

Morphology Characteristics of Local Rice (*Oryza Sativa L.*) Rice Lands of Long Tebulo Village, North Kalimantan

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Abstract

Local rice (*Oryza sativa L.*) is an annual plant cultivated by local people once a year. Local rice in the Malinau Regency area has different names for rice cultivars based on the local community's ethnicity or the person who brought the seeds. The aim of this research is to find out the local rice cultivars in the rice fields in Long Tebulo village and to find out the characteristics of the local rice fields in Long Tebulo village. This research was carried out from November 2020 to February 2021. The methods used in the research were qualitative analysis, exploration and characterization. The research results are available. There are 10 types of local rice cultivars, there are 6 sticky rice cultivars including Adan Saleng, Adan Bala, Adan Pute, Uro, Pulut Embeng, Pulut Bu'ung, and 4 ordinary rice cultivars, namely Bere, Bawang, and Gula/bread, based on plant characteristics. Rice has different ages, plant height, panicle length, grain shape, age, and rice color.

Keywords: Characteristics, Local Rice, Rice Fields, Long Tebulo.

Introduction

North Kalimantan has a variety of local types of rice which have been cultivated by the people from their ancestors for generations, generally the local people cultivate rice using the shifting cultivation system, this is usually done by the Dayak people in general, while the Tidung and Bulungan tribal people use it on lowland or tidal land. Rice (*Oryza sativa L.*) is an annual plant that is cultivated once a year. Local rice in the Malinau Regency area has different names for rice cultivars based on the ethnic group of the local community or the person who brings the seeds. Usually the seeds are obtained through a barter system or bought from people who bring rice seeds from outside the area.

Long Tebulo Village is a village in Bahau Hulu District, Malinau Regency, North Kalimantan. It is one of the villages that has quite high potential for local rice germplasm. Apart from that, Malinau Regency is one of the districts that has a rice producing area where sales have been made to Malaysia. Local rice has advantages compared to superior rice varieties, such as fragrant aroma, smooth taste, and resistance to pests and diseases, but the disadvantage of local rice cultivars is that they have a relatively longer lifespan. Local rice in the North Kalimantan region has different characteristics such as rice color, grain color, grain shape, and the presence or absence of a tail at the end of the grain (Hariyati & Utomo, 2019; Masniawati et al., 2015; Mita et al., 2018).

One effort to ensure that local rice does not become extinct is by inventorying, identifying and conserving local rice in rice fields, which we hope will help in preserving the biological riches in Tebulo Village. This biological conservation effort is so that local rice can be developed, this is because local rice

in Long Tebulo Village has not yet been carried out an inventory of local rice so research needs to be done. The aim of the research is to collect data regarding local rice in the rice fields of Tebulo village. It is hoped that this research will enable plant breeders to develop new superior varieties so that they can increase rice productivity

Literature Review

Local rice (land rice) is germplasm which has natural resource potential that can control important characteristics. Rice is one of the food sources for the Indonesian people in particular, where after being milled the rice turns into rice which is then used as a staple food with a calorie count of around 35 - 60% (Masniawati, et al., 2015; Mita et al, 2018).

The existence of local rice today is still very dependent on cultivation carried out by local people from generation to generation from their ancestors, until now there has been no conservation of genetic resources to protect varieties from extinction and genetic erosion (Hana *et al.*, 2009). The use of local rice varieties in developing new superior varieties in plant breeding programs is not yet optimal, where the genetic resources produced come from traits inherited from their offspring. Local rice plants have advantages that other varieties do not have. Local rice is an important capital in assembling new crops that can be developed in the agricultural sector such as food crops to support food self-sufficiency (Nurhasanah and Sunaryo, 2015).

Based on the physicochemical properties of rice, it can be determined by the nature of its starch, this is because starch as a constituent material consists of amylose and amylopectin. The classification of ordinary rice based on its content can be classified into several criteria, namely glutinous rice (amylose content < 10%), low amylose rice (10-20%), medium amylose rice (20-25%) and high amylose rice (> 25%). The Indica rice type does not always have a higher amylose content than the Javanica type, but most Indica rice types have a higher amylose content. (Haryadi, 2006; Zhang *et al*, 2007).

Research Method

The research was carried out for 5 months, in Long Tebulo Village, Bahau Hulu District, Malinau Regency. The tools used include books, pens, meters, digital scales, cameras, machetes, neat rope, duct tape, scissors. The material used is local rice grain in Tebulo Village.

