

THE LOCAL WISDOM'S ROLE IN SUSTAINABLE AGRICULTURAL SYSTEMS IN THE CITY OF TIDORE KEPULAUAN PROVINCE OF NORTH MALUKU INDONESIA

Arifin Muhammad ADE¹, David EFENDI², Alam MAHADIKA³

¹Researcher at Community Read House, Indonesia,

Email: arifinmuhammadade@gmail.com

²Lecture In Department of Government Affairs and Administration, University Muhammadiyah Yogyakarta, Indonesia, Email: defendi@umy.ac.id

³Researcher at Muhammadiyah Study Center, Indonesia,

Email: mahadikaalam@gmail.com

Abstract: *Local wisdom in the agricultural sector is one of the local knowledge and people have of operating farm activities. The current environmental crisis also dramatically impacts agriculture, which is one of Indonesia's leading sectors. The study aims to know the role of local wisdom in supporting sustainable agriculture, understanding the factors that affect regional variety-based agricultural productivity, and how strategies maintain local prudence in supporting the sustainable farming system in The City of Tidore Kepulauan. The sample in this study is based on an impressive sampling technique with the number of respondents in the number of those who have agricultural land using data collection techniques using interview, dissemination of questionnaire. To get data linked to local agrarian prudence using a snowball sampling technique. The resulting data is further descriptive and uses SWOT analysis as a strategy to maintain local agricultural sense in The City of Tidore Kepulauan. Studies suggest that the local wisdom's role in the farming sector of the City of Tidore Kepulauan can be seen from land opening activities in the form of the Galasi tradition, the planting, and the post-harvest training accompanied by the Ritual Paca Goya. Local virtue plays in The City of Tidore Kepulauan in implementing a sustained farming system of cultivation, rotation of crops, and stabilization, water conservation techniques, land conservation, and not breaking away from the local cultural context and appreciating local values order, spirit and knowledge. Agriculture In the City of Tidore Kepulauan is also affected by the area of land harnessed, the needed capital, and the availability of labor in farm activity. Research has found that farm yields in a single season of 51.39% quintal and 6-9 quintal at 46.61%. In contrast, the practice of maintaining local wisdom in the agricultural sector based on SWOT analysis can be done by strengthening public social ties and indigenous institutions and maintaining local wisdom values preserved by involving governments in producing written rules.*

Keywords: Local Wisdom; Sustainable Agriculture; Agricultural Productivity.

1. Introduction

Rapid development is accompanied by an increase in population growth, causing an increase in natural resources. Excessive utilization of natural resources and from ecological rules will affect sustainability and impact worsening environmental quality. Therefore, there needs to be a guarantee of the sustainability of natural resources utilized.

Facing increasingly concerning environmental problems and the effects of increasingly uncontrolled global warming, humans are required to as much as possible live a life that is in harmony and harmony with nature to build a good relationship between humans and nature, one of which can be done by revitalizing local wisdom that becomes the outlook on life of a community of people.

Local wisdom as a result of human and environmental interaction and as a result of a long process that takes place continuously is a form of guidance, views, rules, and policies that are not written in society. In the Law of the Republic of Indonesia Nomo 23 of 2003 on the protection and management of the environment, it is explained that local aria is a noble value that applies in people's lives to protect and manage the environment sustainably.

The practice of natural resource management and environmental conservation based on local wisdom can overcome problems that have been allegedly only able to be solved using modern science and technology (Susilo, 2014). However, according to Marfai et al. (2015), local wisdom is now beginning to be threatened by the intervention of modernity and capitalism. For that, in the implementation of its sustainability, local knowledge meets many challenges.

The current environmental crisis is also very influential on the agricultural sector, one of Indonesia's leading sectors. It is known as an agricultural country with the majority of its people eyed in the farming sector. Through the Ministry of Agriculture, the Government of Indonesia seeks to increase food productivity by modernizing the agricultural sector in line with Law No. 18 of 2012 on Food. The problem was the increase in food productivity which is the government's instruction to force farmers to adopt modern farming methods that depend on the availability of chemical fertilizers and pesticides.

