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Comparative Studies on Leaf Surface of *Pandanus Tectorius* Blume Among Two Accessions

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ABSTRACT

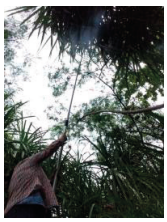
Two accessions of *Pandanus tectorius* Blume (Ban Sai Khuan, Satun and Ban Du Hun, Trang) were carried out to be investigated on the leaf surface with light microscopy and scanning electron microscopy in 2019. The result showed that both of them have the 4-6 angled shape of epidermal cells and entire cell wall. They also have a tetracytic type of stomata which occurs in the adaxial and abaxial epidermis, but they were always more abundant in the abaxial than those in the adaxial one. The guard cells were kidney-shaped. The subsidiary cells at both poles were smaller than those at the lateral side. The investigation of stomata from two accessions found that the stomatal size from Ban Du Hun larger than that from Ban Sai Khuan. The cuticle from Ban Du Hun is much thicker. In addition, the natural habitat could affect the structure of leaves from different locations, by means of stomatal size cuticular, salty crystal on abaxial and adaxial leaf surface.

INTRODUCTION

Pandanus tectorius Blum (Screwpine) (Pooma & Suddee, 2014) is dioecious, meaning male and female flowers are borne on separate trees, with very different male and female flowers. Male flowers, known as racemes, are small, fragrant, and short-lived, lasting only a single day. The flowers are grouped in 3 and gathered in large clusters surrounded by big, white bracts. these clusters are about 1 ft in length and are fragrant. The female flowers resemble pineapples. The leaves of *Pandanus tectorius* are usually 90–150 cm in length and 5–7 cm in width. They possess saw-like margins. The leaves are spirally arranged at the end of the branches.

In the southern region of Thailand, can be use of Screwpine leaves for the basketry, such as baskets, hats, mats and can be transformed into a variety of contemporary products.

The objective of this study was to compare the leaf surface anatomy of Screwpine from two areas which has different ecological conditions as a basis for selecting good genetic traits for processing into wicker products.



Harvesting parts of Screwpine leaves and products obtained from basketry

MATERIALS AND METHODS

The specimens used for this study were collected from fieldwork conducted in Southern of Thailand at Ban Sai Khuan, Satun and Ban Du Hun, Trang. Selected leaf sample from the center of the stem and selected a sample from the center of the leaf plate. Studied of epidermis by peeling the leaf surface.

Th leaves we removed from both the upper and lower surface tissues with a razor blade, took the sample to be examined with a light microscope and record the image. (Tihurua, & Erlinawati, 2015).

Studied the stomata cell by cleaning the leaves. Left to dry and then baked in a hot air oven at **60°C. Prepare**d the sample blades, cut into rectangular pieces approximately **5** x **5** mm in size, both the upper and lower surfaces. Placed the specimen on the stub and gold plated, and then studied under a scanning electron microscope (SEM) to studied the characteristics of stomata and the shape of cells in the skin tissue. (Rahayu, Kartawinata, Chikmawati, & Hartana, 2012) Leaves samples were kept as dry specimen and deposited in Bangkok Heabarium (BK), Department of Agriculture.

RESULTS AND DISCUSSION

The study of the area where pandan leaves were collected from two sources, it was found that the ecology around Ban Duhun (a), Screwpine growing on the beach with strong winds and relatively dry weather, leaves had glaucous. For example, pandan leaves collected from Ban Sai Khuan (b), Screwpine growing in the humid conditions. covered with large trees, Screwpine leaves, glaucous uncovered.

The epidermis cell shapes, usually square, pentagonal, and rectangular, anticlinal cell wall straight or slightly undulate, papillae present or absent. Stomata sunken or even to epidermis cells, tetracytic, amphistomatous, scattered on adaxial. In abaxial part, it is found only at inter costal or sometimes scattered thin hypodermis, consist of 1-3 layers of rectangular cells on adaxial and abaxial part as well. (Tomlinson, 1965). They have tetracytic type of stomata which occur in the adaxial and abaxial epidermis, but they are always more abundant in the abaxial than those in the adaxial one. The guard cells (a) are kidney-shaped. The subsidiary cells at both polar (b) are smaller than those at the lateral side (c) (Figure 1) as well as the study of Rahayu, Kartawinata, Chikmawati, & Hartana, 2012.

