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### THE EFFECTS OF SOIL LEAD POLLUTION AND SOME REMEDIATION TREATMENTS ON GROWTH, YIELD AND CHEMICAL COMPOSITION OF COMMON BEAN

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#### ASBTRACT

The current study was conducted to investigate the effects of soil pollution with four different levels of lead (0, 100, 200, and 300 ppm) and five different remediation treatments (control, cattle manure (20 m<sup>3</sup> fed.<sup>-1</sup>), super phosphate (45 kg P<sub>2</sub>O<sub>5</sub> fed.<sup>-1</sup>), seed inoculation of *Bacillus subtilis* (10 ml of the inoculum/pot having about 10<sup>6</sup>–10<sup>8</sup> cells) and a mixture of the three previous types of the remediation treatments.) as well as their interactions on the vegetative growth characters, green pods yield and Pb and P contents of the roots, stems, leaves, and green pods of common bean (*Phaseolus vulgaris* L.) cv. "Giza 3". Two pot experiments were carried out during the 2005 and 2006 seasons at the Experimental Farm, El-Bostan, Faculty of Agriculture, Damanhour Branch, Alexandria University. A split plot system in a complete randomized blocks design was used with three replications. Vegetative growth characters were significantly inhibited with increasing the Pb concentration in soil. The inhibitory effect of Pb was more pronounced at high Pb concentrations. Also, Pb had a deleterious effect on leaf chloroplast pigments. Both chlorophyll a and b were more negatively affected by Pb ions than that of carotenoids. Pollution of soils with Pb significantly reduced total yield of green beans. Adding remediation treatments to the Pb polluted soils not only led to overcome the deleterious effect of intolerable Pb levels (200 and 300 ppm) on most above mentioned characters, but also stimulated the growth, increased the yield and protected the photosynthetic pigments and sharply reduced the Pb concentration in both root and top. Both the application of P and the mixed treatment were the best in this respect.