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# Penggunaan *Still Air Box* Melalui *PlantClone Edu Kit* dalam Pelaksanaan Amali Pensterilan Kultur Tisu Tumbuhan

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## Abstrak

Pelaksanaan amali kultur tisu tumbuhan di institusi Pendidikan dan Latihan Teknikal dan Vokasional (TVET) sering terbatas disebabkan kos peralatan yang tinggi serta keperluan fasiliti makmal yang sofistikated. Kajian ini bertujuan menilai keberkesanan penggunaan *Still Air Box* (SAB) melalui *PlantClone Edu Kit* sebagai alternatif ruang kerja aseptik kos rendah bagi proses pensterilan eksplan. Kajian ini menggunakan reka bentuk eksperimental berskala kecil yang melibatkan pelajar Kolej Komuniti Rembau, di mana aktiviti pensterilan dan inokulasi dilaksanakan berdasarkan Prosedur Operasi Standard (SOP) yang ditetapkan. Keberkesanan SAB dianalisis menggunakan analisis statistik deskriptif melalui pemerhatian kadar kontaminasi kultur pada hari ke-3, ke-5 dan ke-7 selepas inokulasi. Dapatan menunjukkan min kadar kontaminasi berjaya dikawal di bawah 20%, sekali gus membuktikan bahawa SAB mampu menyokong pelaksanaan proses pensterilan secara terkawal walaupun dalam persekitaran makmal yang terhad. Selain itu, maklum balas pelajar melalui analisis tematik menunjukkan bahawa SOP yang dibangunkan adalah mudah difahami, membantu meningkatkan kefahaman terhadap proses pensterilan serta meningkatkan keyakinan dalam mengendalikan eksplan secara sendiri. Secara keseluruhannya, kajian ini menunjukkan bahawa penggunaan SAB melalui *PlantClone Edu Kit* berpotensi sebagai pendekatan praktikal dan kos rendah dalam menyokong pelaksanaan latihan amali pensterilan kultur tisu tumbuhan di institusi TVET yang berhadapan dengan kekangan fasiliti makmal.

**Kata kunci:** Amali kultur tisu tumbuhan; Institusi TVET; Kekangan makmal; Pensterilan eksplan; Still air box; Teknik aseptik

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## Abstract

*The implementation of plant tissue culture practical sessions in Technical and Vocational Education and Training (TVET) institutions is often limited by high equipment costs and the requirement for sophisticated laboratory facilities. This study aims to evaluate the effectiveness of the Still Air Box (SAB) through the PlantClone Edu Kit as a low-cost alternative aseptic workspace for the explant sterilization process. Utilizing a small-scale experimental design involving students from Kolej Komuniti Rembau, sterilization and inoculation activities were conducted based on established Standard Operating Procedures (SOP). The effectiveness of the SAB was analyzed using descriptive statistical analysis through observations of culture contamination rates on days 3, 5, and 7 post-inoculations. Findings indicated that the mean contamination rate was successfully controlled below 20%, proving that the SAB is capable of supporting controlled sterilization processes even within limited laboratory environments. Furthermore, student feedback via thematic analysis showed that the developed SOP was easy to understand, improved their comprehension of the sterilization process, and increased their confidence in handling explants independently. Overall, this study demonstrates that the use of the SAB through the PlantClone Edu Kit has potential as a practical and low-cost approach to support plant tissue culture sterilization training in TVET institutions facing laboratory facility constraints.*

**Keywords:** *Explant sterilization; Plant tissue culture; Still air box; Technical and vocational education and training (TVET); Aseptic technique; Laboratory constraints*

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