Excessive use of chemicals or pesticides to improve agricultural yields is only temporary. Pesticide use will further worsen environmental conditions and threaten the diversity of living things, including humans (Carson, 1990). In addition, environmental pollution, especially in the agricultural sector in Indonesia, is characterized by the presence of a green revolution. According to Vandana Shiva (1998), the green course was not based on independence but on dependence, not on diversity but uniformity. The green revolution is long-term damaging diversity, increasing costs for farmers, and increasing ecological risks, especially in drought-stricken environments.

Regarding local wisdom in the agricultural sector, the people in Tidore Islands are people whose life activities constantly interact with the surrounding nature. The process of interaction is contained of farm activities, namely land management and farming. The method of human interaction with nature in agricultural activities has succeeded in forming an order of local cultural values in various traditions that teach people how to conserve natural resources to be utilized sustainably.

The form of local wisdom of the Tidore community in maintaining ecological balance can be seen in various traditions and rituals that are carried out in line with land management activities until post-harvest. The application of sustainable agricultural systems and comprehensive integration between environmental and socio-economic aspects of farming communities is a practice in farming activities that implement organic farming systems and utilize natural resources appropriately.

The practice of managing and utilizing natural resources in the agricultural sector based on local wisdom carried out by the Tidore community does need to be studied in hopes of maximizing the management of natural resources, especially in the agricultural sector, and at the same time avoiding the damages that will occur to the environment taking into account its ecological aspects.

Based on the above bragging, the objectives in this study are as follows, Knowing the role of local wisdom in the sustainable agricultural system in the City of Tidore Islands. Analyzed factors that affect the productivity of farm products based on local learning in the Tidore Islands City. Develop strategies to maintain local wisdom in support of sustainable agricultural systems in the city of Tidore Kepulauan.

2. Theoretical framework

2.1 Sustainable agriculture

A sustainable agricultural system is defined as a farming system that utilizes renewable resources and resources that cannot be renewed in a series of agricultural production processes by reducing the negative impact on the environment to a minimum. Sustainable farming systems have become a new phenomenon that has been growing since 1990. Sustainable agriculture systems emerged as the answer to various problems resulting from applying conventional agricultural systems that use many chemicals such as chemical fertilizers and pesticides.

Sustainable agricultural development is the implementation of the concept of sustainable development aimed at increasing the income and welfare of the farm community at large. This is done through increasing agricultural production (quantity and quality) while keeping in mind the sustainability of natural resources and the environment. Agricultural development is carried out in a balanced manner and adapted to the carrying capacity of the ecosystem so that the continuity of production can be maintained in the long term by suppressing the level of environmental damage as little as possible (Fadlina, Supriyono and Soeaidy, 2013).

A sustainable agricultural system, often also referred to as an organic farming system, is not just the process of planting and maintaining crops but is an uninterrupted cycle ranging from pre-production, production to post-harvest (Nurlaeny, 2013). Sudalmi (2010) in Ruhimat (2015) explained that organic farming is defined as the ability of an agricultural business to remain productive and meet the growing human needs while maintaining environmental quality and preserving natural resources.

2.2. Factors that affect agricultural productivity

Agriculture is one of the dominant sectors in people's income and has a vital role in Indonesia because Indonesia's population works as farmers. The agricultural sector has a strategic role in national economic development. This causes agrarian land to be the main factor of agricultural production because it is difficult to replace in a farming business process (Makhfatih, 2014).

Mangkuprawira (2007) in (Dewi, Utama and Yuliarmi, 2017) explained that productivity is the ratio between the inputs and outputs of a particular production process. The information and results of agriculture greatly influence agricultural productivity. Inputs from agriculture include labor, agricultural land, and capital, while agriculture production includes agricultural products; in addition to productivity in agriculture is also inseparable from socio-economic factors around it.

2.1.1 Land factor

Rustiadi (2008) in Amanila et al. (2018) explained that the availability of sustainable food agricultural land resources is a condition for national food security.

Productivity is the ability of a factor of production (land area) to obtain output per unit area of land. Production and productivity are determined by many factors such as soil fertility, varieties of planted seedlings, sufficient water availability, use of fertilizers, proper farming techniques, the use of adequate agricultural tools, and the availability of labor.

