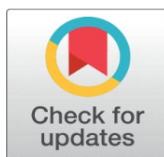


# IMPLEMENTING LOCAL KNOWLEDGE TO EMPOWER FARMER WOMEN IN MANAGING SUSTAINABLE FOOD IN THE MANDIRI VILLAGE

Rinda Yanti <sup>1</sup>, Setya Dharma <sup>1</sup>, Nelson Elita <sup>1</sup>, Harmailis <sup>1</sup>, Nilawati <sup>1</sup>, Hasan Ibrahim <sup>1</sup>

<sup>1</sup> Politeknik Pertanian Negeri Payakumbuh, Tanjung Pati, Sumatera Barat, Indonesia



Received 08 August 2023  
Accepted 09 September 2023  
Published 30 September 2023

## Corresponding Author

Rinda Yanti, [rinda\\_yanti@yahoo.co.id](mailto:rinda_yanti@yahoo.co.id)

## DOI

[10.29121/granthaalayah.v11.i9.2023.5324](https://doi.org/10.29121/granthaalayah.v11.i9.2023.5324)

**Funding:** This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

**Copyright:** © 2023 The Author(s). This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

With the license CC-BY, authors retain the copyright, allowing anyone to download, reuse, re-print, modify, distribute, and/or copy their contribution. The work must be properly attributed to its author.



## ABSTRACT

In order to create the socioeconomic conditions that will lead to self-sustaining and sustainable food security, it is crucial to analyze community empowerment models, particularly those that empower women, when evaluating the success of the food self-sufficient village program. In order to empower women in the management of sustainable, food-independent communities, research is being done to examine the state of food security, the role of institutions, and local knowledge. Survey techniques involving observation and interviews are included in the methodologies and data analysis. The findings demonstrated that the adequacy rate at the research site and the empowerment of farm women organizations in the area of family food security were not yet at their best. Some signs that empowerment has not been as effective as it could have been include: 1) respondents' education is typically dominated by elementary school level, which significantly affects food patterns and their presentations; 2) land productivity is limited (0.5 ha) and dependent on rainwater; and 3) the majority of family expenditure is food expenditure and provides less than enough calories (2100 calories). The Nagari Institutional's inadequate assistance and its local wisdom have a secondary impact on this problem. The women farmers' group's household food security status demonstrates that the empowerment of women farmers is not yet at its best, making independent food management unsustainable.

**Keywords:** Empowering Women, Independent Villages, Food, Local Wisdom, Sustainable

## 1. INTRODUCTION

The food self-sufficiency village initiative is one effort to combat the issue of food insecurity and poverty in rural areas. A community that is food self-sufficient has developed a food security system that includes the availability subsystem, distribution subsystem, and consumption subsystem by making sustainable use of local resources. This system enables the community to achieve food and nutrition security so they can live a healthy and productive life on a daily basis.

The establishment of villages that are self-sufficient in food requires a variety of strategies, including communal empowerment, particularly for women farmers. A

movement called "community empowerment" aims to increase the community's capacity to take part in the creation of a village that is self-sufficient in food. A number of procedures are used to empower communities in an effort to increase their capacity to maximize the potential of their resources and implement better reforms for prosperity. This process is carried out by making it easier for the community to examine its demands in light of its issues and circumstances regarding its means of subsistence.

The idea of women's empowerment is essentially a new development paradigm that emphasizes the qualities of "people-centered, participatory, and sustainable improvement." Although the understanding is different, the objective is the same: to increase power by inspiring others and making them aware of their potential while also making an attempt to go in a more positive manner.

The search for what Friedmann referred [Susilo \(2010\)](#) as "alternative development," which calls for "inclusive democracy, appraisal of economic growth, gender equality, and intergenerational equality," led to the development of this idea. It signifies that women now actively participate in a variety of spheres of life, including social, economic, and political spheres, beyond their traditional roles as housewives who perform the functions of reproduction, caring for children and spouses, or other domestic tasks. Gender equality, generational equality, and enhanced democratic life in line with modern times have made this possible.

