

Existency, Role and Fading Local Wisdom of Tidal Farmer Community in Ciamis Regency

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Abstract. The comprehensive and most successful modernization of agriculture in Indonesia occurs in rice farming, including its institutional aspects. In reality, in Lakbok District, local wisdom still plays an important role in rice farming in Tidal rice fields. This study aims to determine the existence and role of local wisdom in lowland rice cultivation in Tidal rice field and to find out the fading of local wisdom in the lowland rice farming system in Lakbok, Ciamis Regency. This qualitative research method and case study technique are conducted on indigenous people in Lakbok District, Ciamis Regency during 2018-2020. Four traditional leaders are selected as informants and interviewed in-depth, and 47 rice farmers are involved in the focus group discussion. Primary data are collected, selected, and coded, then analyzed dialectically and constructed visually into internalized patterns. The results reveal that local wisdom exists in the form of planting schedule (when to seed, plant, and harvest), water management, planting (cultivation techniques), land management and inheritance, harvest management, and post-harvest handling. These local rules that have been passed down from generation to generation are institutionalized collectively regarding traditional leaders (*kasepuhan*). Local wisdom exists and plays a role in the management of lowland rice farming systems and assists farmers in managing water, stabilizing production/productivity, and maintaining the integrity of paddy fields. However, its existence is increasingly eroded in the whole rice farming system (agribusiness). The recommendation is that the sustainability of local wisdom is largely determined by regeneration, internalization, and protection processes.

Keywords: *local wisdom, farming community, tidal swamps/paddy field*

Introduction

Comprehensive agricultural modernization that is considered the most successfully implemented in Indonesia occurred in rice farming. Historically, the process of social engineering begins with the creation of new farm institutions in a rural area, such as the agricultural extension center, farmer groups, water user farmer association, village unit cooperatives, village community barn, business units of village, agricultural equipment services, rice milling

business group, seed breeder, pawn rice, logistics agency, warehouse receipts, and others. These institutions are constructed as a channel to distribute inputs, whether chemical fertilizers, pesticides, farm credit, machine tools, improved seed, cultivation, and information technology. In addition, several institutions are also used for the distribution of production results.

Through social engineering and engineering cultivation technology, the behavior of rice farmers and their farming

has become very modern. Planting intensity (IP) and productivity of rice farming increased several times. Planting intensity (IP) increased from the original 1-2 times/year to 3-4 times per year. Productivity increases of only 2-3 tons per hectare to 5-6 tons per hectare. Miraculously, it only took 18 years (1967-1984) since the Green Revolution program was adopted, Indonesia which had previously been the world's largest rice importer country, changed into a self-sufficient country in rice in 1984. This miracle was recognized by the world, so that in 1985, the then President of the Republic of Indonesia, Suharto, received an award from the FAO in Rome, Italy.

Intensive and comprehensive implementation of modernization of production inputs, cultivation techniques, product processing, infrastructure, and institutions of rice farmers in Indonesia was followed by negative implications, such as land saturation, environmental pollution, and marginalization of local rice culture. These include the erosion of local biodiversity, local rice varieties, local knowledge, local technology, local institutions, local traditions, and local creations.

Strictly, in just 18 years, the local rice culture was reduced from the social system and ecosystem paddy rice field by modern paddy culture. The modernization of agriculture and the green revolution is still ongoing today. If in 1985 (18 years) after the green revolution there were so many local rice cultures were reduced and eroded, even more so in 2020 (after 53 years). Spatially, as the number one center for national rice production and a food buffer for the capital city, West Java is the province with the most sporadic adoption of agricultural modernization. It has become a pilot zone and a show window for rice farming innovations for other rice development centers in Indonesia. The implication is the degradation of the environment and local rice culture, social change, and transformation of agriculture in West Java that became explosive.

In contrast with the change of rice farming in the whole area of West Java which is sporadic and explosive, in the district Lakbok of Ciamis Regency, the rice farming culture still exists as local wisdom, either in the rules, knowledge, technology, institutional and local varieties. The strong color of local culture is evident from the

existence and functioning of ceremonies, ordinances peasants, granary, and land management.

Aki Tasim (traditional leader) revealed that "Although the rice farmers in Lakbok open to a variety of agricultural technologies from outside, but farming still comply with local regulations and customary rules". This is a unique, specific, and nominal (noumena) reality regarding agriculture. The proposition is, if local wisdom exists in a closed indigenous social system (such as Kampung Naga Tasikmalaya, Kasepuhan Sukabumi Selatan, Baduy Banten Kidul and Cigugur Kuningan) then that is normal. But when local wisdom exists in the Lakbok farming community which is open to the outside world and agricultural modernization, it becomes extraordinary. How can the local farming culture survive in the open and multi-ethnic Lakbok society (Sunda Java and Bugis)?

