

Unraveling Local Beliefs and Knowledge in the Agriculture of Dusun Bundu and Tindal Sub-Ethnic to Nature Conservation

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Abstract

Dusun Bundu and Tindal sub-ethnics practice the local beliefs and knowledge inherited from one to another generation to start a plantation, especially rice plantation. For the purpose of this research, nine informants were interviewed during the fieldwork at three villages in the district of Ranau, Tuaran and Kota Belud. This research focuses on the relevance of local beliefs and knowledge while farming and is analyzed based on qualitative interpretation. The findings of the analysis show that Dusun Bundu and Tindal believe that 'patod' (the ritual of opening a new land for agriculture), 'gawoi' (cleaning a small agricultural site), 'pobobor do boros' (to recite words), 'moginipi' (dreaming), 'manalud' (prayers for rice in booting stage), 'momuhau' (chasing the birds) and 'pasalakoi bambarayon' (inviting the rice spirit) during farming will be able to sustain the nature. In addition, the findings also revealed that this sub-ethnic are well versed in burning the fields without spreading the fire into the forest, a way to keep the soil fertile and avoid soil erosion as well as a landslide for conserving the nature. This research is essential to be brought forward and retained as it has a relevance to sustainable conservation and environmental management which focuses on local knowledge as a key to achieving conservation development in the 21st century. In conclusion, the unification of local beliefs and knowledge of Dusun Bundu and Tindal are the alternative for nature conservation.

Keywords: Local Beliefs and Knowledge, Agriculture, Dusun Bundu and Tindal, Sub-Ethnic, Nature Conservation

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1. Introduction

Bundu and Tindal sub-ethnic are a part of 40 sub-ethnic of the Kadazandusun cluster in Sabah. Both sub-ethnic belong to the Dusun family based on the generics of language, culture, beliefs, tradition and share the same historical experiences (Benedict Topin, 2017; Minah Sintian, 2017). These sub-ethnic live in most of the areas in Ranau, Tuaran and Kota Belud. Bundu and Tindal; being a part of the Dusun family are known as farmers by the Brunei and British people. This is due to them living

in agricultural land, hills and rural areas (Rutter, 1985; Dayu Sansalu, 2008). Generally, Dusun ethnic utilize the surrounding they live as agricultural land by planting various types of rice traditionally, in addition to fruits and vegetables (Pugh-Kitingan, 2012). Farmers who live in high lands, especially those nearer to the Mount Kinabalu; such as Kg. Bundu Tuhan, Kg. Kiau Nuluh and Kg. Tiong Gondohon are skilled in the plantation of hill rice, various types of tuber and highland type vegetables. The environment of Dusun Bundu and Tindal sub-ethnic

highly influences the behaviour of traditional farmers as they associate beliefs, rituals, customs, taboo and local culture to live in its environment. They believe that the environment they live in or will explore in the future is also inhabited by other supernatural being. Therefore, any clearing of land for agricultural purposes should be done according to the customs, for the sake of the well-being and harmony of all occupants of nature. It is believed that intrusions, as one pleases, could cause the anger of nature. Raden Cecap Eka Permana et al., (2011), claim that the wrath of nature through natural disasters could only be recovered by the members of society who are wise in local knowledge.

One of the research issues which arose is regarding agriculture, especially hill rice plantation which is passed down from one to another generation currently faces the challenges of globalization and modernization. The traditional beliefs of rice planting process which were practiced by the older generation of *Pre-baby Boom* (born in 1945 or before) are not attracting the *baby bust/* X generation, Y Generation and Z Generation. This is because they are seen as going against the thoughts and practices of Christianity as well as Islam. In a previous study, certain local knowledge and beliefs were considered as superstitious and backward (Xu et al., 2005). They were also in the opinion that rituals such as worshipping holy hills or water catchment area with the intention of activating forest spirits in agriculture is considered outdated and always disputed by the government (Xu et al., 2005). In accordance with the challenges of globalization and modernization, this research also identifies whether there is an existence of a combination of local beliefs and knowledge practiced by farmers nowadays.

