Title Commercial propagation for new varieties of some native bulbs

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Abstract

The technology used for commercial propagation of ornamental plants in the world market has advanced quickly in recent years. There is more emphasis on high volume, industrial-scale production. Buyers demand planting material that is disease free and low cost, so tissue culture has been seen as the best alternative for large-scale commercial production. However, there are some drawbacks to conventional tissue culture technology, because normally the plants are grown in glass or plastic containers filled with solid medium, which is quite heavy. This means high transportation costs when the plants are transferred to the customer or the greenhouse. High production costs make tissue culture propagation less competitive. Another disadvantage is that when the plants are removed from the tissue culture vessels they are delicate and highly susceptible to disease and handling damage. The temporary immersion bioreactor system has recently become more popular because it allows for very fast propagation of plants in liquid medium and the plant produced are quite hardy, with a higher survival rate after transplanting compared to plants grown in conventional tissue culture. Also, it is possible to package the plants in lightweight plastic containers for delivery without exposing them to pathogens. Transportation and handling costs are thus lower. In the development of new hybrids of native bulbs like Curcuma for the world market, the temporary immersion bioreactor system has been utilized to increase efficiency from the step of breeder's trials up to the step of commercial propagation. Inflorescences are used as the initial explants to develop new plantlets. They can grow roots in the temporary immersion bioreactor until they are ready to be packaged for export. Curcuma plants propagated by bioreactor grow well, have good form, and have more side shoots than plants grown from bulbs. The temporary immersion bioreactor system should be applied for propagating other native bulbs like Globba.