TISSUE CULTURE OF BACTRIS

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Bactris gasipaes, also known as pejibaye or peach palm is widely grown in Central and South America. MPOB has obtained seeds from Hawaii, Costa Rica and the Department of Agriculture, Sabah. The palms are established in MPOB Research Station, Kluang. The Department of Agriculture, Sabah, is also maintaining a small collection of Bactris palms. Bactris is generally propagated by seeds and vegetatively via suckers and *in vitro* culture of shoot apices. However, it was reported that the process was slow and difficult to establish (Castillo, 1998). A reliable tissue culture technique using roots from *in vitro* grown seedlings has been developed.

BACTRIS PALM AND ITS USES

The Bactris palm has many uses, the major ones include 1) palm heart and fruit for direct human consumption, 2) animal feed, 3) flour and meal, and 4) oil (Clement, 1986). There are spiny and spineless varieties. The spineless types are commonly used for palm heart production and the spiny for the fruits. In the country of origin, palm hearts popularly known as *palmito* are canned and exported. In Malaysia, attempts were made to the use of palm heart and fruits in the local cuisine. The fruit mesocarp can be made into *kerepek* similar to *kerepek ubi* or fried as fries. Traditional cake like *bingka* can be made. The palm heart can be pickled or eaten raw as salad (Rajanaidu *et al.*, 2000) or *kerabu* or cooked in coconut milk. Plans are in the pipeline to market fresh palm hearts to major hotels and airlines.

TISSUE CULTURE OF BACTRIS

Among the different explants tested, roots from *in vitro* seedlings gave the best response to callusing ranging from 0%-75%. However, the success is genotype dependent.

In vitro Seed Embryo Germination

The fruits are dehusked and the kernels surface-sterilized. The embryos, about 1 mm in size, are retrieved from the sterile kernels as described by Rohani *et al.* (2000) for oil palm seed embryo culture. The embryos are cultured in MS (Murashige and Skoog, 1962) medium containing an auxin. The seed embryos germinate after one to two months of culture.

Root Culture

Roots excised from the base of the sterile seedling are cut into 1 cm segments and cultured into callus induction medium: MS medium + auxin and cytokinin. The shoots are re-rooted and after one to two months, the roots can be re-sampled. Callus starts to form at the root tips and at the root primordia after one to two months in culture.

Callus Bulking

Callus *(Figure 1a)* is bulked using the same callus induction medium at monthly intervals.

Embryogenesis

More than 50% of the cultures became embryogenic *(Figure 1b)* after transfer one to two months to hormone free medium.

Shoot Development

The embryogenic cultures are transferred to maturation medium and incubated in 24 hr of darkness. Once the shoots sprout within less than one month of culture *(Figure 1c)*, the cultures are transferred to the light room, 12 hr light/12 hr dark *(Figure 1d)*.

Rooting and Transplanting

Shoots reaching a height of >3 cm are ready for root induction. The rooting success is about 90% *(Figure 1e)*. The survival rate of plantlets is dependent on the shoot and root development. Vigorous plantlets gave a survival rate of more than 75% *(Figure 1f)*. Further improvement on plantlet establishment in *ex vitro* environment is on-going.

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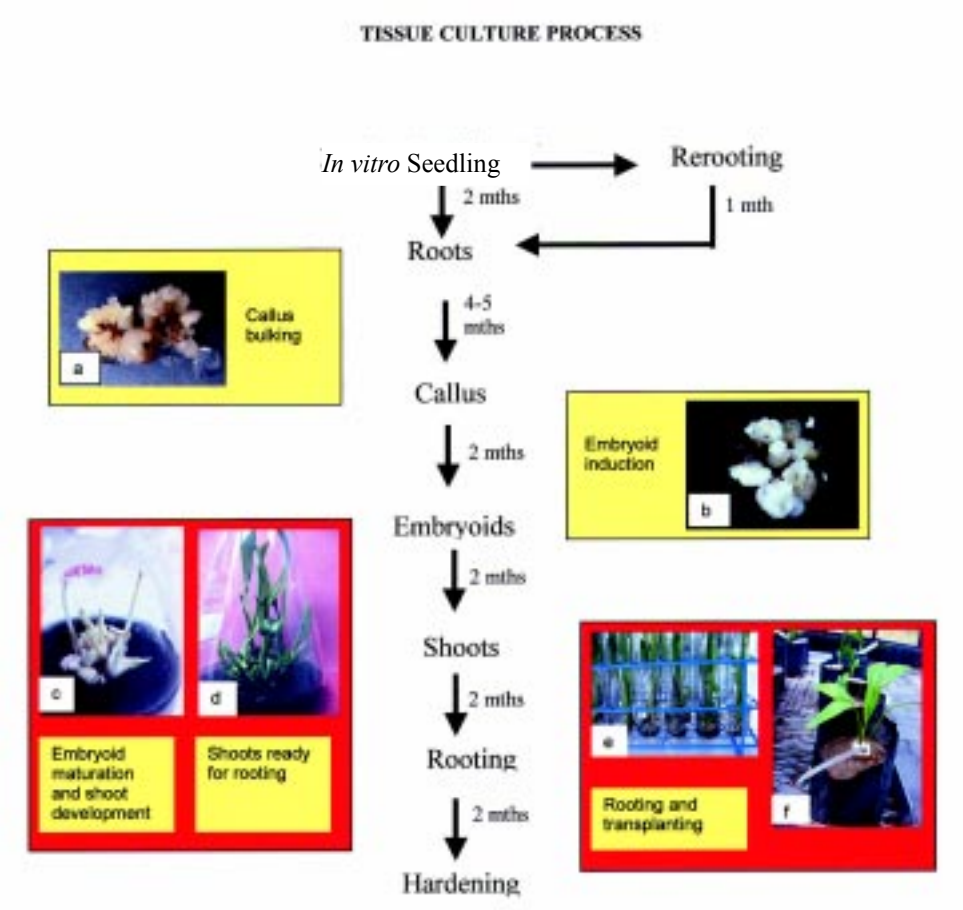

Figure 1. The schematic flow of Bactrics cloning process from root explants.

CONCLUSION

A method for cloning Bactris palm via *in vitro* culture of roots has been developed. Like tissue culture of other plant species, genotype dependence will, to some extent affect the rate of success. About 12 months are required to produce plantlets from root explants. The promotion of Bactris palm hearts as special cuisine for major hotels and airlines is in the pipeline.

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