

## ETHNOSCIENCE STUDY OF *YUR* LOCAL WISDOM OF KANUM TRIBE IN MERAUKE

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**Abstract.** Kanum tribe is one of indigenous tribes in Merauke which depend their live on nature. One of their local wisdoms is *yur*, which was done on plant at harvest time. The principle of *yur* is prohibits human to take that plant at the certain time. The aim of this research is to describe *yur* local wisdom with ethno-science study. This research conducted in Tomer village, habitat of Kanum tribe in Naukenjerai District, Merauke. Data collected direct observation to Tomer village, interview with some people of Kanum tribe, and also literature study. The result of this study show that *yur* local wisdom can analyze with biology, physic, and chemistry science. This local wisdom can protect every step of plant growing, namely pollination, fertilization, development of ovule into seed, ovary into fruit, and until it becomes a perfectly ripe fruit. Furthermore, *yur* can take care of imbibition, photosynthesis, and transpiration process. Finally, from all of that, *yur* can conserve the

growing process of plant until harvest time.

### INTRODUCTION

Kanum tribe is one of the original tribes who inhabit the city of Merauke. The majority of these tribes inhabit the Naukenjerai District, namely Onggaya village, Tomer village, Tomerau village, and Kondo village. Naukenjerai district area is still covered by forests, which is equal to  $\pm 90.87\%$  (BPS, 2023). The Kanum people still dependent their lives on nature. They fulfill their daily needs by gardening, hunting, and also fishing in swamps. The plants that they plant include sago, sweet potatoes, petatas, vegetables and also some kinds of fruits. Dependence of their lives on nature is a derivative of their own ancestors. They also have some culture or local wisdom related to nature and the environment. The local wisdom was passed down by the ancestors with the aim that their environment and nature be maintained, so that they too can still live well (Widana et al., 2023). One of the local wisdom is *yur*, which is local wisdom that aims to maintain a plant that is in the fruiting period until the harvest time arrives. The principle of implementing this *yur* is to forbid people from taking or doing anything on the plant that is planted.

Every indigenous tribe in the world has its own culture. In the culture itself, there are values that are used to solve social problems and improve the welfare and peace of society. This value is referred to as local wisdom (Sibarani, 2018). Local wisdom is also an idea, local values, and opinions that contain wise characteristics that exist and must be obeyed by a community group (Jundiani, 2018). Like culture, local wisdom is a legacy from the ancestors or ancestors of an indigenous tribe, which is passed down to each generation, and is considered a village philosopher. Na Talang said that local wisdom is used as a guide in carrying out daily activities, including in dealing with family members, neighbors, and the environment (Hallatu et al., 2021) Through local wisdom, the people of an indigenous tribe must respect their ancestors, practically spiritually, and also nature. In local wisdom, people are taught to love nature, not to destroy nature. Local wisdom is also basic knowledge obtained through the balance of life with nature, that is knowledge that comes from life experiences that integrate body, soul, and environment (Primayanti and Puspita, 2022).

Local wisdom of a tribe can have a positive impact on the environment, include forests and coastal areas (Sidiq et al., 2022). In practice, local wisdom that contains cultural values or traditional beliefs is considered taboo by the community so that it makes people afraid to break them. Local knowledge or indigenous science from local wisdom, can actually be interpreted as an effort to cultivate natural resources with minimum environmental degradation and ensuring agriculture sustainability (Kurnia et al., 2022). Local wisdom can also be used to prevent biodiversity damage and become a foundation for sustainable development while still paying attention to environmental aspects (Tamalene & Almudhar, 2017).

Some regions in Indonesia have used local wisdom as a keeper or manager of environment. Duanu tribe in Riau have some local wisdom that used for maintain and prevents forest and coastal areas, namely *Menongkab*, *Pembelat*, and *Menumbur* (Sidiq et al., 2022). People at North Lombok use *Pujawali* tradition which came from Majapahit Kingdom, as a regular way of maintaining and protecting the environment (Pranata et al., 2021). In addition, people at West Timor have traditional farming practices, namely *Mamar*, that can use for land management (Ngongo et al., 2022). Traditional Samin farmers in the village of Klopoduwur, Central Java, have some local wisdom inherited from their ancestors in terms of crop management and also maintaining the tradition of farming (Kurniasari, et.al, 2018).

Culture or local wisdom which is a legacy from the ancestor can be studied using science. Science that is contained in local wisdom is called as indigenous science and this original study of science in local wisdom is called ethno-science (Supriyadi and Nurvitasari, 2019). The concept of ethno-science is also considered a cultural paradigm which states that culture is not only physical form, but also knowledge that is in human memory (Arfianawati, 2016). This study in ethno-science encompasses science (biology, physics, and chemistry), ecology, agriculture, medicine and also the development of technologies that already exist in society (Sudarmin, 2015).

