

Bacterial diseases of *Lotus* spp.

[ADRIANA M. ALIPPI*](#)

CIC - Centro de Investigaciones de Fitopatología (CIDEFI), Facultad de Ciencias Agrarias y Forestales, Universidad Nacional de La Plata, c.c. 31, calles 60 y 118, 1900 La Plata, Argentina

* Corresponding author

There are no reports about diseases of bacterial origin affecting species of *Lotus* in Argentina. On a world-wide basis, only *Pseudomonas viridiflava* and *Clavibacter michiganensis* subsp. *insidiosus* have been reported affecting birdsfoot trefoil (*Lotus corniculatus*; Bradbury, 1986).

Main symptoms caused by *P. viridiflava* on trefoil are wilting of affected plants and reduction of root growth. The tops were wilted and the crowns appeared yellowish gray (Lukezic *et al.*, 1983).

P. viridiflava also produces other diseases in several plants. It has been reported to cause basal stem rot of tomato, fruit rot on tomato, discolored pith on chrysanthemum, bacterial wilt of sweet onion, root and crown rot of alfalfa, bacterial canker of poinsettia, blossom blight of kiwifruit, necrosis of melon, blite, eggplant, basil, bean, cabbage, cauliflower, dill, grape, lettuce, lupine, parsnip, passion fruit, pea, poppy, pumpkin, rape, and other hosts (Gitaitis *et al.*, 1998; Alippi *et al.*, 2003). It has also been reported as a secondary invader and epiphyte. In Argentina *P. viridiflava* has been associated with symptoms of pith necrosis of tomato and pepper (Alippi *et al.*, 2003) and leaf necrosis of basil (Alippi *et al.*, 1999), being a potential pathogen to species of *Lotus* due to its ubiquitous nature and transmission through contaminated seed.

Bacterial wilt caused by *C. m.* subsp. *insidiosus* has been reported affecting *Medicago sativa*, *Lotus* spp., *Melilotus* spp., and *Trifolium* spp. (Bradbury, 1986). The disease occurs throughout most of the alfalfa growing areas of the world (Graham *et al.*, 1980). Infected plants are scattered throughout the stand and are easily detected by their yellow-green color and stunted growth. Mild symptoms consist of leaf mottling with slight cupping or upward curling of the leaflets and some reduction in plant height. Severely infected plants are stunted and yellow-green, with many spindly stems and small, distorted leaflets. Diseased plants are usually most evident in the regrowth after clipping with appearance of witches' broom symptoms. Cross sections of taproots show first a yellowish brown discoloration of the outer vascular tissue, and subsequently the entire stele discolors. When the bark is peeled away, the stele is yellowish brown, in contrast with the white of healthy plants. Pockets of infection sometimes appear on the inner surface of the bark (Graham *et al.*, 1980). The pathogen can survive in plant material in the soil, hay and seed for several years. It can be spread plant to plant via rain, irrigation or contaminated implement. Long distance spread is

due to contaminated seed and hay. Bacteria usually infect plants through wounds in the root and crown that can be caused by winter injury, nematodes, or mechanical injury.

Dwarfing symptoms of alfalfa, probably caused by *Xylella fastidiosa* has been reported in USA (Graham *et al*, 1980), and similar symptoms were described on *L. corniculatus* in Uruguay (Altier, 1997), but the identity of the causal agent was not confirmed. Due to the wide range of hosts reported for *X. fastidiosa* there is high probability that the bacterium can also affects *Lotus spp.* From this limited information about bacterial diseases, it is obvious that much remain to be done to elucidate interactions between bacterial diseases and development of *Lotus spp.*

References

- ALIPPI A.M., WOLCAN S. and DAL BÓ E. 1999. First report of bacterial leaf necrosis of basil caused by *Pseudomonas viridiflava* in Argentina. *Plant Disease*, **83** (9), 876.
- ALIPPI A.M., DAL BÓ E., RONCO L.B., LÓPEZ M.V., LÓPEZ A.C. and AGUILAR O.M. 2003. *Pseudomonas* populations causing pith necrosis of tomato and pepper in Argentina are highly diverse. *Plant Pathology*, **52** (3), 287-302.
- ALTIER N. 1997. Enfermedades del *Lotus* en Uruguay. [Diseases of *Lotus* in Uruguay]. INIA, Montevideo, *Serie Técnica* N ° **93**, 16 p. [In Spanish]
- BRADBURY J.F. 1986. Guide to Plant Pathogenic Bacteria. C.A.B. International Mycological Institute, Kew, Surrey, England, 332 pp.
- GRAHAM J.H., FROSHEISER F.I., STUTEVILLE D.L. and ERWIN D.C. 1980. A compendium of alfalfa diseases. APS Press, USA, 65 pp.
- GITAITIS R., MAC DONALD G., TORRANCE R., HARTLEY R., SUMNER D.R., GAY J.D. and JOHNSON III W.C. 1998. Bacterial streak and bulb rot of sweet onion: II. Epiphytic survival of *Pseudomonas viridiflava* in association with multiple weed hosts. *Plant Disease*, **82**, 935-938.
- LUKEZIC F.L., LEATH K.L. and LEVINE R.G. 1983. *Pseudomonas viridiflava* associated with root and crown rot of alfalfa and wilt of birdsfoot trefoil. *Plant Disease*, **67**, 808-811.