

ABSTRACT

***IN VITRO* PROPAGATION OF BANANAS CV. AMBON KUNING AND RAJA BULU**

By

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Banana is one of the most important fruits in Indonesia, since it contributes to food security for millions of people, a rich source of vitamins, minerals, and carbohydrates as well as important cash crop. Traditionally, banana is propagated by suckers, because almost all of edible banana are triploid and seed sterile. Therefore, the availability of a large number of uniform and clean plant materials become a constraint for commercial banana cultivation. *In vitro* propagation has been widely used as an alternative for rapid clonal propagation of banana. Ambon Kuning and Raja Bulu are two of the most popular banana cultivars in Indonesia. This study, which was conducted at Plant Science Laboratory and Green House of Faculty of Agriculture the University of Lampung since February 2012 to May 2013, consisted of two experiment: i.e (1) effects of BA concentrations on shoot and propagule multiplication of banana cv. Ambon Kuning and Raja Bulu, and (2) effects of different acclimatization media and fertilizer on survival rates and plantlet growth. Treatments in experiment I were arranged factorially in a completely randomized design with three replications. The first factor was BA concentrations (2,5 mg/l, 5,0 mg/l and 7,5 mg/l) and second factor was banana cultivars (Ambon Kuning and Raja Bulu). Each experimental unit consisted of three culture bottles each of which contained 1 explant. Subculture to the same medium was conducted every 4 weeks until 20 weeks of culture, when the number of shoots, propagules and length of shoots were recorded. Treatments in experiment II were factorially arranged in a completely randomized design with three replication. The first factor was different acclimatization media (M1 = sand : rice husk charcoal : compost, 1:1:1; M2 = rice husk charcoal : compost, 1:1; and M3 = sand : compost, 1:1). The second factor was application of NPK (32:10:10) solutions (with and without fertilizer). Each experimental unit consisted of 10 Ambon Kuning plantlets. Acclimatization was conducted in a shaded green house and the survival rates as well as plant growth were recorded after 2 month. All

data were subjected to analysis of variance, and further mean separation was done using least significant difference (LSD). Results of experiment I showed that both BA concentrations and cultivars as well as their interaction significantly affected shoot and propagule multiplication. The highest number of shoots and propagules per explant on both cultivars per explant were obtained on MS + 5 mg/l BA. Banana cv. Ambon Kuning produced significantly more shoots and propagules per explant compared to Raja Bulu. The highest number of shoots (25,6) and propagules (40,7) in cv. Ambon Kuning and in cv. Raja Bulu (i.e. 1,9 shoots and 12,3 propagules) per explant were obtained in MS + 5 mg/l BA. Results of experiment II showed that all treatments tested produced 100% planlet survival. Both media and fertilizer application significantly affected planlet growth. The best media for planlet growth was M3 (sand:compost, 1:1), with produced the highest plant height and fresh weights. Application of NPK solution on planlets increased plant growth, as shown by the increased of plant height, number of leaves, chlorophyll content (spad unit) and fresh weights. Most of the acclimatized planlets were planted in the field and produced fruits of high quality.

Key words: benzyladenine, *in vitro*, banana, Ambon Kuning, Raja Bulu, media, acclimatization, fertilizer.