Women have long been recognized as playing a crucial role as one of the mainstays of the food manufacturing industry. They are involved in every stage of the process, from managing the land to marketing the crops, but they are most active during planting, weeding, harvesting, post-harvesting, and marketing. The need of human labor is actually slightly decreased by the development of agricultural technology that produces various agricultural facilities and infrastructure, such as tractors, rice thresher machines, etc. However, it is insufficient to completely replace humans in all phases of agriculture sector activity. Not to mention the fact that the technology has not been properly utilized due to a number of restrictions, including lack of funding for technology acquisition and lack of technological expertise.

Women from Minangkabau are shown as beautifiers of the nagari (village). In addition to serving as a symbol, the positioning of women also assigns them a function based on their location. Therefore, even if they are not the ones who make choices, women in adat have a place in decision-making at every consultation held in the nagari. Although Minangkabau women do not have the authority to make choices, their placement as administrators of heritage is a reflection of their loyalty to their significant role in family management [Yevita et al. \(2007\)](#). This is true while making decisions about food security policy.

Food security strategies are an essential component of national development policies. As a result, the strategy for establishing a system of food security is focused on both increasing productivity and human resources through community empowerment in line with local wisdom, enabling people to meet their needs on their own and sustainably.

In the meantime, a sizable portion of the poor population continues to be food insecure and vulnerable to the issue. The main reasons of food insecurity and poverty are the low purchasing power brought on by the poor's low incomes, the community's limited access to food, and the lack of resources and assets needed to start microbusinesses. Building the community's capacity and independence to be able to deal with food issues that arise both within the household and in the surrounding community is the key difficulty in improving food security at the household level.

According to field research conducted by [Ibrahim & Yanti \(2020\)](#) in Jorong Podang Rontang Nagari Koto Tuo, Limapuluh Regency, West Sumatra City, there are 72 households that are considered to be underprivileged. Further information indicated that Limapuluh Kota District had a 16.19% poverty rate. The women's farmer organization in Nagari Koto Tuo is made up of 98% cultivating farmers with 0.1–0.2 ha of arable land, making them tiny farmers. Numerous young people in the area travel, endogamous marriages between villages still frequently occur, patterns of relationships between villages and oceans are still actively promoted, and the tradition of life cycle ceremonies (life cycle) is still widely observed, all of which help to preserve traditional social links.

This underprivileged group is at a greater risk of food insecurity. Food security management will have an influence on rising poverty, food insecurity, and poor nutritional status if it does not give this population due consideration. When there is not enough food available in a household, community, or area to support everyone's physiological demands for survival and growth, food insecurity results. In relation to food security policy, women (mothers) have the power to provide food in the family even when they are not involved in decision-making. In other words, when family-level food security is ensured, national food security results.

According to [Suadnyawati, Putu, and Made Suma \(2010\)](#), many women around the world do not have the protection of their most fundamental rights, have very little education, and are extremely exposed to economic hardships. In many nations, prejudice, the necessity to balance work and family obligations, and the need or desire to work outside the home are additional social and cultural barriers that women must overcome in order to advance. The greatest barrier is education.

According to the description given above, one area of development that is currently being worked on is boosting food security in order to address the issues of poverty and food insecurity. Accordingly, one of the community's food security development programs focuses on eliminating rural poverty and supplying household food needs. Community and government work together to achieve food security, which is developed at the family level.

The food self-sufficiency village program is one of the government initiatives promoting the growth of food security. It is crucial to analyze community empowerment models, particularly those that empower women, in managing food-self-sufficient villages based on local knowledge in order to foster socioeconomic conditions that will lead to self-sustaining and sustainable food security in order to assess the success of the food-self-sufficient village program.

## 2. METHODS

The goal of this study is to examine the level of household food security among farmer groups, the function of institutions, and traditional knowledge regarding the role of women's empowerment in the administration of villages that are self-sufficient in terms of food.

Women's farmer organizations in Limapuluh Kota Regency's Nagari Koto Tuo, Harau District, served as the study's respondents. The 95 female members of the farmer group in Nagari Koto Tuo, Harau District, Limapuluh Kota Regency, West Sumatra, who made up the research sample were chosen on purpose.

In addition, this study consulted with important specialists and informants, including tertiary institutions, local governments, agricultural services, Kenyans, and community leaders. Analysis of household wellbeing and income using an

interview-based survey method Through observation, the tracking of important informant papers, and the use of primary material, examine the function of institutions and local knowledge in the community.

