

ABSTRAK

IDENTIFIKASI RESISTENSI GULMA *Fimbristylis miliacea*, *Ludwigia octovalvis* DAN *Monochoria vaginalis* TERHADAP HERBISIDA 2,4-D DI LAHAN PADI SAWAH

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Padi sebagai tanaman pangan utama Indonesia, memiliki banyak tantangan dalam budidayanya. Keberadaan gulma pada lahan dapat menurunkan produktivitas karena daya saing gulma untuk memperoleh unsur hara, air, CO₂, cahaya matahari, dan ruang tumbuh. Pengendalian gulma di Trimurjo, Lampung Tengah umumnya menggunakan metode kimia dengan herbisida 2,4-D. Penggunaan 2,4-D yang berulang dalam jangka waktu yang lama berpotensi menyebabkan resistensi pada gulma. Penelitian ini bertujuan untuk mengevaluasi tingkat resistensi gulma *Fimbristylis miliacea*, *Ludwigia octovalvis*, dan *Monochoria vaginalis* terhadap herbisida berbahan aktif 2,4-D di Lampung Tengah. Percobaan disusun dalam Rancangan Acak Kelompok (RAK) Faktorial dengan 4 ulangan Faktor pertama asal gulma telah terpapar dan tidak terpapar 2,4-D di lahan, faktor kedua tingkatan dosis 2,4-D taraf 0, 108,1, 216,2, 432,5, 865, 1.730, 3.460 dan 6.920 g/ha 2,4-D. Nilai Resistensi ditentukan berdasarkan nilai *Lethal Time* 50% (LT₅₀), *Effective Dose* 50% (ED₅₀) dan Nisbah Resistensi (NR). Hasil penelitian menunjukkan bahwa LT₅₀ dan ED₅₀ gulma terpapar 2,4-D lebih tinggi dibandingkan gulma tidak terpapar 2,4-D, yang menunjukkan respon keracunan lebih lambat dan menurunnya sensitivitas gulma terhadap 2,4-D. Nilai Resistensi (NR) gulma *Fimbristylis miliacea*, *Ludwigia octovalvis*, dan *Monochoria vaginalis* masing-masing sebesar 1,35; 1,62 dan 0,70 yang menunjukkan bahwa ketiga gulma masih sensitif terhadap 2,4-D. Namun demikian secara umum gulma menunjukkan peningkatan toleransi terhadap 2,4-D sehingga diperlukan pengelolaan gulma terpadu untuk mencegah terjadinya resistensi.

Kata kunci: resistensi, herbisida, gulma sawah, 2,4-D

ABSTRACT

IDENTIFICATION OF HERBICIDE RESISTANCE IN *Fimbristylis miliacea*, *Ludwigia octavalvis*, AND *Monochoria vaginalis* TO THE HERBICIDE 2,4-D IN IRRIGATED RICE FIELDS

By

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Rice, as Indonesia's primary food crop, faces many challenges in its cultivation. The presence of weeds in the field can reduce productivity because weeds compete for nutrients, water, CO₂, sunlight, and growing space. Weed control in Trimurjo, Central Lampung, generally relies on chemical methods using the herbicide 2,4-D. Repeated use of 2,4-D over a long period has the potential to cause weed resistance. This study aimed to evaluate the resistance levels of the weeds *Fimbristylis miliacea*, *Ludwigia octavalvis*, and *Monochoria vaginalis* to the 2,4-D herbicide in Central Lampung. The experiment was designed as a Randomized Block Design (RBD) with 4 replications. The first factor was whether the weeds had been exposed to or not exposed to 2,4-D in the field; the second factor was the 2,4-D dose levels: 0, 108,1; 216,2; 432,5; 865; 1.730; 3.460; and 6.920 g/ha of 2,4-D. Resistance values were determined based on the Lethal Time 50% (LT₅₀), Effective Dose 50% (ED₅₀), and Resistance Ratio (RR). The results of the study showed that the LT₅₀ and ED₅₀ values for weeds exposed to 2,4-D were higher than those for weeds not exposed to 2,4-D, indicating a slower toxic response and decreased weed sensitivity to 2,4-D. The resistance Ratios (RR) for the weeds *Fimbristylis miliacea*, *Ludwigia octavalvis*, and *Monochoria vaginalis* were 1.35, 1.62, and 0.70, respectively, indicating that all three weeds remain sensitive to 2,4-D. However, in general, weeds are showing increased tolerance to 2,4-D, so integrated weed management is necessary to prevent the development of resistance.

Keywords: resistance, herbicides, rice field weeds, 2,4-D