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Indigenous Knowledge and Food Security of Tunggu Tubang Community in Semende, South Sumatra

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Abstract: This research aims to identify and document the local food security system in the Semende traditional community based on tunggu tubang indigenous knowledge. The study was conducted in 3 districts of Muara Enim, South Sumatra, involving 81 people from 5 villages practicing the tunggu tubang custom. Using a mixed method, the research took place from July to August 2023.The findings revealed that while tunggu tubang adherents still inherit rice fields and agricultural land, some no longer own rice fields. Inheriting rice fields has led to sufficient food availability but does not guarantee good food security. 50.6% of respondents experienced mild food insecurity due to the traditional sandwich generation where they have to support their parents and closest family. Despite this, most children (56.6%) showed good nutritional status. This research identifies and documents the local food security system in the Semende traditional community. It reveals the importance of tunggu tubang in maintaining food availability but acknowledges the challenges in achieving food security. The findings provide valuable insights for developing educational initiatives to address climate change and food security

Keywords: Food Security; Indigenous Knowledge; Nutritional Status; Tunggu Tubang

Introduction

The global food crisis has become a pressing issue, with increasing numbers of people experiencing food crisis due to limited food producing regions, reduced biodiversity, collapse of local food security systems, and climate change (Conceição & Mendoza, 2009; Gliessman, 2022; Jarosz, 2009). One way to tackle these problems is by exploring and reusing the local food security systems, which are closely related to indigenous knowledge.

Indigenous knowledge refers to the knowledge and practices developed by local communities over generations to manage and utilize natural resources sustainably based on a long interaction with the environment (Berkes, 2012; Berkes et al., 2008; O'Faircheallaigh & Ali, 2017). The local food security system is a policy of a community in an area to ensure that its people have access to sufficient and affordable food. This system involves cultivation, production, processing, distribution, and consumption and preparation of food.

Many studies have identified IK in local food security, such as Kamwendo & Kamwendo (2014) in Malawi where the community use local corn varieties that are resistant to climate, carry out sustainable land management, and use biodiversity as a source of food and medicine. In Ethiopia, there is preservation technique (Kuyu & Bereka, 2020). In Nigeria, this takes the form of planting different trees on the same land, using traditional irrigation, and controlling pests using local pesticides (Amusa et al., 2018). In Indonesia, people employ *jajar legowo* technique to grow non-rice plants for increasing water and nutrient absorption and reducing the risk of pest and disease attacks **(Sumarwati, 2022)**, *talun-kebun* technique by combining gardening systems with trees to maintain plant fertility (Kurniawan &

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Kurniawan, 2022), and water resource management to maintain water availability for agriculture and household consumption at the *tunggu tubang* IK in Semende, South Sumatra **(Meilinda et al., 2021).**

Several studies have published the relationship between tunggu tubang IK and the environment, such as its relationship to coffee planting culture **(Bray, 2019)**, tunggu tubang as a social mechanism in preserving natural resources (Martin et al., 2016), and tunggu tubang and rice field conservation and water conservation **(Meilinda et al., 2021)**. However, few studies discuss comprehensively about tunggu tubang indigenous local food security system (ILFSS), let alone the influence of economics and modernization which has caused the decline of these traditional ties in the Besemah community **(Mulyaningsih et al., 2021)**.

IK is also related to efforts to maintain local food security in an area. Food security is expected to improve the quality of life so that it can describe prosperity. Food security is a situation where all households have physical and economic access to food; food is sufficiently available, both in quantity and quality, safe, diverse, nutritious, equitable, affordable, and does not conflict with the religion, belief, and culture of all family members (Afla et al., 2023; Aritonang et al., 2020)

One of the indigenous knowledge practices that is still carried out in Semende is tunggu-tubang. This principle is to ensure that family members have sufficient food by maintaining the function of the land, especially the rice fields inherited from the family and passed on to the eldest daughter. Despite several studies on tunggu tubang IK in Semende, this IK is often disguised by customary laws regarding the role of family members and very strict property inheritance laws (Arifin, 2020; Muntaqo et al., 2022; Velinda et al., 2018), let alone the main principle of ensuring that each family member has sufficient food by maintaining the function of the family inherited land.

Understanding how indigenous knowledge shapes the local food security system and identifying the relationship between food security and the nutritional status of children in indigenous communities is crucial in addressing the global food crisis and informing policy and interventions in similar communities.

