

SCREENING OF DIFFERENT ALTERNATIVE RESISTANCE
AND SUSCEPTIBLE GENOTYPES OF *Melanthera
indica* WITH PAPDs

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SCREENING OF DIFFERENT GLYPHOSATE RESISTANCE AND
SUSCEPTIBLE BIOTYPES OF *Eleusine indica* WITH RAPDs

By

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LIST OF ABBREVIATIONS

a.i.hc ⁻¹	Activated ingredient per hectare
bp	Base pair
dNTP	Deoxynucleotide triphosphate
DNA	Deoxyribonucleic Acid
ED ₅₀	Herbicide rate inhibit plant growth by 50%
EPSPS	5-enolpyruvylshikimate-3-phosphate
G+C	Guanocine+Cytosine
OD	Optical density
TAE	Tris-Acetate-EDTA
~	Approximately

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ABSTRACT

In Malaysia, goosegrass (*Eleusine indica*) is a major threat in Malaysian oil palm plantation that has evolved its glyphosate resistance since 1997 and its ED₅₀ value is approximately 2 to 4 fold greater than that of susceptible biotype from the same region. Due to these problems, there is an interest involving molecular biology study to reveal the differences in DNA sequences of different goosegrass biotypes. Randomly Amplified Polymorphic DNA (RAPD) was used to screen genomic DNA of four different resistant biotypes (P6, P8, P20 and P24) and one susceptible biotype. Six RAPD primers (OPA-1, OPA-11, OPA-16, OPA-17, OPA-18 and OPA-19) were used for amplification. All together, six putative specific RAPD bands were identified. Primer OPA-18, OPA-17 and OPA-19 produced specific bands with size of 450bp, 350bp and 500bp for biotype with 11-fold respectively. Thus, primer OPA-17 and OPA-11 produced specific bands with size of 400bp and 250bp for biotype with 8-fold and 4-fold respectively. While, primer OPA-01 successfully produced specific band with size of 300bp for the susceptible biotype.

MENYARING POPULASI-POPULASI *ELEUSINE INDICA* BERBEZA MENGUNAKAN KAEDAH RAPDs

ABSTRAK

Di Malaysia, goosegrass (*Eleusine indica*) merupakan rumpai yang paling menimbulkan masalah kepada tanaman kelapa sawit dan telah mengalami evolusi kerintangan terhadap glyphosate sejak tahun 1997 yang mana nilai ED₅₀ dianggarkan 2 hingga 4 kali lebih tinggi daripada nilai ED₅₀ populasi goosegrass daripada kawasan yang sama. Oleh yang demikian, kajian melibatkan teknik molecular biologi adalah sesuatu yang bermanfaat untuk mendedahkan perbezaan jujukan bes-bes DNA pada populasi goosegrass yang berbeza kerintangan. Kaedah Randomly Amplified Polymorphic DNA (RAPD) telah digunakan untuk menyaring empat populasi (P6, P7, P20, P24) terpilih dan satu populasi tidak rintang terhadap glyphosate bagi mengesan penanda RAPD pada setiap populasi. Enam pencetus (OPA-1, OPA-11, OPA-16, OPA-17, OPA-18 dan OPA-19) digunakan untuk tujuan amplifikasi. Secara keseluruhan, enam jalur RAPD telah dikenal pasti. Pencetus OPA-18, OPA-17 dan OPA-19 berjaya menghasilkan jalur yang mempunyai saiz serpihan 450bp, ~350bp and 500bp untuk populasi 11 kali rintangan masing-masing. Juga, pencetus OPA-17 dan OPA-11 menghasilkan jalur yang mempunyai saiz serpihan 400bp and ~250bp untuk populasi yang mempunyai kerintangan 8 kali dan 4 kali masing-masing. Sementara itu, OPA-01 menghasilkan jalur yang mempunyai saiz serpihan ~300bp untuk populasi yang tidak rintang terhadap glyphosate.