

Physiological responses of jatrophoto drought stress in coastal sandy land conditions = Tanggapan fisiologis tanaman jarak pagar terhadap cekaman kekeringan di lahan pasir pantai

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Abstrak

ABSTRACT

Jarak pagar (*Jatropha curcas*L.), salah satu tanaman sumber bahan bakar nabati tropis, telah terkenal karena ketahanannya terhadap cekaman kekeringan, akan tetapi, kemampuannya untuk tumbuh pada lingkungan yang kering masih jarang diteliti.

Perubahan status air daun, kadar klorofil, suhu permukaan daun, konduktansi stomata, kadar prolin dan abscisic acid (ABA), laju transpirasi dan fotosintesis dikaji pada empat genotip jarak pagar (IP-1A, IP-2M, Unggul lokal dan Daun

kuning) yang diperlakukan cekaman kekeringan pada lahan pasir pantai di Jawa Tengah, Indonesia.

Cekaman kekeringan menurunkan secara signifikan status air daun, kadar klorofil daun, konduktansi stomata, laju transpirasi dan fotosintesis, dan meningkatkan suhu daun, kadar prolin dan ABA. Genotip tahan (IP-1A dan IP-2M) memiliki status air daun, kadar klorofil dan laju fotosintesis lebih tinggi secara signifikan dibandingkan dengan genotip yang peka (Unggul lokal dan Daun kuning). Tidak terdapat perbedaan yang nyata di antara genotip jarak pagar terhadap suhu daun, konduktansi stomata dan laju transpirasi.

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Abstract

Jatropha curcas L., an important tropical biofuel crop, is reputed for its drought resistance, however, its ability to perform in dry conditions has still hardly been investigated. Changes in leaf water status, chlorophyll content, leaf surface temperature, stomatal conductance, proline and abscisic acid (ABA) content, transpiration and photosynthetic rate were studied in four *Jatropha* genotypes (IP-1A, IP-2M, Local superior and Yellow leaf) and subjected to drought stress in coastal sandy land conditions in Central Java, Indonesia. Drought stress significantly decreased the leaf water status, leaf chlorophyll content, stomatal conductance, transpiration and photosynthetic rate, and increased leaf temperature, proline and ABA content. Resistant genotypes (IP-1A and IP-2M) had significantly higher leaf water status, chlorophyll content and photosynthetic rate than susceptible genotypes (Local superior and Yellow leaf). There were no differences between the *Jatropha* genotypes on leaf temperature, stomatal conductance and transpiration rate.