Therefore, this article aims to describe the local food security system (LFSS) based on indigenous knowledge (IK) in the tunggu tubang community in Semende, South Sumatra and shed light on the orientation values that dominate the people of Semende in carrying out the tunggu tubang custom. Additionally, the article will explore food security at the household level and the nutritional status of children of tunggu tubang adherers.

Method

Research Location

Geographically, Semende is located between 4°–6° south latitude and 104°–106° east longitude, which is divided into three districts, namely Semende Darat Ulu (SDU), Semende Darat Tengah (SDT), and Semende Darat Laut (SDL). The research area can be seen in Figure 1.

Figure 1. Topography of Semende Area

Research Design

This research employed mixed methods with concurrent strategy. The research design combines qualitative and quantitative methods. The type of concurrent mixed method used was transformative sequential by collecting qualitative and quantitative data concurrently based on a theoretical perspective. It used qualitative descriptive mixed method (Creswell & Clark, 2017).

Qualitative data were retrieved using ethnographic methods by interviews, observation, and in-depth and detailed analysis of a group of people. Quantitative data were collected using survey questionnaire. The participants as the source of qualitative and quantitative data are the tunggu tubang adherers, who have knowledge about this custom and indigenous knowledge related to food security, from the village which was chosen based on the strength of the community in upholding tunggu tubang. Qualitative method was used to determine the IK of tunggu tubang adherers in the food security framework using the framework of Cole et al. (2018) and value orientation framework by Marshall et al. (2019). The quantitative method was used to measure the status of household food security and nutritional status of children in tunggu tubang families using the Coated's framework.

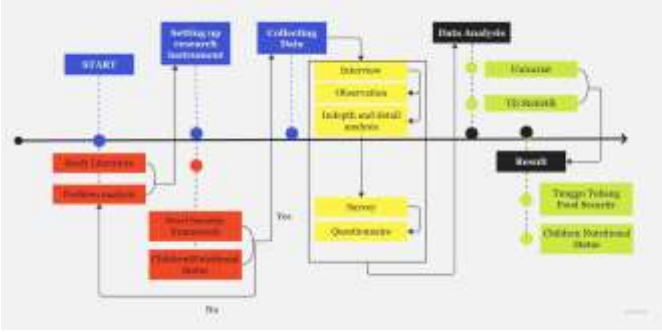


Figure 2. Research Flow

Research Participants

Based on these strict criteria, we found 81 respondents from 5 villages in Semende, namely Muara Tenang, Gunung Agung, Muara Dua, Tanjung Agung, and Pajar Bulan villages. The inclusion criterion includes tunggu tubang adherers (the oldest first child who is married). The respondents were selected using purposive sampling. They fulfill the requirements for ethnographic research, especially related to phenomenological human scientific research (Englander, 2021). Watkins (2012) and **Gutterman (2015)** stated that informants or participants in phenomenological research are selected informants with a minimum number of 8 people. The interview and data collection were carried out from July to August 2023.

Research Instrument

The research instruments used were interviews and questionnaires. Interviews were conducted to answer the first and second research questions using an interview guide as suggested by Bevan (2014) using the food security framework by Cole et al. (2018) which began with the question "Are you the adherer to tunggu tubang custom?". The next questions are "If you are the tunggu tubang adherer, from what lineage are you?", "What inheritance do you get as the tunggu tubang adherer", and "How do you store rice harvested from tunggu tubang rice fields?", etc. based on the guidelines of regarding three indicators of food security, namely reducing food production demand, increasing food production, avoiding losses or future production potential, and maintaining pest and disease resistance and biosecurity/food safety. These indicators are divided into several sub-indicators as shown in Table 1.

Table 1. Sub-Indicators of Food Security (Cole et al., 2018)

Indicator	Sub-indicator
1	Reducing food waste from farm to consumer Reducing overconsumption in human diets Rebalancing the livestock component of future diet Developing 'smart' biofuel policies and or technologies
2	Expanding the land resources used for agricultural production Expanding the water resources used for agricultural irrigation Expanding aquaculture Closing yield gaps in existing crop and livestock production systems Developing new farming systems that intensify land use/water use
3	Avoiding soil and water degradation Minimizing climate change through mitigation that maintains food security. Adapting to unavoidable climate change

The three of indicators and sub-indicators, only those which contained IK in Semende were explored. The data on the food security indicator for quantitative purposes is marked as 1 if it is carried out and 0 if not carried out and the extracted data is the data that contains tunggu tubang IK in Semende.

