

EFFECTS OF TANK-MIX COMBINATIONS OF SETHOXYPIDIN
AND CYHALOTHRIP-ETHYL ON CONTROL OF PROPAWIL-
RESISTANT AND SUSCEPTIBLE BIOTYPES OF
Leptothrips citricornis (L.) Nees

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EFFICACY OF TANK-MIX COMBINATIONS OF SETHOXYDIM AND
CYHALOFOP-BUTYL ON CONTROL OF PROPANIL-RESISTANT AND
SUSCEPTIBLE BIOTYPES OF *Leptochloa chinensis* (L.) Nees

By

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PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **Efficacy of tank - mix combinations of sethoxydim and cyhalofop-butyl on control of propanil resistant and susceptible biotypes of *Leptochloa chinensis* (L.) Nees** oleh Maziah binti Mohamad no. matrik: UK 7640 telah diperiksa dan semua pembedahan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh **Ijazah Sarjana Muda Sains (Sains Biologi)** Fakulti Sains dan Teknologi, Kolej Universiti Sains dan Teknologi Malaysia.

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LIST OF ABBREVIATIONS/SYMBOL

Mg/l	=	Milligram per liter
ml	=	milliliter
ppm	=	Part per million
μM	=	Micrometer
$\mu\text{Em}^{-2}\text{s}^{-1}$	=	Microelectron meter per second
cm	=	Centimeter
g	=	Gram
kg	=	Kilogram
a.i/ha	=	Active ingredient per hectare

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ABSTRACT

A study on efficacy of tank-mix combinations of sethoxydim and cyhalofop-butyl on control of propanil-resistant and susceptible biotypes was conducted in the greenhouse. The seeds of *L. chinensis* (L.) Nees were collected from rice fields at Nilam Puri, Kota Bharu, Kelantan. Greenhouse experiments were conducted to screen for propanil-resistant (R) and susceptible (S) biotypes of *L. chinensis*. Dose response experiment involving seedlings at 3 to 4-leaf stage showed that the estimated ED₅₀ of the S biotype was only 1/35 times compared to recommended application rate of 3.16 kg a.i/ha while the estimated ED₅₀ of the R biotype was approximately 1/15 times, giving a 2.16- fold difference in resistance between the R and S biotypes. Tank mix combination experiments using the 3 to 4-leaf stage plants were then carried out in the greenhouse. Sethoxydim plus cyhalofop-butyl at 32 + 25 g a.i/ha provided better control on both the R and S biotypes of *L. chinensis* compared to that of application of either herbicide alone. Tank mixture of sethoxydim plus cyhalofop-butyl at 32 + 6.25 g a.i/ha could control both biotypes cost-effectively. Four of the nine tank mixtures were antagonism while five of them acted synergistically when applied to the R biotype. Antagonistic response was observed in seven tank mixtures in the S biotype while two tank mixtures gave additive response. Tank mixing sethoxydim with cyhalofop-butyl did not cause injury on paddy regardless of application rates.

KEBERKESANAN KOMBINASI SETHOXYDIM DAN CYHALOFOP-BUTIL UNTUK MENGAWAL BIOTIP *L. chinensis* YANG RINTAN (R) DAN RENTAN (S) TERHADAP PROPANIL.

ABSTRAK

Kajian tentang keberkesanan kombinasi sethoxydim dan cyhalofop-butyl untuk mengawal biotip R dan S telah dijalankan di rumah hijau. Biji *Leptochloa chinensis* (L.) Nees dikutip dari sawah padi di Nilam Puri, Kota Bharu, Kelantan. Kajian rumah hijau dijalankan untuk menyaring biotip *L. chinensis* yang rintang (R) dan rentan (S) terhadap propanil. Eksperimen dos gerakbalas melibatkan tumbuhan pada peringkat 3-4 helai daun menunjukkan nilai jangkaan ED₅₀ bagi biotip S hanya 1/35 kali berbanding dos yang disyorkan iaitu 3.16 kg a.i/ha sementara nilai jangkaan ED₅₀ bagi biotip R ialah kira-kira 1/15 kali dari dos yang disyorkan dan memberikan perbezaan kerintangan sebanyak 2.16 diantara biotip R dan S. Eksperimen kombinasi yang melibatkan peringkat 3-4 helai daun juga dijalankan di rumah hijau. Kedua-dua biotip R dan S dapat dikawal dengan baik apabila sethoxydim dicampur dengan cyhalofop-butyl pada kadar 32 + 25 g a.i/ha berbanding penyemburan setiap herbisid secara berasingan. Kombinasi sethoxydim dan cyhalofop-butyl pada kadar 32 + 6.25 g a.i/ha dapat mengawal kedua-dua biotip R dan S secara kos efektif. Bagi biotip R, empat daripada sembilan kombinasi herbisid bertindak secara antagonistik manakala lima daripadanya memberikan gerakbalas sinergistik. Terdapat tujuh kombinasi herbisid adalah antagonistik bagi biotip S manakala dua tindakan gabungan telah memberikan kesan aditif. Walau bagaimanapun, semua kombinasi bagi kedua-dua herbisid tidak mencederakan padi.