### 3. RESULTS AND DISCUSSION

#### 1) Characteristics of Respondents

Table 1 shows the characteristics of respondents with a cutoff point based on findings from research on women's farmer groups in Nagari Koto Tuo.

Table 1

Table 1 Characteristics of Respondents by Cut of Point						
Description	Farmer's Women Group					
	MS	JT	HB	TS	PE	IM
	Percentage (%)					
<b>Formal Education</b>						
Not completing Elementary School	25	0	18	5	47	31
Elementary School	31	60	55	56	13	38
Junior High School	44	13	27	33	13	15
Senior High School	0	27	0	6	20	15
D3	0	0	0	0	7	0
<b>Non Formal Education</b>						
1. Yes	94	7	36	0	100	100
2. No	6	93	64	100	0	0
Duration of being a farmer (Year )	21	21	20	36	25	28
Total members of family	4	5	5	4	5	3
Total of working family	2	3	3	2	2	2
Average remittances per month (Thousand Rupiah )	0	0	18	161	0	46
The area of houses (m <sup>2</sup> )	68	56	49	72	82	52
<b>Walls</b>						
a. Board	19	13	64	0	0	31
b. Semi-permanent	6	13	9	0	0	0
c. Brick	31	0	9	11	13	15
d. Wall/	44	74	18	89	87	54
e. Cement						
<b>Floor</b>						
a. Soil	6	0	18	0	0	8
b. Board	0	0	0	0	0	0
c. Cement	69	93	73	61	87	61
d. Tiles/Ceramics	25	7	9	39	13	31

Description: MS=awar Saiyo, JT=Jaso Tani, HB: Harapan Baru, TS=Tanjung Saiyo, PE= Perpito, Ingin Maju

The respondents' formal education included the following characteristics: D3 and failure to complete elementary, junior high, or high school. According to the formal education characteristics, the average percentage of respondents with a degree is 21%, 42.17%, 24.17%, 11.33%, and 1.167%. According to these results, elementary school (42.17%) had the highest degree of education, followed by junior high (24.17%), failing to graduate from primary school (21%), and D3 (as many as 1.167%). When compared to the other 5 KWT, the Perpito farmer women group (KWT) has more respondents with a degree of formal education who did not

complete elementary school (47%) than those who have a Diploma 3 (D3) level. Most KWT respondents in the study area had only completed elementary school.

According to the study's findings, 56.17 percent of respondents had participated in informal education, compared to 43.8 percent of the total population. In terms of informal education, respondents in the study area had limited opportunities to enroll in junior high school and higher because of their age. In each KWT, informal education should be encouraged since, according to [Sumarwan \(2002\)](#), education affects one's perspective, style of thinking, and even how they perceive a problem.

Averaging 25.17 years, respondents in the 6 KWTs had been farmers for more than 20 years overall. Given that the majority of respondents (42.17%) only had elementary education, this statistic is pretty accurate. Additionally, participants at the study site got shipments worth an average of 37.574,00 Rp. Three groups did not receive any materials (Rp. 0). The largest shipment was sent to KWT Tanjung Saiyo (Rp. 161.111,00).

The size of the family reflects the load it bears. There were typically three to five family members per respondent in the research area. Want Forward has the fewest members among the respondents, with only three. When compared to six other KWT, respondents who are a part of KWT Want Forward have a heavier family load. Perpito has the highest percentage of family members employed by six or more KWTs, at 40%, while KWT Want to Forward has the lowest, at 66.66%.

The location of the home, the type of wall, and the type of floor are the next criteria. At the research site, the 6 KWT's respective living spaces are 68 m<sup>2</sup> (MS), 56 m<sup>2</sup> (JT), 49 m<sup>2</sup> (HB), 72 m<sup>2</sup> (TS), 82 m<sup>2</sup> (PE), and 53 m<sup>2</sup> (IM). Using the BKKBN (2003) cut-off point, the size of the dwelling is appropriate for the habitation of responders. In KWT Tanjung Saiyo, cement-based walls are the most prevalent form of wall, followed by cement-based walls in KWT Jaso Tani.

## 2) Agricultural Productivity

The little area that KWT cultivates (more than 0.5 ha), as indicated in [Table 2](#), is the cause of the low agricultural productivity. This indicates that there is room for improvement in terms of household food security. Additionally, a lot of areas have been damaged. The knowledge and abilities of sustainable agriculture have not been fully utilized by KWT.

