corn farmers facing recurrent crop-failure risks. Farmers' resilience is not built through individual coping strategies alone, but through collective support, trust-based relationships, market linkages, and institutional collaboration. Strengthening these three dimensions of social capital is therefore important for sustaining agricultural livelihoods in rural communities vulnerable to climate and pest-related disturbances.

This study has several limitations that should be considered. First, the research was conducted in a single village, so the findings cannot be generalised to all corn-producing areas in Indonesia. Second, the number of informants was relatively limited and did not fully represent the perspectives of women, youth, landless agricultural labourers, and other vulnerable groups involved in agricultural livelihoods. Third, data collection was conducted within a relatively short period, so the year-to-year dynamics of crop failure and farmer resilience could not be fully captured. Future studies are encouraged to use comparative, longitudinal, or mixed-method designs across different villages, regions, or commodities to examine more comprehensively how social capital

interacts with income stability, livelihood diversification, agricultural insurance, digital marketing platforms, and formal risk-management programmes.

REFERENCES

Ahmed, M. R. (2024). Climate shocks' impact on agricultural income and household food security in Bangladesh: An implication of the food insecurity experience scale. *Heliyon, 10*. https://doi.org/10.1016/j.heliyon.2024.e25687

Arifah, Salman, D., Yassi, A., & Demmallino, E. (2022). Livelihood vulnerability of smallholder farmers to climate change: A comparative analysis based on irrigation access in South Sulawesi, Indonesia. *Regional Sustainability*. https://doi.org/10.1016/j.regsus.2022.10.002

Atube, F., Malinga, G., Nyeko, M., Okello, D., Alarakol, S., & Okello-Uma, I. (2021). Determinants of smallholder farmers' adaptation strategies to the effects of climate change: Evidence from northern Uganda. *Agriculture & Food Security, 10*. https://doi.org/10.1186/s40066-020-00279-1

Badan Pusat Statistik. (2025a). *Luas panen dan produksi jagung di Indonesia 2024*. https://www.bps.go.id

Badan Pusat Statistik. (2025b). *Luas panen, produksi, dan produktivitas jagung menurut provinsi*. https://www.bps.go.id/id/statistics-table/2/MjIwNCMy/luas-panen--produksi--dan-produktivitas-jagung-menurut-provinsi.html

Badan Pusat Statistik. (2025c, March 2). *Pada Maret 2025, luas panen jagung pipilan sebesar 0,29 juta hektare dan produksi jagung pipilan kering dengan kadar air 14 persen pada Maret 2025 diperkirakan sebanyak 1,63 juta ton*. https://www.bps.go.id/id/pressrelease/2025/05/02/2496/pada-maret-2025--luas-panen-jagung-pipilan-sebesar-0-29-juta-hektare-dan-produksi-jagung-pipilan-kering-dengan-kadar-air-14-persen-pada-maret-2025-diperkirakan-sebanyak-1-63-juta-ton-.html

Bahiru, A., Senapathy, M., & Bojago, E. (2023). Status of household food security, its determinants, and coping strategies in the Humbo District, southern Ethiopia. *Journal of Agriculture and Food Research*. https://doi.org/10.1016/j.jafr.2022.100461

Berhanu, A., Ayele, Z., Dagnew, D., Fenta, A., & Kassie, K. (2024). Smallholder farmers' coping strategies to climate change and variability: Evidence from Ethiopia. *Climate Services*. https://doi.org/10.1016/j.cliser.2024.100509

Boansi, D., Owusu, V., Tham-Agyekum, E. K., Wongnaa, C., Frimpong, J., & Bukari, K. (2023). Responding to harvest failure: Understanding farmers' coping strategies in the semi-arid northern Ghana. *PLOS ONE*. https://doi.org/10.1371/journal.pone.0284328

Carter, M. (2022). Can digitally enabled financial instruments secure an inclusive agricultural transformation? *Agricultural Economics*. https://doi.org/10.1111/agec.12743

Chang, Z., Ahmed, N., Li, R., & Huai, J. (2025). Social capital, crop differences, and farmers' climate change adaptation behaviors: Evidence from Yellow River, China. *Agriculture*. https://doi.org/10.3390/agriculture15131399

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Sage.

