ABSTRACT

Lailia Nofiana, 24020110400008**,** Applied of Biofertilizer *Bio-GS* Used Mixed Carrier of Peat-Sludge of Cigarette Industry and Its Effect on Physico-Chemical Properties Growing Media, Growth and Productivity of Caisim(*Brassica rapa* var. *parachinensis*), **under guidance Erma Prihastanti and Muniffatul Izzati.**

Excessive use of synthetic chemical fertilizers in decades has caused environmental pollution and reduced soil fertility. We developed another alternative by substituted chemical fertilizers with *Bio-GS*. The *Bio-GS* fertilizer was inoculated with beneficial microbes in order to synthesized IAA as nitrogen fixer. Peat and sludge from cigarette industry as *Bio-GS* carrier. The aim of this research was to determined the effect of biofertilizer on physico-chemical of soil properties, caisin growth and productivity, and the optimal dose of biofertilizer for caisin growth and productivity. This study was designed by randomized block design with three doses of *Bio-GS*, NPK fertilizer was used as positive control and caisin without fertilizer was used as negative control. The variables of physico-chemical of soil properties measured were texture, porosity, field capacity, pH, total of organic C, organic matter, total of NPK and C/N ratio (measured before planting). Plant height and leaf number (growth parameters) were measured weekly while root length measured after harvest. Fresh and dry weight of plant and root were measured after harvest. Results indicated that the *Bio-GS* application increased water holding capacity of soil. The soil texture and porosity were not affected by this *Bio-GS* fertilizer. The application of *Bio-GS* could increase organic matter, organic C, total N of the soil, while total P and K were not affected. Caisin productivity was increased by this biofertilizer, but not its growth rate. The optimal dose was resulted when it given at 20 g/pot.

Key :*biofertilizer, peat, sludge of cigarette industry, productivity, Caisin (Brassica rapa* var. *parachinensis)*