Data analysis

The method used in this research is the survey method, interviews followed by descriptive data, exploration and characterization of rice grain. The number of samples observed for each cultivar was 5 panicles planted, then grain characteristics were tested. The parameters to be observed are, Plant height (cm), Flowering age, Number of productive panicles per clump (stem), Harvest age, Panicle length (cm), Filled grain per panicle (grain), Empty grain per panicles (grains), total grain per panicle (grains), grain weight per panicle (gram), grain length (cm), rice condition, grain shape and rice color.

Results and Discussion

Local rice in Long Tebulo Village

Long Tebulo Village is a village in Bahau Hulu District, Malinau Regency, which has quite large potential for natural resources, one of which is local rice. Local rice is cultivated in paddy fields and fields. As for the boundaries of Long Tebulo Village; to the east it borders Malinau, to the west it borders Kayan Hulu, to the south it borders Long Uli Village, and to the north it borders Long Alango Village which is the center of the capital of Bahau Hulu District. Based on the local rice types available in Long

Tebulo Village, you can see the following table.

Table 1. Classification Based on Local Rice Types in Long Tebulo Village Rice Fields

No	Type of rice	Cultivars
1	Sticky rice	Adan Saleng, Adan Bala, Adan Pute`, Uro, Pulut Embeng, Pulut Bu'ung.
2	Normal	Bere, Onions, Talun, Sugar/Bread.

Table 1, based on the classification of local rice cultivars in Long Tebulo Village, 10 types of cultivars were found, and they were classified into two types, namely sticky rice, there are 6 cultivars including Adan Saleng, Adan Bala, Adan Pute`, Uro, Pulut Embeng, Pulut Bu rice. 'ung, while there are 4 cultivars of ordinary rice, namely Bere, Bawang, and Gula/roti. The naming of local rice cultivars in Long Tebulo Village follows local indigenous tribes or people who come with rice seeds, this is to make it easier to pronounce the name of the rice cultivar. In accordance with the opinion of Nurhasanah, et al (2018) that the naming of local rice follows the local regional language and the origin of rice, rice seeds are obtained using a barter system, there is no limit to the distance between local rice plants between other cultivars.

Table 2. Diversity of Local Rice Cultivars in Long Tebulo Village.

Cultivars	Classification										
	TT (cm)	Age (day)	J.M	Harvest Age		PM	J.T	GB	GH (%)	JGT	Heavy (g)
				Day	Mont h						
Bere	124.33	128	15	175	5.22	26	27	230	8.9	252	6.3
Adan Saleng	155.00	115	12	162	5.9	32	38	300	14.4	349	7.3
There's reinforcements	132.33	125	19	170	5.17	25	24	186	17.4	229	6.6
Adan pute`	147.00	115	11	180	5.27	30	27	261	14	303	8
Talun	148.00	133	14	198	6.15	31	28	261	29.6	367	5.3
Onion	151.00	125	8	172	5.19	31	30	134	18.4	165	7.3
Sugar/bread	152.67	125	21	193	6.1	26	41	285	12.2	326	8
Pulut bu'ung	145.33	115	13	180	5.27	27	25	220	14.4	258	7.6
Pulut embeng	118.33	125	8	172	5.19	25	28	216	15.7	258	9
Uro	141.33	125	10	164	5,11	27	33	256	8.4	280	8.3

The diversity of local rice cultivars in Long Tebulo Village (Table 2) shows that the average plant height for sticky rice is between 118.33 - 155 cm while for ordinary rice it is 124.33 - 152.47. This can be caused by the genetics of the type of plant, apart from that it can be influenced by the environment / place of growth. According to Hariyati & Utomo (2019) that local rice in Bulungan Regency has an average plant height of 70 cm to 182 cm, while based on height criteria Plants are divided into three groups, namely short (<122 cm), medium (122 – 161cm) and tall (>162 cm) (BB Biogen, 2014).

Based on the age of rice plants in Long Tebulo Village, 193 - 198 days or 6.1 - 6.15 months, consisting of Sugar/Bread Rice, Talun. Rice cultivars that have a lifespan of <193 days or around 5 months are Adan Saleng, Bere, Adan Bala, Adan Pute`, Bawang, Pulut Bu`Ung, Pulut Embeng, Uro. The

flowering age of rice plants in Long Tebulo Village ranges from 115-133 days after planting, in accordance with the opinion of Sunarsedyono, et al, (2021) that local rice cultivars have a flowering age of less than 120 days which is called late maturity, 120-140 days after medium maturity, and more from 140 hst.

