

## **Effects of lead concentrations on germination and development of common vegetables in Thailand**

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Level of study	Bachelor of Science
Faculty	Biotechnology
Academic year	2005

### **Abstract**

Heavy metal contamination is one of limiting factors in agricultural practice. This study was to provide us a tool to plan and decide which vegetables would grow better and be less affected by lead contamination in agriculture. The experiment was conducted to study effects of lead on germination and physiological changes and to identify level of tolerance of lead in vegetables. The study was carried out on ten species of vegetables. Seeds were planted in tissue culture media with lead; 0 ppm (control), 5 ppm, 15 ppm, and 30 ppm. Average length as plant growth was measured. Ten species showed no significant difference ( $P>0.05$ ) on germination when cultured in treatments. Average length of mung bean, tomato, holy basil, and bird pepper had significant difference ( $P<0.05$ ) to control after one, two, three, and four week exposure to lead onward, respectively. Morning glory, cucumber, lettuce, sweet basil, kale, and cabbage had no significant difference ( $P>0.05$ ) on average length to control. Effect of lead on physiology changes was found in all ten species as shown in their root development. Lead did not seriously affect on seed germination in this study. However, lead showed effect on average growth by length of four species and effect on root elongation of all ten vegetables.