ABSTRAK

APLIKASI MEDAN MAGNET 0,2 mT UNTUK MENINGKATKAN VIGOR DAN AKTIVITAS ENZIM PROTEASE BENIH PADI (*Oryza sativa* L.) GOGO USANG KULTIVAR LOKAL LAMPUNG

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Produksi padi ditentukan oleh ketersediaan benih yang berkualitas. Benih yang disimpan terlalu lama akan mengalami deteriorasi yang menyebabkan vigor benih menurun. Salah satu cara untuk mengembalikan vigor benih tua adalah dengan pemaparan medan magnet. Penelitian ini bertujuan untuk mengetahui pengaruh medan magnet 0,2 mT terhadap vigor dan aktivitas enzim protease benih padi gogo lokal Lampung usang. Percobaan dilakukan menggunakan Rancangan Acak Lengkap (RAL) satu faktor yang terdiri atas 5 level perlakuan dengan 5 kali pengulangan yaitu S_N (kontrol positif), S_O (kontrol negatif), S_OM_3, S_OM_7, dan S_OM_{11} adalah benih tua yang masing masing mendapat paparan medan magnet selama 3 menit 54 detik, 7 menit 48 detik, dan 11 menit 32 detik. Parameter yang diamati meliputi indeks kecepatan perkecambahan (IKP), germinasi hari terakhir (GHT), sebaran waktu germinasi (SWG), tinggi tanaman, berat segar, dan aktivitas enzim protease. Data yang diperoleh dianalisis varian dilanjutkan dengan uji DMRT pada α – 5%. Hasil penelitian menunjukkan S_OM_3 memberikan hasil terbaik pada parameter IKP, GHT, dan SWG, sedangkan aktivitas enzim protease tertinggi diperoleh dari perlakuan S_OM_7. Medan magnet tidak berpengaruh nyata terhadap tinggi tanaman dan berat segar benih.

Kata kunci: enzim protease, benih usang, medan magnet, vigor benih

ABSTRACT

APPLICATION OF 0.2 mT MAGNETIC FIELD TO IMPROVE VIGOR AND PROTEASE ENZYME ACTIVITY OF OLD UPLAND RICE (*Oryza sativa* L.) SEEDS FROM LOCAL CULTIVAR OF LAMPUNG

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The quality of rice production is heavily influenced by the availability of high-quality seeds. However, seeds stored for extended periods tend to deteriorate, leading to a decline in vigor. A method to restore the vigor of old seeds is exposure to a magnetic field. This study aimed to assess the effects of a 0.2 mT magnetic field on the vigor and protease enzyme activity of old upland rice seeds from the local Lampung cultivar. The experiment was was conducted using a Completely Randomized Design (CRD) with a single factor, comprising five treatment levels with five replications, namely S_N (positive control), S_O (negative control), S_OM3, S_OM7, and S_OM11. The SOM3, SOM7, and SOM11 treatments involved exposing the aged seeds to a magnetic field for 3 minutes 54 seconds, 7 minutes 48 seconds, and 11 minutes 32 seconds, respectively. The parameters observed included the germination rate index (GRI), final germination day (FGD), germination time distribution (GTD), plant height, fresh weight, and protease enzyme activity. The data were analyzed using variance analysis, followed by the DMRT test at a 5% significance level. The results indicated that SOM3 provided the best outcomes in terms of IKP, GHT, and SWG, while the highest protease enzyme activity was observed in the SOM7 treatment. The magnetic field exposure did not significantly affect plant height or fresh seed weight.

Keywords: aged seeds, magnetic field, protease enzyme, seed vigor