The formation of tillers is influenced by several factors such as the age of the rice seedling at the time of the nursery, plant spacing, and environmental factors where it grows (AAK, 1990). Apart from that, the age of rice plants can also be caused by the length of time for seeding, the spacing is too wide, and the growing environment can influence the place where the plants grow easily to reproduce. It is best if the plant population is too large, the spacing is too close, which can cause plant growth. be less than optimal, this can be caused by genetic factors of the plant itself or environmental factors in which it grows. Based on the age of local rice plants in Bulungan Regency, it ranges from 4 to 8 months (Hariyati and Utomo, 2019, Hariyati, 2020).

Based on the number of productive panicle branches, it ranges from 11 – 21 stems found in the rice cultivars Bere, Adan saleng, Adan bala, Adan pute`, talun, Pulut bu'ung, Gula/Bread. Rice cultivars with productive panicles of at least 8–10 stalks are Bawang rice, Pulut Embeng, and Uro. The number of local rice seedlings is generally less than the national superior varieties (Mulyaningsih et al, 2013). For the length of the panicles of rice plants in Long Tebulo Village, there are 7 types of rice cultivars which have a medium length of 20-30 cm, namely Bere rice, Adan Bala, Adan Pute, Pulut Bu'ung, Pulut Embeng, Gula/Bread and Uro rice. having long panicles >30 cm, there are 3 types of rice cultivars, namely Adan saleng rice, Bawang and Talun rice. Panicle length can be divided into three categories, namely short panicles less than 20 cm, medium panicles between 20-30 cm, and long >30 cm (Anonymous, 2011).

The largest amount of rice grain is Adan Saleng rice, Sugar/Bread Rice, Uro` Rice. Those with the fewest grainy grains are Bawang rice, Adan Bala rice, while the most empty grains are Talun rice. It is thought that this plant is easily attacked by pests, causing the rice plants to have a lot of empty grain. The rice cultivars that have the fewest empty grains are Bere and Uro` rice, and the highest number of empty grains are Talun, Adan Saleng and Gula/Roti rice. Based on the weight of grain for each type of local rice cultivar. has different weights, apart from the shape and size, the highest is 9 g for Uro` rice. Meanwhile, the lightest grain weight at 5.3 g is onion rice.

Table 3. Classification of local rice based on shape

Cultivars	Rice Size		
	PB (mm)	Shape	Color
Bere	6	Rounded	Clear
There's a sale	7	Slim	Black
There's reinforcements	10	Slim	White
Adan pute`	9	Slim	White
Onion	9	Slim	Clear
Pulut embeng	9	Slim	White
Pulut bu`ung	7	Rounded	White
Talun	6	Rounded	Clear
Uro`	10	Slim	White
Sugar/bread	6	Rounded	Black

In table 3 above, the research results show that the length of local rice grains in Long Tebulo Village, which has a grain length of 6 to 7 mm, has five cultivars, namely Bere, Adan Saleng, Pulut Bu'Ung, Talun, Gula/Roti. Cultivars that have a grain length of 9 to 10 mm are Adan Bala, Adan Pute`, Bawang, Pulut Embeng, Uro`.

Based on the average shape of the slender grains, there are 6 cultivars of Adan Saleng, Adan Bala, Adan Pute`, Bawang, Pulut Embeng, Pulut Bu`ung, and Uro` rice, while there are 4 types of rice with a rounded shape. Bere, Pulut nu `ung, Talun and Gula/bread, while there are three categories of rice color, namely white, there are 5 cultivars, namely Adan Bala rice, Adan Pute`, Pulut Embeng, Pulut Bu`ung, Uro. The clear color has 3 cultivars, namely Bere, Onion and Talun rice and the black color has 2 types of cultivars, namely Adan Saleng rice and Gula/Roti rice.

Conclusion

The research results, the number of local rice found in Tebulo Village is 10 cultivars consisting of 6 types of sticky rice and 4 types of ordinary rice. Based on morphological characteristics based on height from 118.33 – 155, the average age of rice is 5 months (glutinous rice), ordinary rice 6 months. It has long grain size for sticky rice and is slender in shape. Regular rice is rounded, panicle length 25 - 31 cm.

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