**Table 2**

Table 2 Agricultural Productivity of Women Farmers Groups						
Farmer's Women group						
	MS	JT	HB	TS	PE	IM
Kinds of Jobs (%)						
Owner Farmer	6	0	0	22	20	15
Small holder farmers	25	53	91	45	53	62
Owners Farmers and tenants	44	33	0	22	7	23
Small holder farmers and non-farming	25	14	9	11	20	0
Area of arable land						
Less than 0,5 ha	62	87	100	67	33	77
0.5 – 0.99 ha	19	13	0	16	53	23
> 1 ha	19	0	0	17	14	0
Agriculture water sources						
Irrigation	0	20	0	11	0	8

### 3) Types of Household Expenditure, Income, and Calorie Consumption

Technically, three factors contribute to the problem of food production: (1) the reduction in the total agricultural production area due to land conversion; (2) the fragmentation of agricultural land; and (3) the tendency to reduce soil fertility due to pollution leading to land degradation [Tjahjohutomo et al. \(2014\)](#). Water availability affects how productive agriculture becomes. The success of food productivity is determined by water. Food commodities like rice require a lot of water to cultivate. In contrast, only about 13% of KWT homes typically have technological irrigation networks. Rainwater sources are used by the other 87%.

[Table 3](#) explains that the monthly expenditure on food and non-food is higher than the per capita household income.

**Table 3**

Table 2 Average Expenditures and Consumption of KWT					
Farmer's Women Group					
MS	JT	HB	TS	PE	IM
Expenditures (%)					
63,48	62,39	73,42	64,39	59,13	59,13
36,52	37,61	26,58	35,61	40,87	40,87
Average of the Expenditures (Million Rupiah/House Hold/Month)					
1.89	1.9	2.49	1.61	2.28	1.43
Consumption (Calorie/day)					
817,3	767,5	588,8	890	755,7	805,1

Because household productivity (for farmers and non-farmers) is still low, the level of food security for households has not yet achieved its ideal level. The dominance of the small area per unit of land (> 0.5 ha), managed by KWT households, and the low productivity of commodities due to land degradation and the not yet optimal transformation of knowledge and skills, as well as assistance with the implementation of sustainable farming, are thought to be the causes of households' low productivity.

According to [Tjahjohutomo et al. \(2014\)](#), a number of issues with food production are due to land constraints, including the following: (1) a reduction in the total area used for food crop production due to land conversion; (2) a reduction in the area per farm household managed due to land fragmentation; and (3) a decline in soil fertility as a result of pollution and/or poor management that causes land degradation.

Water availability is essential for plant cultivation. Despite the fact that different plants have different water requirements, water is still a crucial element in the productivity of pangas. The food crop known as rice is one that necessitates a lot of water. Only 13% of KWT rice fields, on average, have access to reasonably priced technical irrigation networks with reasonably secure river-based water supplies. It is determined that 87% of KWT land is rainfed.

On the other hand, household per capita monthly income is outpaced by the average monthly expenditure on food and non-food consumption. Because the food consumed does not match the nutritional needs of the household, this scenario may compromise food security. This is demonstrated by household calorie consumption,

which is still low (2000 cal per capita per month) compared to the recommended calorie intake of 2100 cal per capita per month for nutritional adequacy. The education of farmer-women groups (wives) also has an impact on the household food consumption, which is nevertheless below the advised nutritional level. Because the wife's education is primarily at the primary school level, the presentation (both the quantity and quality of food consumed) may be impacted. The nutritional status of KWT households is shown in [Table 4](#), which demonstrates this condition.

**Table 4**

Table 3 KWT Household Nutrition Status						
Nutrition Status (%)	Farmers' Women Group					
	IM	JT	HB	MS	TS	PE
Thin	15.4	13.4	0	6.3	21	0
Normal	69.2	66.6	75	25	42.2	87.5
Fat	15.4	20	25	68.7	36.8	12.5
Average body weight based on age and height						
Ideal	69	67	75	25	42	87.5
Non ideal	31	33	25	75	58	12.5
Average of Child < 12 years; ideal 28% and not ideal 72%						

The table explains that children under the age of 12 represent the majority of the nutritional hazard status with an ideal body weight of 72% rather than the ideal of 28%. KWT Mawar Saiyo and Tanjung Saiyo had the highest optimum weights, with 75% and 58%, respectively. This shows that the trend of food consumption hasn't followed what was anticipated. According to [Setiawan \(2012\)](#), the average Indonesian population does not consume enough food to meet their energy needs in terms of both quantity and balance.

