

Exploration and Morphological

by Sundari S

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SUBMISSION ID	1373173984	CHARACTER COUNT	8861

1 Exploration and Morphological Character Identification of Local Durian (*Durio zibethinus* Murr.) from Tidore Island, North Maluku

Sundari¹, Estri Laras Arumingtyas¹, Luchman Hakim¹, Rodiyati Azrianingsih¹

¹Department of Biology, University of Brawijaya, Malang, Indonesia

Corresponding author: sundariunkhair08@gmail.com

Abstract

Local durian is the name for *Durio zibethinus* Murr. found in the Tidore Island, North Maluku. There are many local names for local durian in Tidore Island that have many different morphological variation. The objective of this study was to inventarize and analyze the morphological character variations of 19 local durian names collected from 9 villages: Gurabunga, Gubukusuma, Afa-afa, Fobaharu, Foralaha, Jaya, Bobo, Dokiri and Rum in the Tidore Island, North Maluku. This research was conducted in March-June 2015 using descriptive exploratory method with purposive sampling. Local durians found in Tidore Island have variations local names and variation of morphological characters include: habitus, leaf shape, fruit shape, flesh color and texture, seed shape, and the shape of the aril thorn.

Keywords: inventarization; local durian; morphological characters; Tidore Islands

1. Introduction

One effort to build the image of nusantara durian is to utilize local genetic resources of durian scattered in various areas [1]. Local durian is a variant name for durian (*Durio zibethinus* Murr.) which grows in various regions in Indonesia. Various types and varieties of durian are generally used by various community for different purposes [2]. Tidore local durian is durian variant which grows naturally (wild) on Tidore Islands and is derived from the seeds, in which the ownership is passed from one generation to the next generations. Tidore archipelago is one of the durian production center in North Maluku Province beside the island of Ternate and West Halmahera District of Jailolo. Local durian production in Tidore Island reached 3.87 tons per year [3].

Diversity of local durian in Tidore Islands remains unreported. One of the diversity parameters of local durian in Tidore Islands is the names of the local durian variant given by the local community. The local name was given based on morphological variation, the owner's name or the area where durian grew locally. Tolangara *et al.* [4] reported that based on taxonomic analysis, the diversity of local durian in Ternate were divided into 7 groups with the highest similarity index (90.32 %) was durian Udi and Sina, while in Jailolo, there were 5 groups with the highest similarity index (88.66 %) was durian Boga and Malal.

This study was aimed to explore and inventarize the genetic resources of local durian in Tidore Islands based on morphological characters and local variant names. The specific objective of this study was to analyze the variation of morphological characters of 19 names of local durian collected from villages Gurabunga, Gubukusuma, Afa-afa, Fobaharu, Foralaha, Jaya, Bobo, Dokiri, and Rum Tidore Island, North Maluku. The exploration and inventarization of genetic resources in the local durian Tidore Islands were expected to contribute to give information toward the policy and strategies of local durian good management for utilization and conservation aspects.

2. Material and Methods

The research was conducted in March-June 2015 by using exploration descriptive method with purposive sampling technique. Observation of morphological characters was carried out using International Descriptors for Durian (*Durio zibethinus* Murr.) [5] as reference. Plants of local durian observed were focussed on over 15 years old plants and had already been fruitful. As many as 19 local durian names were collected from villages Gurabunga, Gubukusuma, Afa-afa, Fobaharu, Foralaha, Jaya, Bobo, Dokiri, and Rum in Tidore Island, North Maluku.

3. Results and Discussion

Based on the exploration conducted in 9 research sites in Tidore Islands, there were 19 local variant durian (*D. zibethinus* Murr.) names, can be seen in Table 1.

Table 1. Collection and sampling of Tidore local durian

Collection Number	Local name	Location
R1	Mentega/Urat/Nguro	Gurabunga, Gubukusuma, Foralaha, Fobaharu
R2	Gajah	Gurabunga, Foralaha, Jaya, Rum
R3	Gosi	Jaya
R4	Nona	Gurabunga, Gubukusuma, Rum
R5	Botol	Gurabunga, Jaya
R6	Baba	Gurabunga
R7	Boso	Gurabunga
R8	Kavika	Gubukusuma
R9	Tusa	Dokiri, Rum
R10	Batu/ Gulinga	Gubukusuma
R11	Sambiki	Afa-afa, Bobo, Rum
R12	Mafu	Fobaharu
R13	Malal	Jaya
R14	Joijo	Jaya, Rum
R15	Nangka	Rum
R16	Kusi	Rum
R17	Kohori	Rum
R18	Takate	Rum
R19	Blek	Bobo, Rum

Result of identification of 19 local variant durian (*D. zibethinus* Murr.) names using multiple vegetative and generative characters as apparent in Figure 1, 2, 3, 4, 5, and 6.