Agricultural land tenure is significant in the production process or agricultural business and agricultural business. In farming, companies such as ownership or narrow land tenure are certainly less efficient than broader land. The thinner the business land, the more inefficient the farming business is carried out. Unless a farming business is run in an orderly and sound administration and proper technology, the efficiency lies in applying technology. Because of the narrower area, the application of technology tends to be excessive and makes an effort inefficient (Daniel, 2004). Agricultural land is a determinant of the influence of agricultural commodities. In general, it is said, the wider the land (tilled/planted), the greater the number of products produced by the land. The size of the farmland can be expressed by a hectare (ha). Farmers still use standard sizes in the countryside, such as patok and jengkal (Rahim, 2007).

2.1.2 Capital factor

The availability of capital becomes one of the factors of agricultural productivity. Empirically capital in agriculture is funds derived from owners, banks, or shareholders consisting of cash used within one growing season. Capital determines the level of fertilization costs, irrigation, labor wages, and so on. This difference in capital intensity substantially contributes to widespread disparities in agricultural productivity. Capital in agriculture can distinguish the use of two types of technology, namely traditional technology and modern technology. Conventional technology is generally used by farmers with relatively low capital, while farmers use modern technology with more outstanding capital.

2.1.3 Labor factor

Labor in the farming business is labor that is devoted to the farm's own business or family business. In economics, labor is a tool of physical force and the human brain, which cannot be separated from humans and aimed at the efforts of production. Every agricultural business that will be implemented must require labor. Therefore, in the analysis of employment in agriculture, the use of labor is expressed by the amount of labor outpouring used is the amount of effective labor used. The scale of the business will affect the small amount of labor needed and also determine the type of labor that is needed (Soekartawi 1993).

2.2. Concept of local wisdom

The quality of the natural environment is currently getting worse. The function of the natural environment that continues to degrade due to prolonged and continuous damage adversely affects the sustainability of living things, including humans. Human exploitation of the natural environment results in a gap in the relationship between man himself and his environment (Niman, 2016).

The technological engineering solutions offered are entirely unable to overcome the problem and have not touched on the issue of natural environmental

damage (Susilo, 2014). According to Mashall McLuhan (1962) in Pinantyo (2016), technological inventions and developments have changed human behavior or culture. Technology has a devastating impact not only on humans themselves but also on the surrounding environment. In line with Mashall McLuhan, Suwardi Endraswara explained that whether realized or not, damage after damage that afflicts most parts of the hemisphere is closely related to the ability of humans to find and use modern technology, in addition to changes in human mindset (Endraswara, 2016).

So there need to be efforts to protect and manage the natural environment that is integrative, sustainable, and consistent through local culture by local communities and governments because local culture or local wisdom is part of the community to survive according to environmental conditions, according to needs, and beliefs that have taken root and are difficult to eliminate (Sufia, Sumarmi, and Amirudin, 2016).

Local wisdom is a form of environmental wisdom in community life in a place or region (Holilah, 2015). So, it refers to a particular locality and community. Conceptually, local wisdom is human wisdom that rests on a traditionally institutionalized philosophy of values, ethics, ways, and behaviors (Mariane, 2014).

Local wisdom is often conceptualized as local wisdom, local knowledge, or local genius (Mawaddahni, 2017). Local learning is related to the attitudes, views, and abilities of a community in managing its natural and social environment that fosters the ability of the community to build resilience and growing power by utilizing the potential of natural resources and human resources (Sukari, Purwana, & Mudjijono, 2016).

According to Sonny Keraf, local wisdom is all forms of knowledge, beliefs, understanding, or insight, and customs or ethics that guide human behavior in life within the ecological community (Keraf, 2010). In addition, the management of natural resources aims to improve the community's welfare as a whole (social well-being) in a sustainable manner, especially in local communities that live in the area of natural resources (Tziaraputri & Ledy Diana, 2017).

2.3. Local wisdom – based agriculture

Indonesia's agricultural activities are very close to cultural activities. This cultural element then places Indonesian agriculture as a strength and a differentiator with other countries that also conduct agricultural activities (Akbar, 2016). The relationship between wisdom and culture is very close. The knowledge of local culture reflects the cultural behavior of its people, who are backgrounded from the nature and behavior of Indonesian society (Kurima, 2016). As a product of culture, local wisdom is born because of the need for values, norms, and rules that become a model for doing an action (Alpis, Sayamar and Kausar, 2016).