The key supporting elements that affect consumption patterns, according to [Tjahjohutomo et al. \(2014\)](#), are availability, socioeconomic conditions, location of the region, and household characteristics. The ability of a household to generate food, its purchasing power, and gifts all have an impact on how much food is available in that household.

#### 4) The Role of Institutional and Local Wisdom

The fame of a nagari, which is supported by its children's (nagari communities') customs, companies, or other enterprises, is what makes it great. The operation of adat nagari (KAN) institutions, Bundo Kanduang, and nagari rules can be used to describe the role of nagari institutions and local wisdom based on field observations and interviews.

Tribal chiefs speak on behalf of their tribes in KAN to influence Nagari government policy. The term "penghulu" refers to the ninik mamak for degree-holding adat holders. He has a duty to protect the members of his people, tribe, and fences since he is the head of the head.

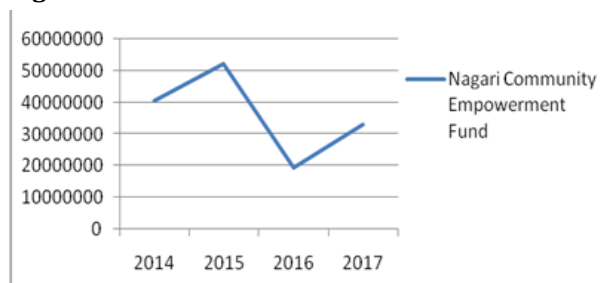
Bundo Kanduang is the recipient of maternal lineage provisions, the recipient of housing provisions, the recipient of the provision that economic assets and resources are prioritized for women, the recipient of the provision that those who save the results of economic business are also women, and the recipient of special voting rights holders in deliberations as women who are given honor and virtue according to adat.

Nagari laws regulate interactions between the nagari and its materials, between individuals, and between the community and outside parties. allocation of funds for community empowerment initiatives, nagari public health funds, and nagari funds received over the previous five years. Nagari laws specify the duties and responsibilities of community members.

The support of the designated nagari fund to maximize the function of the institution can be demonstrated in the operation of the nagari institution and local wisdom based on field surveys. The largest increase in Nagari money came when village monies were made available by government policy.

Since the nagari received village finances for the first time in 2014, there has been a rapid increase in the amount of nagari monies acquired; this trend has continued through 2016. However, the distribution of Nagari money for community empowerment initiatives varies and tends to continue to vary, witnessing a decrease till 2016. As seen in [Figure 1](#), the monies allocated each year vary and are diverse.

**Figure 1**

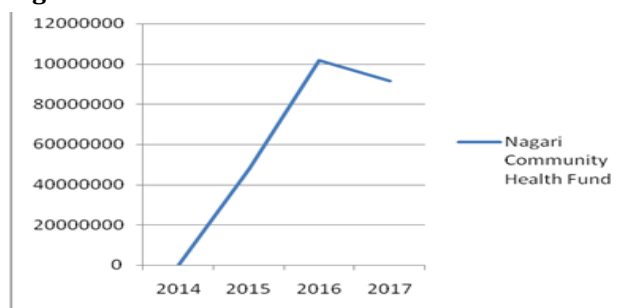


**Figure 1** Graph of Nagari Community Empowerment Fund allocation

It is clear from Graph 1 that from 2014 to 2015, more money was provided for community empowerment. Although funds climbed again in 2017 after declining in 2016, they were still smaller than in 2015. Some significant amounts are allotted for infrastructure enhancements including the building of village roads and bridges based on the 2017 Budget Realization Report and justifications from the village guardians. The Budget Realization Report for 2014–2017, on the other hand, varies when considered in the context of the distribution of Nagari money to public health.

The distribution of health funding, which included the building of village polyclinics and the administration and direction of posyandu, started in 2015. A program of activities was added in 2016 and 2017 along with an early childhood education development program. However, as shown in [Figure 2](#), the trend of money allocation has dropped since 2017.