Dadzie, S., Ndebugri, J., Inkoom, E., & Akuamoah-Boateng, S. (2022). Social networking and risk attitudes nexus: Implication for technology adoption among smallholder cassava farmers in Ghana. *Agriculture & Food Security, 11*. https://doi.org/10.1186/s40066-022-00376-3

Dewi, H. S., & Hajrah, S. (2025). Effect of rainfall changes on maize production in Southeast Sulawesi in 1990–2024. *International Journal of Agricultural Social Economics and Rural Development (IJASERD)*. https://doi.org/10.37149/ijaserd.v4i2.1886

DigitalDesa.id. (2025). *Profil Desa Karandu, Kabupaten Konawe*. https://karandu.digitaldesa.id/profil

Feryanto, Harianto, & Rosiana, N. (2023). What are farmer household coping strategies for facing crop loss: Evidence from Indonesia. *Sustainability Science and Resources*. https://doi.org/10.55168/ssr2809-6029.2023.5003

Flood, K., Mahon, M., & McDonagh, J. (2022). Everyday resilience: Rural communities as agents of change in peatland social-ecological systems. *Journal of Rural Studies*. https://doi.org/10.1016/j.jrurstud.2022.11.008

Fukuyama, F. (2001). Social capital, civil society and development. *Third World Quarterly, 22*, 20–27.

Häuberer, J. (2011). Introducing the civic perspective on social capital: Robert D. Putnam's concept of social capital. In J. Häuberer (Ed.), *Social capital theory: Towards a methodological foundation* (pp. 53–86). VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-531-92646-9_3

Hendrawan, D., Chrisendo, D., & Mußhoff, O. (2024). Strengthening oil palm smallholder farmers' resilience to future industrial challenges. *Scientific Reports, 14*(1). https://doi.org/10.1038/s41598-024-62426-z

Herlinda, S., Suharjo, R., Elbi Sinaga, M., Fawwazi, F., & Suwandi, S. (2022). First report of occurrence of corn and rice strains of fall armyworm, *Spodoptera frugiperda*, in South Sumatra, Indonesia and its damage in maize. *Journal of the Saudi Society of Agricultural Sciences, 21*(6), 412–419. https://doi.org/10.1016/j.jssas.2021.11.003

Kangogo, D., Dentoni, D., & Bijman, J. (2020). Determinants of farm resilience to climate change: The role of farmer entrepreneurship and value chain collaborations. *Sustainability, 12*(3), 868. https://doi.org/10.3390/su12030868

Kementerian Dalam Negeri. (2025, July 20). *Si Manja: Inovasi pengendalian hama terpadu di Desa Karandu*. TuxedoVation Inovasi BSKDN. https://tuxedovation.inovasi.bskdn.kemendagri.go.id/detail_inovasi/150574

Lahura, N. V., Lolowang, T. F., Julia, A., & Maweikere, M. (2025). Identifikasi risiko usahatani jagung (*Zea mays* L.) di Desa Wko Kecamatan Tobelo Tengah Kabupaten Halmahera Utara. *[Nama jurnal belum dicantumkan], 21*, 999–1006.

Li, M., Li, J., Haq, S., & Nadeem, M. (2024). Agriculture land use transformation: A threat to sustainable food production systems, rural food security, and farmer well-being? *PLOS ONE, 19*. https://doi.org/10.1371/journal.pone.0296332

Manyise, T., & Dentoni, D. (2021). Value chain partnerships and farmer entrepreneurship as balancing ecosystem services: Implications for agri-food systems resilience. *Ecosystem Services, 49*, 101279. https://doi.org/10.1016/j.ecoser.2021.101279

Mbugua, M., Nzuma, J., & Muange, E. (2019). Social networks and ex post risk management among smallholder farmers in Kenya. *Development Studies Research, 6*, 30–39. https://doi.org/10.1080/21665095.2019.1573149

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: A methods sourcebook*. Sage.

Mnou, M. C., & Wulakada, H. H. (2023). Pengaruh faktor geografis terhadap potensi gagal panen jagung di Kecamatan Insana Tengah Kabupaten Timor Tengah Utara tahun. *Jurnal Geografi, 19*, 237–249.

Mooney, D., Swinton, S., Subía, C., & Peralta, E. (2022). Returns to disease resistance research when pest management is an option. *Sustainability*. https://doi.org/10.3390/su14052859

Nadi, N. I., Halid, A., & Mustafa, R. (2024). Analisis risiko produksi dan pendapatan usahatani jagung di Desa Dulamayo Utara Kecamatan Telaga Biru Kabupaten Gorontalo. *[Nama jurnal belum dicantumkan]*, 105.