In the context of agriculture, in this case, traditional farmers have local knowledge that they use for farming efforts. According to Langerodi (2013) in Kurniasari et al. (2018), conventional farmers have local knowledge that can be utilized as a principle to develop agricultural empowerment. A study on the influence of local culture on the motivation of farming arfak people in West Papua showed that the spirit of working in the garden, such as knowledge of garden rotation, maintaining forests, and agricultural patterns helped encourage the acceleration of development while maintaining natural sustainability (Mulyadi and Iyai, 2016).

Management of agriculture based on local wisdom is a pattern or system of smart farming used as a guide in which it is implied that the function of the land as a source of livelihood must be maintained so that the sustainability of the process can still be obtained (Ginting and Harahap, 2016).

3. Research Methods

This research was conducted in Topo and Gurabunga Villages in Tidore Subdistrict and Kalaodi Village in East Tidore Subdistrict, Tidore Islands City. The selection of this location as a research location is determined based on the consideration that the three villages are a village that is still thick with local wisdom customs, especially in agriculture. The research will be conducted from November 2019 to January 2020.

The sampling determination in this study was based on purposive sampling techniques and using snowball sampling techniques. The decision of samples is the people who have monthly agricultural land. In this study, the determination of informants is based on several key informants who are considered to know the most about the information to be studied, namely about local wisdom applied in agricultural activities. The critical informant is the lurah that represents government agencies and indigenous figures as representatives of indigenous institutions. These key informants then developed into several informants through snowball sampling techniques.

Table 1. Number of research samples

Neighborhoods	Number of KK	Percentage (%)
Topo	112	$112/100 \times 25 = 28$
Gurabunga	98	$98/100 \times 25 = 25$
Kalaodi	74	$74/100 \times 25 = 19$
Sum		72

This study uses descriptive data analysis to illustrate the local wisdom of the Tidore Islands community in agricultural activities. SWOT analysis as a draft strategy maintains local wisdom applied by the people of Topo, Kalaodi, and Gurabunga villages in farming activities.

4. Result and Discussion

4.1 The role of local wisdom in support of sustainable farming system in Tidore Island City

Based on the results of research and observations in the field, it is explained that the people in the villages of Topo, Kalaodi, and Gurabunga in carrying out farming activities still apply the way of farming inherited by their ancestors. The customary agricultural land management used by local farmers is reflected in the farming process, followed by various traditions and rituals. For example, the practice of *excavation* in the process of opening or clearing new planting land, planting time determined based on agreement with village elders to avoid unlucky days or bad *range*, and *paca goya* rituals performed when farmers reap the harvest.

4.2 Land clearing

The work of clearing agricultural land, known as *the gelation* tradition, is an event of the farming community in Tidore who did not forget to include rituals led by indigenous elders so that the work is smooth and there are no disturbances. Based on the results of field observations and interviews, local people are more interested in carrying out *galasi* traditions. This is because the tradition of *galasi* as local wisdom socially further strengthens family relations and, from an economic point of view, saves more costs in managing land.

Related to the area of land used for planting activities, the people in the villages of Topo, Gurabunga, and Kalaodi generally utilize land with a size of $\pm 200\text{-}400\text{m}^2$ and spread in several locations. To take advantage of the limited land area, farmers usually apply cropping patterns as an alternative to maximizing profits and stabilizing income. Local knowledge applied by farmers in Topo, Kalaodi, and Gurabunga villages indirectly also minimize the impact on environmental conditions. This is seen from the way local farmers use sleeping land and conduct soil and water conservation in land use activities by utilizing local knowledge inherited for generations by previous ancestors. Local farmers have local knowledge that is passed down through generations, namely land rotation, water conservation techniques, and soil conservation.

4.3. Planting

Based on the interviews with farmers in the villages of Topo, Kalaodi, and Gurabunga related to the determination of planting time, it is explained that the decision of the right time in the planting process to avoid unlucky days becomes a critical factor. By the local community known as *wange nahas*. To find out *the nahas wange*, farmers usually calculate the names of days in one month following the local calendar of Tidore or ask directly to the indigenous elders. The determination of planting time also relies on climatic conditions by waiting for the rainy season to get enough water supply.

