The Ecological Wisdom Values of Agricultural Land Utilization by the Indigenous People of Cigugur Kuningan, West Java

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Abstract. This article describes the results of research on the ecological wisdom values of agricultural land utilization by masyarakat adat (the indigenous people) of Cigugur, Kuningan, West Java. The objective of the research is to obtain a model of ecological wisdom values of indigenous people in maintaining environmental sustainability. The researchers conducted an ethnographic study with in-depth observations of agricultural cycles based on ecological wisdom, special treatments in the process of rice cultivation, and noble values in respect for nature. The findings show that the indigenous people of Cigugur Kuningan still: 1) Use palintangan to calculate farming time with sustainable principles; 2) Provide special treatments to rice seeds through customary agricultural rituals; and 3) Respect nature as the embodiment of the philosophical value of sanduk-sanduk papalaku.

1. Introduction
The present research on the exploration of the values of ecological wisdom is motivated by the importance of tackling the problem of agricultural land damage due to human exploitation of nature by ignoring the sustainability of the ecological system. Awareness of environmental management based on the principle of sustainability is needed so that people will acquire the knowledge, attitude, and life skills that are environmentally friendly. Humans should be positioned as part of nature: “humans are part of nature, not separated from it” [1]. Environmental damage is caused by the anthropocentric view that puts human beings at the center of the earth. The various disasters that occur should actually change this anthropocentric view to that of ecocentrism [2] [3]. Previous research has shown that local wisdom-based agricultural systems contribute significantly to environmental conservation and are able to provide quality agricultural produce [4-10]. The indigenous communities or people of Cigugur Kuningan maintain such farming systems. Thus, the present research selected Cigugur indigenous people as its subjects, because the people still practice the unique values of ecological wisdom, especially in the utilization of agricultural land, that is really interesting to be further investigated.

2. Methods
The research employed an ethnographic design that emphasizes on the participation of researchers in the research location as a human instrument. As cultural research, the researchers mingled with the
indigenous people of Cigugur to obtain the required data as accurately as possible. The researchers sought to explore and understand the meaning of ecological wisdom practiced by the research subjects in the utilization of agricultural land. The ethnographic traditions carried out by the researchers produced descriptive data in the form of written or oral words of the people and observable behaviours [11]. Through this research method, the researchers attempted to understand and give interpretation of the phenomenon observed from the research subjects through the processes of interview, observation, and documentation study.

3. Results and Discussion
The results of the research include three major aspects, namely the agricultural cycle of the indigenous people of Cigugur Kuningan that is based on ecological wisdom, special treatments to rice seed through agricultural rituals, and noble values in respect of nature. These three aspects provide a complete picture of the utilization of agricultural land with the principle of sustainability. The agricultural cycle is based on the traditional farming procedures with the wisdom of reading natural signs and using palintangan system. The process of planting rice is done through agricultural rituals and special treatments to the seeds. Meanwhile, the noble values in respecting nature are shown by the “humility” of the peasants through sanduk-sanduk papalaku, asking for permission to nature so that the farming process gets its blessing in the sense of producing abundant and quality harvest. Specifically, each aspect is explained as follows.

3.1. The agricultural cycle in land utilization
Agriculture is the main livelihood of the indigenous people of Cigugur, in which the majority of the people manage rice fields as a source to meet their basic need of rice. A rice field area of 692,843 Ha that they have is very adequate, but the indigenous people are aware that population growth over time requires the use of agricultural land with attention to aspects of sustainability management.

Figure 1. The Agricultural Cycle of Cigugur Indigenous People
The agricultural patterns with sustainable management principles include, among others, the following stages: mopok galengan, ngabaladahan, nebarkeun binih, babut, macul, nyongkog, dilahankeun, diirik, disurungan, digarit, tandur, diayuman, ngarambet, mupuk (digemuk), mipit/dibuat, dan Nutu/Ngagiling pare. Figure 1 shows a cycle consisting of the sequence of rice planting conducted by the community.

