

**TIGMOMORFOGENESIS TANAMAN BAYAM MERAH (*Amaranthus tricolor* L.)  
AKIBAT PEMBERIAN IRIGASI CURAH DAN IRIGASI KABUT**

**INTISARI**

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Tigmomorfo genesis merupakan respon tanaman terhadap gangguan mekanis berupa sentuhan yang dapat berasal dari cara pemberian irigasi yang mampu merangsang pertumbuhan sel tanaman. Tujuan penelitian ini adalah mengamati dan mengukur fisiologis tanaman bayam merah karena tigmomorfo genesis, mengaplikasikan dan memvalidasi model *logistic equation* untuk menggambarkan pertumbuhan tanaman bayam merah, dan membandingkan pengaruh perbedaan ukuran butir air melalui pemberian tipe irigasi curah dan irigasi kabut pada tanaman bayam merah. Parameter yang diukur adalah tinggi tanaman, jumlah daun, luas daun, diameter batang, panjang akar dan berat tanaman. Pengukuran dilakukan selama 46 hari. Analisa yang digunakan adalah uji homogenitas, uji anova satu arah, uji *independent t-test*, regresi linier, analisis deskriptif dan model *logistic equation*. Hasil penelitian menunjukkan bahwa perlakuan irigasi curah memberikan pengaruh yang lebih baik terhadap pertumbuhan tanaman bayam merah dibandingkan irigasi kabut. Nilai rerata pertumbuhan tanaman pada irigasi curah yaitu tinggi tanaman: 10,85 cm; diameter batang: 2,24 mm; jumlah daun: 5,67 helai; luas daun: 358,9 cm<sup>2</sup>; berat tanaman: 20,125 g; panjang akar: 27,125 cm. Sedangkan nilai rerata pertumbuhan tanaman pada irigasi kabut yaitu tinggi tanaman: 9,22 cm; diameter batang: 1,93 mm; jumlah daun: 4,93 helai; luas daun: 224,85 cm<sup>2</sup>; berat tanaman: 12,625 g; panjang akar: 23,8 cm. Hasil uji anova satu arah menunjukkan bahwa perlakuan irigasi tidak berpengaruh signifikan terhadap pertumbuhan tanaman (sign. > 0,05). Hasil pemodelan matematika dengan *logistic equation* menunjukkan bahwa model ini dapat digunakan untuk mendeskripsikan pertumbuhan tanaman bayam merah (R = 98%) akibat tigmomorfo genesis oleh metode irigasi.

Kata Kunci : Bayam Merah (*Amaranthus tricolor* L.), tigmomorfo genesis, fisiologi tanaman, irigasi kabut, irigasi curah , model *logistic equation*.

## **THIGMOMORPHOGENESIS OF RED SPINACH (*Amaranthus tricolor* L.) BY SPRINKLE AND MIST IRRIGATION**

### **ABSTRACT**

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Thigmomorphogenesis is the response of plants to mechanical disturbances such as kinetic energy from water of irrigation which may able to stimulate plant cell growth. The purposes of this study were to observe and measure the physiology of red spinach plants due to thigmomorphogenesis, to apply and validate logistic equation models in describing the growth of red spinach plants, and to compare the effect of differences of the water drops by sprinkle and mist irrigations. The parameters measured were plant height, number of leaves, leaf area, stem diameter, root length and plant weight. The observation and measurement were conducted during 46 days. The analysis used were homogeneity test, one-way ANOVA test, independent t-test, linear regression, descriptive analysis and logistic equation model. This study revealed that sprinkle irrigation had a better effect on the growth of red spinach plants compared to mist irrigation. The average value of plant growth in sprinkler irrigation is plant height: 10.85 cm; stem diameter: 2.24 mm; number of leaves: 5.67 strands; leaf area: 358.9 cm<sup>2</sup>; plant weight: 20.125 g; root length: 27,125 cm. While the mean value of plant growth in mist irrigation were plant height: 9.22 cm; stem diameter: 1.93 mm; number of leaves: 4.93 strands; leaf area: 224.85 cm<sup>2</sup>; plant weight: 12,625 g; root length: 23.8 cm. One-way ANOVA test showed that irrigation method did not significantly effect the plant growth (sign.> 0.05). The logistic equations was excellent to describe the growth of red spinach plants (R = 98%) due to thigmomorphogenesis by irrigation methods.

Keywords: Red Spinach (*Amaranthus tricolor* L.), thigmomorphogenesis, plant physiology, mist irrigation, sprinkler irrigation, logistic equation model.