Planting patterns applied by local farmers are patterns of planting polyculture type of *overlap (intercropping)* with a combination of various kinds of plants in one farm and a cropping relay pattern *that is* by inserting one or more types of plants other than staple plants. There are types of palawija plants and annual plants such as nutmeg, cloves, and cinnamon.

From the existing agricultural system model, based on the results of observations in the field, there is an application of agroforestry systems, where there is a combination of the agricultural, plantation, and forestry crops. Crops of palawija and horticulture are grown with an area of only between $200\text{-}400\text{ m}^2$ grown amid plantation crops such as cloves and nutmeg and other woody plants. The characteristics of such planting patterns correspond to producing designs according to the classification of Napoleon T. Vergara (1981). One of these patterns is *Trees Along Border* (TAB), a way of planting trees on the edge of land and crops in the middle. Conditions like this show that the cover of ground that is opened is not too large, woody plants can serve as a fence/barrier of crops, and there is no competition of nutrients that can interfere with crop growth.

4.4. Fertilizing and care of plants

Based on the results of interviews with local farmers, it can be explained that in the use of fertilizer types, farmers who are in the villages of Topo, Kalaodi, and Gurabunga use organic fertilizers and inorganic fertilizers. Organic fertilizer in the form of burning leftover ash and one type of plant, namely gamal leaves (*Gliricidia sepium*) which is believed to fertilize plants.

The farming community in Topo, Kalaodi, and Gurabunga villages in utilizing gamal leaves (*Gliricidia sepium*) or known to the local community as *sombar* leaves, is enough to be done by scattering leaves into the land that has been planted crops. In addition to being an organic fertilizer medium for cultivated crops, gamal leaves can also be used as vegetable pesticides that protect crops from pest attacks and the use of rangrang ants (*Oecophylla smaragdigna*) to prey on pests that attack farmers' crops. Local knowledge of local farmers in fertilization patterns is also seen from the application of fertilization using gamal leaves (*Gliricidia sepium*) by scattering the leaves to land that has just been planted with cultivated crops. Adi & Aini (2018) explained that fertilization through leaves is considered more effective because plants more easily absorb nutrients. This is because the leaves are able to absorb fertilizer about 90%, while the roots are only able to absorb about 10%. The explanation conveyed by the respondents above is also reinforced by the opinion of Sukmawati & Zein (2016) who said that one possibility to replace inorganic fertilizers is the use of ash derived from plants (*Plant Derived Ash* or *PD Ash*), such as from copra ash, coconut coir, rice straw burning waste, firewood burning waste from the kitchen, and chaff.

4.5. Harvesting

The belief of the local community before harvesting agricultural products is to determine the right time in harvesting activities, as well as carrying out rituals for the abundance of crops. Harvest time also affects the quality of the plants produced. Generally, the harvest is done in the morning when the sun has just risen because the day is bright enough. However, the ambient temperature is still low enough that it can reduce damage due to product respiration and also increase the efficiency of harvesting.

Based on the results of interviews with respondents who work as farmers in the villages of Topo, Kalaodi, and Gurabunga can be explained that related to the way or technique of harvesting, local farmers still rely on manual harvesting techniques. The harvesting process is enough to use a knife to separate the fruit from the stalk, or if the harvest is a type of tubers, it is enough to be removed manually using hands or by using traditional tools of horses. In *post-harvest activities* of agricultural products, do not forget the local community performs rituals overabundant harvest. The post-harvest ceremony is to give offerings from the harvest to the spirits of ancestors who are placed in sacred places. In topo society, Kalaodi and Gurabunga, the tradition is known as "*Paca Goya*".

Paca Goya ritual is a procession of ritual traditions typical of kalaodi indigenous people on the hills of the Tidore mountains in peace and friendship with the environment. *Paca Goya* ritual is also a way for indigenous peoples to deliver prayer requests to God traditionally in the hope that it is blessed in the form of a fertile nature, a nature that continues to faithfully provide and meet the needs of living beings.