Each stage in the agricultural cycle has its own special and different activities. To start with, Mopok galengan is an activity to fix the dikes and clean the grass around them. Ngabaladahan is an activity in the stage of ploughing the rice field to turn around the rice stems planted in the last season and then buried them in the soil during the process of tillage using a hoe, so that they can be used as organic fertilizers. Nebarkeun binih is an activity of spreading the seeds of rice to be planted, usually done in a patch of rice fields, accompanied by the regulation of water volume. Macul is an activity of tilling the ground with a hoe in order to make the soil loose. Nyongkog is an activity of softening the soil to be prepared for a rice field before soaking it with water. Dilahankeun, in this activity the paddy field is soaked with water for one week until the rice field becomes ledok (flooded with water and looks like mud); this is intended to make the soil easier to trim. Diirik, this is an activity of stomping on the land that will be used to plant the rice. Disurungan is an activity of levelling the land that has been soaked with water so that the rice field is ready to be planted (tandur). Digarit is an activity in farming that aims to create spaces on the land that will be planted with rice. The spaces are indicated by a square (boxes), with a size ranging from 20-25 cm. This aims to make the planting of rice seedlings at the time of tandur easier, and that is why the spacing between the seeds is made symmetrical.

The next stage is planting the rice on the prepared rice fields. The steps include tandur, an activity of planting the rice that has been sown with a backward movement. Diayuman, an activity of checking whether there is damage to the rice seedlings planted at the time of tandur and replacing the damaged ones with new seeds. Ngarambet, this activity is done twice, namely ngarambet munggaran and ngarambet mindo. Ngarambet munggaran is done when the rice is 15 to 20 days old, while ngarambet mindo is carried out when the rice is already 60 days old. Mupuk/digemuk is done by giving manure so that the rice can grow to its maximal growth. The use of manure is to preserve the soil nutrients and protect them from chemical fertilizer contamination. Mipit/Dibuat, this activity is also called rice harvest, done when the rice has turned yellow in colour and is around 4 months old. The last stage is Nutu/Ngagiling, which is an activity of peeling the skin of rice.

The stages of rice field cultivation are a routine procedure implemented by Cigugur indigenous people. Usually, the process of cultivating rice fields from the beginning stage to harvest time lasts for 4-6 months. The calculation in managing the rice field is based on the astrology and also supported by the calculation of “good days” which refers to etangan weton (calculating the date of birth) of the person who owns the rice field [12]. Palintangan is based on the traditional astrology of the community when starting their agricultural activities. This can be done by calculating and taking into account the following things:

1) Numbuk/Taboo
   a. Sungut (the Mouth), has the meaning of always talking and the work to be done always becomes the topic of discussion, so that the results are less satisfactory.
   b. Irung (the Nose), meaning getting smelled by pests such as mice, aphid, and the like.
   c. Mata (the Eyes), meaning the rice we planted gets seen by pests so that the pests know about our plants and are ready to attack the plants.
   d. Ceuli (the Ears), has the meaning of mung kupireng wungkul (can only be heard/audible only), so that the rice grown by us can only be heard but cannot be seen by the pests; hence, they do not know where the rice is planted.
2) **Naptu/days**

Each *naptu* day has its own weight, namely:

- *Ahad* (Sunday) – 5
- *Senen* (Monday) – 4
- *Salasa* (Tuesday) – 3
- *Rebo* (Wednesday) – 7
- *Kemis* (Thursday) – 8
- *Jumaah* (Friday) – 6
- *Sabtu* (Saturday) – 9

3) **Mancakalima/naming the days with the Sundanese calendar.**

After an adjustment with *naptu* (day) calculation, an adjustment is also made with the *mancakahlima* calculation, as follows:

- *Manis* – 5
- *Pahing* – 9
- *Puhun* – 7
- *Wage* – 4
- *Kaliwon* – 8

Based on the calculation of *numbuk* (taboo), a good time for *tandur* is *numbuk di Ceuli* (taboo in the ears). It entails the meaning of being audible but not visible, so that pests that want to attack rice plants are unable to see where the rice is grown. *Numbuk* calculation is then adjusted to *naptu* (the days in the Gregorian calendar) and *mancakahlima* (the days in the Sundanese calendar). For example, if the person who owns the rice field was born on the day of *salasa puhun*, then the calculation is \(3 + 7 = 10\), *poeka* ka-10 *numbuk di Ceuli* (the 10th day of taboo in the ears). So, a good day is calculated to be the 10th day of each month of the rice cultivation cycle.

Calculation using *weton*/day of birth is used because *gumelarna urang ka alam dunya teh sabab welas asihna Gusti ka urang* (our birth to this world is due to the mercy and love of God to us). This is used as a reason to practice *etangan weton* (*weton* calculation) in farming activities.

The cultivation pattern practiced by the indigenous people of Cigugur entails the meaning of mutual respect and love among God’s creations and maintaining the harmony between humans and the natural environment, so that natural sustainability can be well-preserved. The symbols contained in the local wisdom of Cigugur indigenous people are still preserved to this day. The calendar system using palintangan is the ecological intelligence of the local people in reading natural signs through the natural cycle of climate change and all the natural events that accompany it [13]. Palintangan becomes the local wisdom of Cigugur indigenous people in determining the right time to farm based on the calculation of natural signs in a routine cycle.

3.2. **Agricultural routines and special treatments to rice seeds**

The agricultural activities carried out by Cigugur indigenous people are coloured with various rituals and special treatments to rice seeds. The rituals are held by providing *paramodana* (*sesajen*/offerings) before *tandur*, which consists of earth produce, such as *hanjuang*, *papaliasan* leaves, lime, *jawer kotok*, *caringin* (banyan) leaves, *kamuning* leaves, *tamiang* leaves, lemongrass, and young green coconuts. The offering or *paramodana* is not intended for the ancestors of the indigenous people, but is a form of gratitude for the produce of the earth which is the gift of *Pangeran Si Kang Sawiji-Wiji/God Almighty to man. Each component contained in the *paramodana* (offering) contains noble meanings as the embodiment of the symbols of God’s creations [14]. In more detail, the symbols are mapped in the following table.
Table 1. Components of Agricultural Rituals, their Philosophical Values and Implementation in Farming Activities

| No | Ritual Components | Philosophical Values | Implementation |
|----|-------------------|----------------------|---------------|
| 1  | Hanjuang          | Kudu aya daya upaya walakaya (There must be efforts and struggles) | Agriculture is an activity that must be undertaken seriously so that rice crops can be well-maintained |
| 2  | Papalis leaves    | Ulah ngarumpak larangan (Do not violate the prohibitions) | The agricultural system must be in accordance with the rules; it should not damage nature, so that the harvested yield will be of good quality |
| 3  | Limes             | Di antara buana nyungcung ka buana agung jarakna sagerolong buah jeruk nipis (The distance between the present world and the eternal world is as short as the rolling of a lime) | Agricultural activities should be carried out gradually. It is not allowed to take the stages in agricultural activities randomly. |
| 4  | Caringin (banyan) leaves | Ngayoman/Ingijuhan (nurturing or providing a shelter) | The landowner should always nurture the people who cultivate the land so they can feel the peace within themselves |
| 5  | Tamiang leaves   | Pamiangan urang teh timana (where we come from) | Farmers need to recognize the characteristics of the rice planted so that the results can be maximal and the harvest can be abundant |

The agricultural components are offered in order to have an abundant harvest, in addition to the special treatments of rice seeds. The special treatments are in the forms of: 1). Using organic fertilizer (manure); 2). Not using pesticides, but traditional plant pesticide (teureup leaves, mara asri, kakandelan, cariang asri, rane, ilat, and tumbu eusi); 3). Using traditional farming equipment (hoes and buffalos); 4). Processing rice seeds in a longer time than the common rice; 5). Not forcing the rice to grow with additional chemical substances, but following the natural processes; 6). Treating the rice exclusively as a gift of Sang Hyang Widhi by storing the seeds in a special place with a certain temperature and sorted according to its quality; and 7) not exploiting the agricultural land excessively after the harvest, but waiting for the natural process, meaning that the land is not planted by other types of plants while waiting for the next planting season, to keep the nutrients intact.