In the context of local knowledge, the role of traditional equipment which reduces the destruction of nature is slowly losing its appeal. Most of the farmers, especially vegetable farmers use a modern machine to plow the land. Fertilizers and chemical poisons have become a common practice among them. Taspcott (2008), looks at the concept and thought of every level of generation as giving impact to the growth of culture and their living style. Generation X who have been exposed to modern education begun changing the thinking approach and behavior according to the current change of time. Based on the observation of the researchers, some of the agricultural lands were leveled using a bulldozer which was rented or bought. Utilization of modern machinery destroys valuable rare plant species and erodes black soil containing natural fertilizers. The destruction of trees affects global warming, landslides and the drying of water catchment sources. In 2015, the research area was affected by an earthquake (Bernama, 2015) and mild tremors, in addition to frequent landslides at the hillside. Jiffar (2014), claims that the existing forest and land

which had been cleared in Kundasang, Ranau area has been used for agriculture and constructing accommodations for tourists. Onoguchi dan Matsubayashi (2008) admitted that uncontrolled deforestation could contribute towards the imbalance in the ecosystem.

At the same time, the cultural values which are expressed and implied in traditional beliefs and local knowledge such as mutual respect among human, human and residents of nature; both visible and invisible are slowly going extinct. Therefore, this research was done to discuss the local beliefs and knowledge in agriculture among Dusun Bundu and Tindal sub-ethnic which are seen as accommodating the conservation of nature. This is to assure that the local beliefs and knowledge can be preserved and documented as a reference for the future generation. This research supports Article 8 (j), *Convention on Biodiversity* (1992 in Rio which recognizes the rights of an indigenous community defending the local culture especially in biological diversity conservation (Neilson Ilan Mersat & Spencer Empading Sanggin, 2012).

2. Methods

This research uses descriptive analysis based on qualitative perspective. Fieldworks were conducted at three villages in three different districts to compare the data collected. The main data was obtained using partially structured interviews and observations. The researchers forwarded some prepared questions during the interview. However, researchers have the freedom to further explore the answers given by informant further by asking additional questions. The language used during the interview was simplified to adapt to the understanding of the informants who are elderly farmers lacking formal education. Observations involve observing geographical location, agricultural land, non-verbal events and informants' behavior. Observation is one of the methods of gathering information to understand events taking place in the surrounding area both consciously or unconsciously (Chua, 2006).

All the interviews were conducted in groups for every village. This is to allow the informants to remind and correct each other regarding traditional beliefs and local knowledge about agriculture which could accommodate the conservation of nature. The nine informants, aged 50 to 84 years old have been full-time farmers from a relatively young age, around 5 years old. They learnt about traditional agriculture through their parents, did not get a formal education and were not Christians by birth. The identities of the informants were kept secret and only labeled as informant B1, B2 and so on (Table 1) to abide by the ethics of research principle.

Table 1: Informant Demography

Informant	Sex	Location	Occupation	Age
B 1	Female	Bundu Tuhan, Ranau	Farmer	77
B 2	Female	Bundu Tuhan, Ranau	Farmer	77
B 3	Female	Bundu Tuhan, Ranau	Farmer	84
K 4	Female	KiauNuluh, Kota Belud	Farmer	69
K 5	Female	KiauNuluh, Kota Belud	Farmer	74
K 6	Male	KiauNuluh, Kota Belud	Farmer	50
T 7	Male	TiongGondohon, Tuaran	Farmer	65
T 8	Male	TiongGondohon, Tuaran	Farmer	78
T 9	Female	TiongGondohon, Tuaran	Farmer	58

The interview details were recorded using a *Samsung* smart phone, in addition to taking notes. The recording was used as an instrument for observation, besides taking static photographs of the informants, the surrounding area where they live and the farms. Other than fieldworks, literature reviews were used as critical references especially for problem statement and choice of literature highlights. The choices of three villages at different districts were significant with the issue of deforestation for agricultural purposes which gives an impact to the balance of ecosystem at places near to Mount Kinabalu. The villages are located at Mount Kinabalu valley at the west coast of Sabah and had encountered a moderate earthquake of 6.0 on Richter scale on 5 June 2015 (Bernama, 2015), followed by more than 100 minor tremors (Zam Yusa, 2018). Data collected were analyzed and interpreted to look at the relation and connection between dimensions which emerged.