Geographically, Lakbok District is a fertile agricultural area located in the lower reaches of the Citanduy River. It is a sub-optimal agricultural area whose land and agricultural activities are strongly influenced by the tides of seawater and the Citanduy River. Dusin (Chairman of the Sirimukti Farmers Group) said "Farming rice in the Lakbok swampland is like a gamble, luck, and hope because success and failure are affected by floods that can come at any time during the rainy season". Because of this, planting can be done many times, but the harvest is only one time, or even zero if the flood comes earlier than calculated. Extreme climate change and government intervention in regulating floodgates have made farmers' calculations no longer precise. Flood, receding and normal times are no longer as regular as they used to be. The irony is that the paddy fields in the Lakbok swamp can only be produced during the dry season. Interestingly, although rice farming is like a "gamble", farmers still "Istikomah" (steadfastness and consistency) to plant rice. Theoretical perspective considers that the success and failure of suboptimal land management efforts are influenced by many factors, especially the socio-cultural aspects of the suitability of the local community (Lakitan and Gofar, 2013).

The collective perspective of Fukuyama (2001), Uphoff (2002), and Grootaert (2004) views that the values contained in local wisdom are social capital. Its existence is in the form of norms, the principle of mutual

trust, reciprocal relations, collaboration, networking, and participation. The relationship of mutual trust and the principle of sharing can be considered as a bridging and bonding cooperation in collective activities, both participation, and collaboration. If it occurs in a community, then the relationship can create networking, collaboration, and participation between individuals who know each other and who do not know each other in the same social structure. Fukuyama (1995), Florida (2001), Howkins (2002), and Christensen et al. (2006) asserted that in the era of economic, creative industry and disruptive like the present time, community-based sharing and collaboration mechanisms find the momentum, both in urban and rural areas.

Local wisdom plays an important role in natural resource management. The interaction process can live and run for several generations (Sirait, 2005). The availability and sustainability of natural resources are determined by the wisdom factor as a manifestation of the hidden wisdom of the local community and are believed to be true, good, and useful for their lives. Local wisdom is all forms of knowledge, belief, understanding, and customs (ethics) that guide human behavior in life in ecological communities. All these forms of local wisdom are lived, practiced, taught, and passed down from generation to generation to form a pattern of relationships between human beings, nature, and God (Capra, 2001; Keraf, 2005). Local wisdom is a way of life, knowledge, and strategies in responding to various problems and needs.

If local wisdom is seen properly and promoted, it can be a very good source of knowledge. It can be information and guidelines for the development of the quality of life of the community. However, Setiawan et al. (2017) remind the movement of certain community groups that generate local wisdom and culture with the aim of commercialization, the creation of capitalism, and the camouflage of local wisdom. Social, economic, and ecological wisdom which is currently developing into local wisdom of sustainable agricultural management, is an attitude and action taken in agricultural management based on the conditions and experiences that the community has had in overcoming and adapting to environmental conditions in the location (adaptation). These attitudes or actions are generally wiser and of good value, so that the communities

are followed and passed them down from generation to generation. This paper aims to (1) determine the existence and role of local wisdom in the management of lowland rice farming in Tidal lands, and (2) to find out the fading of local wisdom in the Tidal rice farming system in Lakbok.

Research Methodology

This interpretive paradigm research is designed qualitatively using case studies and historical methods (Robson, 2005, Yin, 2008). The research was conducted in the Lakbok swamp farming area, Lakbok District, Ciamis Regency, Jawa Barat (West Java) Province. The selection of research locations was carried out purposively with the consideration that in the social system and ecosystem of lowland rice farming in Lakbok, local wisdom is still unique and important to preserve because it is related to the life and sustainability of rice farming culture in Tidal swampland. The Lakbok Swamp is the only remaining swamp on the island of Java. The primary data is obtained through field research from informants or community members who have lived in the research area for a long time. While secondary data is obtained through a search of library materials (books, documentation, and report materials) that exist in communities, groups, institutions, agencies, and regional apparatus related to this research. Secondary data include various things, such as geographical and demographic situations, socio-economic and cultural conditions of the research area, ecosystem conditions, sociosystems, and geosystems. Information about these things comes from sources at various institutions, including technical agencies within the government Ciamis Regency.

