POLYEMBRIONY STUDY OF MANGOES *(Mangifera indica* L.*)* cv.ARUMANIS SEEDLING BASED ON MORPHOLOGY AND DNA MARKERS

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Introduction

Arumanis cultivar (*Mangifera indica* L.) is a polyembriony mango indigenous from Indonesia and is the best cultivar that owned by Indonesia at this time. The characteristics of this cultivar are sweet, soft fiber, low water content, scented fragrance and color of yellow-orange fruit flesh (idiotype), with quality standards that become favorite of international customers (Fitmawati et al. 2009). The major problem in conventional plant breeding mango are the small number of seedlings obtained, the complex nature of panicula flowers, long life cycle, the high heterozygosity pollinate plants and low success rates because of the nature of self-sterile. The result is an excessive loss of quality fruit, due to pushing interest rates to be able to produce fruit lend more difficult than the mango crop. Besides the high heterozygosity mango seedlings caused difficulty obtained a uniform zygotic.

cv. Arumanis reproduce through polyembryoni mechanisms, their seeds develop with fertilization called zigotic embryo and the others without fertilization called apomixes (non-zygotic). Apomicts progenies may have the same genotype as their mother plant. This research was aimed to analyze morphology characteristics and the DNA pattern among mother and polyembryoni progenies (zygotic and non-zygotic) and the DNA pattern among progenies (zygotic and non-zygotic).

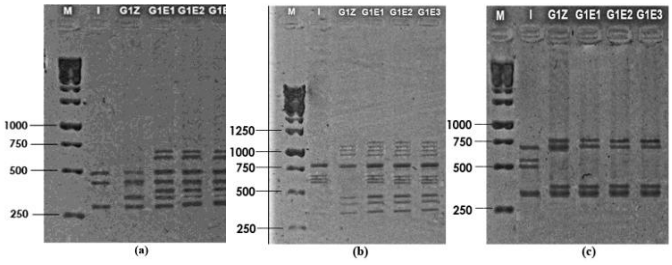
Material and methods

This study was carried out at laboratory of genetic FMIPA-UR Pekanbaru and laboratory of biotechnology FAPERTA-UA Padang. The plant materials used are leaves of seedlings germinated from three seeds, are taken from Arumanis cultivar of East Java. Morphology and genetic observations are conducted by using Inter Simple Sequence Repeat (ISSR) technique. Five primers are used to amplify the genomic DNA of mango. DNA extraction following the CTAB procedure with some modification that increase the concentration of CTAB 2% to 10% and was added NaCl 5N (Fitmawati et al. 2009 and Carmin del Castillo et al. 2006). Primers used to amplify obtained from the Center for Tropical Fruit Studies (PKBT) are (AC)8TG, (AC)8TT, (AG)8T, (AG)8AA, (GT)8TA, (GT)9C. ISSR technique following the method of Kurokawa et al. (2003).

Result and discussion

Based on morphological characterictic, there are 2-7 polyembrionic seedlings with different size between zigotic and non-zigotic seedlings as shown on **Figure 1**.

The level of polymorphism as ISSR reveal is 93.44%. The level of polymorphism from seeds G1, G2, G3 are 13.11%, 60.66%, 32.79% respectively. It shows that genetic variation among progenies from seed G1, G2 and G3 are different. Mother plant and non-zygotic progenies have the different banding patterns and it is estimated because of mutation. Zygotic and non-zygotic progenies have specific DNA bands. Banding pattern of the parent and progeny DNA amplification with three primer was selected namely primary PKBT-1, and PKBT PKBT-4-10 is shown in **Figure 2.**



Conclusion

In morphological characteristics, the difference vigority characterеristic are founded between zygotic and non zygotic progeny. DNA banding pattern polyembrioni parent and progeny (zygotic and non-zygotic) shows difference bands. The specific bands are only owned by the parent and progeny of non-zygotic

Refferences

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