

EFFECT OF TRAINING OF MICROURON - MESH AND  
EFFECT OF TRAINING ON CONTROL OF PROBLEMS  
IN THE ...

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FAKULTI SAINS DAN TEKNOLOGI  
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2005



EFFICACY OF TANK-MIX OF METSULFURON-METHYL AND PARAQUAT  
OR TRICLOPYR ON CONTROL OF BROADLEAF WEED, *Hedyotis verticillata*  
Lam.

By

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Research Report submitted in partial fulfillment of  
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PENGAKUAN DAN PENGESAHAN LAPORAN  
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **Efficacy of tank-mix of metsulfuron-methyl and paraquat or triclopyr on control of broadleaf weed, *Hedyotis verticillata* Lam.** oleh **Juliana binti Karso**, No. Matrik **UK 6641** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh ijazah **Bachelor Sains (Sains Biologi)**, Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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## LIST OF ABBREVIATIONS/ SYMBOLS

ALS	acetolactate synthase
ANOVA	Analysis Of Variance
ATP	adenosine triphosphate
CDA	Controlled Droplet Applicator
DAS	days after sowing
DAT	days after treatment
ED <sub>50</sub>	50% reduction in shoot fresh weight
g a.i./ha	gram active ingredient per hectare
<i>H. verticillata</i>	<i>Hedyotis verticillata</i>
HSD	Turkey's Honesty Significance Different
IAA	indole-3yl-acetic acid
NADP	nicotinamide adenine dinucleotide phosphate
PS I	photosystem I
PS II	photosystem II
SAS	Statistical Analysis System
SOD	superoxide dismutase
v/v	volume per volume
WSSA	The Weed Science Society of America

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## ABSTRACT

This research was conducted under greenhouse condition to determine the efficacy of tank mixture of metsulfuron-methyl plus triclopyr or paraquat on control of *Hedyotis verticillata* Lam. both at the young stage (3 to 4 leaves) and mature stage (first flower emerges). Of the 36 treatment combinations, 24 were antagonistic while 12 were additive. The results indicated that metsulfuron-methyl at 0.48 g a.i./ha plus paraquat at 12.5 g a.i./ha and metsulfuron-methyl at 0.12 g a.i./ha plus triclopyr at 3 g a.i./ha provided good control (>89%) of *H. verticillata* at the young stage. However, based on economic analysis, application of single metsulfuron-methyl at 0.12 g a.i./ha was more successful and cost-effective on control of *H. verticillata* at the young stage compared to tank-mix combination. The results also indicated that tank-mix combination of metsulfuron-methyl at 0.5 g a.i./ha plus paraquat at 35 g a.i./ha and metsulfuron-methyl at 0.5 g a.i./ha plus triclopyr at 20 g a.i./ha gave good control (>85%) of *H. verticillata* at the mature stage. Based on economic analysis, however, application of single metsulfuron-methyl at 0.5 g a.i./ha was more cost-effective compared to tank mixtures.



**KEBERKESANAN KOMBINASI RACUN HERBA, METIL –METSULFURON  
DAN PARAKUAT ATAU TRIKLOPIR UNTUK MENGAWAL RUMPAI  
DAUN LEBAR, *Hedyotis verticillata* Lam.**

**ABSTRAK**

Kajian ini telah dijalankan di rumah hijau untuk menentukan keberkesanan kombinasi racun herba, metil-metsulfuron dan triklopir atau parakuat untuk mengawal *Hedyotis verticillata* Lam. pada peringkat muda ( 3-4 daun) dan peringkat matang (infloresen pertama muncul). Daripada 36 rawatan kombinasi, 24 daripadanya adalah antagonistik manakala 12 yang lain adalah aditif. Keputusan kajian ini menunjukkan bahawa kombinasi metil-metsulfuron pada kadar 0.48 g a.i./ha dengan parakuat pada kadar 12.5 g a.i./ha dan kombinasi metil-metsulfuron pada kadar 0.12 g a.i./ha dengan triklopir pada kadar 3 g a.i./ha memberi kawalan yang baik (>89%) bagi *H. verticillata* pada peringkat muda. Walau bagaimanapun, analisis ekonomi menunjukkan bahawa semburan metil-metsulfuron tunggal pada kadar 0.12 g a.i./ha adalah lebih berjaya dan kos-efektif dalam kawalan rumpai ini di peringkat muda berbanding kombinasi racun herba tersebut. Hasil pada peringkat matang pula mendapati kombinasi 0.5 g a.i./ha metil-metsulfuron dengan 35 g a.i./ha parakuat dan kombinasi 0.5 g a.i./ha metil-metsulfuron dengan 20 g a.i./ha triklopir didapati memberi kawalan yang baik (>85%) terhadap *H. verticillata* pada peringkat tersebut. Namun begitu, analisis ekonomi menunjukkan aplikasi 0.5 g a.i./ha metil-metsulfuron tunggal adalah lebih kos-efektif berbanding kombinasi racun herba.