3. Results and Discussion

Opening the Agricultural Land Phase

Environment influences the Dusun Bundu and Tindal sub-ethnic's culture, especially in agriculture. Forest, soil, trees, stones, rivers, anthills, birds, mice, grasshoppers, supernatural and many more are believed to be linked to the lives of human. This statement is similar to the view of Benedict Topin (2017), who claimed that the traditional Kadazandusun community share the earth with other supernatural being both visible and invisible; known and unknown to humans. According to informant B1, the phase of opening a new land gives significance in their socio culture as if entering a new house. He explained that the *patod* ritual (opening new land for agriculture) must be conducted before working on the land. The ritual would be conducted at a river which has elements of *sogindai* (a place to display decapitated human heads and a sacred spot before the 20th century). Farmers start off the initial step to earn income through the reconciliation mechanism with the symbolic elements

of Dusun Bundu and Tindal sub-ethnic's lifestyle. Bamboo clumps are symbolic to strengthening the soil from erosion and water is symbolic to *kosogit-sogiton* (root word "sogit" literally means "cold") which brings peace, harmony and prosperity to the farmer, his family and crops. According to Dove, Sajise and Doolittle (2005), local methods such as bamboo gardens and intercropping, which had precious impacts on resource management and prevention of soil erosion, have been overlooked. This is how farmers from Dusun Bundu and Tindal sub-ethnic use local knowledge to guard the forest for the sustainability of their land. After *patod*, the *gawoi* ritual (clearing the site area) will be conducted by the *bobolian* (shaman) at the land area suggested for agriculture. Informants B2, B3, K4 and T8 explained that the area to be cleared is small and does not involve logging, which is about one square feet. *Bobolian* will *pobobor do boros* (to recite words), seeking protection from *Kinorohingan* (God) to obtain *kosogit-sogiton do mongumo* (prosperity while farming) while a plank of wood is pegged or laid on the cleared land. To peg or lay a stick symbolically means humans are communicating with the invisible supernatural being promising that the farmers are committed to working on the land and do not wish to be disturbed while doing so.

During *pobobor do boros*, *bobolian* will appeal to *Kinorohingan* to give good dreams to the land developer. Informant B2 shared about his dream after the *gawoi* ritual. He dreamt that his son and uncle were dead in a hanging coffin. The dream was interpreted by an elderly who is used to doing so. According to the Kadazandusun community, dreaming of a coffin is a good sign. Informant B1's dream proved to be right when the land they worked on, produced rice in large quantity. The plants were heavy and tilted just as the hanging coffin in the dream. Besides the dream, informant B1 added that he dreamt of *mogitimbang-timbang o watu di ongokodou* (well arranged hard rocks) which also brings good news regarding agriculture. Examples of bad dreams are like *ongolombut o guol nga sanghaba'-haba'* (ripe sweet

potato fallen to the ground). *Moginipi* is a sign which can avoid logging if there is a bad dream. The *patod*, *gawoi* and *moginipi* are Dusun Bundu and Tindal sub-ethnic's beliefs which focuses on the relationship between human and invisible supernatural being. These beliefs implicate the cautiousness of Dusun Bundu and Tindal ethnic in exploring the nature as they worry that the supernatural would react by creating diseases, pests, disturbance of spirits, drought, rain and more to the farmers. Pals (2012), admitted that traditional communities' have a close connection with primitive mythologies which beliefs in the intervention of supernatural elements in setting the growth and death of crops as well as the fate of profits of farmers working on agricultural land there.

Land clearing will begin once there is a good dream. Initially, bushes would be cleared before cutting down big trees. Based on the researcher's observation, there were a few trees which were not cut down at the rice field in Tiong Gondohon village. Informant T9 explained that these trees are needed as shades for the farmers to rest. Informants T7 and T8 added that usually trees of good quality would not be cut as it can act as windbreaks, has medicinal values and needed for *manalud do parai* ritual (prayers for rice at booting phase). After two months of drying up period, the burning will be done. According to Informant T7, the farmers in his village have certain rules inherited from their ancestors to burn farms. These rules must be obeyed to avoid the fire spreading to the forest or burning someone else's nearby farm. In addition, working together is given importance while burning the land. Before burning, the *mongulat* (to create fire breaks by making sure the edge of the farm is clear from any flammable materials) is emphasized by cleaning the surrounding of the land which is to be burned. The width of the area to be cleaned is around three feet or a meter. The Dusun Bundu and Tindal sub-ethnic should identify the wind direction when burning. Informant B2 explained that the higher ground of the side of the land will be burned first to avoid the fire to spread to the forest area. This is because it has a higher potential to face the strong wind. The *sunsurionon* technique (receding) is used for this purpose. This is how the local knowledge of fire burning help people towards healing the land as well as important for fire management (Eriksen, 2013). The burning of land would not be conducted during long drought season as it will easily spread fire to the forest while hindering the growth of seeds.

