

**PENGARUH MEDIA TANAM TANAH BEKAS PERTAMBANGAN EMAS
TERHADAP PERTUMBUHAN DAN ANATOMI TANAMAN BAYAM
CABUT (*Amaranthus tricolor* L.)**

**Marnita Lestari
22/509421/PBI/01900**

ABSTRAK

Tanaman bayam cabut (*Amaranthus tricolor* L.) merupakan salah satu sayuran yang banyak dikonsumsi oleh masyarakat. Sayuran ini banyak mengandung serat serta dapat digunakan untuk bioindikator adanya logam berat. Merkuri (Hg) merupakan salah satu logam berat yang digunakan pada industri pertambangan emas. Hg sangat berbahaya pada jumlah sedikit baik yang berada di perairan maupun di tanah. Tujuan penelitian ini mengetahui pengaruh konsentrasi logam Hg terhadap anatomis dan fisiologis tanaman bayam serta akumulasi logam Hg pada organ tanaman bayam. Penelitian ini merupakan percobaan eksperimen yang menggunakan Rancangan Acak Lengkap (RAL) dengan 5 perlakuan yaitu media tanam siap pakai 100%, media tanam siap pakai 75% + tanah tambang 25%, media tanam siap pakai 50% + tanah tambang 50%, media tanam siap pakai 25% + tanah tambang 75% serta tanah tambang 100%, dengan 3 ulangan untuk setiap perlakuan. Parameter yang diamati berupa kadar Hg, respon fisiologis (tinggi tanaman, luas daun, berat basah dan berat kering, jumlah daun, warna daun, kadar klorofil dan volume akar, respon anatomis akar (tebal kortek, tebal dinding trakea, diameter trakea, jumlah trakea, dan diameter stele), respon anatomis daun (seperti tebal epidermis atas dan bawah, tebal mesofil, diameter pembukaan stomata atas dan bawah, densitas stomata epidermis atas dan bawah serta tipe stomata). Kadar logam Hg diukur dengan menggunakan mercury analyzer. Data dianalisis menggunakan *One Way Anova* diikuti *Duncan Test* dengan taraf kepercayaan 95%.

Hasil penelitian menunjukkan bahwa logam Hg lebih banyak diakumulasi pada organ akar dibandingkan organ daun. Tanah tambang 100% menurunkan rerata: tinggi tanaman, jumlah daun, luas daun, volume akar, berat basah & berat kering serta kadar klorofil. Tanah tambang 100% juga menurunkan semua parameter anatomis akar dan mengalami peningkatan pada parameter diameter trakea, tebal dinding trakea dan jumlah trakea. Tanah tambang 100% juga menurunkan rerata parameter anatomis daun: tebal epidermis bawah, jumlah epidermis atas dan bawah, diameter pembukaan stomata atas dan bawah, densitas stomata epidermis atas dan bawah.

Kata kunci: *Amaranthus tricolor* L., Bioakumulasi, Tanah tambang.

THE EFFECT OF GOLD MINING SOIL PLANTING MEDIA ON THE GROWTH AND ANATOMY OF AMARANTHUS PLANTS

(Amaranthus tricolor L.)

Marnita Lestari
22/509421/PBI/01900

ABSTRACT

Spinach (*Amaranthus tricolor* L.) is one of the vegetables widely consumed by the community. This vegetable contains a lot of fiber and can be used as a bioindicator for the presence of heavy metals. Mercury (Hg) is one of the heavy metals used in the gold mining industry. Hg is very dangerous in small amounts, both in water and in soil. The purpose of this study was to determine the effect of Hg metal concentration on the anatomy and physiology of spinach plants and the accumulation of Hg metal in spinach plant organs. This study was an experimental trial using a Completely Randomized Design (CRD) with 5 treatments, namely 100% ready-to-use planting media, 75% ready-to-use planting media + 25% mining soil, 50% ready-to-use planting media + 50% mining soil, 25% ready-to-use planting media + 75% mining soil and 100% mining soil, with 3 replications for each treatment. The parameters observed were Hg levels, physiological responses (plant height, leaf area, wet and dry weight, number of leaves, leaf color, chlorophyll levels and root volume), root anatomical responses (cortex thickness, tracheal wall thickness, tracheal diameter, number of trachea, and stele diameter), leaf anatomical responses (such as upper and lower epidermis thickness, mesophyll thickness, upper and lower stomata opening diameter, upper and lower epidermis stomata density and stomata type). Hg metal levels were measured using a mercury analyzer. Data were analyzed using One Way Anova followed by Duncan Test with a confidence level of 95%.

The results showed that Hg metal was more accumulated in root organs than in leaf organs. 100% mining soil reduced the average: plant height, number of leaves, leaf area, root volume, wet weight & dry weight and chlorophyll levels. 100% mining soil also decreased all root anatomical parameters and increased tracheal diameter, tracheal wall thickness and tracheal number. 100% mining soil also decreased the average leaf anatomical parameters: lower epidermis thickness, upper and lower epidermis number, upper and lower stomatal opening diameter, upper and lower epidermis stomatal density.

Keywords: *Amaranthus tricolor* L., Bioaccumulation, Mining soil.