

Gelling agents and culture vessels affect *in vitro* multiplication of banana plantlets

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ABSTRACT. Agar is the most commonly used gelling agent in media for plant tissue culture. Because of the high price of tissue-culture-grade agar, attempts have been made to identify suitable alternatives. The type of culture vessel and lid also affects the gaseous composition inside the vessel as well as light penetration. In turn, the vessel affects growth parameters, such as shoot elongation, proliferation and fresh weight, as well as hyperhydric degradation processes. We examined the effects of different culture vessels, including commercial glass jars, magenta boxes, and disposable containers, as well as different gelling agents (agar-agar, Agargel, Phytigel, and plant agar) on the micropropagation of Dwarf Cavendish bananas in an effort to find a combination that yields large numbers of high-quality seedlings. The different culture vessels did not significantly affect seedling culture success. The medium significantly affected shoot weight. Phytigel resulted in the highest shoot weight (overall mean = 2.4 g), while agar, Agargel and plant agar resulted in 1.7, 2.2 and 2.2 g, respectively. Disposable container/Phytigel and Magenta/Agargel combinations yielded the

highest shoot weights (2.9 and 3.0 g, respectively). Mean shoot length increased progressively with subculture (four subcultures were made). The highest mean shoot length was obtained with Phytigel and Agargel media (6.4 and 6.3 cm, respectively). Shoot number was significantly affected by medium only at subculture 4. Overall, the highest mean shoot length was obtained with the Magenta/Agargel combination (8.5 cm). Phytigel and plant agar gave higher mean shoot number than agar and Agargel (2.1, 2.1 and 1.7 and 1.9, respectively). The costs of the media and of the culture vessels need to be taken into account for final choice of the banana shoot culture system.

Key words: Dwarf Cavendish; Magenta vessel; Agar-agar; Agargel; Phytigel; Plant agar