

## SUMMARY

**APRIANA DWI ASTUTIK. 105040200111166. GROWTH AND YIELD OF RED PEPPER (*Capsicum annuum* L.) WITH THE APPLICATION OF PLANT GROWTH PROMOTING RHIZOBACTERIA AND STRAW MULCH. Under the supervision of Dr. Ir. Nurul Aini, MS as main supervisor and Ir. Koesriharti, MS as co-supervisor.**

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Red pepper (*Capsicum annuum* L.) is a commodity which is required by almost people of all levels society. Necessaries of red pepper is continue to increase along with population growth and various needs. The price of red pepper was fluctuates with productivity and availability of red pepper among farmers. Demand red pepper in East Java should be balanced with a high yield harvest so that needs to be done technique cultivation for increasing production in East Java. One of strategy to increase the growth of red pepper is to use PGPR (Plant Growth Promoting Rhizobacteria). Furthermore, PGPR will be able to synthesis IAA from within exudates by root or organic material. Therefore, need to combination PGPR with mulching in the process of cultivation. The purpose of this research is to study about the effect of plant growth promoting rhizobacteria with combinations straw mulch to growth and good results of red pepper. The hypothesis of this research is the treatment of seed soaked by PGPR and additional PGPR with combinations straw mulch to give the growth and good results of red pepper.

Research was conducted in September 2014 until March 2015 in experimental garden Brawijaya University, Jatikerto village, sub-district Kromengan, Malang. Tools used is a thermometer, soil moisture tester, analytic scales, and ruler. The material used is the red pepper varieties Scarlet, mulch, Plant Growth Promoting Rhizobacteria, organic fertilizer, NPK Mutiara fertilizer, insecticide Actara 25 WG, fungicide Antracol 70 WP, and glue. The research design used was Randomized Complete Block Design (RCBD) with 6 treatments plant growth promoting rhizobacteria with combinations mulching and 4 replication. The treatments were: P1: Seed soaked with water without mulching, P2 : Seed soaked with PGPR 10 ml l<sup>-1</sup> without mulching, P3 : Seed soaked with PGPR 10 ml l<sup>-1</sup> + Additional PGPR 15 ml l<sup>-1</sup> without mulching, P4 : Seed soaked with water + mulching, P5 : Seed soaked with PGPR 10 ml l<sup>-1</sup> + mulching, P6 : Seed soaked with PGPR 10 ml l<sup>-1</sup> + Additional PGPR 15 ml l<sup>-1</sup> + mulching. Observations on research was done non destructive includes: plants high, number of leaves, and leaf area, flowering age, number of flowers, days to mature fruits, fruit set, first harvest time, last harvest time, number of fruit harvest per plant, weights of fruit harvest per plant, and results tons per hectare. The parameters of environment includes: soil moisture and temperature. Data obtained from the results of observations are analyzed using the analysis range (F test) at the level of p = 5% and when there are real effects, then continued with LSD test on level p = 5%.

The results showed that combination of PGPR with mulching give significant difference in parameter of growth include number of leaves and leaf area except plants high. Parameter of result include number of flowers, number of fruit harvest per plant, weights of fruit harvest per plant, and results tons per hectare except flowering age, fruit set, first harvest time, and last harvest time.

The parameters of environment showed that soil moisture and temperature with mulching give significant difference if in comparison without mulching. Number of fruit harvest per plant seed soaked with PGPR 10 ml l<sup>-1</sup> + Additional PGPR 15 ml l<sup>-1</sup> + mulching (P6) give higher results (10,09 fruits) if in comparison with seed soaked with water without mulching (P1) and seed soaked with water + mulching (P4). That results different with weights of fruit harvest per plant, seed soaked with PGPR 10 ml l<sup>-1</sup> + Additional PGPR 15 ml l<sup>-1</sup> + mulching (P6) give higher results (3,25 t ha<sup>-1</sup>) if in comparison with the others treatment (P1, P2, P3, P4, and P5).

