

PRODUCING DATABASE OF IMAGES FOR THE STUDY OF WATER LILY'S VARIETY

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ABSTRACT

This research aims to produce and estimate the efficiency of photo database to study the water lily of 70 breeds. The study is to produce photos of water lily and bring to assess the efficiency in details through questionnaires and sample groups of 302 visitors at the lotus museum of Rajamangala University of Technology Thanyaburi.

The result indicated that controlled factors, such as the distorted photos by using a long focus lens similar to a standard lens, the color balance by estimating the color temperature of photo-recording devices as same as the light-color temperature, the light not differing from taking photos in the morning, the disordered background by using the black scene, using the eye-level angle to a 20-degree-high angle to show the dimension of blooming flowers, using a 20-degree-low angle to a 20-degree-high angle to portray the budding flower shapes, using a high-angle camera to a 60-degree-high-angle camera to show the lotus petal shape, using the high-angle camera to show the leaf shapes, designating the direction of front light and side light to show the water lily leaf and branch surfaces, and using the color-checker sheet to check the color correctness to display the flower leave and branch colors can produce the photos applying the study of the water lily breeds to grow them as garden trees in the very good level.

INTRODUCTION

The water lily is a plant that has long history along with Thai people for more than 700 years as Thais have grown the water lily as decorating trees. Moreover, Thai people have used the lotus as a food, a fragrant, medicines, and sacrificing to the image of Buddha. In the present, the lotus is used as a resource base of Thailand. There has been water lily grown in the project of reserving heredity plants, according to the statement of Her Royal Highness Princess Maha Chakri Sirindhorn, such as the Lotus Museum of Rajamangala University of Technology Thanyaburi (RMUTT). If there is a widespread growing of the lotus as the decorating trees in houses, it will be a means to reserve the heredity plants.

The water lily is a kind of lotus which is popular for growing as a decorating tree. There is a wide range of water lily breeds which give colorful flowers, various shapes and surfaces, and different types of leaves. Giving knowledge of water lily breeds regarding the significant physical qualities; for example, colors, shapes, surfaces of lotus branches, and shapes and colors of lotus leaves, will be helpful to choose the breeds of decorating trees. On the other hand, the description of the lotus in writing can explain the botany qualities of water lily, relating to the human vision naturally, in specific names such as a shallow concave leaf edge, tapering flower form, and tapering forms of flower base and edge [1]. This is relatively hard for the real perception of lotus.

As the feature of photos stated that “A picture is worth a thousand words,” photos were used as the supporting media to explain in the learning. Photos can describe the water lily breeds in order for growing the water lily as a decorating tree. The photos should be able to show the physical details of flower and leaves such as colors, shapes, surface of water lily branches, and shapes and colors of water lily leaves corresponding with the explanation.

THE RESEARCH OBJECTIVES

1. To produce the photo data base for learning the breeds of lotus
2. To evaluate the efficiency of photos to learn of water lily breeds

RESEARCH METHODOLOGY

In this research, the researchers determined the methodology as follows

1. Studying the data of flower photos, photo taking techniques to portray shapes, colors, and details of surfaces, and physical features of the water lily and particular data of each breeds including collecting the physical features of water lily breeds to plan in taking photos by using the data of original water lily breeds created by Dr.Sermlarp Wasuwat.

2. Taking photos of 70 water lily breeds by using the devices and specifying the photo taking methods as bellows:

- Use 35 mm digital single lens reflex with full frame CCDs
- Use 75 mm telephoto lens which is the short narrow angle lens to make the flowers look bigger and not result in the photos distorted apparently
- Set the color temperature of digital camera at daylight mode with sensitivity (ISO) of 200
- Use the color checker as a tool to evaluate the color correctness which photos of color checker are taken every time of taking photos of water lily breeds or changing the camera angles



Figure 1. Using the color-checker sheet

- Set the time of taking photos at 6.30-9.30 am to control the light source out of the family angle and get the light containing low contrast
- Use the black background to cut off the disordered background
- Take photos of the water lilies and other compositions of water lilies in a real location and use the natural light at the Lotus Museum of RMUTT

3. Making the original photos and adjusting colors of all photo files by applying the Color checker sheet as a criterion to develop, expand, select, and categorize photos following the water lily breeds. Then, the photos were brought to three lotus specialists of Thailand to detect the accuracy of the photos in terms of showing colors, surfaces of water lily branches, shapes and color of water lily leaves of all 70 water lily breeds.

4. Generating a tool to collect the data by building a questionnaire to measure the efficiency of the photo data base to learn the water lily breeds in the ratio of five level approximately (Cronbach's Alphavalue of .831)

5. Collecting the data of May-July 2010 from the accidental samples which are the Lotus Museum of RMUTT visitors or once visitors, and are not color-blinded in the number of 333 people (5 percent error) calculating from 2,000 RMUTT lotus museum visitors in 2009.

6. Analyzing the data from each question in questionnaires which the mean value must be more than or equal to 3.50 and the standard deviation must be lower or equal 1.50. The researchers, later, brought the photos to make the original manuscript of the lotus photo data base in the form of photo books.

The Research Result and Criticism

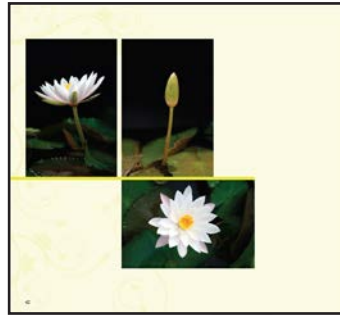


Figure 2. Photo Samples of Lotus Physical Quality

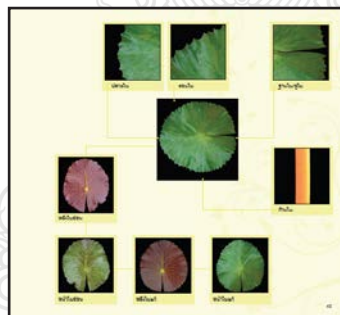


Figure 3. Photo Samples of Physical Quality of Lotus Leaves and Branches

According to the study, the produced photos could be used to learn the lotus breeds in order to grow as garden trees by showing the details of the photos corresponding to photo description in a good level. The study results showed that using 75 mm focus lens, which is short narrow angle lens and has a little focus length difference comparing with a standard lens, could be applied for taking photos to show water lily shapes and dimensions excellently. That is, using a narrow angle lens, which has the focus length similar to a standard lens, would not distort the photos to be concave enough, in the perspective of the human eyesight, to consider that shapes and dimensions of the subject was distorted. [2] Moreover, taking photos without specifying the closest focus length may be a cause of the invisible concave distort, or showing obvious unnatural dimensions or noticeable unnatural shapes [3].

To take photos showing the lotus shapes by setting camera angle in the eye level can show the best shapes of the lotus. That is because the camera angle paralleling to the subject would not change the subject distance. Conversely, taking photos in the low and high angle would change the shapes of the subject and was a reason of distorting the vision dimension [4][5]. Nevertheless, taking photos in the high camera angle (the camera