

**ISOLASI DAN KARAKTERISASI *PLANT GROWTH PROMOTING*  
*RHIZOBACTERIA* DARI PERAKARAN PAITAN  
(*Tithonia diversifolia* (Hemsl.) A. Gray) SERTA PENGARUHNYA  
TERHADAP PERTUMBUHAN VEGETATIF KACANG TOLO  
(*Vigna unguiculata* (L.) Walp.)**

**INTISARI**

*Plant Growth Promoting Rhizobacteria* (PGPR) merupakan bakteri yang mengkolonisasi akar tanaman dan bermanfaat dalam meningkatkan pertumbuhan tanaman. Isolat PGPR dari perakaran paitan (*Tithonia diversifolia* (Hemsl.) A. Gray) dapat memacu pertumbuhan tanaman dengan baik. Tanaman kacang tolo (*Vigna unguiculata* (L.) Walp.) adalah tanaman yang umum dikonsumsi masyarakat Indonesia, karena bernilai ekonomis maka diperlukan budidaya kacang tolo secara berkelanjutan. Penelitian ini dilakukan untuk mengisolasi dan mengkarakterisasi PGPR dari perakaran paitan serta mengetahui pengaruh isolat PGPR terpilih (yang menghasilkan hormon) dari perakaran paitan terhadap pertumbuhan vegetatif kacang tolo. Prosedur kerja penelitian ini meliputi; isolasi, karakterisasi dan kultur isolat PGPR perakaran paitan, penanaman tanaman kacang tolo dengan berbagai perlakuan pada media tanam, yaitu: A (Tanah), B (Tanah + Kompos), C2 (Tanah Kompos + PGPR IP 2), C4 (Tanah + Kompos + PGPR IP 4) dan C7 (Tanah + Kompos + PGPR IP 7), pengukuran pertumbuhan vegetatif tanaman kacang tolo, serta pengukuran bobot basah dan bobot kering tanaman kacang tolo. Analisis data dilakukan secara kualitatif dan kuantitatif dengan uji F serta uji DMRT pada taraf 5%. Hasil dari penelitian menunjukkan bahwa terdapat 16 isolat PGPR perakaran paitan yang berhasil diisolasi dengan karakteristik morfologi dan fisiologi yang sangat beragam, serta aplikasi PGPR perakaran paitan (IP 2, IP 4, dan IP 7) memberikan pengaruh positif terhadap pertumbuhan vegetatif kacang tolo terutama pada tinggi tanaman, diameter batang, luas daun, jumlah daun, bobot basah, dan bobot kering.

**Kata kunci:** PGPR, kacang tolo, pertumbuhan vegetatif

**ISOLATION AND CHARACTERIZATION OF PLANT GROWTH PROMOTING RHIZOBACTERIA FROM THE ROOTS OF TREE MARIGOLD (*Tithonia diversifolia* (Hemsl.) A. Gray) AND ITS EFFECT ON THE VEGETATIVE GROWTH OF COWPEA (*Vigna unguiculata* (L.) Walp.)**

**ABSTRACT**

Plant Growth Promoting Rhizobacteria (PGPR) are bacteria that colonize plant roots and are useful in increasing plant growth. The PGPR isolates from the roots of tree marigold (*Tithonia diversifolia* (Hemsl.) A. Gray) can stimulate plant growth. The cowpea plant (*Vigna unguiculata* (L.) Walp.) is a plant that is commonly consumed by Indonesian people, because it has economic value, it is necessary to cultivate cowpeas sustainably. This research was conducted to isolate and characterize PGPR from the roots of tree marigold and determine the effect of selected PGPR isolates (which produce hormones) from the roots of tree marigold on the vegetative growth of cowpea. The procedures for this research include; isolation, characterization and culture of PGPR isolates from the roots of tree marigold, planting cowpea plants with various treatments on planting media, namely: A (Soil), B (Soil + Compost), C2 (Soil + Compost + PGPR IP 2), C4 (Soil + Compost + PGPR IP 4) and C7 (Soil + Compost + PGPR IP 7), measuring the vegetative growth of cowpea plants, measuring the fresh weight and dry weight of cowpea plants. Data analysis was carried out qualitatively and quantitatively with the F test and DMRT test at the 5% level. The results of the research showed that there were 16 PGPR isolates from the roots of tree marigold that were successfully isolated with very diverse morphological and physiological characteristics, and the application of PGPR isolates from the roots of tree marigold (IP 2, IP 4, and IP 7) had a positive influence on the vegetative growth of cowpea especially on plant height, stem diameter, leaf area, number of leaves, fresh weight, and dry weight.

**Keywords:** PGPR, cowpea, vegetative growth