Ethno-science studies of a local wisdom can be applied through learning in schools, especially science learning. This aims to make it easier for students to accept and understand a scientific concept, because it is given a contextual example, namely the implementation of local wisdom (Supriyadi and Nurvitasari, 2019). The results of ethno-science studies are also effectively used as a learning resource for elementary school children, because the social and natural environment are indirectly representative learning

resources (Kelana et al., 2021). In addition, through the use of ethno-science, students are introduced to the local wisdom of their respective regions, so that the local wisdom still exists and can be preserved by students.

Ethno-science studies conducted on local wisdom can be found in the making of shrimp paste by the Madurese, where every stage of manufacture, starting from the selection of raw materials, salting, fermentation, to the emergence of the characteristic color and aroma of shrimp paste, can be explained scientifically (Hadi et al., 2019). Ethno-science studies, especially in the field of physics, are also carried out on the local wisdom of the Madiun people, namely the sea alms tradition, Reog Ponorogo art, and martial arts. Each of these local wisdoms has genuine scientific value such as the local wisdom of sea alms which is carried out in the new moon phase so that it is appropriate for catching fish (Novitasari et al., 2017). In the field of environmental preservation, ethno-science studies are carried out on local wisdom, where *sar* can function as a way to protect and preserve the environment (Palittin et al., 2019).

In this article, we will discuss *yur* local wisdom, the original local wisdom of the Kanum tribe which is used just before the harvest season. *Yur* local wisdom has original science which will have an impact on the growth and development of the plants that are being treated. The original scientific studies that will be discussed in this article are studies according to biology, physics, and chemistry.

## **METHOD**

This research is a qualitative descriptive study that aims to describe the influence of *yur* local wisdom in the development and growth of a plant that is in the period of fertilization to harvest. Data collected by observation, interviews, and also literature study. Observations were made in Tomer village to see the Tomer village environment itself. The interview was conducted with some people of Kanum tribe in Tomer and the Chief of the Customary Kanum Tribe. All questions which was asked are about *yur* local wisdom and their farming habits. Literature study conducted to find references related to growth of plant by science.

Furthermore, the data was analyzed through some steps. First, checking validity used triangulation technique, especially sources triangulation, which is checking answers from informants. Next, the data was selected that is accordance with purpose of research and analyzed again with ethno-science. For the final stage, all data which suitable with aim of research was displayed in the form of communicative sentences and drawing the conclusion.

## **RESULTS AND DISCUSSION**

### ***Yur* Local Wisdom**

Kanum tribe which is one of the indigenous tribes in Merauke still holds the culture or local wisdom handed down by their ancestors. Their dependence on nature, made their ancestors realize the importance of protecting nature and their own environment. Therefore, the ancestors made rules relating to the preservation and preservation of nature, which were passed down to their generation. Even today, culture or local wisdom related to nature, is still carried out by the Kanum tribe community itself.

*Yur*, one of the local wisdoms of the Kanum tribe, has a goal of preserving the harvest. This local wisdom is carried out when the harvest season arrives. Harvest season is meant

here, not only for plants but also for animals. This is in accordance with the daily life of the Kanum tribe itself, which is farming and also hunting. *Yur* for plants, carried out on a plant that starts in the fertilization period until the harvest time arrives. *Yur* for animals is usually done in a swamp, during the dry season or the season of fish. When the *yur* is applied, no one can take and do anything on the plants or the swamp that is being planted.

The Kanum tribe communities will do the *yur* on a plant when the plant begins to produce fruit. *Yur* can be done by anyone Kanum tribe community without exception. *Yur* implementation uses the custom of Kanum tribe and is carried out by the owner of the plant. When the plant has been shaved, the plant will be marked with a coconut leaf attached to a wood and planted close to the shaved plant. Each clan in the tribe Kanum, has their own way of binding. The purpose is given the mark, so that no one takes or does anything to the plant. if there is a violation, then that person will be subject to adat sanctions.

When the fruit of the plant that was ripe has been ripe, the *yur* mark will be opened, and this means that the *yur* process has also been completed. When the sign is opened, the fruit of the plant can be taken or in other words the result can be harvested.

### **Ethno-Science Study of *Yur* Local Wisdom**

Every local wisdom has their own original science, as well as *yur* local wisdom. Prohibition of taking or doing something on plants, has an impact on growth and development on the plant itself. The growth and development of the fruit can be studied scientifically, namely biology, physics, and chemistry.

The growth and development of fruit in a plant begins with the process of fertilization or the process of meeting pollen (male sex cells) with the pistil (female sex cells). At the time of fertilization, there is a union between the sperm nucleus with this ovum and form ovules (zygotes) containing triploid cells. Then the zygote began to develop into an institution. At this time the development process occurs. Institutions will continue to develop into ovaries and ovaries. The seeds will develop into seeds, while the ovaries will develop into fruit flesh.

During the development process, the content of tripod cells will also divide and develop into endospermic tissue. This network provides food for zygotes in the process of development to become perfect fruit. Provision and feeding by endosperm to seeds and fruit, is done through enzymes in the plant. These enzymes actively break down food substances that will be used to produce energy. This energy is used by seeds and ovaries to develop. The fertilization process can occur properly if there are no disturbances, both internal and external disturbances. Internal disorders can be in the form of the condition of the plant itself which is not perfect and also hormones in plants. External disturbances can be in the form of disorders from humans, animals and nature.