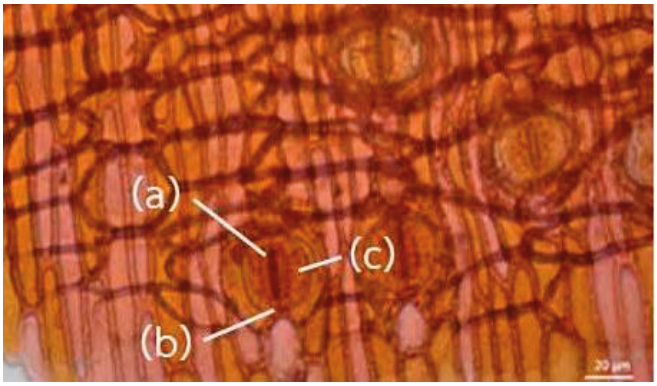


Figure 1. The guard cells (a) are kidney-shaped. The subsidiary cells at both polar (b) are smaller than those at the lateral side (c).

The investigation of stomata from two accessions found that the stomatal size from Ban Du Hun are larger than that from Ban Sai Khuan, and the cuticle, sample from Ban Du Hun has thicker than sample from Ban Sai Khuan,

In addition, the natural habitat could affect with structure of leaves from different locations, by means of stomatal size and thickness, cuticular thickness, salty crystal on abaxial and adaxial leaf surface. (Figure 2) as a result of being in an environment with hot windy weather, plants need to reduce dehydration of the leaves surface. cuticle can be reduce dehydration and protect against sun damage.

CONCLUSION

Two accessions of *Pandanus tectorius* Blume (Ban Sai Khuan, Satun and Ban Du Hun, Trang) both of them had the same shape of

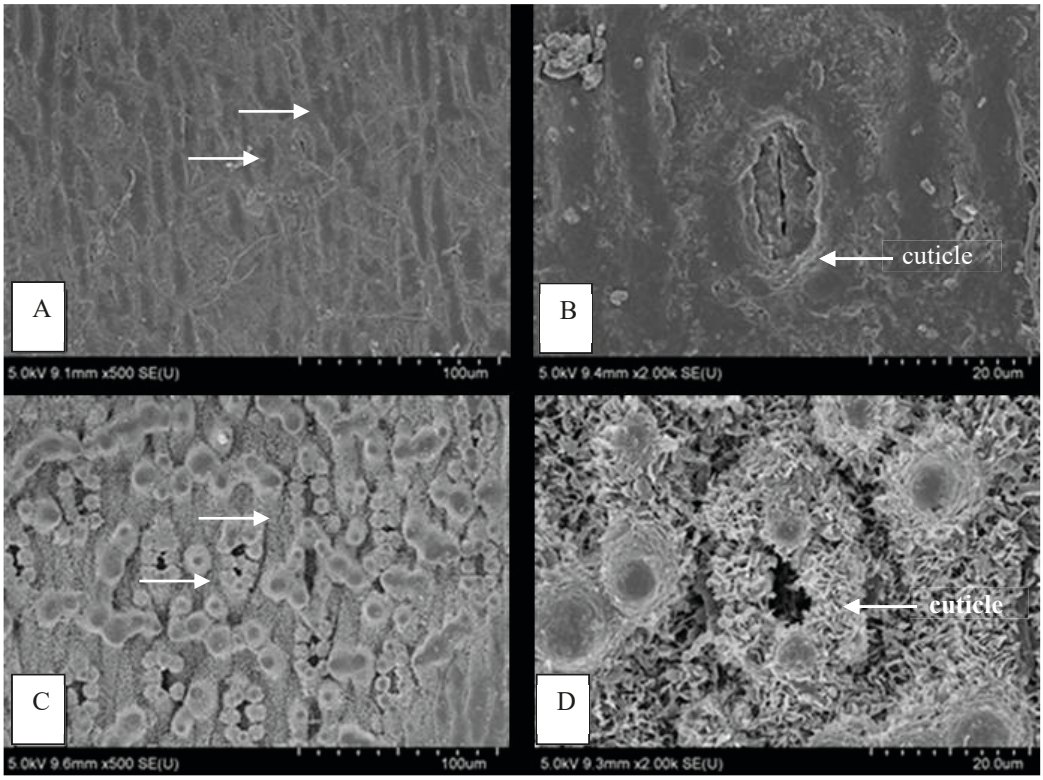


Figure 2. The stomatal size from Ban Du Hun (C, D) are larger than that from Ban Sai Khuan (A, B), and the cuticle from Ban Du Hun has much thicker.

epidermal cells and entire cell wall. They had tetracytic type of stomata. The stomatal size from Ban Du Hun are larger than that from Ban Sai Khuan, and the cuticle, sample from Ban Du Hun has thicker than sample from Ban Sai Khuan. The natural habitat could affect with structure of leaves from different locations as a result of being in an environment with hot windy weather. Plants need to reduce dehydration of the leaves surface. cuticle can be reduce dehydration and protect against sun damage.

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