

Molecular Characterization and Sensitivity to Quinone Outside Inhibitor (QoI) Fungicides of *Aspergillus flavus* Isolated from Peanut Seeds in Georgia

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Aspergillus flavus is an important pathogenic fungus affecting peanuts by production of aflatoxin, a potent human carcinogen. In infected peanuts, it can also cause seed rot and reduce seed viability and germination. The first aim of this study is to characterize the *Aspergillus* population obtained from six highly colonized commercial peanut seed lots in Georgia. We collected 76 *Aspergillus* isolates and initial identification was based on their morphological characteristics. Isolates were further confirmed as *A. flavus* using nucleic acid-based molecular methods with species-specific primers. Another objective of this study was to test the sensitivity to quinone outside inhibitor (QoI) fungicides and elucidate the molecular mechanism of QoI resistance in *A. flavus*. *In vitro* plates assay showed that the reduced efficacy of QoI fungicide (azoxystrobin) against *A. flavus* isolates. It is widely reported that resistance to QoIs has been associated with the presence of amino acid substitution in the cytochrome b gene. For further confirmation of the QoI resistance phenotype, we examined 70 isolates for the presence of substitution using DNA sequencing. Results showed that we have a high percentage of the population with known resistance mutations to the QoI fungicides. The majority of the mutations (65%) are Cyt B G143A which confers complete immunity to the QoI's. We also observed Cyt B F129L mutation, which has been documented for QoI resistance, in another 20% of the isolates. These findings explained the cause of developing resistance in peanut seed lots so abruptly this year in GA. More detailed studies are being performed to assay the efficacy of other fungicides for controlling *A. flavus* population in the colonized commercial peanut seed.