Farmlands will be left for about a month to allow some grass to grow. Informants K4 and K5 do not consider grass as a negative competitor to the farmers. They explained that the growth of grass is a sign that the soil in that area is fertile. In the past, most farmers in the village used to plant *barana* and *yoyogi*. The leaves of the plants were believed to restore the fertility of the soil. Nevertheless, *monokop* will be done before or after dibbling to avoid grasses from preventing the growth of crops, especially rice. *Monokop* is an activity to cover the

soil which has fast-growing and hard to be destroyed grasses. Areas which would be given priority to be covered are the ones with weeds (*imperata cylindrica*) and *elephant grasses* (*pennisetum purpureum schumacheri*). The area would be covered by weed or banana leaves and later be burned before or after dibbling is done. The ashes from the burnt leaves will become organic fertilizers for the crops. Using natural things has prevented the Dusun Bundu and Tindal sub-ethnic from buying chemical fertilizers for their crops.

Malaysia's uniqueness as a tropical rainforest country is not enough to help farmers to preserve the fertility and safety of their farmland. Heavy rainfall throughout the year further hastens the farmland erosion located at hillside and Crocker ranges. The fragility of hillside land also causes landslides to take place. Researchers found out that farmers in Tiong Gondohon village use traditional technology by laying long woods between stumps or spiked woods to hold on the humus soil from eroding. The woods would also be useful for farmers to step on while dibbling the rice seeds. Informants T7 and T8 informed that farmers at their village dig holes as wide and deep as one square feet at slopes as a strategy to collect humus soil. The holes filled with soil will later be planted with fruit trees or sweet potatoes.

Farms closer to the river banks will be planted with plants which are believed to strengthen the soil as told by Informant 6. Farmers at Kiau Nuluh village plant bamboos and lemongrass which function as *pamanggor do tana'* (soil strengthener) at riverbank areas. The roots of bamboos and lemongrass are deep and very strong. Strong roots will grip the soil at riverbanks or slopes from eroding. Adaptation towards the ecological pressure provides local knowledge to the Dusun Bundu and Tindal sub-ethnic in choosing multifunctional plants. Bamboo shoots and lemongrass are edible and provide additional income for them. Besides, bamboo plants also can be used to build houses, animal cages, fences, kitchen utensils, handicrafts and more.

Rice Plantation Phase

Rice is not only the main food source or the livelihood of Dusun Bundu and Tindal sub-ethnic but also considered as sacred. Hanafi Hussin (2005), claims that the Kadazandusun community believe that there is a rice spirit named *bambarayon*. The rice spirit should be taken good care from as early as the plantation in order for the rice to grow well, produce fruits in large quantity and to avoid any kind of disaster either from nature or human. Farmers at Bundu Tuhan village conduct *popoirikau do tonomon* ritual (the act of putting the rice seeds) before they are planted. Informant B1 explained that the *popoirikau do tonomon* ritual has to be conducted by *bobolian* or any of his skilled followers. *Bobolian* will put the rice seeds in a container called *basung*; continued by the rituals of laying down and erecting the *basung* for seven times while chanting. Following is one of the

chants to request for multiplied rice production, fertile soil and to avoid human jealousy.

The beginning of dibbling:

Gather all these seeds
As little as there are
As we end dibbling
Crossing eight hills
Piercing seven mountains
We dibble even if it's small.

After dibbling:

There ends someone's grudge

(*Basunglaid down*)

Do tilt someone's rice

The envious, the spiteful

(*Basung erected*)

Stand upright rice

Our fortune

Our rice

Our well-being

(*Arable blew using rolled tobacco leaves or kirai leaves*)

As if once blown smoke

this rice be it

once sowed once reaped

(Source: Informant B1)

Farmers are keen to plant seeds of other crops while the dibbling takes place. During the fieldwork at Tiong Gondohon village, researchers noticed maize, spinach and cucumber plants between the rice plants. Basically, companion planting is very useful to the farmers as additional food while waiting for the rice to be ripe, protecting from pests, helping pollination of rice and to maintain the dampness of the soil. Nutrition from other crops could help provide nutrition to the rice plants. This indirectly restores the soil and reduces the usage of chemical fertilizers.