The primary data is obtained through the technique of in-depth interviews, focused discussion, observation, and documentation of the process. According to Robson (2005), the data used in qualitative research is also called triangulation data, namely data collected in several ways: observation, in-depth interviews, focused discussions, and document analysis. To analyze the data and information obtained, an inductive technique with an interpretive or hermeneutic approach is used (Moleong, 2010; Creswell, 2005). Concerning data processing and analysis techniques, five components of inductive research stages are used, starting from data collection, data selection, data reduction,

data presentation, data formulation, and data verification (Robson, 2005; Neuman, 2001). The data presented (synthesis) is then analyzed (compared, clashed) with theories from references (antithesis), so that a sharp analysis result (synthesis) is obtained.

The triangulation technique is also used to verify the validity of data, especially to (1) compare the results of observations and interviews; (2) compare what people say in public with what they say in private; (3) compare the current state and perspectives of a person; (4) compare the research situation and the situation all the time, and (5) compare the results of interviews with the contents of a document. Furthermore, inductive analysis is conducted through the process as follows: (1) a deeper analysis of the various data that have been grouped into themes and categorization; (2) describe each theme into a specific explanation; (3) deepen the explanation in each categorization; (4) form the meaning of various data which has been researched for deepening the analysis; (5) interpretation is carried out based on literature references related to the focus of the analysis to obtain scientific validity and reliability accentuation; and (6) apart from visible findings, the qualitative report disclosed is also accompanied by non-visual information related data and references.

In particular, hermeneutic techniques are used to find out the history of rice culture, local wisdom of rice farming, and the dynamics of unique swampland in Lakbok District based on records (Ciamis historical documentation) since the days of the Galuh Kingdom until now. The stages are as follows: (1) the selection of a topic. According to Sager (2015), this stage is identical to the definition of a subject which depends on the interests and assessments of the researcher. According to Kuntowijoyo (2013), topics should be chosen based on emotional closeness, intellectual closeness, and research plans; (2) data source collection (heuristic), data gathering, and classification or transcription of the stages into written form (Spilackova, 2012). Data can be sourced from primary, secondary, official records and personal material; (3) verification (the stage of proving and investigating historical sources which are often referred to as historical criticism, source criticism, or data validity). Kuntowijoyo (2013) asserts that there are two kinds of verification, namely authenticity (authenticity of sources) and credibility (the level of reliability of sources);

(4) interpretation: analysis and synthesis. Analysis refers to elaboration, while synthesis refers to unification (Kuntowijoyo, 2013). Interpretation activities are carried out by researchers after the discovery of historical facts or historical sources that can be trusted (credible). Rachmat et al, (2018) concluded that the interpretation is an activity to interpret the facts that are verbal and factual to be written in the stage of historiography; and (5) History writing (historiography, is an imaginative reconstruction of the past based on data obtained by going through the process. Kuntowijoyo (2017) called this process chronology. Through a chronology, historical events are arranged so as not to become chaotic (Alian, 2012).

Results and Discussion

The Existence and Role of Local Wisdom in Rice Farming System in Tidal Paddy Field of Lakbok District

Lakbok is an area where most of its territory is in the form of Tidal marsh ecosystems on suboptimal land. Lakbok swamp is the only remaining peatlands in Java. According to Government Regulation No. 27 of 1991, the swamp is a natural puddle of water that occurs continuously or seasonally due to obstructed natural drainage and has special physical, chemical, and biological characteristics. Swamp Lakbok is categorized as "Lebak marsh" because although it is close to the mouth, the puddle just Tidally influenced overflowing freshwater from Cintaduy River. Besides granary, swamp Lakbok also becomes a source of animal protein (fish) for the surrounding communities, especially in the post-season.

The problem, according to farmer D (50 years old) is "Since the hand tractor is used massively by rice farmers in Lakbok in the last ten years, the structure of peat is also eroded so that the layer is thinning. The implication is, when the tide is high, the puddles get deeper because the surface of the swamp is no longer raised to the surface (floating)". This confirms that the existence of peat is under threat". In fact, in the last 10 years, rice farming has become increasingly vulnerable to flooding and crop failure has intensified.

In addition to the depletion of the peat layer, the Tidal inundation in the Lakbok swamp is also influenced by increasingly extreme climate change, which does not

only affect the water discharge of Citanduy River in the rainy and dry seasons, but also the Tidal water of the South Coast as the mouth of the river (Khais, 2020). In addition, the Tidal marsh Lakbok is also influenced by the precision and accuracy of the opening and closing of the sluice. Farmers C (63 years old) revealed "(It) is already a collective agreement, if the tide swamp water, the clerk immediately opened the floodgates disposal (suppletion), and the rice farmers are saved until the harvest". The problem is, if the sluice opened, water will flow to the south and flood rice paddies in the District Kalipucang and Padaherang. Initially, it is considered normal as natural risks and the form of risk sharing, but with the extreme climate change, the water not only flooded rice fields but also settlements and roads. The implication is traffic to and from Pangandaran Regency becomes obstructed. Socio-economically, inundation not only thwarted harvests in Kalipucang and Padaherang but also stopped the economy in Pangandaran Regency. Because of this, the political economy intervention was carried out by closing the drain gate when the tide came in and sacrificing the paddy field of the Lakbok swamp farmers. It was a rational choice done for the socio-economic values, namely making small sacrifices to save a larger area (the southern region).

