

**POTENSI PAKLOBUTRAZOL DAN KETERSEDIAAN AIR DALAM  
MENINGKATKAN ANTIOKSIDAN BAYAM MERAH  
(*Amaranthus tricolor* L.)**

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**ABSTRAK**

Penelitian kombinasi paklobutrazol dan ketersediaan air dalam memanipulasi pertumbuhan dan kandungan fitokimia telah banyak dilakukan. Tujuan penelitian ini adalah mengevaluasi peran paklobutrazol dan kekurangan air serta kombinasi keduanya terhadap pertumbuhan, kadar karotenoid, vitamin C, dan antosianin bayam merah. Pada penelitian ini tanaman bayam merah berusia 2 minggu diberi perlakuan paklobutrazol dengan konsentrasi 0 ppm, 25 ppm dan 50 ppm masing-masing tanaman mendapatkan 1 ml paklobutrazol yang dikombinasikan dengan ketersediaan air sebesar 100% kapasitas lapang (Kontrol), 60% kapasitas lapang, dan 40% kapasitas lapang, dengan 5 ulangan untuk masing-masing perlakuan. Parameter pertumbuhan berupa tinggi tanaman diukur dari awal pemberian perlakuan hingga masa panen. Bayam merah dipanen dan kemudian diukur parameter berupa panjang akar, luas daun, berat basah, berat kering, dan kadar air tanaman, serta kadar klorofil, karotenoid, dan antosianin dengan menggunakan metode spektrofotometri, dan vitamin C dengan metode titrasi. Hasil dianalisis dengan ANOVA dua faktorial pada tingkat kepercayaan 95% dan dilanjutkan dengan uji DMRT pada tingkat signifikasinsi 5% apabila diperoleh beda nyata. Hasil yang diperoleh menunjukkan perlakuan paklobutrazol signifikan dalam menurunkan tinggi tanaman, luas daun, dan berat basah akar pada konsentrasi 25 ppm dan 50 ppm, serta berat basah tajuk, berat kering akar, berat kering tajuk, dan kadar air tanaman pada konsentrasi 50 ppm. Paklobutrazol dengan konsentrasi 25 ppm dan kapasitas lapang 40% meningkatkan kadar klorofil bayam merah secara signifikan. Selain itu, kadar karoten dan antosianin meningkat secara signifikan pada perlakuan kapasitas lapang 40% dan paklobutrazol dengan konsentrasi 25 ppm. Berdasarkan hasil tersebut, disimpulkan bahwa paklobutrazol pada kosentrasi 25 ppm dan 50 ppm mampu meningkatkan kadar antioksidan bayam merah berupa antosianin, sedangkan kapasitas lapang 40% dapat meningkatkan kadar antioksidan bayam merah berupa karotenoid dan antosianin.

Kata kunci: *Amaranthus tricolor* L., paklobutrazol, kapasitas lapang, antioksidan.

## POTENCY OF PACLOBUTRAZOL AND WATER AVAILABILITY IN INCREASING RED SPINACH (*Amaranthus tricolor* L.) ANTIOXIDANTS

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### ABSTRACT

A combination of paclobutrazol and water availability in manipulating growth and phytochemical content has been carried out. The purpose of this study was to evaluate the role of paclobutrazol and water availability on growth, levels of carotenoid, vitamin C, and anthocyanin in red spinach. In this study, after seed sowing and planting for 2 weeks, red spinach were treated with paclobutrazol at a concentration of 0 ppm, 25 ppm and 50 ppm combined with 100% (control), 60%, and 40% field capacity, with 5 replications for each treatment. Parameter observed were plant height, root length, leaf area, fresh weight, dry weight, and water content were measured in 4 weeks of treatment. Chlorophyll, carotenoid, and anthocyanin levels were measured using the spectrophotometric method, while vitamin C with the titration method. The results were analyzed by two-way factorial ANOVA at 95% confidence level and continued with DMRT test at 5% when significance were obtained. The results obtained, showed that paclobutrazol was significantly reduce plant height, leaf area and root fresh weight at concentrations of 25 ppm or 50 ppm, as well as shoot fresh weight, root dry weight, shoot dry weight, and water content at a concentration of 50 ppm. Paclobutrazol of 25 ppm and 40% field capacity was significantly in increased the levels of red spinach chlorophyll, carotenoid, and anthocyanin. Based on these results, it was concluded that paclobutrazol at a concentration of 25 ppm and 50 ppm increased antioxidant content of red spinach in the form of anthocyanin, while 40% field capacity increased antioxidant content of red spinach in the form of carotenoid and anthocyanin.

Keywords: *Amaranthus tricolor* L., paclobutrazol, field capacity, antioxidant