To find out the orientation value of the Semende people who carry out tunggu tubang, the researchers asked, "Even though tunggu tubang has difficult consequences, what makes you still adhere to this custom?". The answers from respondents were divided into four orientation value groups based on the guidelines of Marshall et al. (2019), namely: biospheric (appreciation of biodiversity and scientific heritage benefits), altruistic (appreciation of intrinsic values and traditional owner heritage), egoistic (appreciation of health benefits, wisdom and way of life, economic values, wellbeing, and lifestyle) and hedonic (appreciation of spiritual, artistic, and esthetic opportunities)

Data on the food security of the tunggu tubang community was collected using data on food security and children's nutritional status. The level of food security in this research was measured using Household Food Insecurity Access Scale (HFIAS), which is the adaptation and summary of the Household Food Security Survey Module of the United States of America (US-HFSSM) providing a sustainable indicator

regarding access to a household's level of food insecurity. HFIAS is based on the idea that the experience of food insecurity can lead to predictable responses, so it can be measured through surveys and summarized on a scale. HFIAS consists of 9 questions. Each of the main questions is followed by additional questions regarding frequency of occurrence, which asks about how often the condition occurred during the previous 4 weeks. The HFIAS questions are related to anxiety about uncertainty in household food supplies, poor food quality, and insufficient food intake. The HFIAS instrument was used to assess food insecurity in the last 4 weeks or last 30 days. The results were converted into food security indicators with the categories of good food security, mild food insecurity access, moderate food insecurity access, and severe food insecurity access. Meanwhile, data on the nutritional status of the last child from the *tunggu tubang* family was collected by measuring body height using a Seca stadiometer with an accuracy of 0.01 cm and body weight using an Omron digital scale with an accuracy of 0.01 kg. The child's anthropometric data was then analyzed using WHO Anthro. This research has passed ethical review from the Faculty of Public Health, Universitas Sriwijaya, Number: 366/UN9.FKM/TU.KKE/2023.

Result and Discussion

Many factors affect food security, especially at the household scale (HFS), in addition to access, use, stability and availability, there are also social and cultural factors (Ruiz et al., 2022). Cultural aspects affect food security on all sides of HFS such as perceptions about the definition of food and non-food, access and choice, determining when a food is "appropriate" to eat and when and how to eat it (Atkins & Bowler, 2016) including community acceptance of food production technology from the seed scale to the form of food processing. One culture that is likely to influence community food security is the culture of Tunggu Tubang.

Tunggu tubang is a custom practiced by the Semende community in Muara Enim. Tunggu tubang is the name given to the eldest daughter in a family who is tasked with looking after, maintaining, and utilizing the collective inheritance owned by the family in the form of houses, rice fields, and agricultural land (Kosasih et al., 2018; Martin et al., 2016). Tunggu tubang collective inheritance in the form of a house is used for gathering place for tunggu tubang relatives and a place of return for family members who have gone abroad and a place to carry out various ceremonial activities by the family. Meanwhile, rice fields and agricultural land are used for herself and her family as well as for her parents and siblings if needed. This collective inheritance cannot be sold and serves as a kind of guarantee to protect extended families from food shortages (Meilinda et al., 2023).

The following is the demographic distribution of respondents, 100% of whom are women who adhere to tunggu tubang custom with an age range of 20–74 years as shown in Table 2.

Table 2. Age Distribution of Tunggu Tubang Respondents

Age	Amount	Percentage %
11–20	1	1.23
21–30	13	16.05
31–40	29	35.80
41–50	20	24.69
51–60	12	14.81
61–70	4	4.94
71–80	2	2.47
Total	81	100

This data is in accordance with the results of interviews with the people who stated that the rights of tunggu tubang children are managing property in the form of houses, rice fields, and agricultural land inherited from their parents after they get married. Meanwhile, tunggu tubang children are obliged to look after their parents and grandparents, if they are still alive, as well as their unmarried siblings who are financially dependent. According to the results of the interview, there is no special ceremony or ritual in handing over the rights and obligations of *t*unggu tubang to a child. However, the family, whose property has been inherited to the established generation (5th to 6th generation and so on), extended family members, the maternal uncle who was the previous tunggu tubang (*meraje*) and traditional elders are gathered at the house handed over to the tunggu tubang child to witness the handover or determination of tunggu tubang.

"It was my grandmother and meraje who told me that I was the next heir to tunggu tubang and the rights and obligations I had to fulfill, even though I had known from daily conversations in my family and community that I was the child of the tunggu tubang" (Villager XXX).

