



## Control of Potato Early Blight Disease Using Biotic and a Biotic Agents

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**Abstract :** The present investigation aimed to evaluate the effect of foliar spray with each of chitosan and humic acid alone, or in combination with soil amendment with compost in controlling potato early blight caused by *Alternaria solani*. Under laboratory conditions, all the tested concentrations of humic acid had no inhibitory effect against the linear growth of *A. solani*. While, chitosan at the concentration of 5.0 g / L caused complete reduction in linear growth. Data also revealed that the compost water extract CWE of plant compost show antagonistic activity at all the tested concentrations (5, 10 and 15%) via three methods of pouring plate, well-cut diffusion and dry weight assay. Under field conditions, results indicated that all treatments significantly reduced early blight severity, during the two growing seasons. The highest reduction was obtained with the combined treatments between soil amendment with compost and foliar spray with each of humic acid, chitosan or Redomyl gold plus, which reduced the blight severity more than 75.0, 84.4 and 78.6%, respectively, during the two growing seasons. Combined treatments also reduced the spores of *A. solani* /cm<sup>2</sup> found on infected leaves by 95.1, 95.4 and 95.8 % as compared with untreated plants. All treatments significantly increased the chitinase activity. The highest increase in chitinase activity was obtained with combined treatments between plant compost and humic acid or chitosan, which increased the activity by 116.5 and 122.2 %, respectively. As for tuber yield, results revealed that all treatments significantly increased the tuber yield of potato plants during the two growing seasons. The highest increase in tuber yield was obtained with combined treatments between plant compost and humic acid or chitosan, which increased the tuber yield more than 95.8 and 100.0%, respectively, during the two growing seasons. Individual treatment of each compost, humic acid, chitosan and Redomil gold plus showed moderate effect.

**Key words:** Early blight-potato plants- plant compost- humic acid- chitosan.