

SUMMARY

Septiana Primasari, 0810483044. The Use Of Waste Cabbage As Biofumigant To Control (*Ralstonia* sp.) In Potatoes (*Solanum Tuberosum* L.) Cultivation In The Medium Land. Supervisor: Ir. Moch. Nawawi, MS. C0-supervisor: Prof. Dr. Ir. Tatiek Wardiyati, MS

The demand of agriculture product is increased along with the population growth. Food that is available must meet the demand of community. Horticulture product plays greater in meeting the food demand. Potato (*Solanum tuberosum* L.) represents a commodity which is playing important role and deserved priority to be developed because it has potential in the food diversification. Indonesian potato production reaches 1 millions tones in 2008 and achieves 1.1 millions tones in 2009. National average production is 16.51 tones ha⁻¹ with width total of 71,000 ha. In this width of land, potato commodity must produce 3.5 millions tones per year (BPS, 2009). Low production of potato tuber is caused by low quality of the seed planted. Other causal factors are culture technique, high loss due to pest and disease, and unreliable storage. The improvement of potato production in the highland through plant area extensification is not anymore possible because it is considered as dangerous for environment preservation. An alternative to potato exploration is by cultivating potato at medium plain (300 m to 700 m above the sea). Bacteria wilt has been a prominent barrier in the potato production at medium plain, and successfully challenging the high-produced potato variety which is suitable for medium plain. Bacteria wilt disease is triggered by *Ralstonia solanacearum* which is always disturbing and limiting the potato growth in Asia, Africa and South and Central Americas, and has produced dramatic loss in the tropic, sub-tropic and hot regions (Martin and French, 1997). Bacteria wilt can even reduce potato production to 80 % (Wattimena, 2000). Some recommendations to control this disease are not giving optimal result. The recently used resistant variety is one which is capable to control French disease (1994). But now, there is a new method to control the disease *R. Solanacearum* by using biofumigant. A source of biofumigant is vegetative from the family Brassicaceae (cabbage). The use of cabbage as biofumigant is not functioned as microbial eradicator similar to methyl bromide or other pesticides. Biofumigant represents a part of continued agriculture management because it functions as the balancer of biological and natural biodiversity, and also as improving the plant condition.

The objective of this research is to obtain the effective control technique against *Ralstonia solanacearum* from the comparison between chopped cabbage and blended cabbage as the biofumigant in the potato cultivation at medium land. Hypothesis of research is that the use of 100 g per polybag chopped cabbage is equivalent to 50 g per polybag blended cabbage. Research is conducted at screen nursery house for venus orchid in Malang City. The altitude is more or less 700 at 27°C temperature and 65 % air humidity. Research begins from January of 2012 to April of 2012. Materials used in this research are 40x50 cm polybag, Desiree potato

variety, chicken feces-based dung, 15:15:15 NPK fertilizer, water, suspension *Ralstonia solanacearum*, fresh cabbage, and Agrept 20 WP. Experiment design is Group Random Planning which is consisting 9 treatments and 3 replications. Each treatment consists of 6 plants such that the total is 162 plants. The treatments involved in this research are P0 = Control (Without Bacteria Inoculation), P1 = Control (With Bacteria Inoculation), P2 = 50 g per polybag fresh cabbage (chopped cabbage), P3 = 100 g per polybag fresh cabbage (chopped cabbage), P4 = 150 g per polybag fresh cabbage (chopped cabbage), P5 = 50 g per polybag fresh cabbage (blended cabbage), P6 = 100 g per polybag fresh cabbage (blended cabbage), P7 = 150 g per polybag fresh cabbage (blended cabbage), and P8 = potato inoculated by bacteria and controlled by bactericide. Non-destructive observation is conducted from 22 to 56 dap, and concerned with plant height, number of leaf, and intensity of disease attack. Harvest observation is given during harvest at 56 dap, concerned with the number of tuber per plant, the weight of tuber per plant, and the weight average per tuber. The processing of observation data is analyzed by Analysis of Variance (F-Test with 5 % Significance Rate). There is significant effect in the treatment, and it is followed by LSD Test (BNT) at 5 % grade to ensure the existence of difference between treatments.

The results showed that the use of cabbage as biofumigant in potato cultivation is not significant different in plant height, number of leaves, number of branch, number of tuber per plant and intensity of disease attack. The use of 50, 100 and 150 g per polybag chopped cabbage and mixed cabbage can not reduce intensity of disease attack.