4.6. Factors that affect the productivity of local wisdom - based agricultural products in the Tidore Island City

4.6.1. Land

Based on the results of the spread of questionnaires to respondents, it can be explained that the land worked by farmers in Topo, Kalaodi, and Gurabunga villages with an area of 200m² by 9.72%, 300 m² by 30.50%, 400 m² by 45.83%, and >500 m² by 13.88%. Based on the interviews with local farmers, it can be explained that with a limited land area, farmers are trying to increase agricultural production by regulating planting patterns in each land use. The application of a polyculture planting system (*intercropping*) is a pattern of planting that is widely applied by farmers in Topo, Kalaodi, and Gurabunga villages by planting more than one plant simultaneously in the same land, such as planting peanuts combined with corn and long beans simultaneously on one ground.

In addition to the planting pattern, farmers in Topo, Kalaodi, and Gurabunga villages also utilize land by implementing an agroforestry system that combines food crops with annual crops in one land. Land use for a combination of food crops and year crops such as nutmeg, cloves, and cinnamon is done by placing yearly crops on the supply of food crops. Land use patterns by applying the convention of polyculture planting types and agroforestry systems by local farmers rely on local knowledge passed down through generations. Local farmers utilize agricultural land use practices to anticipate crop failure in food crops and increase land productivity.

4.6.2. Modal bibit

Based on the study results, it can be explained that the capital spent by farmers in the procurement of seedlings depends on the area of arable land. The greater the size of arable land, the greater the money needed and vice versa. Based on the results of interviews with farmers in the villages of Topo, Kalaodi, and Gurabunga it can be explained that when the harvest season arrives, the harvest is then separated in part as seedlings to be planted in the next growing season, then the rest can be sold or for daily consumption. Separating some of the crops that will be used as seeds for the next growing season succeeded in suppressing farmers' spending in buying seeds sold in the market.

4.6.3. Fertilizer capital

The average amount of fertilizer value needed by farmers from 72 respondents is Rp. 40,000-79,000 by 2.78%, Rp. 80,000-119,000 by 79.16%, and the use of fertilizer with a value above Rp. 120,000 of 18.05%. The capital used by farmers in Topo, Kalaodi, and Gurabunga villages is quite small because the majority of farmers use organic fertilizer to fertilize cultivated crops.

The type of organic fertilizer used by local farmers is the ashes of wood-burning or grass, and it is believed by local farmers to fertilize the soil before the planting process. In addition to burning ash, another type of organic fertilizer used by farmers is green foliage such as gamal leaves (*Gliricidia sepium*).

4.6.4. Labor capital

Based on the results of interviews with farmers in Topo, Kalaodi, and Gurabunga villages, it is explained that in one growing season, landowners do not need significant

capital for labor costs. This is because local farmers still apply the tradition of *galasi* in farming. The galation practice makes farmers do not need to think about capital considering in land use until the harvesting process is done in gotong royong. There is a tradition of *galasi*. Landowners only provide costs for the consumption of working members. The wages provided by landowners in the harvesting process are to give a little harvest obtained to each member of the *galasi* group formed since the time of the land-use plan.

Relying on the tradition of *galasi*, with the application of the cooperation system, can economically benefit members involved in farming groups and have the same rights and obligations. Actors or members no longer incur costs but with reciprocal services to reduce production costs, increasing farmers' incomes.

4.6.5. Labor Factors

The number of workers needed in new land management in farming activities with the most significant digit is 6 to 7 people. This is very much related to the Galatian tradition applied by local farmers. The amount of labor will help each other in farming activities, from land use or new land clearing to the harvesting process. The number of 6 to 7 people is determined to do the turnaround does not take a long time.

Local wisdom based on family and mutual spirit helps each other in the farming activities of the local community not only maintains relations and maintains solidarity between farmers but can also reduce production costs in new planting land-use activities to the harvesting process, which can increase farmer's incomes.

4.7. Strategic to maintain local wisdom in support sustainable agricultural systems

4.7.1. Strenght

1. Have strong social ties in the customary institutional system
2. There is local wisdom in agricultural activities in the form of *galasi* traditions and *paca goya* traditions.
3. The practice of agroforestry in farming.
4. The use of traditional tools in land management can save costs.
5. Plant keepers by using natural pesticides such as using sombar leaves and rangrang ants to repel pests disturb there are cultivated plants.

4.7.2. Debilitation

1. Rules that are applied customarily in oral or unwritten form.
2. The development of modern technology can change the mindset of farmers in the use of modern technology.
3. Lack of community participation or the younger generation who continue and maintain local wisdom for generations.
4. Lack of attention of local authorities in supporting and developing, and even maintaining local wisdom.