Nerizza, D., Suparta, W., Ratih, A., & Taher, Y. (2025). Analysis of the effect of investment, agglomeration, and human development index on regional inequality in Eastern Indonesia 2019–2023. *Jurnal Ekonomika dan Bisnis (JEBS)*. https://doi.org/10.47233/jebs.v5i3.2841

NusaDesa. (2025). *Informasi lengkap Desa Karandu*. https://nusadesa.id/74.02.03.2025

Padhan, N., & Madheswaran, S. (2022). Effectiveness of post-disaster coping strategies among the farming households in the coastal districts of Odisha, India. *Natural Hazards Research*. https://doi.org/10.1016/j.nhres.2022.12.006

Pemerintah Desa Karandu. (2024, September 25). *Pertanian jagung manis dorong ekonomi Desa Karandu*. Website Resmi Desa Karandu. https://karandu.digitaldesa.id/berita/pertanian-jagung-manis-dorong-ekonomi-desa-karandu-

Pemerintah Kabupaten Konawe. (2025, February 24). *Bantu petani, Yusran Akbar bangun jalan usaha tani di Desa Karandu Konawe*. Website Resmi Desa Karandu. https://karandu.digitaldesa.id/berita/bantu-petani-yusran-akbar-bangun-jalan-usaha-tani-di-desa-karandu-konawe

Prasetyo, R., Sari, M. K., & Lestari, Y. K. (2024). Penguatan ekosistem jagung: Isu, tantangan, dan kebijakan. *Policy Brief Pertanian, Kelautan, dan Biosains Tropika, 6*(1). https://doi.org/10.29244/agro-maritim.0601.749-753

Priya, S., Selvam, S., Parimalarangan, R., Murugananthi, D., Jeyaprakash, P., & Jona Innisairani, P. (2025). Social capital fosters organisational resilience: Evidence from

farmer collectives and farmer producer organisations. *Plant Science Today, 12*(Sp3). https://doi.org/10.14719/pst.9295

Putnam, R. D. (1994). Project report: Social capital and public affairs. *Bulletin of the American Academy of Arts and Sciences, 47*(8), 5–19.

Rahut, D., Aryal, J., & Marenya, P. (2021). Understanding climate-risk coping strategies among farm households: Evidence from five countries in eastern and southern Africa. *Science of the Total Environment, 769*, 145236. https://doi.org/10.1016/j.scitotenv.2021.145236

Saleh, Y., Boekoesoe, Y., Wibowo, L. S., R, S. A., Tolinggi, W. K., & Hippy, M. Z. (2024). The role of social capital as a mediator of the effectiveness of counseling on innovative behavior in increasing corn farmers' income in Bone Bolango Regency. *Agromix, 15*(2), 164–172. https://doi.org/10.35891/agx.v15i2.4362

Slijper, T., Urquhart, J., Poortvliet, P. M., Soriano, B., & Meuwissen, M. P. M. (2022). Exploring how social capital and learning are related to the resilience of Dutch arable farmers. *Agricultural Systems, 198*, 103385. https://doi.org/10.1016/j.agsy.2022.103385

Taus, I., & Tukan, H. D. (2022). Identifikasi penyebab gagal panen jagung Lamuru: Studi kasus pada Kelompok Tani Stiper Flores Bajawa Desa Turekisa Kecamatan Golewa Barat. *Agriovet, 4*(2).

Umiyati, S., Jamil, M., Rukmana, D., Yusuf, M., & Diansari, P. (2023). Factors affecting the development of maize (*Zea mays* L.) farms in South Sulawesi, Indonesia. *Journal of Advanced Zoology*. https://doi.org/10.17762/jaz.v44i2.193

Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The World Bank Research Observer, 15*(2), 225–249. https://doi.org/10.1093/wbro/15.2.225

Yusdar, E. Y., Hamzah, A., & Rasyid R, A. (2025). Strategi pengelolaan resiko gagal panen untuk mengurangi utang petani jagung dalam perspektif ekonomi syariah. *Metta: Jurnal Ilmu Multidisiplin, 5*(2), 84–93. https://doi.org/10.37329/metta.v5i2.4204

Zulkifli, Z., Dahliana, B., & Suhartina, S. (2025). Food security challenges and policy responses in South Sulawesi: Toward sustainable self-sufficiency. *Multidisciplinary Indonesian Center Journal (MICJO)*. https://doi.org/10.62567/micjo.v2i4.1249