Tidore local durian has morphological variations among the local names. Several variations that can be distinctive morphological characters among the local names of durian Tidore include: crown shape, the type of branching, leaf shape, fruit shape, fruit color, and texture of the fruit (Figure 1, 2, 3, 4, 5, and 6). The variations of crown shape Tidore local durian among others oblong, elliptic, and irregular (Figure 1). Tidore local durian variants which have oblong crown shape were: R12, R15, R17, and R19, elliptic canopy shape: R1, R2, R6, R7, R9, R13, R14, R15, and R16, while the irregular crown shape: R3, R4, R5, R8, R10, R11, and R16. The crown shape of durian (*D. zibethinus* Murr.) consists of pyramid, oval, rounded, wideround, elliptic, and irregular crown shape [5].

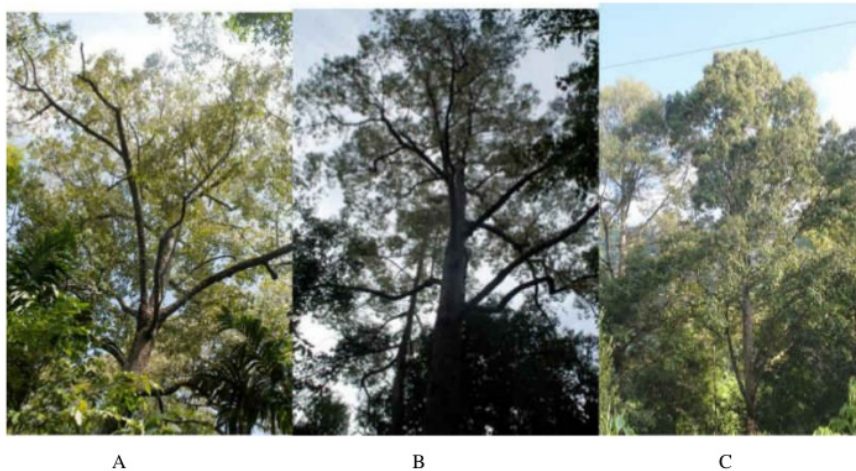


Figure 1. The shape of the canopy. A) oblong, B) linear, C) irregular

The branch type of the Tidore local durian variant among others: intermediate and intermediate-spreading (Figure 2). The Tidore local durian variants that had intermediate branching types were: R1, R2, R6, R7, R13, R15, R16, R17, and R19. The variants of local durian with intermediate-spreading branching type among others: R3, R4, R5, R8, R9, R10, R11, R12, and R18. Durian (*D. zibethinus* Murr.) is an annual plant that has Roux growth model which is characterized by the dominance of their continuous orthotrop stem monopodial growth [6]. Bioversity International [5] mentions that durian has erect plant growth model, intermediate and spreading as well as other models.

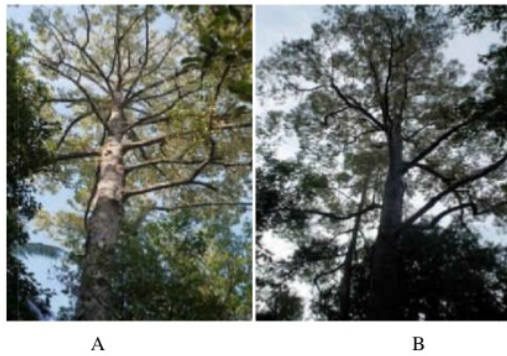


Figure 2. Branch type of Tidore local durian. A) intermediate, B. intermediate-spreading

Variations in leaf shape of Tidore local durian among others: elliptic, ovate, abovate, and linear oblong (Figure 3). Durian leaf shape (*D. zibethinus* Murr.) are generally ellips, but some are oval with round leaf base and stalk [7]. Leaf on durian is considered not complete type with the upper surface of the leaf is light green to dark green. The lower surface of the leaf is greenish-white, beige, brown or brown [8]. Tidore local durian fruit shape varies exists in the form of round (globose), oval (ovoid), heart, or elongated (oblong) (Figure 4). Tidore local durian fruit also has a variety of colors ranging from green, brown, brown, and dark brown (red) to grey (Figure 5).

