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The Micropropagation of Bananas

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ABSTRACT

A study to obtain a method of rapid clonal propagation of bananas was done. The investigated cultivars were Pisang Mas (AA), Pisang Ambon Kuning (AAA), Pisang Barangan (AAA), and Pisang Rajabulu (AAB). The basal medium was MS, the treatment were IAA (0 – 4.5 mg/l) and BAP (0 – 10.5 mg/l), and the explants were suckers from the field. The experiment was designed with Randomized complete design, and repeated in 10 bottles for each treatment. The result of experiment showed that IAA alone significantly induced shoot multiplication. The role of IAA could be replaced by BAP. Cultivars, IAA and BAP interacted each other to induce shoot multiplication. The best treatment to induce shoot multiplication was the combination of IAA and BAP, and the concentration depend on the cultivar. After 8 weeks, the highest number of axilar shoots (12.6 shoots/bottles) was obtained by Pisang Ambon (AAA), followed by Pisang Mas (AA) 8.2 shoot/bottle, Pisang Barangan (AAA) 7.8 shoot/bottle, and Pisang Rajabulu (AAB) 7.6 shoot/bottle.

Key words : Banana, Micropropagation

INTRODUCTION

Bananas is an important fruit in Indonesia, because of nutritive values, as source of vitamins, minerals and carbohydrates. The bananas also easily grow in many areas in Indonesia. The domestic demand of bananas increase 5-10 % per annum, while the exsport markets always open, such as in Japan and Korea. To increase the production of bananas, good quality and quality of seedlings are necessary. Tissue culture technique can be used to achieve that purpose. In this paper, some factors affecting the micropropagation of bananas are reported.

MATERIAL AND METHOD

Investigated cultivars in the experiment were Pisang Mas (*Musa acuminata*, AA group), Pisang Ambon (*Musa acuminata*, AAA group), Pisang Barangan (*Musa acuminata*, AAA group) and Pisang Rajabulu (*Musa Paradisiaca*, AAB group).

Initiation of Culture

The explants were suckers obtained from the field. The suckers were sterilized by soaking them in the mixture of detergent, Agrimycin and Dithane M-45, for overnight. The suckers were then sterilized with NaHCl0 (10%) and sterilized water in the laminar airflow cabinet. The sterilized suckers (diameter 1 cm) were then placed on the solid MS medium containing BAP and IAA, and incubated at 25°C under light illumination for 16 hours per day.

Selection to Get Shoot Multiplication lines

The suckers that could be multiplied into more than 3 shoots were maintained and subcultured for ten times in the MS medium containing BAP and IAA. Number of shoot formed in the cultured were counted every four weeks, and subcultured was done every eight weeks. The axilar shoots that could not multiply were discarded. The produced axilar shoots were used for the following study, to improve medium, for a better propagation rate.

The Effects of BAP and IAA on the Micropropagations of Axilar Shoots.

Single axilar shoot excised from selected lines was used as an explant. The explants were transferred to the MS basal solid medium to eliminate carry over effect of the previous media. The cultures were incubated at the standard condition (25°C, 16 hours/day illumination) for 10 weeks. In order to know the multiplication rate potential of cultivars, the explants were then cultivated on the MS-0 again, and incubated for 8 weeks; subsequently were used for the following experiment. The treatments were IAA (0-4.5 mg/l) and BAP (0-10.5 mg/l), which were added on the MS basal medium. The experiment was designed with Randomized complete design and repeated in 10 bottles for each treatment. Cultures were incubated on the standard condition.

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