

## Micropropagation of *Renanthera coccinea* Lour for Conservation

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### Introduction

*Renanthera coccinea* Lour. is a native orchid which was found in the forest or in orchard, Chanthaburi Province. Nowadays, these orchids were cultured for decoration and commercial, in the former time, Queen Rhambhai Barni, the queen of King Rama VII cultured these orchids at Suan Ban Kaew Palace, Chanthburi Province.

From general study, *Renanthera coccinea* Lour. is easy to culture, rapidly grow under strong sunlight. The flowers are horizontally arranged, branched inflorescence produces more than 50 red flowers, from March to May. The sizes of flowers are 2-3 x 4-5 cm. The narrow petals and dorsal sepals are orange-red, mottled with dark red. The lateral sepals are darker red, narrow at the base, but broadened at the tip. The dark-red midlobe has a white blotch at the base. The upright stems attain a height of 4-5 m. or more. Leaves are light green, unequally bilobed, leathery and measure about 8-10 x 2-2.5 cm. From botanical characteristics, *Renanthera coccinea* Lour. has potential developed to be commercial orchid by plant breeding. Nowadays, many native orchids have been endangering to be disappeared due to habitat destruction, so that we should conserve *Renanthera coccinea* Lour. by multiple propagation under aseptic technique or micropropagation.

### Objectives of the study

General objectives are to study the botanical characteristics of *Renanthera coccinea* Lour. and study micropropagation of *Renanthera coccinea* Lour.. This can be defined as the followed specific objectives:

1. To study botanical characteristics of *Renanthera coccinea* Lour.
2. To study the effect of BA on multiple shoot initiation of *Renanthera coccinea* Lour. by micropropagation
3. Transfer the knowledge to the students, and return these orchids to the forest

**Research area :** Faculty of Agricultural Technology, Rambhai Barni Rajabhat niversity Chanthaburi, Thailand.

**Time of the study:** November, 2008 – December, 2009

### Methodology

This research was conducted by survey and experimental research, and then integrated with teaching in Rambhah Barni Rajabhat University:

1. Study botanical characteristics of *Renanthera coccinea* Lour. These orchids were collected from many places and were cultured in greenhouse at Faculty of Agricultural Technology, Rambahai Barni Rajabhat University.

2. Study the effect of BA on multiple shoot initiation of *Renanthera coccinea* Lour. by micropropagation. Tiny seeds from 10-month-old green capsules of *Renanthera coccinea* Lour. were induced to form protocorm - like bodies in Modified Vacin and Went medium supplemented with 150 ml/l of coconut water. The protocorm-like bodies were cultured on Modified Vacin and Went medium supplemented with 50 mg/l of potato, 50 mg/l of ripe banana, 150 ml/l of coconut water, 1% activated charcoal and 5 different concentrations of BA (0,1,2,3,4 mg/l)

3. Transfer the knowledge to the students, and return these orchids to the forest, the students in Faculty of Agricultural Technology learned how to propagate these orchids and transplanted to the big trees at Rambhah Barni Rajabhat University

### Results and Discussion

#### 1. Study Botanical Characteristic of *Renanthera Coccinea* Lour.

After conducting the study we found that *Renanthera coccinea* Lour. was monopodial orchid belong to Family Orchidaceae, Genus *Renanthera* which was easy to culture, rapidly grow under strong sunlight. The flowers were horizontally arranged, branched inflorescence produces more than 50 red flowers, from March to May. The sizes of flowers were 2-3 x 4-5 cm. The narrow petals and dorsal sepals are orange-red, mottled with dark red. The lateral sepals were darker red, narrow at the base, but broadened at the tip. The dark-red labella had a white blotch at the base. The upright stems attain a height of 4-5 m. or more. Leaves were light green, unequally bilobed, leathery and measure about 8-10 x 2-2.5 cm. (figure 1.)

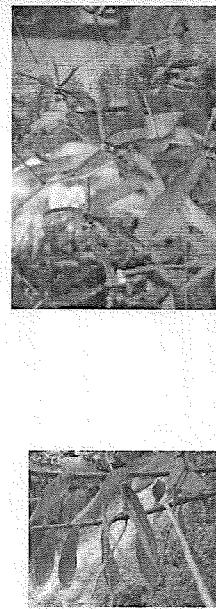
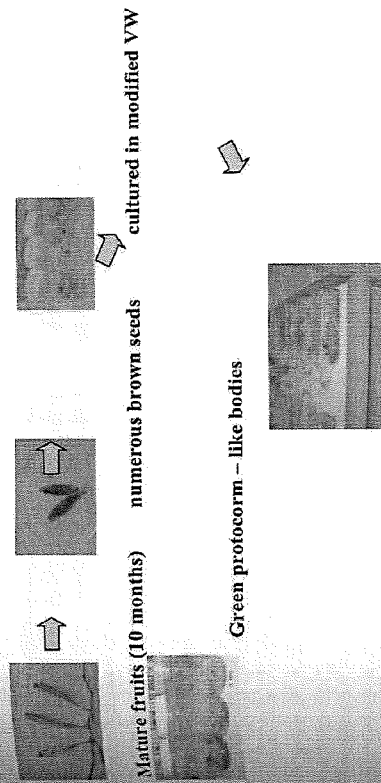


Figure 1. Stem, fruit and flowers of *Renanthera coccinea* Lour.

#### 2. Study the Effect of BA on Multiple Shoot Initiation of *Renanthera coccinea* Lour. by Micropropagation.

In this study, Tiny seeds from 10-month-old green capsules of *Renanthera coccinea* Lour. were induced to form protocorm - like bodies in Modified Vacin and Went medium supplemented with 150 ml/l of coconut water.(Figure 2)



#### Multiple shoot under aseptic technique

Figure 2. Seed of *Renanthera coccinea* Lour. were cultured in Modified Vacin and Went medium.

The protocorm-like bodies were cultured on Modified Vacin and Went medium supplemented with 50 mg/l of potato, 50 mg/l of ripe banana, 150 ml/l of coconut water, 1% activated charcoal and different concentrations of BA (0,1,2,3,4 mg/l), the result was shown in Table 1.

Table 1. The effect of different concentrations of BA on shoot initiation in *Renanthera coccinea* Lour.

Concentration of BA (mg/l)	Number of shoots			
	2 weeks	4 weeks	6 weeks	8 weeks
0	0 <sup>c</sup>	0.1 <sup>b</sup>	0.2 <sup>bc</sup>	0.2 <sup>c</sup>
1	0.5 <sup>b</sup>	0.5 <sup>b</sup>	0.8 <sup>b</sup>	0.8 <sup>bc</sup>
2	1.4 <sup>ab</sup>	1.9 <sup>ab</sup>	1.9 <sup>ab</sup>	1.9 <sup>b</sup>
3	1.5 <sup>ab</sup>	1.9 <sup>ab</sup>	2.0 <sup>ab</sup>	2.4 <sup>b</sup>
4	2.0 <sup>a</sup>	2.3 <sup>a</sup>	2.7 <sup>a</sup>	2.8 <sup>a</sup>

From Table 1 indicated that BA at 4 mg/l was suitable for shoot multiplication and could induce an average of 2.8 shoots from a single

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