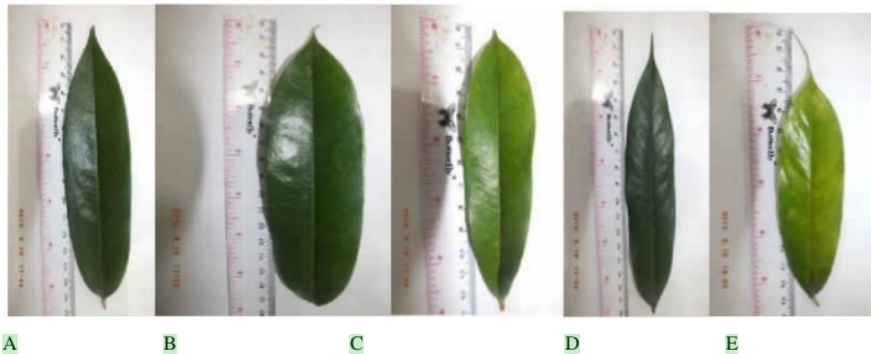


Figure 4. Shape leaf of Tidore local durian. A) ovatus, B) oblong, C) ellip, D) linear-oblong, E) obovate

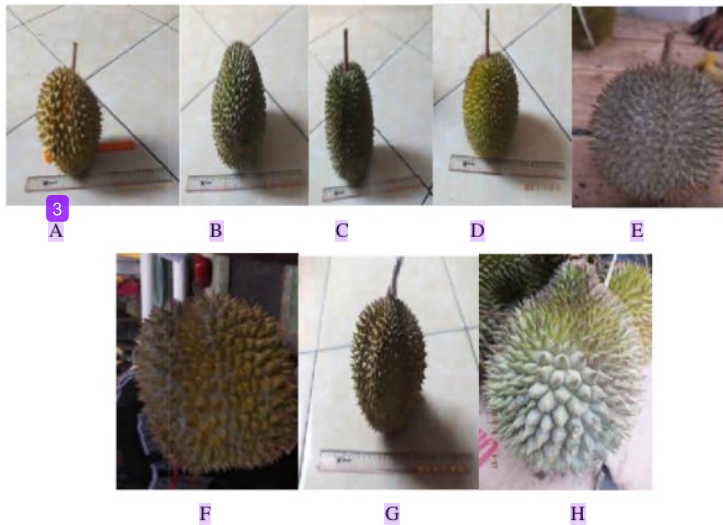


Figure 5. Fruit shape. A) round, B) heart, C) oval, D) round, F) oblong, H) bottle

The texture and color of the fruit flesh at the Tidore local durian also have some variations. Some are white with wet or dry, while some are yellow with wet or dry texture. Some of them also have fibrous wet texture and fluffier dry texture (Figure 6).

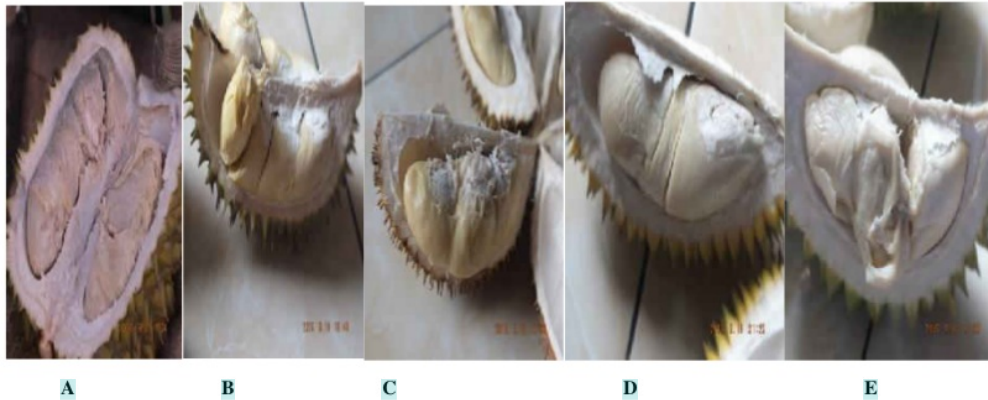


Figure 6. Color and texture of local durian fruit flesh Tidore. A) creamy wet fibrous, B) yellow dried fluffier, C) wet yellow fluffier, D) dry white fluffier, E) white wet

Durian (*Durio zibethinus* Murr.) does not have a striking difference in the character of flowers, shape, and color of seeds. Tidore local durian has 3-47 umbrella series hanging flowers, goldenish yellow to cream in color. The color of extra sepalis greenish cream, outer surface is scaly, furry, and spatula in shape. The flower has 28-77 fan-shaped stamens, arranged in 5 beams, the number of stamens in each beam is 5-16, the length of stamen stem varies 1.7-4.6 in cm, stem color is cream, the color of pistil is orange, ranging from 2.4 – 3.6 cm [9], [10]. Durian seed color is yellowish or light brown and ovoidin shape [11].

4. Conclusion

Tidore local durian which has been successfully explored include 19 local names, scattered in 9 villages. Tidore local durian has a diversity of local names and morphological variation consisting of variations habitus (crown shape and type of branching), leaf shape, fruit shape, flesh color, seed shape, form, and texture of the flesh.

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