**Figure 2**



**Figure 2** Nagari Community Health Fund



Figure 2 illustrates how the allocation of Nagari money for positions in public health increased from 2015 to 2016. But it dropped in 2017. This explains why the institutional knowledge and local wisdom of the nagari are not adequately supporting the community empowerment program, which is directly tied to the activities of farmer women's groups. The food security and nutritional status of KWT households, which is currently suboptimal sustainably, are indirectly impacted by this circumstance.

#### 4. CONCLUSION

The study's findings indicate that primary school (SD) is the most common level of education for peasant women. Because land management (0.5 hectare) depends on the availability of rainwater, land productivity is low. The fact that KWT household spending exceeds productivity is another useful indicator. Food spending exceeds non-food expenditure, yet respondents' calorie consumption is still below the recommended amount of energy sufficiency (2100 calories). The Nagari Institutional's inadequate assistance and its local wisdom have a secondary impact on this problem. The women farmers' group's household food security status demonstrates that the empowerment of women farmers is not yet at its best, making independent food management unsustainable.

#### CONFLICT OF INTERESTS

None.

#### ACKNOWLEDGMENTS

Thank you to the Kenagarian Koto Tuo, Harau District, Limapuluh Kota Regency, West Sumatra, Politeknik Pertanian Negeri Payakumbuh, and the Ministry of Research and Higher Education.

#### REFERENCES

- Ibrahim, H., & Yanti, R. (2019). Empowerment of Women Farmers on Sustainable Food Security with Dynamics System Modelling (in Nagari Koto Tuo, Harau Sub-District, Limapuluh Kota Regency, West Sumatera). The 5th International Seminar on Sciences, 299, 1-11. <https://doi.org/10.1088/1755-1315/299/1/012022>.
- Ibrahim, H., & Yanti, R. (2017). KWT Welfare Level in Sustainable Food Management in Nagari Koto Tuo Kec. Harau, Kab. 50 Cities Proceedings if the 2017 Politeknik Pertanian Negeri Payakumbuh National Seminar.
- Ibrahim, H., & Yanti, R. (2020). Farming Study of Women Farmer Groups Nagari Koto Tuo, Harau Subdistrict, Limapuluh Kota Regency. *Journal Partner*, 25(1).
- Ibrahim, H., & Yanti, R. (2020). Analysis of Food Availability in the Farmer's Women's Group Kenagarian Koto Tuo, Limapuluh Kota Regency. *Proceedings of the National Seminar on Applied Innovative Research (SENTRINOV) Ke 6. Series : Science : 6(1)*, 2477-2097.
- Yevita, N., Ermayanti, & Zamzam, L. (2007). The Role of Matrilineal Minangkabau Family against the Certainness of Elderly Women. Case Study in Kelurahan Payonibung, North Payakumbuh District. Research Report by Letter Contract of Research No.001/SP2H/PP/DP2M/III/2007. *Anthropology. FISIP. UNAND*.

- Setiawan, B. I. (2012). Optimizing Food Diversification to Achieve Sustainable National Food Security. *Tannas Magazine Edition 94-2012* : 69-74.
- Suadnyawati, P. & Wedastra, M. S. (2010 September). Empowerment of Women Potential in Poor Rural District of West Lombok. *Gene Swara*, 4(2).
- Sumarwan, U. (2002). *Consumer Behavior. Theory and Application in Marketing*. PT Ghalia Indonesia.
- Susilo, B. (2010 December). Empowerment. *Economic Women Based Farmer Institutions*. *Muwazah Journal*. 2(2).
- Tjahjohutomo, R., Somantri, A. S., Juniawati, & Hayuningtyas, M. D. (2014). Local Food Based Diversification Development Strategy Supports Food Security with System Modeling Approach. *Research and Development of Postharvest Agriculture*. Ministry of Agriculture.
- Yanti, R., & Ibrahim, H. (2018). Sociological Study of Conservation Behavior with Agroforestry in Semi-Arid Equatorial Regions (Case Study : Amarasi District, NTT). *Journal of Applied Agricultural Science and Technology*, 2(2), 55-70. <https://doi.org/10.32530/jaast.v2i2.46>.