

Plant Health 2022 Abstract:

In-vitro Sensitivity of *Alternaria solani* to SDHI fungicides Fluopyram and Atepidyn

Sunil Shrestha, Ipsita Mallik, and Julie S. Pasche

Department of Plant Pathology, North Dakota State University, Fargo, ND 58108

Early blight caused by the *Alternaria solani* is an economically important foliar disease of potato across the US and Canada. Management of this disease is primarily achieved by the application of foliar fungicides. Frequent application of single-site specific fungicides during the field season have led to reduced sensitivity or resistance of *A. solani* to fungicide classes used in early blight management, including succinate dehydrogenase inhibitors (SDHI). Isolates of *A. solani* collected from potato production regions across the US and Canada were assessed for in vitro sensitivity of SDHI fungicides fluopyram and adepidyn using conidial germination methods. Molecular characterization was done for detection of point mutation in the B, C and D subunits of the AsSdh gene. In vitro sensitivity to fluopyram and adepidyn revealed greater than 3x and 18x resistance factors (RF) from the baseline to the non-baseline Canadian isolates and greater than 8x and 21x RF in US isolates, respectively. In both Canada and the US, the D123E mutation was found most frequently among isolates with resistance/reduced sensitivity to SDHI fungicides. The H134R mutation was next in frequency among the five mutations included in these evaluations. A decrease in the frequency of the known mutations in resistant/reduced sensitive isolates indicates the possibility of new mutations in the Sdh subunits or other factors invoking resistance. Results from this study will help to provide better recommendation to the growers for efficacious use of fungicides to control disease.