STUDY OF PLANT GROWTH PERFORMANCE ON RED SPINACH IN SOILLESS GROWING MEDIUM USING BIOCHAR AS AMENDMENTS

ZUR HANIS SURAYA BINTI ZULBAHRINE

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Universiti Teknologi MARA

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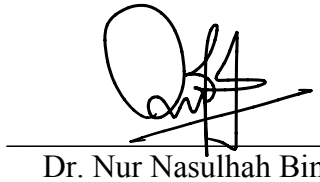
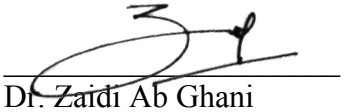
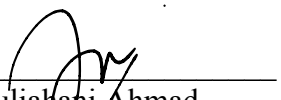


Dr. Nur Nasulhah Binti Kasim
Supervisor
B. Sc. (Hons) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA Cawangan Perlis



Dr. Zaidi Ab Ghani
Project Coordinator
B. Sc. (Hons) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA (Perlis)

Date: _____



Dr. Zuliahani Ahmad
Head of Academic
B. Sc. (Hons) Applied Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA (Perlis)

Date: _____

ABSTRACT

STUDY OF PLANT GROWTH PERFORMANCE OF RED SPINACH IN SOILLESS GROWING MEDIUM USING BIOCHAR AS AMENDMENTS

A sustainable plant management approach must be implemented to reduce environmental pollution related to agricultural activities. The plant growth performance of red spinach using cocopeat as soilless growing medium was investigated to determine the suitable ratio of biochar derived from PKS. The composition of cocopeat, biochar and fertilizer used were characterized using ICP-OES and FTIR analyses. The result shows the presence of minerals such as Ca, Al, K, Mg, Zn, Na and Fe in cocopeat, biochar, fertilizer X and Y. The moisture content for cocopeat and biochar are 82.7% and 10.8% respectively. Hydgrowpipe system was used in this study. Aggregate hydroponic system was implemented for red spinach cultivation with supply of nutrient rich solution. A complete randomized design was used in three replicates with two individuals each. Three treatments were selected on mixture of different medium (cocopeat:biochar), T1 (1:0), T2 (1:1) and T3 (4:1). The pH for growing mediums is slightly acidic for T1 and neutral for T2 and T3. Data were collected on growth parameters such as plant height, number of leaves and plant fresh weight. T3 shows the highest mean plant height (19.6 cm), number of leaves, (13) and fresh weight (19.25 g). The least growing performance observed was on T2 with mean plant height (12.7 cm), number of leaves, (8) and fresh weight (5.25 g). The results revealed that biochar amendments at 20% enhance the red spinach plant growth performance. However, increasing the ratio causes the plant growth to declined.

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