

Effect of Fertilization on Lead Accumulation in Cabbage (*Brassica oleracea* L.) and White Mustard (*Brassica rapa* L.)

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Abstract : Toxic metals accumulation in growing plant is influenced by the soil composition, water, air and planting sites, fertilization and crop types. Cabbage (*Brassica oleracea* L.) and Chinese cabbage (*Brassica rapa* L.) are plants that is able to absorb toxic metals. This study aimed to determine the effect of dosage of NPK fertilizer and organic fertilizer on metal lead accumulation in cabbage and chinese cabbage. This research was carried out in plastic house in Simpang Tiga Redelong highlands using cabbage (Inpestor 369) and white mustard (Deli. CR) seeds. The procedure used was the addition of lead (Pb) into the soil media as much as 319.71 mg.kg⁻¹ in powder form Pb(NO₃)₂ for all groups, in 5 kg per polybag. Then organic fertilizer (Petro Organic) and NPK (YaraMila™) was added were 15, 30, 60, 120 and 240 mg.kg⁻¹ soil at 7, 15 and 30 DAT (days after planting) by sprinkling on the soil media around the plants. At 75 DAT vegetables were harvested and continued with the analysis for lead content analysis. Analysis using the technique of atomic absorption spectrophotometry (AAS) air-acetylene flame at a wavelength of 283.3 nm. The results showed that the cabbage (*Brassica oleracea* L.) and chinese cabbage (*Brassica rapa* L.) able to accumulate metallic lead during the growth of 3.0289 ± 0.0186 µg/g and 3.2770 ± 0.1601 µg/g. But after treatment decrease the accumulation lead with NPK fertilizer at 15 mg/kg; NPK 30 mg/kg; organic fertilizer 30 mg/kg on cabbage; NPK fertilizer and organic 60 mg/kg, the highest decrease of NPK fertilizer on cabbage and chinese cabbage seen at a dose of 120 mg/kg ie 2.2838 ± 0.0232 µg/g and 1.7482 ± 0.0551 µg/g; and the highest decline of organic fertilizer on cabbage and chinese cabbage at a dose of 240 mg/kg ie 2.0798 ± 0.0379 µg/g and 2.6829 ± 0.1565 µg/g respectively, but in NPK fertilizers 240 mg/kg there is an increase of accumulated back. Cabbage and chinese cabbage plants able to accumulate lead during growth. NPK fertilizer and organic fertilizer effect on a significant reduction in the lead, with the higher dose will further decrease the accumulation of lead.

Keyword : Cabbage (*Brassica oleracea* L.), white mustard (*Brassica rapa* L.), lead (Pb), Atomic Absorption Spectrophotometer (AAS).