

Diseases of forage legumes: advances and prospects of research on management strategies

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Forage legumes are essential for an efficient animal-based agriculture. They provide high quality feed for livestock and are a key component for sustainability of crop-pasture rotations. Diseases are a major cause of weakened establishment, premature stand decline and reduced productivity in most temperate forage legumes. The perennial strategy of crown-forming species like alfalfa (*Medicago sativa* L.), birdsfoot trefoil (*Lotus corniculatus* L.) and red clover (*Trifolium pratense* L.), relies on the success of individual plants to develop and maintain a healthy crown and root system along the stand life. The interaction of diverse biotic and abiotic factors does likely produce a cumulative stress load and pose a threat to the long-term performance of forage legumes. My research program is focused on developing management strategies for minimizing the impact of diseases on forage legume establishment, production and persistence. Current research explores the biological control of *Pythium* seedling diseases using native fluorescent *Pseudomonas* (Bajsa *et al.*, 2005; Pérez *et al.*, 2001). Several strains with enhanced disease suppressing and plant growth promoting abilities have been selected to develop bacterial inoculants (De La Fuente *et al.*, 2002; Quagliotto *et al.*, 2004; Yanes *et al.*, 2005). I work in close collaboration with the breeding programs in the development of new varieties with improved disease resistance (Altier *et al.*, 2000; Real and Altier, 2005). My research facilitates the development of new techniques and standardized tests to characterize germplasm and to assist in the identification of host plant resistance (Altier and Thies, 1995). Other projects involve interdisciplinary approaches to understand the ecology of forage legume microbes and disease epidemiology as influenced by agricultural and crop management practices (Altier, 2003; Bao *et al.*, 2005). Results of research on *Fusarium* crown and root disease complex have been recently reported (Altier and Groth, 2005; Altier and Kinkel, 2005). This knowledge is essential to establish the basis for efficient and durable means of disease management.

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