Since the agricultural modernization implemented by the government in the Ciamis Regency, rice farmers in Lakbok adopt some adaptation strategies as follows: first, adopting rice varieties that are faster to harvest and resistant to flooding, such as *inpari*, in addition to local rice; second, cultivate paddy fields earlier and faster by using special tractors, even though it has an impact on the loss of the peat layer; and third, continue to apply the old pattern with the risk of flooding and crop failure. For this group of farmers, farming is like "gambling", where the sustenance should be immediately picked, otherwise it will be flooded before harvesting. Although it sounds irrational, they remain "Istikomah" to plant rice that way. Farmers plant rice more than once or twice, but the harvest can only be carried out once, or even not at all due to the flood. The irony is that there are food crops other than rice that can be productively cultivated on peatlands, such as corn and soybeans (Malta, 2011; Noor, 2010). If the harvest fails, they still have food reserves in the barn or work as harvest workers in areas that are

not flooded, either in Lakbok or Cilacap. Ideally, because they were sacrificed, they should have received incentives from the government (insurance) and the benefited regions (willingness to pay), but in fact, they did not. All attempts of adaptation are performed by the farming community in Lakbok because of a love of food, love for and commitment to the promised land agreed with Regent R.A.A Wiratanuningrat since its inception.

The rice fields in Lakbok have become private property, but are managed collectively with a customary system that persists to this day. It is very rare to find land change ownership of one family in Lakbok because, in addition to the collective agreement (customs rules), it is also a form of obedience to the promises of their predecessors made with the Dalem Kangjeng R.A.A Wiratanuningrat Tasikmalaya. The agreement was established shortly before the opening of the first rice field in Rawa Lakbok in 1923-1926 (Falah, 2010; Lubis, 1998; Hardjasaputra, 1985). That is, historically, rice farming is relatively new in Lakbok. Agriculture is placed on the collective agreement of the community with the Regent of Tasikmalaya. One of the contents of the agreement is "land already owned may not be traded and must be productive".

The full contents of the agreement are as follows: first, they must conform to the customs of the Sunda; second, land that is already owned cannot be sold at all and must be properly maintained; and third, they must be diligent farmers and obey the laws of the country. On development, customs of Sunda culture institutionalized in the society of Lakbok farmers. Farming in swampland (peat) is different from rice fields in general because it must be adaptive to the tides. Prey systems are used primarily to determine when farming begins, although their application is increasingly difficult to expect in conditions of extreme climate change. In general, rice farming on peatlands is carried out before the dry season or when the waterlogging begins to recede. If the calculation is not accurate, then the rice plants could be flooded before harvesting. This trend is intensifying as the climate changes.

In addition to timeliness, farming in peatlands is also determined by the culture and cultivation techniques. Farming in this agroecosystem is special so that it requires

local knowledge and technology (tacit knowledge). Indigenous people place the environment (ecological) as a source of values and ideals (truth). Modern rice cultivation technology is adopted, but the value of local wisdom remains dominant. Farmers in Lakbok District are rich in information and experience, and the application of science and techniques related to lowland rice cultivation in Tidal land. Seeding is done in waves, starting twenty days before the processing of land. The hatchery is designed to be wider, twice as much as needed. This is done as a form of anticipation (mitigation) against the possible arrival of the tide that can turn off the rice plant at any time. Seed reserve is designed as a form of mitigation of climate change impacts that can result in stagnant and dead plants. The implication is that farmers can plant rice many times. For farmers of Lakbok, there is no such thing as giving up. As long as opportunities exist, they will continue to plant the rice. It is not resigned, nor irrational, but there was value and mental strength.

The value in question is local standards, concerning the actions and attitudes that determine who Lakbok farmers are, how they live, farm, and treat the services (sacrifice) of the pioneers of rice farming in Lakbok. Local values are preferences that are reflected in the behavior of Lakbok farmers, so that they will do or not do rice farming depending on the values they hold.