This is in line with Dzulfikriddin (2001) and Tiawati (2019) stating that the *belai* child or first daughter of a

candidate for *tunggu tubang* has been educated from a young age by her parents and her mother's siblings about her role and obligations in the future as a tunggu tubang. In the traditional institution system of meraje anak belai, it is the male siblings of mothers of tunggu tubang children who will provide sanctions if there is a violation or neglect of customs by tunggu tubang. This custom is preserved and passes it down over generations due to its strength. *Meraje* comes from the word *raje* or king who serves as a leader. *Meraje* is the mother's older or younger brother, who oversees caring for and guiding the *belai* child (prospective *tunggu tubang)* as well as nurturing and guiding tunggu tubang to the right path.

The next demographic data is education level. The daughter of tunggu tubang adherers must stay in her hometown, so only few tunggu tubang women can get an education up to tertiary level. The highest level of education in the Semende area is senior and vocational high school. Therefore, most tunggu tubang respondents over 40 years old have completed their education up to senior high school. The distribution of tunggu tubang education is shown in Table 3.

Table 3. The Distribution of the Latest Education of Tunggu Tubang

Education	Total	Percentage %
Elementary School	23	28.40
Junior High School	10	12.35
Senior High School	44	54.32
Bachelor's degree	4	4.94
Total	81	100

Based on Table 3, even though the latest education is high school education, tunggu tubang is not taught at school. Information about the rights and obligations of tunggu tubang has been passed down over generations from grandparents, parents, and uncles as explained above. This is as stated by Hofman-Bergholm (2023) that information about customs and local knowledge (indigenous knowledge) in traditional communities is usually shared by telling stories or inviting people to carry out the customary activities.

Communal Ownership of Tunggu Tubang Property

Communal inheritance in the Semende community is a type of majorat inheritance, an inheritance system where inherited property is not distributed to the heirs but is managed by the eldest son or daughter (Wiranata, 2005). In *tunggu tubang*, the eldest daughter manages the inheritance. The *tunggu tubang* property of the family usually includes the house and agricultural land (Setiawan & Darmawan, 2016). Based on the research results, the communal ownership of inheritance can be seen in Figure 1.

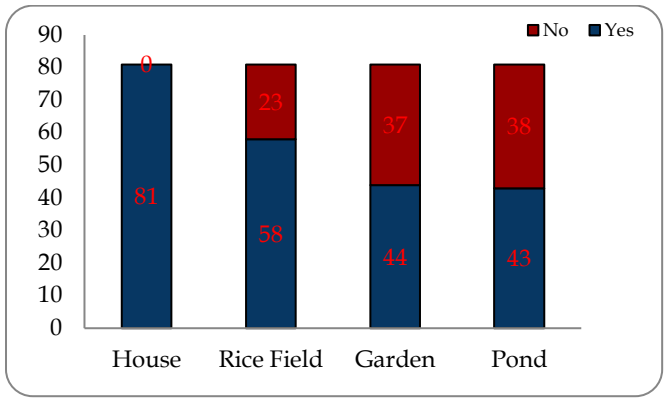


Figure 2. Communal Inheritance of Tunggu tubang Generations

Based on Figure 1, it can be ascertained that 100% of the tunggu tubang generation inherited the house but only 72% still own rice fields. Tunggu tubang property in the form of a house functions as a place to live for the tunggu tubang family, namely *tunggu tubang's* husband, children, parents, and grandparents, along with *tunggu tubang's* siblings who are still dependent and unmarried. *Tunggu tubang's* house also becomes a gathering place for her big family and a place to return home for family members who have gone abroad. The house for *tunggu tubang* also functions as a place to carry out various ceremonial activities by the family.

Based on the results of the interview, an informant explained the function of the tunggu tubang's house for the Semende people as follows. Besides being a place for living for tunggu tubang and her family, the house is also a place to hold traditional activities for the extended family, including a place to live and care for the elderly as well as being a place of return for families who are migrating." (Villager Irawati Muara Tenang)

Based on Figure 1, the loss of ownership of rice fields in the tunggu tubang generation in the village was mainly caused by the damage to the irrigation system due to natural factors such as disasters or drying up of water resources, which causes the rice fields to be converted into coffee plantations. Even though the function and role of the agricultural land has changed to be a source of income for living for tunggu tubang, the inheritance of tunggu tubang is still maintained as per the results of the interview with tunggu tubang from Tanjung Agung village. "Our parents used to have a rice field inherited as tunggu tubang, but the landslide in 2013 damaged the irrigation system and it cannot be repaired until now." (Villager Lia Kustina from Tanjung Agung village)

The phenomenon of rice field conversion into plantations occurs in Tanjung Agung village and other villages with the same causes, namely damage to irrigation due to landslides or floods and the drying up of water sources. Figure 2 shows a coffee plantation from the conversion of rice fields.

