

PERFORMANCE OF LIQUID STATIONARY CULTURE OF BANANA UNDER CSUP TECHNIQUE

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Production of planting material of horticultural crops through micropropagation is limited due to the high production cost. This study was conducted with the objective of investigating the cost reduction applications in micropropagation to facilitate production of horticultural crops at commercial scale. The sterilizing technique (CSUP), which replaces the autoclave and the laminar air flow cabinet with the use of NaOCl solution is a promising technique to reduce the cost of production. Agitated liquid cultures, which cuts down the cost for agar, allow rapid multiplication in micropropagation and thus, the time required for multiplication is reduced along with many other advantages. Maintaining a shaker is also an additional cost. Therefore, in this experiment liquid stationary cultures were used along with CSUP method for the micropropagation of an economically important crop, banana.

Multiplication stage of banana was investigated with the use of six treatments to find the compatibility of CSUP method for liquid cultures within one sub culture period. The experimental design was a completely randomized design (CRD). Four treatments with the CSUP concentrations (5, 10, 15 and 20 %) as the sterilization method with liquid cultures and two conventional applications as autoclaved liquid cultures and 10 % CSUP with semi- solid (agar) cultures were used. Contamination percentage of each treatment, number of shoots and dry weight after multiplication were assessed. In liquid medium, a raft was used to anchor the plants, which made out of disposable plastics with no cost.

Hundred percent contamination free cultures were obtained from CSUP treated liquid cultures. According to *Chi*- square frequency distribution test, higher shoot number was achieved in the liquid medium with 5 % CSUP treated cultures, while the lowest shoot number was reported for the semi-solid CSUP treated treatment ($p = 0.0001$). The highest dry matter accumulation was found in the treatment with liquid medium sterilized with 15 % CSUP and significantly lower dry matter was observed in semi-solid medium sterilized with 10 % CSUP ($p < 0.0001$). The higher dry matter gave lower shoot number with comparatively larger shoot size, while the shoots with higher number were smaller in size. Further investigations are needed to measure the level of toxicity in the treatments, because there were different observations in some of the CSUP concentrations.

Since the CSUP technique with liquid cultures gave a significantly higher shoot number and dry matter with no contaminations, CSUP method can be applied in liquid culturing of banana with modifications (rafting) during the multiplication stage. This method is a low cost alternative for the use of semi solid agar medium.