Values born from collective agreements, whose existence and implementation are guarded by the Customary Chief. Value is always associated with kindness, wisdom, and magnanimity as well as being something that is appreciated, respected, and realized in life so that they feel satisfied. Through values, humans become humanists, namely real humans, humans who humanize humans. Therefore, for rice farmers in Lakbok, farming is not just a matter of stomach fulfillment, productivity, and income, but it also has the main function to carry out the mandate, which is *istikomah* in living life and continuing to fulfill needs (subsistence).

The *istikomah* of rice farmers in Lakbok is based on morality and rationality. The one-hand is responsible and the fulfillment of the needs on the other hand. Farmers E (56 years old) asserts that "It is better to hope than none at all; true that the risks and uncertainties of nature are getting higher, but efforts should still take precedence, of

course, accompanied by prayer. For farmers, all changes are dynamics of life, while planting is needed to fulfill needs and continue life". Samuel Popkins' social rationality and economic rationality of James Scott did not adequately attach the rice farmers in Lakbok. Although the ecological rationality had long been attached (internalization), but now it is no longer adequate to face extreme climate change and policies that do not take sides. Now all rationality is inadequate, so hope remains in the inherent morality and is reinforced by custom. The modern technology introduced is not immediately adopted, but understood and assessed by the community, so that it does not reduce wisdom and strengthen local resources.

In real terms, the Lakbok farming community still has local rice seeds, local rice cultivation techniques, local knowledge and technology, local institutions, and traditional ceremonies related to rice. First, the superior local rice seeds that are widely used by Lakbok farmers are the Ngaos varieties, especially the Wulungsari, Temonsari, Mawar, Sriayu, Nilamsari, and Srikuning varieties. The seeds are not only adaptive to the tide but also have higher, sturdier stems, resistant to pests (especially slugs), and are more resistant to flooding. Local rice seeds have been developed are seed varieties of local rice brands Ngaos Futra Lakbok F2. As a form of mitigation, the seeds are planted at an older age (about 25 days after planting) with the height of 105-125 cm; and as a form of flood, the seeds produced twice that of necessity. In addition to local seeds, farmers also cultivate several types of conventional rice, such as Inpari, Cilamaya, Muncul, Sintanur, Kabir 07, Mekongga, Cihorang, and Bagendit.

Second, rice cultivation practices and techniques in Lakbok are different from ordinary rice fields. When is it to start and how to cultivate the land, sow seed, plant, weed, fertilize and harvest? Only those who know, understand, and have experience can answer that. In practice, they obey the advice of traditional leaders, which refers to the prey system (Table 1) and the calculation of auspicious days. Even though the land is flooded, the farmers know the boundaries of their land for sure. The technique is they make the boundaries of the rice fields by planting hanjuang trees so that when water inundates the rice fields, the boundaries of the rice fields will not disappear. Adat/custom recommends cultivating the land

Tabel 1.
Prey Institution Calendar in Lakbok

Month (Masehi/ Local)	Farmers Activities in the Land						
	MT1			MT2			MT3
	Spread	Plant	Harvest	Spread	Plant	Harvest	catching fish
January/ Kapitu							
February/ Kawolu							
March/ Kasongo							
April/ Kasapuluh							
May/ Kasawelas							
June/ Karolas							
July/ Kasiji							
August/ Karo							
September/ Katelu							
October/ Kapat							
November/ Kalima							
December/ Kanam							

using a hoe since it maintains a shallow and soft fertile soil layer, in addition to preserving peat. As a form of mitigation, the seeds are planted at an older age (about 25 days after planting). Seeds are produced twice as much as needed, both as a reserve for embroidery and in anticipation of possible flood threats.

If 15-20 years ago the use of prey systems was very accurate, then with extreme climate change it is now difficult to implement it precisely. If initially, the sowing, planting, and harvesting date ranges could be accurately determined, it is now difficult to apply the same thing again. It is not only the time, intensity, and duration of the rain that are difficult to predict, but also the rainfall. Lanina and Elnino make prey structures unreliable.

According to the traditional leaders (K) "If the tides and low tides used to run slowly, now they can come sooner and faster. The issue is in the rainy season tide occurs directly so that flood instantly hit farmers' rice". Since the rainy season and the dry season is uncertain (extreme), a period of low and high tides swamp water is difficult to guess. Likewise, with a good day, it is also hard to predict its accuracy. Previously, the original calculation using the reference of Sri, *lungguh*, Dunia, Lara and Pati was still can be applied, but now it is hard to do that. Usually, a good time to plant rice is done on Haru Sri. In some locations, adat also arranges time to repair traditional waterways as well as tertiary canals built by

the government. Repair and maintenance of waterways are usually carried out twice a year in February and August.

