

Evaluating the Effect of Elemental Sulfur with Demethylation Inhibitors (DMI) and Quinone Outside Inhibitors (Qoi) On Germination and Growth of *Nothopassalora personata*

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Late Leaf Spot (LLS) of peanut, caused by the fungal agent *Nothopassalora personata*, is an important foliar disease of peanut that can lead to premature defoliation and yield loss if not controlled. In fields with a history of late leaf spot, the disease is managed using frequent applications of fungicides. A recent study demonstrated that adding micronized elemental sulfur to DMI fungicides with reduced efficacy can enhance LLS suppression in fields with DMI-resistant populations of *N. personata*. To understand the role of sulfur in the mixtures, conidia of *N. personata* were exposed to six fungicide treatments on the surface of water agar plates in the laboratory. The fungicide treatments evaluated were 200 μ l of 1) water (nontreated control), 2) elemental sulfur (0.044mg/ml), 3) tebuconazole (0.3 mg/mL), 4) sulfur (0.044mg/ml) with tebuconazole (0.3 mg/mL), 5) azoxystrobin (0.3 mg/mL), and 6) sulfur (0.044mg/ml) with azoxystrobin (0.3 mg/mL). After the treatments had dried, 1x1 cm sections of a sporulating culture of *N. personata* were pressed, sporulation side down, against the treated surface to transfer conidia. Assay plates were incubated at room temperature under continuous light for 48 hours. There were three replications, and the experiment was conducted twice. Treatment effects on germination and growth were observed for at least 30 individuals per assay plate using a compound microscope. Results showed that sulfur alone or as a mixing partner did not affect fungal germination or germ tube length ($P=0.095$), but sulfur did significantly reduce germ tube number ($P<0.05$). Sulfur reduced the incidence of germ tube branching by more than half compared to the nontreated control, as did tebuconazole and azoxystrobin ($P<0.01$). From this experiment, we saw that sulfur affects some of the growth variables measured for *N. personata* but not germination.