During the process of growth and development of a fruit, there is also an imbibition process, which is a process in which the seeds absorb water due to the low water potential in dry seeds. This absorbed water is used by seeds to activate enzymes and hormones in plants. Without water, the seeds will never grow and cause no development in the fruit of the plant. The imbibition process will continue until the fruit is ripe perfectly. Fruit that begins to ripen, the water content becomes reduced. This causes the imbibition process or

the process of absorption of water to be faster. This fast process affects the time of ripening of the fruit.

The process of growth and development of fruit in plants is also influenced by the process of photosynthesis. In this process, chlorophyll and sunlight are very important. Chlorophyll (leaf green substance) and sufficient sunlight, making the photosynthesis process can work well. The result of this photosynthesis process is glucose (energy) and oxygen. Glucose will be used by plants as a food source for the growth and development of the plants themselves. Oxygen will be used by plants and other living things to breathe. In addition to photosynthesis, soil moisture and air also affect the process of growth and development. Low humidity will make the process of plant transpiration faster. This causes, the process of absorption of water from the soil will also quickly occur and indirectly these plants will need more water. This water is absorbed, not only as a necessity of the plant, but also as a support for the photosynthesis process.

When *yur* is carried out, these plants which are bearing fruit cannot be taken or disturbed by humans. This has indirectly reduced one of the factors that can cause the fertilization process to fail, because there is no interference from humans. During *yur* implementation, the fertilization process can occur properly. Starting from the pollination process, fertilization is the process of turning zygotes into ovules and ovules, the development of ovules into seeds and ovules into fruit, until the fruit is ripe perfectly. During the implementation of the *yur* too, the process of imbibition, photosynthesis, and also plant transpiration, can occur properly without any disturbance. These three processes also affect the final ripe fruit. The absence of interference from humans, causing plants to do these processes well, so that the final results obtained are also satisfactory. When the *yur* has been completed, the harvests obtained are also of good quality. This means that local wisdom can function as a guardian of plants during the fertilization process until the time of harvest.

**Table 1.** Ethno-science Profile of *Yur* Local Wisdom

Local Wisdom	Indigenous Science of Society	Scientific Science
<i>Yur</i>	Prohibit human to take plant that start to bear fruit until harvest time	When <i>yur</i> is conducted, it can protect processes during fertilization until the perfect fruit is done. Some processes namely: <ol style="list-style-type: none"> <li>1. Biology Process:               <ul style="list-style-type: none"> <li>• Fertilization process, namely the meeting of sperm cells and egg cells to become a seed (zygote) and ends up being a perfect fruit</li> <li>• The process of photosynthesis is the process of making food in plants.</li> </ul> </li> <li>2. Physic Process:               <ul style="list-style-type: none"> <li>• The process of imbibition, the process of absorbing water by the seeds which is then converted into enzymes for the growth of the seeds.</li> <li>• The process of plant transpiration, namely plant respiration which is influenced by soil conditions and air humidity.</li> </ul> </li> </ol>

Local Wisdom	Indigenous Science of Society	Scientific Science
		3. Chemistry Process: The process of changing enzymes both in the process of fertilization, imbibition, and photosynthesis.

The ethno-science study of *yur* local wisdom described in Table 1 can be used in the learning process, especially in the matter of plant fertilization. Students will more easily understand every process that occurs in plants, starting from the process of fertilization, imbibition, transpiration, and photosynthesis. This explanation is also expected to foster students' character about caring for the environment. Because basically local wisdom *yur* has a character value of caring for the environment, especially when a plant is undergoing fertilization, growth and development (Widana et al., 2023).

## CONCLUSION

The dependence of the Kanum tribe on nature causes their ancestors to create local culture or wisdom aimed at preserving that nature. Local wisdom, until now continues to be taught to each generation. One of the local wisdoms is *yur*, the principle of which is to forbid humans from taking or doing anything on plants that are entering fertilization until the time of harvest. It is intended that, the fruits of these plants can mature perfectly. During the *yur* process, starting from the pollination process, fertilization, until the ripe fruit of the plant, can run well. During that time, biological processes, chemistry, and also physical processes related to the growth and development of the fruit take place, until the fruit is ripe perfectly. When the fruit is fully cooked, the local wisdom can also be canceled and it's mean that *yur* is finished, and the fruit can be taken and consumed by anyone. This indicates that local wisdom has a positive impact which is able to maintain the process of growth and development of plants that are bearing fruit until the harvest time arrives.

The results of an ethno-science study on *yur* local wisdom can be a contextual example in science learning. The processes that occur during fertilization until the formation of the perfect fruit are processes that can be explained using biology, physics, and chemistry. All of these processes can run well if there is no interference from anywhere, including from humans. In addition, the explanation of *yur* local wisdom indirectly introduces local wisdom to students. From the results of this study, it is hoped that students will more easily understand the process of conception and local wisdom itself.

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