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Screening of glyphosate, fluazif op-p-butyl and glufosinate resistant and susceptible biotypes of goosegrass in Perak, Keda and Terengganu / Franci Anak Julop.

SCREENING OF GLYPHOSATE, FLUAZIFOP-P-BUTYL AND GLUFOSINATE RESISTANT AND SUSCEPTIBLE BIOTYPES OF GOOSEGRASS IN PERAK, KEDAH AND TERENGGANU

By

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Research Report submitted in partial fulfillment of
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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: Screening of glyphosate, fluazifop-p-butyl and glufosinate resistant and susceptible biotypes of goosegrass in Perak, Kedah and Terengganu oleh Franci ak Julop, no. matrik: UK 8055 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains (Sains Biologi), Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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LD_{50}	Lethal dose
a. e. ha^{-1}	Active equivalent per hectare
a. i. ha^{-1}	Active ingredient per hectare
a. i. L^{-1}	Active ingredient per liter
Pa	Pascal
mPa	Mega Pascal
mm Hg	Millimeter of mercury
PRE	Pre-emergence
kg ha^{-1}	kilogram per hectare
g ha^{-1}	gram per hectare

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ABSTRACT

This study was carried out in order to detect herbicide-resistant (R) and susceptible (S) biotypes of *Eleusine indica* (L.) Gaertn (goosegrass). Seeds of goosegrass were collected from several arable areas in Perak, Kedah and Terengganu of Peninsular Malaysia. Three types of herbicides were examined namely glyphosate, fluazifop-p-butyl and glufosinate. Seeds were sown and the seedlings were sprayed with the respective herbicide based on the recommended dose, in the greenhouse. The results revealed that four populations have developed resistance to glyphosate, such as Lawan Kuda, Taiping 2 (tapioca) (95.4%); Simpang, Taiping 4 (guava) (89.1%); Simpang, Taiping 1 (83.8%) of Perak and Kulim, Kedah (chili) (83.1%). Other populations exhibit low survivability which ranging from 30 to 60%. Fluazifop-p-butyl-resistant biotypes of goosegrass also have been detected. These populations include populations from FELDA Perpulut (citrus), Perak and Kulim, Kedah (chili) with 74.3% and 83.1% of survivability respectively. Besides, we had obtained a multiple resistance biotypes of goosegrass in Kulim, Kedah (chili) with the survivability of 70.2% to glyphosate and 83.1% towards fluazifop-p-butyl. There were no glufosinate-resistant biotypes of goosegrass found in this study, suggesting all goosegrass populations studied can be controlled with glufosinate.

KERINTANGAN TERHADAP GLYPHOSATE, FLUAZIFOP-P-BUTYL DAN GLUFOSINATE BAGI *GOOSEGRASS* DI NEGERI PERAK, KEDAH DAN TERENGGANU

ABSTRAK

Kajian ini telah dijalankan bagi mengesan kerintangan spesies rumpai iaitu *Eleusine indica* (L.) Gaertn (*goosegrass*). Biji benih rumpai ini telah dikutip dari beberapa lokasi di negeri Perak, Kedah dan Terengganu. Herbisid yang digunakan dalam kajian ini adalah, glyphosate, fluazifop-p-butyl dan glufosinate di mana, penyemburan dilakukan berdasarkan dos yang disyorkan. Proses penyemaian biji benih dan penyemburan anak pokok dijalankan di rumah kaca. Keputusan menunjukkan bahawa empat populasi adalah rintang terhadap glyphosate iaitu, Lawan Kuda, Taiping 2 (ubi) (95.4%); Simpang, Taiping 4 (jambu batu) (89.1%); Simpang, Taiping 1 (83.8%) of Perak dan Kulim, Kedah (cili) (83.1%). Populasi yang lain menunjukkan sifat kerintangan terhadap glyphosate dalam julat 30 hingga 60%. Selain itu, spesies rumpai ini juga rintang terhadap fluazifop-p-butyl. Populasi yang rintang adalah FELDA Perpulut (limau), Perak dan Kulim, Kedah (cili) dengan peratus kerintangan, masing-masing sebanyak 74.3% dan 83.1%. Terdapat satu populasi iaitu, Kulim, Kedah (cili) telah mengalami kerintangan berganda dengan 70.2% kerintangan terhadap glyphosate dan 83.1% terhadap fluazifop-p-butyl. Hasil kajian juga mendapati bahawa tiada populasi yang rintang terhadap glufosinate dan ini menunjukkan bahawa glufosinate berkesan untuk mengawal populasi *goosegrass* bagi semua populasi yang telah dikaji.