The *manalud* ritual will be conducted when the rice begins to go into booting phase. Informant B3 mentioned that a chicken would be brought to the farm. A few feathers will be pulled out and inserted to the bamboo spikes or to rice plant leaves while chanting takes place. The *manalud* has the same purposes, which is to seek *Kinorohingan's* help to hinder *turol do parai* (negative words from humans) and diseases which can dry the fruits of rice. The chicken would be brought back, slaughtered then cooked to be eaten by family members with their neighbours. This ritual becomes a small celebration with neighbours to show gratitude for the successfulness of rice plants and to strengthen the connection with the ecosystem. According to Pals

(2012), beliefs of animal sacrifice should be seen from the perspective of magic, rationally to change the natural phenomena such as fertility, preventing famine, natural disasters, diseases and death for the survival of farmers.

Momuhau or chasing birds away will be held when rice starts to bear fruits. The local knowledge inherited during *momuhau* uses the *tungkabar* (made from bamboo, with split ends), *tagararon* (windmill), *tompukili-kili* and *tompugiwis-giwis* (made from plastic, rags, sack and leaves). Literally, the purpose of *momuhau* is to chase away birds from feasting on rice plants which starts to bear fruits. Yet, the cosmology of Dusun ethnic believes that the supernatural has connected all these activities with the fauna spirit which is taboo. They are not supposed to shout or use violence towards animals. Farmers should use their intelligence to handle pests. The act of throwing stones at birds is taboo which could create motivating implications; encouraging the birds to eat fruits of rice plants as told by Informant T7. Using traditional technology is one adaptation strategy for local knowledge which is nature-friendly to face environmental challenges (Iman Suyitno, 2015). The unique sound of *tagararon* and the fluttering of rags as the wind blows are therapy for rice spirits to continue providing good fruits to the rice plants.

Rice Harvesting Phase

Rice harvesting phase is the highlight of success for a farmer. The Dusun Bundu and Tindal sub-ethnic need *mitatabang* to collect the sacred crop yields. Harvesting should not be delayed to avoid taboo. Before harvesting, the ritual *pasalakoibambarayon* has to be conducted by *bobolian*. The ritual is to invite the spirits of rice plants to enter inside *tangkob/torutip* (place to collect all harvested rice) to show respect for *bambarayon* from disappearing. Hanafi Hussin (2015), claimed that the rice spirits can move to another place if shocked or received ill-treatment. Therefore, farmers should respect and be grateful with the existence of rice spirits in their crops. Informant B3 explained that *bobolian* will harvest seven stalks of rice and insert them to *torutip* while chanting hopeful prayers in order for the rice spirit to continue staying with the farmers and always provide earnings. Following is an excerpt of chants which was expressed by informant B3 in order to be respectful to the rice spirit:

Come rice spirit, let's get back to the hut,

In the hut, we shall sleep.

(Source: Informant B3)

4. Conclusions

Overall, the local beliefs and knowledge of Dusun Bundu and Tindal sub-ethnic which are inherited from one to another generation are visible in each phase of agriculture especially rice plantation. The rituals *patod*, *gawoi*, *pobobor do boros*, *moginipi*, *manalud* and *pasalakoibambarayan* are elements of beliefs with the intention of educating humans to be more orderly in

managing nature. With the existence of these beliefs, nature and its components are not misused for the benefit of an individual or a small community. However, some of the rituals and beliefs are seen to contradict with the teachings of Christianity and Islam. The findings of this study contribute to prior research on fire management (Eriksen, 2013) and the selection process of cultivation site (Dove et al., 2005) are closely related to local beliefs and knowledge of Dusun Bundu and Tindal sub-ethnic and thus supports nature conservation. Meanwhile, local knowledge is closely connected to burning techniques, fertilizing the soil, avoiding soil erosion and birds chasing activities. Local knowledge is a result gained through observation and the experience of Dusun Bundu and Tindal sub-ethnic regarding agricultural issues and their surrounding area. Therefore, the local beliefs and knowledge of Dusun Bundu and Tindal sub-ethnic are a cultural heritage which is significant in complementing science and technology to solve ecosystem issues for the sake of the harmony and well-being of the natural inhabitants.

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