Third, knowledge and technology of rice farming in Lakbok are only carried out by local farmers who know and understand it by experience, which evolved from generation to generation and cultivate by custom. The custom patterns are used for seeding, land management, maintenance, pest control, and harvesting. Indigenous advocate the use of local seeds (Ngaos), manually preparing the land, planting it (including by boat at certain locations), applying friendly pest control (integrated), and harvesting in a participatory manner. Unlike the usual rice fields, irrigation is not the main requirement as exhaust duct (outflow) water is more important. Rice farming is only done when the marsh water receded. At high tide, farmers reap the benefits of catching fish. According to custom, fish are only caught for daily needs, not for commercial purposes. The main message is the indigenous keep the fish sustainable and not exploit it. Food needs in this period were obtained by farmers from labor (*ngebawon, nyeblok*) in the fields of farmers that are not stagnant or in other areas (Ciamis, Banjar, and Cilacap).

Fourth, local wisdom (custom) also exists and plays a role in land management. Administratively, the land is still owned by each farmer household, but eco-sociologically, the land is maintained as communal property under customary rules.

Therefore, selling land to outsiders is taboo. The land is only permitted by adat to change hands from one household to another in the family who remains in Lakbok. The main message is that land is only allowed to change hands to family members who are also farmers.

Thus, the land will continue to be productive and farmers will continue to regenerate. Customary also play a role in land management, especially related to the use of local knowledge and technology. Custom is not meant to hinder the adoption of modern technology, but to be aware of its implications such as the use of tractors that erode the peat layer and make some land do not float at high tide. If it happens, water will quickly flood the plants and fail the harvest. Chemical pesticides are also not recommended by adat because they can kill various types of fish in Lakbok swamp. Strictly speaking, adat wants to maintain balance, harmony, and sustainable agriculture.

Fifth is the use of local wisdom in managing farm products. Customary in Lakbok arranged harvest storing of grain in the barn (*leuit*), either in *leuit* households, *leuit* families and *leuit* communities. The goal is for all community members to realize that fulfilling the necessities of life is the main goal of rice farming. Others are keeping the food security of all levels of the community as a form of community mitigation in facing any bad possibilities (failed crops, food shortages in the market, and others). Custom realizes that farming in the Lakbok swamps is full of risks and uncertainties, especially with the increasingly damaging environment and extreme climate change. Customary also set when to store and unload the barn. Storing grain is done by farmers shortly after the harvest is completed and the grain is dried optimally. Only a portion of grain was stored, while others were sold as the next production capital. Grain in the granary only is issued (sold) when it enters the next harvest season. The contents of the barn are replaced when there is certainty about the harvest for the next planting season. Grain issued mostly used for seed and consumption, and the rest is being sold.

The Fading of Local Wisdom and Changes in Rice Agricultural Systems Updated in Lakbok District

As previously discussed, custom does not prevent the Lakbok farming community from developing modern knowledge and

technology. Various stakeholders, especially the government, are also permitted to introduce modern rice farming systems. There is a conflict between customary that wants to protect local knowledge and governments that want to increase the productivity, intensity, efficiency, and incomes of Lakbok farmers. Extension Agent X (50 years) revealed "Until the year 2000, people of Lakbok still applied the values of local wisdom, thus it becomes imperative for officers or agricultural extension field to adjust the behavior and habits of farmers who are still bound by local knowledge and technology".

One form of adjustments made by the agricultural extension is to involve traditional leaders or kasepuhan in Lakbok in determining the growing season, the use of external inputs (seeds, fertilizers, pesticides, machine tools), and farmer groups. Indeed, not just the extension, the researchers were also charged to apply the adaptive and participatory approach. One of the local wisdom adapted by extension workers is how to determine the planting season by using *pranata mangsa*. This wisdom is considered important since it is based on the results of an analysis of environmental conditions carried out for years.

Other local wisdom adapted is planting and fertilizing techniques on flooded land.

On the development, when local wisdom faded, *pranata mangsa* is no longer adequate to be adopted and local technology is not reliable because of the following factors: first, the watershed of Citanduy deteriorating so that water discharged and flood are higher in the rainy season, triggering more quickly and intensive floods, making the Lakbok swamp inundated that thinning and deepening peat layer. Human labor is still used, but rapid land cultivation is increasingly needed so that farmers use tractors. They also use short-lived and puddle-resistant rice seeds and stimulate their growth by giving chemical fertilizers; Second, the increasingly extreme climate change that triggers floods, drought, and pests to attack more. Short-lived swamp rice seeds that are adaptive to flood and pests resistance become farmers' choices in farming. Pest attack was resolved by using instant synthetic pesticides; Third, the policy of modernization of agriculture and social engineering is conducted more intensive by the government through agricultural

extension and various media (mass, social, and group), so that slowly but surely farmers adopt the inputs beyond the practical and reportedly superior to local ones, especially chemical inputs and industrial product seeds; and Fourth, changes in the behavior of farmers farming is also influenced by the culture surrounding farmer, market promotion, the city requests, demands (mainly installment of the vehicle), capital, policy and urging increased production from field officers.