(a)

(b)

Figure 3. The conversion of tunggu tubang rice field into coffee plantation; (a) The terraced land structure of the coffee plantation; (b) Former rice field spring in the middle of coffee plantation

Based on the results of interviews, there are several interesting data related to land conversion, namely: the land has undergone a change in function apart from continuing to carry out its role as tunggu tubang inherited land. People's concern to preserve water sources and ponds has also disappeared because coffee plantations which are converted land do not need as much water as rice fields. People do not understand how to preserve water sources even though they are given various forms of questions about how they can ensure that water remains available and plentiful. Most of their answers are to preserve water resources by maintaining the flow and enlarging the spring holes. Only three out of 81 people (3.7%) interviewed stated that water sources could be preserved by protecting the forest and the trees in it.

The findings in point 4 are in accordance with the results of research by Meilinda et al. (2023) stating that although the Semende community has indigenous knowledge about tambak ayik, namely using water as maximally as possible by channeling water from springs to rice fields and various needs before finally returned to nature (the river), and ulu ayek forest, a forest that must be protected for its spring. However, the community does not understand the relationship between the trees and water in the forest. This is because indigenous knowledge is more of recommendations and prohibitions with explanations that sometimes even conflict with scientific explanations (McKinley & Stewart, 2012).

Indigenous Knowledge on Food Security

Indigenous knowledge on food security is explored from three indicators, namely reducing the food production demand, increasing food production, and avoiding losses or future production potential and maintaining pest and disease resistance and biosecurity/food safety.

Based on the results of the interview, there is a difference in the food security behavior of those who still have rice fields as part of their assets and those who no longer have rice fields due to natural or other factors. These differences can be seen in Table 4. The differences are marked with the number 1 if they have behavior such as reducing food waste or overconsumption and 0 if they do not have this behavior.

Based on Table 4, There are two indigenous knowledges of the Semende people found in the reducing the food production demand indicator, namely the use of tengkiang as a place to store harvested rice until the next harvest season and Traditional food preservation processing.

The existence of tengkiang or rice storage areas in rice fields is one of the main factors of food security in Semende related to the indicator of reducing the food production demand. Tengkiang is a hut on a rice field that functions as a granary for the family during the harvest season. Tengkiang is a rice barn hut made of wood and bamboo which is tightly closed without permanent windows and stairs. The shape of tengkiang can be seen in Figure 3.

Table 4. Differences in the Mean of *Tunggu Tubang* Population Samples that Have and Do Not Have Rice Fields

Variable	Rice Field			No Rice Field		
	Mean	%	Category	Mean	%	Category
Reducing the food production demand	3.63	72.61	High	2.06	41.13	Low
- Reducing food waste	3.46	69.29	High	1.72	34.43	Low
- Reducing overconsumption	3.80	75.93	High	2.39	47.83	Medium
Increasing food production	3.24	64.83	High	1.64	32.75	Low
- Expanding agricultural land	2.07	41.36	Low	1.87	37.39	Low
- Expanding irrigation land	4.37	87.46	High	1.30	26.09	Low
- Expanding aquaculture land	2.36	47.12	High	1.99	39.71	Low
- Developing an intensive land management system	4.17	83.39	High	1.39	27.83	Low
Losses and future production potential	4.05	81.07	High	2.13	42.61	Low
- Avoiding soil and water degradation	4.20	84.07	High	1.30	26.09	Low
- Minimizing climate change by mitigating food security	4.63	92.54	High	2.09	41.74	Low
- Adapting to unpredictable climate change	3.33	66.61	High	3.00	60.00	High
Total	3.64	72.84	High	1.94	38.83	Low

With tengkiang, people can store rice for a long time without being attacked by pests. We only take rice from the fields according to our weekly or monthly needs at home. The rest will be stored in tengkiang, so it will be more durable and will not be affected by pests. Storing rice in tengkiang can last for one or two years, and the taste and the quality of the rice will not decrease. Only the color will be redder. The taste remains the same." (Irawati Muara Tenang villager).

Semende people believe that *tunggu tubang* are not allowed to sell their rice harvest in the fields unless the amount is very excessive. This is to ensure the availability of staple food for the big family of tunggu tubang until the next harvest. Tengkiang helps the tunggu tubang community in maintaining its role as guarantor of the basic needs of her big family. Apart from that, tengkiang makes tunggu tubang people more economical because by putting rice in tengkiang, they will avoid the temptation to sell rice in stalls for their daily needs (in every village in Semende, there are stalls that accommodate the rice harvested by the villagers for sale in retail quantities per kilo).