4.7.3. Chance

1. The values of local wisdom are in the form of traditions still maintained by the local community.

2. It was strengthening the ropes between all by mutually gotong royong in village activities. Its attraction to tourists to know the local wisdom and community traditions.
3. It is maintaining and preserving nature by not damaging the heart because of the assumption that there are subtle creatures.

4.7.4. Threat

1. Outside cultural influences and modernization within the agricultural sector are influencing farmers to adopt modern farming methods.
2. The diminishing interest of the younger generation to plunge into agriculture.
3. Poverty can affect farmers with actions that are contrary to existing rules and norms.

5. Conclusion

Based on the results, discussion and analysis of data concluded as follows: Farming activities in the people of Topo, Kalaodi, and Gurabunga in its implementation rely on local wisdom in the local area. Includes gelation traditions in the use and cleaning of new planting land. Trust in the unlucky day (range nahas) for the determination of time in starting farming activities. As well as carrying out the paca goya tradition during post-harvest. Factors that affect agricultural productivity include land utilized, capital needed, and the availability of labor intended for farming activities. Some factors that affect agricultural productivity are also carried out following local wisdom trusted by local communities to increase the productivity of farm products. Srategimaintaining a sustainable farming system based on local knowledge can be done by strengthening social ties of community and traditional institutions and maintaining the values of local wisdom that are still held by involving the government in giving birth to written rules.

References

1. Adi, M. and Aini, N. (2018). Pengaruh Jenis dan Tingkat Konsentrasi Pupuk Daun Terhadap Pertumbuhan dan Hasil Tanaman Terong (*Solanum Melongena L.*), *Jurnal Produksi Tanaman*, 6(7): 1473–1480.
2. Akbar, M. (2016). Pertanian Indonesia Syarat Unsur Budaya. *Republika.co.id*.
3. Alpis, D. O.; Sayamar, E. and Kausar (2016). Analisis Kearifan Lokal Petani Padi Ramah Lingkungan Di Desa Sungai Manau Kecamatan Kuantan Mudik Kabupaten Kuantan Singingi'. *Jom Faperta*, 3. doi: 10.13837/j.issn.1006-8309.2012.01.014.
4. Amanila, Diliwanto, S. and Purnaweni, H. (2018). Formulasi Kebijakan Perlindungan Lahan Pertanian Pangan Berkelanjutan di Kabupaten Karawang. *Jurnal Manajemen Dan Kebijakan Publik*, 3.
5. Carson, R. (1990). *Musim Bunga Yang Bisu*. Pertama. Edited by B. Kusworo. Jakarta: Yayasan Obor Indonesia.
6. Dewi, N. L. P. R.; Utama, M. S. and Yuliarmi, N. N. (2017). Faktor-Faktor Yang Mempengaruhi Produktivitas Usaha Tani dan Keberhasilan Program Simantri di Kabupaten Klungkung. *E Jurnal Ekonomi dan Bisnis*, 2: 701–728.
7. Endraswara, S. (2016). *Metode Penelitian Ekologi Sastra: Konsep, Langkah dan Penerapan*. Yogyakarta: Center for Academic Publishing Service (CAPS).