The implication is that in the last twenty years, the fading of local wisdom and changes in the behavior of lowland rice farmers in Lakbok has been quite significant, especially in cultivation techniques. The adoption of chemical fertilizers, superior seeds, and tractors has been institutionalized in the Lakbok rice farming community. The use of pesticides is increasingly institutionalized but obviously could threaten the microbial life in the swamp Lakbok. However, some rice farmers try to implement organic rice farming with the system of rice intensification (SRI), but the practice is not sustainable. Ecologically, organic farming is more suitable for preserving peat swamps in Lakbok. Economically, the demand for organic rice from local and export markets is also high (Ivan C and R Mardiah, 2020). Some farmers are trying to implement a floating rice system (floating farm) using canoes and rafts from bamboo. But again the practice does not continue, even though it can be a solution to continue to use paddy fields during the high tide season.

In real terms, the local color is still attached to rice farming in Lakbok, but its presence in the social system of farmers has been dwindling. Local wisdom and local rice culture are only strong in certain activities and certain rice farming subsystems, while others have faded (modern). Adoption of innovation has proven to improve the productivity of paddy farmers, but it is risky to change the balance of the ecosystem and moral farmers farming. All parties must be impartial and act to safeguard the sustainability of social, economic, and ecological in Rawa Lakbok. Farmer T (35 years old) views that "In the future, the tides in Lakbok can potentially be monitored with intelligent technology and automation machines, but these efforts will not have much impact if the watershed is not repaired and discharge channel (suppletion) to the south is not opened by stakeholders".

Ideally, as a unique area in Java, peat swamp Lakbok sustainability should be maintained. It seems that the local wisdom of the Sundanese people (Bahagia et al., 2020; Permana, 2006; Adimihardja, 1999) such as "*lebak balongan, gawir awian, leuweung kaian* (valley should have a pond, cliffs should have bamboo as a guard, forests should have woods)" seems to be re-empowered in watershed communities Citanduy.

Results of the study (table 2 and table 3) show the detail of cultural fading and changes in the lowland rice farming system in Lakbok based on framework agribusiness system (Saragih, 2001; Gumbira Sa'id and Diamond, 2004). The thesis is that the lowland rice farming system in Lakbok is still local in color, but is increasingly modern (conventional).

The farming practice is still different from the lowland rice system in general, especially in the use of seeds, land processing, and harvesting techniques, but the inputs are starting to use industrial products. The more modern inputs being used, the thinner the layer of peat swampland of Lakbok. Farming in Lakbok is like rushing the adrenalin since it is getting more and more stressful. Farmers are like riding a "roller coaster", especially because they need to race with the tides of swamp water which becoming increasingly erratic. This is the side that rice farmers, in general, do not have. The colors of the swamp ecosystem and local wisdom still exist, but the conventional lowland rice farming system is increasingly institutionalized. Margaret M. Poloma (1998) calls it a contestation between products of internalization (tacit knowledge: local knowledge) and products of institutionalization (explicit knowledge: modern knowledge) which is introduced through agricultural modernization or rural industrialization. On the one side, Lakbok farming is still sticking to local agriculture (green evolution), while on the other side, it tries to do the agricultural revolution (green revolution).

Several local farming behaviors are still applied by Lakbok farmers in cultivating lowland rice in swamps, including:

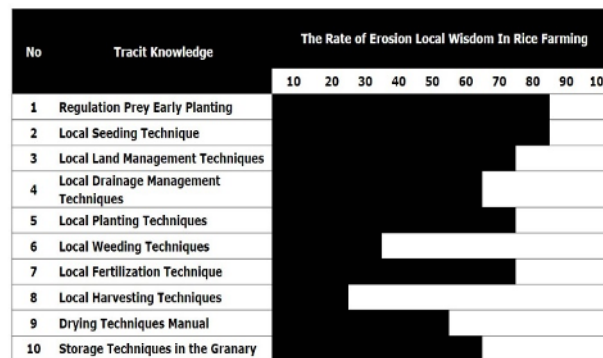
- (a) demarcation of paddy fields by planting hanjuang trees as a form of anticipating the loss of paddy field boundaries caused by flooding during the rainy season;
- (b) the application of plant schedule helps

Table 2.
The Fading of Rice Farming Culture and Changes in Tidal Rice Farming System in Lakbok