Figure 4. *Tengkiang* in the Middle of Rice Field

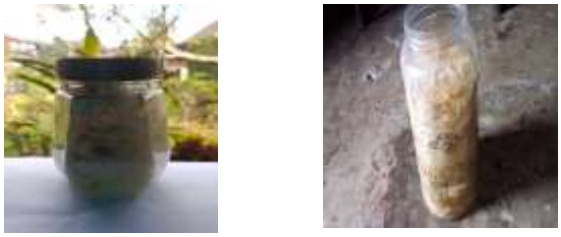
Not all villages in Semende adopt this tengkiang rice barn. Some villages, such as Gunung Agung, do not use tengkiang in the rice fields but place it under the house in the form of a large wooden crate. Tengkiang is put under the house because the distance between the rice fields and the village is very close, so it is not difficult if the harvested rice is brought directly to the tengkiang under the house. The harvested rice is

brought home in rice sacks with orange leaves and lemongrass to avoid lice. The shape of the wooden crate tengkiang can be seen in Figure 4.

Figure 5. Tengkiang in the Form of Mini Wooden Crate

Storing harvests is essential in maintaining food security because poor storage processes will result in the harvest being damaged or eaten by rats and other insects. FAO states that losses due to the loss of harvest from improper storage areas can reach an average of 10% of the harvest. Rice stored in tengkiang is first dried in the sun until the water content is less than 20%. Then, together with the stems, the rice is tied and sometimes put in sacks before being stored. The shape and structure of tengkiang is the same as that of traditional rice farmers in Nigeria and India, which is made of bamboo and wood with a lid made of zinc or dry palm leaves. The base of the pole on tengkiang is the same as a metal silo or bamboo house in India which has a wooden border which prevents animals from entering. Tengkiang is tightly closed with a few vents that can be opened and closed on the top wall (Adejumo, 2013; Karthikeyan et al., 2009).

The second thing related to reducing the food production demand indicator is the management of traditional fermented foods. Based on the results of interviews and observations, there are 2 types of traditional fermented food that are truly typical of Semende, namely kembuhung and rebung asam. Kembuhung is a Semende traditional food which is like bekasam, a fermented fish and white rice food found in many areas in Sumatra and Kalimantan. The difference is that the parts of the fish used in kembuhung are very rarely used, such as fins, bones, heads, and eggs. Meanwhile, asam rebung is a fermented food made from young bamboo. rebung asam is young bamboo that is sliced thinly and soaked in water mixed with a little salt. Apart from kembuhung and rebung asam, the Semende people also consume other fermented foods. However, these two foods are typical to Semende, and all residents can make them. Traditional foods, especially fermented foods, have an important role in food diversity and household food security (Longvah et al., 2017; Singh et al., 2013). They have been proven to contain important micronutrients (Samtiya et al., 2021). Kembuhung and *r*ebung asam can be seen in Figure 5.



(a) (b)

Figure 6. Traditional Fermented Foods: (a) Kembuhung; (b) Asam Rebung

Increasing food production

Based on Table 4, the identification of food security in the increasing food production indicator for the tunggu tubang community in Semende is at high criteria but only for communities that still have rice fields. When they have rice fields, tunggu tubang people are very concerned about irrigation conditions, aquaculture, fisheries, land management, and agricultural land intensification. This is in accordance with the research by Nazip et al. (2020)that indigenous knowledge about water conservation of the Besemah Semende community is closely related to their rice fields they own. In other words, when people have rice fields, they care more about the availability of water and irrigation including intensification of aquaculture land. To ensure the availability of water for the rice fields, the community also has a shared pond called tebat which is used for keeping fish, bathing, and washing. Management of water sources in the community is carried out using several mechanisms for irrigation of rice fields, namely by Datuk Ayik or a water manager and water management by irrigation through royongan or mutual cooperation.

Among the indicators of increasing food production in the tunggu tubang community, expanding agricultural land is at the low level. This condition occurs because of the culture of tunggu tubang which does not allow people to sell their rice fields.

These various behaviors are interpretations of 3 aspects of maintaining food security. Then, a comparison of indigenous knowledge was carried out from the tunggu tubang people who had rice fields and those who did not. This is because ownership of rice fields has an important role in maintaining community food security so that there is no need to buy rice

throughout the year and this influences other food security behavior. The comparison results are presented in Table 4.