8. Fadlina, I. M.; Supriyono, B. and Soeaidy, S. (2013). Perencanaan Pembangunan Pertanian Berkelanjutan (Kajian tentang Pengembangan Pertanian Organik di Kota Batu). *J-PAL*, 4(1): 43–57.
9. Ginting, P. and Harahap, F. (2016). Analisis Pengetahuan Lingkungan Berbasis Kearifan Lokal pada Pola Pemupukan, Pergiliran Tanaman dan Kebersihan Ladang Masyarakat di Kabupaten Karo dan Kabupaten Deli Serdang. *Jurnal Pendidikan Biologi*, 6(1): 221–229.
10. Holilah, M. (2015). Kearifan Ekologis Budaya Lokal Masyarakat Adat Cigugur Sebagai Sumber Belajar IPS. *Jurnal Pendidikan Ilmu Sosial*. 24(2).
11. Keraf, S. (2010). *Etika Lingkungan Hidup, Kompas Media Nusantara*. Jakarta: Kompas.
12. Kurima, Y. (2016). Motivasi Petani Dalam Pengelolaan Usahatani Padi Berbasis Kearifan Pada Daerah Aliran Sungai (DAS) di Kecamatan Kuantan Kabupaten Kuantan Singingi'. *Jom Faperta*, 3(2): 1-13.
13. Kurniasari, D.; Cahyono, E. and Yuliati, Y. (2018). Kearifan Lokal Petani Tradisional Samin di Desa Klopoduwur, Kecamatan Banjarejo, Kabupaten Blora', *Habitat*, 29(1): 33–37. doi: 10.21776/ub.habitat.2018.029.1.4.
14. Makhfath, A. (2014). *Valuasi Ekonomi Sumber Daya Lahan Pertanian 'Zona Lahan Abadi Untuk Tanaman Padi' Di Desa Jatiluwih Kabupaten Tabanan*. Universitas Gadjah Mada.
15. Marfai, M. A.; Rahayu, E. and Triyanti, A. (2015). *Peran Kearifan Lokal dan Modal Sosial Dalam Pengurangan Risiko Bencana Dan Pembangunan Pesisir*. 1st edn. Yogyakarta: Gadjah Mada University Press.
16. Mariane, I. (2014). *Kearifan Lokal Pengelolaan Hutan Adat*. Jakarta: Rajawali Pers.
17. Mawaddahni, S. (2017). Filosofi Hidup sebagai Wujud Kearifan Lokal Masyarakat Adat Kasepuhan Sinar Resmi. *Local Wisdom*, 9(1).
18. Mulyadi, and Iyai, D. A. (2016). Pengaruh Nilai Budaya Lokal terhadap Motivasi Bertani Suku Arfak di Papua Barat. *Jurnal Peternakan Sriwijaya*, 5(1): 18-29. doi: 10.33230/jps.5.1.2016.3916.
19. Niman, E. M. (2016). Kearifan Lokal Dalam Upaya Pelestarian Lingkungan Alam. *Jurnal Pendidikan dan Kebudayaan Missio*, 11(10): 91-106.
20. Nurlaeny, N. (2013). *Peran Bahan Organik Tanah Dalam Sistem Pertanian Berkelanjutan*. Bandung: Unpad Press.
21. Pinantyo, M. F. (2016). Teknologi Membuat Manusia Merusak Alam. *Tribunnews.com*.
22. Ruhimat, I. S. (2015). Status Keberlanjutan Usahatani Agroforestry Pada Lahan Masyarakat : Studi Kasus di Kecamatan Rancah, Kabupaten Ciamis, Provinsi Jawa Barat. *Penelitian Sosial Ekonomi Kehutanan*. 12: 99–110.
23. Shiva, V. (1998). *Bebas Dari Pembangunan*. Jakarta: Yayasan Obor Indonesia.
24. Sufia, R., Sumarmi and Amirudin, A. (2016). Kearifan Lokal Dalam Melestarikan Lingkungan Hidup (Studi Kasus Masyarakat Adat Desa Kamiren Kecamatan Glagah Kabupaten Banyuwangi). *Jurnal Pendidikan*, 1: 726–731.
25. Sukari, Purwana, B. H. S. and Mudjijono (2016). *Kearifan Lokal Dalam Membangun Ketahanan Pangan Petani Di Desa Lencoh, Selo, Boyolali, Jawa Tengah*. Yogyakarta: Balai Pelestarian Nilai Budaya.
26. Sukmawati, F. N. and Zein, Z. (2016). Pemanfaatan Abu Dapur Sebagai Media Tanam Pembibitan Kakao (*Theobroma cacao*). *Gontor Agrotech Science Journal*.

- 2(2): 1-16. doi: 10.21111/agrotech.v2i2.728.
27. Susilo, R. K. D. (2014). *Sosiologi Lingkungan*. 1st edn. Jakarta: Rajawali Pers.
 28. Tiaraputri, A. and Ledy Diana (2017). Kearifan Lokal Masyarakat Melayu dalam Perlindungan dan Pengelolaan Lingkungan Hidup di Kabupaten Kuantan Singingi. *Riau Law Jurnal*, 1(1): 73-82.
 29. ****Undang Undang Republik Indonesia Nomor 23 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup* (no date).