3.3. The philosophical values in respecting nature
The philosophical value of respecting nature is demonstrated by the Cigugur indigenous people by reciting sanduk-sanduk papalaku at every stage of farming. Sanduk-sanduk papalaku has the purpose of asking permission from God Almighty to carry out agricultural activities [15]. The farmers ask God to protect the rice crops. Rice has a special place in Sundanese society, because it is the source of life. Through sanduk-sanduk papalaku, it is expected that the rice planted in the fields can grow and provide a source of blessing for those who plant it. The owner of the rice fields entrusts himself to God in order to always be given health and wishes that the rice he planted will grow well.

One example of sanduk-sanduk papalaku recited by the farmers at the time of harvest is as follow:

Yeuh ieu kuring geus dikersakeun
Ka anu ngersakeun di Mandala Hyang
Nitipkeun Nyi Pwah Aci
di weweg sampeg mandala pageuh
Di bumi pertiwi pikeun engke datang wayah
Dipapag dijayak eudeuk disampurnakeun bareng jeung tangtung manusa
Yeuh sang Cungcung Maya,
Nyi Cungcung Manik sato geulis jeung sababatur,
Kuring neundeun ciri di madhab papat kalima tengah
“pikeun anjeun sababatur ulah ganggu maka bareng-bareng hirup bae nyah”

The translation:
Here we are, we have been created; To the Creator in the Realm of Mandala; We entrust Nyi Pwah Aci in the realm of the earth until her time comes; To be taken, processed to perfection along with the growth of man; Here it is, sang Cungcung Maya, Nyi Cungcung Manik, a beautiful creature with its company; We have marked the fifth place in the middle for you (pests) so you will not disturb us; instead, let's live together.

The recited sanduk-sanduk papalaku has the meaning of surrendering to God Almighty so that the rice plants will not be attacked by pests. The farmers’ self-surrender is a form of submission to God so that their efforts are waged and will obtain maximum results. Sanduk-sanduk papalaku entails a sense of harmony between humans and the natural environment. The farmers communicate with the natural environment so that the planted rice can grow properly and get protected from all kinds of disturbances. Communication with nature is an effort in realizing environmental sustainability, in which humans must understand nature and not impose their will that can cause destruction to nature.

Sanduk-sanduk papalaku in this ritual contains the meaning of being grateful and pleading to God Almighty, begging for a smooth harvest and hoping to be kept away from undesirable things and being grateful for the harvest gained, so that the crops can be perfected into human resources. The farmers ask permission from God Almighty and are grateful for His gift of rice (Nyi Pwah Aci). Subsequently, the rice will be perfected into a source of life that blends with the human body. In general, this is an effort to surrender ourselves to God Almighty so that God will give ease in our daily life and also His protection.

4. Conclusions
Based on the results previously explained, it can be concluded that the optimization of agricultural land utilization that supports sustainability must be done through a harmonious communication between farmers, nature, and the local wisdom of the indigenous people. There needs to be a paradigm shift from anthropocentrism to ecocentrism, in which nature gives life to human beings through agricultural products and human beings must take care of the sustainability of nature with environmental wisdom and without greed. Cigugur Kuningan indigenous people have practiced the system of agricultural land use wisely through an agriculture cycle based on natural processes, agricultural rituals, and special treatments of rice seeds as a form of communicating affection towards nature, and the philosophical values passed down from generation to generation become the local wealth in preserving nature. The world community needs to imitate this harmony with nature displayed by the indigenous people so that the survival of human life in the future will be ensured.

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