Agribusiness Subsystem	Rice Agribusiness in General	Rice Field Agribusiness based on Local Wisdom in Lakbok
<i>Upstream Agribusiness</i>		
• Tillage	Using a tractor	Using hoes and tractors
• Fertilizer Supplier	Using chemical fertilizers	Using chemical fertilizers
• Seed Provider	Industrial product superior seeds	Local seeds (Ngaos) that are bred by the community and traditional leaders, as well as superior seeds of industrial products
• Harvest	Using a threshing machine and sickle	Using jagged sickles and canoes (when inundated)
<i>On-Farm Agribusiness</i>		
• Rice Cultivation	Planting simultaneously based on agricultural extension unison or by cropping season calenda	To plant according to the direction of traditional leaders (use order of prey), water conditions (Tidal) and backward planting calendar (so as not to harvest in the month of Zulhijah and early Robuill); and when planting is completed, there is a performance of traditional ceremonies (duplicate storage of red pulp and white pulp in seven corners from the fields).
• Control plant pests and diseases	Using general knowledge, pesticides, and according to the instructor's directions	Using chemical pesticides and local manner according to the direction of traditional leaders. Historically, farmers rarely use chemical pesticides, the reason is to preserve fish resources in the swamp
<i>Down Stream Agribisnis</i>		
• Post Harvest Handling	Harvest is done in the daytime. Undertaking to thresh using a threshing machine. Drying unhulled rice manually and using a dryer	Harvesting at night. Threshing is done using curtained slams, either wooden or stone cushions. Unhulled Rice Drying is done by a base wall, plastic (tarpaulins), and bamboo (giribig)
• Marketing	Sold directly to dealers and middlemen in the fields	Mostly sold directly to middlemen. Most are stored in the barn and partly distributed to family members
<i>Off-Farm</i>		
• Group farmers	Farmer groups are formed by a top-down system. The chairman is chosen by the members of the group and instructor. Media is used by extension workers to introduce innovation.	Farmer groups are formed by a bottom-up system. The chairman is a traditional leader and its members must obey and obediently carry out what is agreed and ordered to support rice cultivation. It is equipped with a deliberation room and granary

• Agricultural extension	Counseling is very important for the improvement of farming and rice cultivation. Its main role is not only to introduce innovation, but also help handling problems that occur in the field	The role of a counselor is not a lot and if there is information related to cropping, fertilization, pest control and other, extension agents must coordinate in advance with indigenous leaders. When the pattern of planting, seeding, fertilizing and controlling pests is successful, then the traditional leaders will disseminate it to the farming community members
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Table 3. Erosion Rate of Local Wisdom of Rice Farming from Farmer Communities



(Source: Results FGD, 2019)

and maintains the stability of the agricultural sector, especially swamp rice commodities. The names of the local month starting with the word "Je, Dal and Be" were believed as a good month for farmers. Local people believe that these three months are "wet-dry" season and good for farming;

and (c) to obtain abundant results and respect nature, the community always tries not to violate the prohibition, otherwise, it will harm life. For example, according to traditional leader K (73 years old) "Most of the old age farmers believe that the occurrence of high-level flooding that inundated the rice fields in Lakbok was caused by the arrival of stealth crocodiles from the *onom swamp*". Onom notoriously haunted swamp, until 1926, still inhabited by wild animals, either the Java tiger or crocodile.

According to Hardjasaputra (1985), Lopez (1998), and Lombard (2006), local people believe that anyone who enters the Swamp Onom at that time, he/she will not get out because of hidden invisible. Whereas, according to Lombard, the disappearance was due to being pounced on by wild animals of tigers and crocodiles.

Conclusions

Rice farming management techniques in Lakbok are still based on local wisdom, especially local knowledge and technology. Science, technology, and the local behaviors inherited so that entrenched into custom or habit. All three are maintained and cultivated by traditional leaders through a relationship of harmony and a participatory approach. Local wisdom exists in the form of plant schedule (when to sow, plant and harvest), water management, cropping techniques (cultivation techniques), land management and inheritance, harvesting, and postharvest handling.

Local wisdom exists and plays a role in managing the lowland rice farming system in Lakbok and assisting farmers in managing water (especially at high tide), stabilizing production, increasing productivity, and collective agreement in maintaining the integrity of paddy fields. However, since twenty years ago, the existence of local wisdom has been increasingly eroded in almost all lowland rice farming systems (agribusiness). Climate change, the damage of the Citanduy watershed ecosystem, and agricultural modernization have accelerated the erosion rate of local wisdom. The recommendation is that the sustainability

of local wisdom is largely determined by the regeneration process, siding with policies, as well as the internalization process and its protection by custom.

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