

# SURVEY OF FUNGI ASSOCIATED WITH BIRDSFOOT TREFOIL SEED

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A survey of fungi associated with seed of birdsfoot trefoil was done at INIA La Estanzuela Exp. Stn. (National Institute for Agriculture Research, Uruguay), from October 1994 to May 1995. In order to select the seed health testing methodology, we compared two incubation methods (water agar plate vs. blotter) and two seed pretreatments (with or without surface disinfection) over 10 seed lots. The water agar plate method using seed without surface disinfection resulted in higher counts of fungi, and was chosen for further testing. Forty seed lots from the major birdsfoot trefoil seed production area of Uruguay were evaluated using a randomized complete block design with four replicates over time. Incidence, frequency and prevalence were calculated for each identified fungal genus. Incidence was expressed as percent of seeds with a genus relative to the total seeds assessed; frequency was expressed as the ratio between the mean incidence of a genus and the mean incidence of total fungi; prevalence was expressed as percent of lots with a genus relative to the total lots assessed. Mean incidence of total fungi varied significantly ( $P < 0.05$ ) among seed lots, with an average of 10.7% and a range from 1.7% to 38.2%. Storage fungi (*Aspergillus* and *Penicillium*) averaged 5.1%, seed contaminant fungi (*Alternaria tenuis*, *Cladosporium*, *Curvularia*, *Epicoccum*, *Helminthosporium*, *Pithomyces* and *Rhizopus*) averaged 5.3%, and pathogenic fungi (*Colletotrichum*, *Fusarium*, *Leptosphaerulina*, *Phoma*, *Rhizoctonia* and *Stemphylium*) averaged 0.3%. *Alternaria* was the most frequent genus, representing 37% of total fungi; it had a mean incidence of 4% and a prevalence of 100%. In order to evaluate the effect of the different fungi on seed quality, we determined percentages of germination (following ISTA methodology) and correlated this variable with fungal incidence. Percentages of germination varied significantly ( $P < 0.05$ ) within a range from 59% to 94%. Seed lots with low germination presented the highest counts of storage fungi and/or *Alternaria*. Correlation coefficients between germination and incidence of total fungi, storage fungi, and contaminants were  $r = -0.75$ ,  $r = -0.69$ , and  $r = -0.43$ , respectively ( $P < 0.05$ ); correlation coefficient between germination and incidence of pathogenic fungi was  $r = -0.10$  (NS). The presence of storage fungi and contaminants contributes to the process of seed deterioration by reducing seed germination. The presence of pathogenic fungi, despite low percents, may play an important role as potential source of inoculum for disease development under field conditions. The impact of fungi associated with seed of birdsfoot trefoil on the seed quality and on the crop productivity should be further assessed.

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