Table 4 data shows that there is a difference in the mean of indigenous knowledge of the tunggu tubang community who has rice fields and those who do not. Then, t-test was carried out on the sample mean results to see the tendency towards the tunggu tubang population in Semende as follows.

t-table = 2.0154

t = Standard error = 0.335

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \quad (1)$$

$$= \frac{(3.64-1.94)}{\sqrt{0.335\ (1/23\ +\ 1/59)}}$$

$$= 12.32$$

t > t-table

It is known that the food security of the *t*unggu tubang population who have rice fields is better than that of the population who do not have rice fields. This is in accordance with finding that the rice fields can supply rice throughout the year for tunggu tubang and her family. Without rice fields, tunggu tubang must look for other additional income to buy rice. This behavior then influences other behavior related to food security. Tunggu tubang has a big responsibility, This traditional sandwich generation inevitably must carry this burden, but the underlying value (orientation value) of the tunggu tubang generation in carrying out their responsibilities can be seen in Figure 7.

The value of tunggu tubang is dominated by an altruistic value orientation, namely the reason for tunggu tubang to accept and carry out their responsibilities because of their belief in noble values. Tunggu tubang acknowledges that they are undeniably the legacy passed down from generation to generation. Apart from that, several respondents believe that refusing tunggu tubang could bring disaster and the anger of their ancestors.

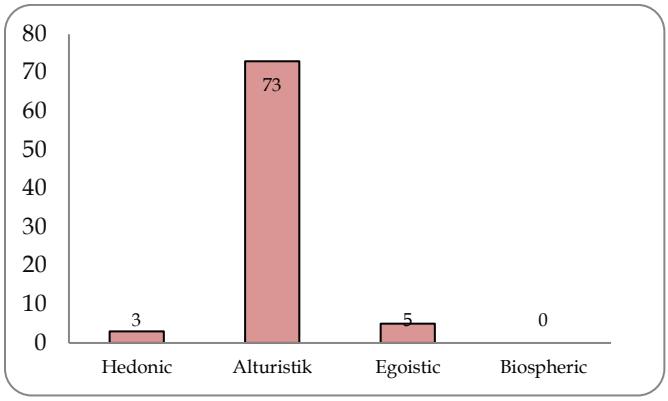


Figure 7. The Value of *Tunggu Tubang* in Semende

Besides the altruistic orientation value, several tunggu tubang respondents also have an egoistic value orientation, namely for economic reasons. The inheritance obtained from tunggu tubang is considered economically beneficial because there is no longer a need to look for houses and rice fields. It was also found that tunggu tubang has a hedonic value orientation because they believe in human values such as looking after the family, looking after the inheritance and preserving the memories passed down from generations to the house that are inherited. The average hedonic orientation value is that young people under 30 years old with higher education who already have a permanent job choose to go home and return to be tunggu tubang because their parents are old and there is no one to look after the family and property.

The results of data processing related to the food security of the local tunggu tubang community at the household scale and the nutritional status of children can be seen in Table 5.

Table 5. Univariate Analysis of Household Food Security and Nutritional Status of Tunggu Tubang Children

Aspect	Value	Percentage %
Access to Food Security		
Good food security	22	26.50
Mild food insecurity access	42	50.60
Moderate food insecurity access	17	20.50
Severe food insecurity access	2	2.40
Nutritional status of *tunggu tubang* children		
Poor nutrition	3	3.60
Good nutrition (normal)	47	56.6
Risk of excessive nutrition	7	8.40
Excessive nutrition	4	4.80
Obesity	4	4.80

In tunggu tubang tradition, the house and land are inherited to the first daughter. Tunggu tubang has expertise in agriculture, especially fields (Arifin et al., 2023). This is supported by the research results in Figure 1 which shows that 72% of respondents inherited rice fields managed by tunggu tubang and their families for their daily needs. If the husband of tunggu tubang does not have another permanent job, he and his wife will manage the rice field.

Discussion

Agriculture has an important role as one of the providers of food needs for the people to ensure food security (Sari & Zuber, 2020). The most dominant agricultural products produced by the tunggu tubang community are rice harvested twice a year and coffee harvested once a year. These agricultural products will be the capital for the life of tunggu tubang and her family. However, the results of this research showed that 42 respondents (50.6%) were classified as experiencing mild food insecurity.

This also happens because the tunggu tubang traditional community has an obligation to maintain and care for all the people who live with them, such as parents and unmarried siblings until they can be independent (married). Apart from that, if their siblings need funds, tunggu tubang must give the production results to her siblings. Tunggu tubang also has the obligation to finance all traditional ceremony needs. This condition can cause them not to have sufficient food availability because food production is often sold to fulfill their obligations as *tunggu tubang*.

