

Respons Fisiologis dan Biokimiawi Tanaman Padi (*Oryza sativa* L.) terhadap Pemberian *Magnetized water* Air Laut

Ekris Sutyanti
18/436645/PBI/01583

INTISARI

Ketersediaan air tawar yang terbatas untuk sektor pertanian perlu diantisipasi dengan menggunakan sumber air lain, salah satunya air laut. Persentase ketersediaan air laut sebesar 97%, namun tidak dapat secara langsung digunakan pada sektor pertanian karena air laut memiliki kandungan salinitas yang tinggi. Salinitas yang tinggi menyebabkan berbagai gangguan pada pertumbuhan dan perkembangan tanaman. Pada kondisi cekaman salinitas tanaman memiliki mekanisme untuk pertahanan diri, baik secara morfologis, fisiologis, maupun biokimiawi. Kemampuan *magnetic water* untuk desalinasi air laut dimanfaatkan dalam penelitian untuk melihat potensi air laut sebagai air irigasi. Penelitian ini bertujuan untuk menganalisis respon fisiologis dan biokimiawi tanaman padi 'IR64' dan 'Inpari 35' terhadap *magnetized water* air laut. Penelitian ini dilakukan dengan menggunakan Rancangan Acak Lengkap 3 faktor perlakuan, yaitu 2 kultivar padi ('IR64' dan 'Inpari 35'), 3 level salinitas air laut (0 dan 10 dS/m.), serta 4 jenis perlakuan air (tanpa diberi *magnetized water* dan di beri *magnetized water* 1 siklus, 2 dan 3 siklus). Parameter yang diamati yaitu parameter pertumbuhan (tinggi tanaman, jumlah daun dan anakan), parameter lingkungan (kelembaban tanah, pH tanah and intensitas cahaya), parameter fisiologis (kandungan klorofil, karotenoid, antosianin, indeks stabilitas membran, kandungan air relatif, kandungan prolin) serta parameter biokimiawi (aktivitas SOD, MDA dan H₂O₂). Data yang diperoleh diuji dengan ANOVA dan uji DMRT dengan taraf kepercayaan 95%. Hasil penelitian menunjukkan bahwa pemberian *magnetized water* 3 siklus meningkatkan pertumbuhan, respon fisiologis dan biokimiawi tanaman padi 'IR64' dan 'Inpari 35' pada salinitas 0 dan 10 dS/m.

Kata kunci : 'IR64', 'Inpari 35', salinitas, *magnetized water*.

Physiological and Biochemical Responses in Rice Plant (*Oryza Sativa* L.) towards Magnetized Seawater Treatment

Ekris Sutyanti
18/436645/PBI/01583

ABSTRACT

The percentage of freshwater availability on Earth has reached less than 1%. An alternative to overcome the lack of fresh water in the agricultural sector is by replacing freshwater with other types of water, such as seawater. Seawater availability is 97%, but it cannot be used directly in the agricultural sector because seawater has high salinity. High salinity causes various disturbances in plant growth and development. In salinity stress, plants have a self-defense mechanisms, such as morphological, physiological, and biochemical adaptations. The ability of magnetized water for seawater desalination can be used in this research to measure seawater potential for irrigation water. The aims of this research are to analyze the physiological and biochemical responses of rice plants 'IR64' and 'Inpari 35' with magnetized seawater treatments. This research will be conducted using a Completely Randomized Design by 3 variables research, which is 2 rice cultivars ('IR64' and 'Inpari 35'), 3 treatments of seawater salinity (and 10 dS/m.), and 4 types of water type (treated by magnetized water with 1 cycle, 2 and 3 cycles also untreated magnetized water). The parameters that will be observed are growth parameters (plant height, number of leaves and tillers), environmental parameters (soil moisture, soil pH and light intensity), physiological parameters (chlorophyll content, carotenoid, anthocyanin, stability index membrane, relative water content, proline content) and biochemical parameters (SOD, MDA, H₂O₂). The obtained data will be tested by ANOVA and DMRT tests by a confidence level of 95%. Result showed that magnetized water 3 cycles gives the best result to enhance growth, physiology and biochemical parameters in 'IR64' and 'Inpari 35' in 0 and 10 dS/m level salinity.

Keywords : 'IR64', 'Inpari 35', salinitas, *magnetized water*.