Research Article

Evaluation of Inorganic Chemicals as Inducers in Systemic Acquired Resistance in Potato against Alternaria Blight

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Abstract

Inorganic chemical like calcium chloride, ferric chloride, indole acetic acid, di potassium hydrogen orthophosphate, hydrogen peroxide, salicylic acid, copper chloride and metalaxyl as inducers provides induced resistance in potato against Alternaria blight, resulting decline in disease severity from 45.84, 52.19 and 66.26 to 11.35, 16.10 and 19.58 per cent at 2, 6, and 10 days of inoculation, respectively. Biochemical evidence of defense response in potato plant showed that increased content of peroxidase, polyphenol oxidase and phenyl alanine ammonia lyase were increased due to activity of inorganic chemical as inducers. The activity of peroxidase in potato leaves before application of inorganic chemicals as inducers ranged from 1.49 - 1.75 min/g of fresh leaves whereas, after application, the values were 1.75- 2.38 at 2 days, 1.78 - 2.43 at 4 days, 1.83 - 2.45 at 6 days 1.86 - 2.48 at 8 days and 1.80 - 2.38 min g^{-1} of fresh leave at 10 days of inoculation, indicated that the inducing agent enhanced the peroxidase activity in potato leave. The highest peroxidase activity (29.43%) before and after application of inorganic chemicals as inducers is found in salicylic acid treated potato leaf after 8 days of pathogen inoculation. Similarly, activities of polyphenol oxidase and phenyl alanine ammonia lyase were also increased due to application of inducers with the highest in salicylic acid treatment in both the cases. Correlation coefficient analysis revealed that there was negative correlation as (r) 0.780, -0.987 and -0.935, between disease severity with peroxidase, polyphenol oxidase and phenylalanine ammonia lyase at 2 days of pathogen inoculation, respectively. Similarly, negative correlation had also been found, -0.907, -0.953 and -0.742 at 4 days, 0.912, -0.945, -0.971 at 6 days, -0.964, -0.975 and -0.877 at 8 days and -0.941, -0.973 and -0.875 at 10 days of pathogen inoculation.

Key world: Correlation co-efficient, defense enzymes, disease, resistance

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