Arifin et al. (2023) also found that a plot of land inherited is sometimes not enough to carry out tunggu tubang obligations. In fact, due to limited production from the land, it is also often insufficient to finance every traditional ceremony that will be carried out. Therefore, what and how much land are inherited will greatly influence the economic conditions of tunggu tubang. Tunggu tubang are worried about not being able to meet sudden customary demands, so they prefer to be careful in using inherited harvests rather than to meet their family's needs.

Based on the research results, only 22 respondents (26.5%) had good food security and respondents who had good food security were traditional adherers who did not only rely on agricultural products or inheritance for their livelihood but had other jobs or other sources of income. The results of this research show that tunggu tubang adherers do not feel food secure because of their traditional obligations. In fact, having a sense of food security is very important because food is a basic need for human life. The body needs food every day in certain quantities as a source of energy and nutrients.

Indicators of household food security can be seen from the 3 pillars of food security, namely availability, food access, and food utilization (Badan Ketahanan Pangan, 2020). Food secure households can lead to better family food consumption patterns, increase consumption of food diversity, improve nutritional status (Maryam et al., 2023; Syakur et al., 2023), and improve food safety and quality compared to food insecure households (Badan Pangan Nasional, 2022). Good food security will lead to achieving nutritional security, which will then be reflected in fulfilling nutritional intake and nutritional status. Meeting the need for food in the context of food security is a pillar in the formation of quality and healthy human resources needed to increase the competitiveness of the Indonesian nation in the global order (Faridi & Sagita, 2016; Saputri et al., 2016).

Table 6. Nutritional Status

HFIAS	Nutritional Status				Total		*p-value*	PR (95%CI)
	Poor Nutrition		Good Nutrition					
	n	%	n	%	n	%		
Food insecurity	7	14.60	41	85.40	48	100	0.458	0.555 (0.140–2.201)
Good food security	4	23.50	13	76.50	17	100		
Total	11	16.90	54	83.10	65	100		

The results of the research showed that 54 tunggu tubang children (83.1%) had good nutritional status and there was no relationship between food security and children's nutritional status ($p > 0.05$). This shows that even though households feel food insecure, adequate food intake for the family remains a priority for tunggu tubang. One of the advantages of living in a village is that all natural ingredients can be used as a food source so that villagers will never experience hunger. In addition, nutritional status is a complex problem that is influenced by many factors including income redistribution, access to savings, availability of health

services, household consumption patterns, parenting patterns, infectious disease status, environmental health, and access to other social services, so that food security is not the sole factor causing malnutrition status (Widiati & Rusmana, 2020). Maternal education can influence food availability. It is an indicator of food security, which in turn will influence the quantity and quality of food consumption, which is a direct cause of malnutrition in children (Arlius et al., 2017). A good understanding of food and nutrition, especially for housewives, can provide optimal benefits such as providing and serving more nutritious food for the family. With natural ingredients that can be used as a food source and adequate maternal education, the nutritional status of the household will be good.

First, an investigation was carried out on the villagers interviewed regarding their presence or absence. In further interviews, residents of the tunggu tubang generation stated that because they already had rice fields, they had no desire to own rice fields. There were several factors that caused this to happen. Buying more rice fields is uncommon among the "tunggu tubang" generation for several reasons. Firstly, many already own rice fields. Owning additional fields is complex due to irrigation needs. Secondly, local customs often discourage selling these important assets, making it hard to find sellers. Lastly, the younger generation seems to prefer owning different types of land or assets, not just more rice fields. These factors together make the buying and selling of rice fields less likely.

Conclusion

The practice of inheriting rice fields among Tunggu Tubang followers guarantees food supply but not food security. Half of the people experience mild food insecurity despite children's good nutrition. People continue this custom for its altruism. Some rice fields are now plantations due to irrigation problems, leading to less focus on water and fish pond preservation. There's a need for education to mix traditional beliefs with science for food supply stability. This can also improve food security and nutrition.

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Author Contributions
Meilinda: Conceptualization, writing review, editing, and supervision, project administration, funding acquisition. Yenny Anwar: Writing original draft, formal analysis, data curation. Windi Indah Fajar Ningsih & Retno Cahya Mukti: Formal analysis, data curation, investigating. Delima Engga Maretha: Supervision, investigating.

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Conflicts of Interest
The authors declare no conflict of interest.

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