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THE EFFECT OF *PSEUDOMONAS FLOURESCENS* ON THE GERMINATION AND PLANT GROWTH OF PAPAYA

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ABSTRACT

Pseudomonas flourescens were known as plant growth promoting rhizobacteria (PGPR). *P. flourescens* has a role to promote the plant growth and triggers induce systemic resistance (ISR) to against the pathogen. The objective of this research is to evaluate the influence of *P. flourescens* on the germination and plant growth of papaya. The methods are the efficacy of *P. flourescens* to germination of papaya seeds in laboratory and efficacy of *P. flourescens* on plant growth in green house. Papaya varieties were used in this research was hawaii (HW), bangkok (BK), lokal (PR), and variety of papaya developed by Bogor Agricultural University (IPB). The result of this research, local papaya has a higher germination and plant height than other varieties. Most of application *P. flourescens* has a higher percentage of germination than control. There is increasing percentage of germination due to the using of *P. flourescens*. There is no difference plant height due to the different spraying time of *P. flourescens*.

Keywords: Papaya, *Pseudomonas flourescens*, plant growth, seed germination.

1 INTRODUCTION

Papaya (*Carica papaya* L.) is one of the important commodities in Indonesia. The fruit is consumed as fresh fruit and as vegetable or used as processed product. Papain in the papaya is also useful as a botanical insecticide to control herbivorous insect (Konno 2004). By looking at variety of uses, the need of papaya in Indonesia is high, but the productivity of this product is still low. One of the problems in papaya cultivation is plant pests and diseases. Integrated plant pest and disease management (IPM) is needed to control plant pests and diseases, and also to achieve a better productivity of papaya.

There are many plant diseases in papaya. The important thing to prevent and control plant diseases is to induce systemic resistance (ISR) in

host plant. Induced resistance is a state of enhanced defensive capacity developed by a plant reacting to specific biotic and chemical stimuli (Van Loon 1998). *Pseudomonas flourescens* is bacterial triggers ISR (Bakker 2007). These bacteria were known as plant growth promoting rhizobacteria (PGPR).

This research will evaluate the effect of *P. flourescens* on the germination and plant growth of papaya.

2 METHODS

The method of research was conducted by the following step:

1. Efficacy of *P. flourescens* to germination of papaya seeds in laboratory
2. Efficacy of *P. flourescens* on plant growth of papaya in green house

2.1 Efficacy of *P. flourescens* to Germination of Papaya Seeds

This method was conducted in laboratory. The suspension of *P. flourescens* was obtained from Laboratory of Bacteriology, Plant Protection Department, Faculty of Agriculture, Bogor Agricultural University.

The papaya varieties used in this experiment was hawaii (HW), bangkok (BK), lokal (PR), and variety of papaya developed by Bogor Agricultural University (IPB).

Seeds of each papaya varieties were soaked in the suspension of *P. flourescens* with concentration of 2% for 30 minutes. In control, every papaya varieties were soaked in sterile water for 30 minutes.

Papaya seeds that had been soaked, then planted in a plastic container (30 cm x 20 cm) which already contains a soil and manure (1:1). For each treatment, 32 seeds were cultivated in each container. Each treatment was replicated three times. The parameter measured was percent germination of papaya.