

Commercial Production Of Planting Material By Inducing Polyembryony For The Nursery Industry

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Introduction

Malaysia requires an annual supply of 5 million seedlings for the fruit industry. Increasing polyembryony in seeds will help overcome this seedlings need. Polyembryony occurs naturally in Mangoes and Citrus (Hartman and Kester 1990), and can be induced by hormonal means (E. Asker and Jerling, 1982). The objectives of this study is to enhance polyembryony by hormonal or by mechanically intersecting the seeds and the second objective is to study the type of polyembryony involved in mangosteen.

Materials and Methods

Seeds that had the aril removed were washed, soaked in Clorox for 20 minutes and then either treated with hormones Gibberellic acid (50%), 1 ppm 2, 4 D Amine and 10 ppm 2, 4 D Amine or treated mechanically by cutting them into 2 halves before sowing. Two controls were used, one seeds soaked with water before sowing and the other seeds sown directly without any treatment.

Results and Discussion

Seeds that were cut into halves had the highest polyembryony (16.7% duplex, 0.7% triplex) while 50 ppm Gibberellic acid produced 3% polyembryony, 1ppm and 10 ppm 2, 4- D Amine had 2% and 1% respectively. Control treatment or untreated seeds produce only 3% polyembryony. The result shows the positive treatment of intersecting seeds over hormonal treatment to enhance polyembryony. Using SEM technique, the type of polyembryony observed was identified as nucellar embryony. Earlier study (Hashim, O., et al., 2000) also reported that nucellar embryony existed in *Garcinia mangostana*

Conclusions

Polyembryony is a characteristic common for some fruits such as mangosteen. Seeds can be treated by excision technique or by treating with hormones. The hormones that were used included Gibberellic acid and 2, 4-D Amine. Excised seed showed the highest number of polyembryony compared to the control or untreated seeds. Hormones Gibberellic acid and 2, 4-D Amine gave smaller number of polyembryony

Benefits from the study

The research is useful for nursery owners who wants to increase the number of seedlings from a limited number of seeds. Commercially, the production of many seedlings can be supplied with a limited resource of seeds. Since these trees produced seasonally, either around July to August and around December to January, nursery owners do not have to wait for fresh seeds in season.

Patent(s), if applicable:

Nil

Stage of Commercialization, if applicable :

Nil

Project Publications in Refereed Journals

1. Asker, E. and Jerling, L., 1982. Apomixis in plants. CRC Press.
2. Hashim, O., Ghani Yunus, Azmi, A.R., Zakaria, W. and Rahman Razak, A., (2000). Morphology of Embryo of Some Tropical Fruit As Seen Under the Scanning Electron Microscope. 9th Scientific Conference of EMSM
3. Hartman, H.T. and E.D. Kester, (1990), Plant propagation. Principle and practices, Prentice Hall, New Jersey.

Project Publications in Conference Proceedings:

Nil

Graduate Research

Name Graduate	of	Research Topic	Field of Expertise	Degree Awarded	Graduation Year
Aniza Bt. Ngah		Enhancing Polyembryony Hormonal Intersecting Techniques <i>Gracinia mangostana</i>	Seed Technology	M. Agr. Science	Schedule For Dec 2003

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