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PCR based analysis for the detection of *Xanthomonas vesicatoria* causing pepper and tomato bacterial spot

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Xanthomonas vesicatoria is a major pathogen of tomato (Solanum lycopersicum) and pepper (Capsicum spp.). Bacterial spot caused by *Xanthomonas vesicatoria* is one of the most important diseases in many countries throughout the world. The disease causes considerable crop loses specially in areas of warmer and humid climate. In this study, 50 pathogenic Xanthomonas strains were isolated from tomatoes and peppers with bacterial spot in Turkey and USA. In continuously, 29 samples of 50 Xanthomonas strains were determined as *Xanthomonas vesicatoria* in the presence of 517 bp fragment of rhs gene by using specific XCVF and XCVR primers. We investigated that this protocol can be used as a reliable diagnostic tool for specific detection of *Xanthomonas vesicatoria* in tomato and pepper.

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Molecular diversity of root nodule bacteria from different leguminous crop

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A total of 210 samples of four legumes i.e., 85 of *Cicer arietinum*, 74 of Glycine max, 21 of *Vigna radiata* and 40 of *Cajanus cajan* were collected from different fields of District Sagar and were processed for the isolation of root nodule bacteria, *Rhizobium*. A total of 247 bacteria were identified as *Rhizobium*, out of which 94 from *Cicer arietinum*, 69 from Glycine max, 43 from *Vigna radiata* and 41 from *Cajanus cajan*, on the basis of Lactose agar test, Nitrate reduction test, citrate utilization test, motility, oxidase, catalase different staining technique i.e., Gram's staining and carbol fuschin staining. All the isolates were tested for phosphatase activity on solid plate assay. Maximum phosphatase production was noted in the test strains were selected for siderophore and indole acetic acid production. Ten selected rhizobia were subjected to RAPD and ARDRA analysis to identify the species. On the basis of RAPD and ARDAR all the 10 isolates were identified as *Rhizobium* meliloti. Higher phosphatase activity was noted in ten *Rhizobium* isolates i.e., *Rhizobium* S81, *Rhizobium* G04, *Rhizobium* G16, *Rhizobium* G20, *Rhizobium* G77, *Rhizobium* S43, *Rhizobium* S81, *Rhizobium* M07, *Rhizobium* M37, *Rhizobium* A15, *Rhizobium* and *Rhizobium* A55.

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