

TIGMOMORFOGENESIS AKAR TANAMAN SAWI (*Brassica juncea* L.) SEBAGAI RESPON TERHADAP IRIGASI TETES DAN IRIGASI KABUT

INTISARI

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Tigmomorfogenesis merupakan respon pertumbuhan tanaman akibat rangsangan mekanis berupa sentuhan. Pada penelitian ini rangsangan mekanis yang digunakan berupa cara pemberian air irigasi dengan metode tetes dan kabut. Tujuan penelitian ini yaitu untuk mengukur fisiologi tanaman sawi pada tigmomorfogenesis irigasi dan memodelkan tigmomorfogenesis pertumbuhan akarnya. Parameter yang diukur dan diamati dalam penelitian ini adalah panjang akar, berat basah dan berat kering tajuk, berat basah dan berat kering akar, volume akar, dan rasio tajuk akar. Analisis yang digunakan adalah uji homogenitas, uji *independent sample T-Test*, regresi linier, dan model *logistic equation*. Hasil penelitian menunjukkan perlakuan irigasi tetes berdampak baik terhadap pertumbuhan tanaman sawi. Perlakuan irigasi tetes memberikan hasil rerata pertumbuhan tanaman sawi: panjang akar 18,97 cm, berat basah tajuk 27,57 g, berat kering tajuk 2,32 g, berat basah akar 1,89 g, berat kering akar 0,53 g, volume akar 1,57 ml, dan rasio tajuk akar 4,83. Sedangkan perlakuan irigasi kabut memberikan hasil rerata pertumbuhan sawi: panjang akar 19,22 cm, berat basah tajuk 22,36 g, berat kering tajuk 2,09 g, berat basah akar 2,31 g, berat kering akar 0,46 g, volume akar 2,42 ml, dan rasio tajuk akar 4,60. Pemodelan dengan persamaan logistik menghasilkan persamaan $y = e^{-0,116x}$ untuk irigasi tetes dan $y = e^{-0,144x}$ untuk irigasi kabut. Hasil validasi menyatakan bahwa persamaan tersebut dapat digunakan untuk mendeskripsikan laju pertumbuhan panjang akar sawi sebagai respon tigmomorfogenesis irigasi.

Kata kunci : tigmomorfogenesis, sawi (*Brassica juncea* L.), irigasi tetes, irigasi kabut, persamaan logistik

**THIGMOMORPHOGENESIS OF MUSTARD ROOT (*Brassica juncea* L.)
AS A RESPONSE TO DRIP IRRIGATION AND MIST IRRIGATION**

ABSTRACT

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Thigmomorphogenesis is a plant growth response that occurs as a result of mechanical stimuli, such as touch. Mechanical stimulations used in this study were the form of irrigation water droplets delivered by the drip and mist method. The purposes of this study were to determine the physiology of mustard plants in irrigation thigmomorphogenesis and to model root growth thigmomorphogenesis. Root length, wet weight and dry weight of the crown, wet weight and dry weight of roots, root volume, and root crown ratio were all measured and observed in this study. Homogeneity test, independent sample T-Test test, linear regression, and logistic equation model were utilized for analysis in the study. The study indicated that drip irrigation had a positive impact on mustard plant growth. The resulted root length, crown wet wight, crown dry weight, root wet weight, root dry weight, root volume, and root-crown ratio of mustard with drip irrigation were 18.97 cm, 27.57 g, 2.32 g, 1.89 g, 0.53 g, 1.57 ml, and 4.83, respectively. The root length, crown wet wight, crown dry weight, root wet weight, root dry weight, root volume, and root-crown ratio of mustard ith mist irrigation were 19.22 cm, 22.36 g, 2.09 g, 2.31 g, 0.46 g, 2.42 ml, and 4.60, respectively. The crop growth modelled using logistic equation resulted in $y = e^{-0,116x}$ and $y = e^{-0,144x}$ for mustard with drip and mist irrigation respectively. The logistic equation model is valid to describe the rate of growth of mustard root length in response to irrigation tigmomorphogenesis.

Keywords: thigmomorfogenesis, mustard (*Brassica juncea* L.), drip irrigation, mist irrigation, logistic model equation