FUNGICIDE SENSITIVITY OF *SCLEROTIUM ROLFSII* (CAUSING WHITE MOLD) FROM PEANUT IN GEORGIA

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One of the hardest diseases to control with fungicides is white mold, or stem rot caused by *Sclerotium rolfsii*. This is due to the fact that the disease occurs deep in the plant canopy near the soil surface, and can even grow down under the soil to rot pegs and pods below ground. Irrigation and night sprays can help compensate for this, but control is seldom equal to that of foliar diseases such as leaf spot where the leaves are easily sprayed. When white mold control failures occur, it is usually not known if the cause is fungicide resistance, or perhaps a lack of fungicide ever reaching the target because it is intercepted by the leaves. Of course a common reason for fungicide failure in many diseases is the occurrence of fungicide-resistant isolates. Franke, Brenneman and Stevenson (1998) published an extensive study of the sensitivity of *S. rolfsii* from Georgia peanut fields about 25 years ago. There has been extensive use of these fungicides during those years, and the current level of sensitivity is not known.

Another possible issue that can affect fungicide efficacy is the length of residual control offered by the fungicide. This is particularly true for soilborne pathogens were conditions are more consistently favorable for infection, and the fungicide is exposed to many more microbes that are capable of metabolizing it, thus rendering it ineffective. Some fungicides, such as the dicarboximides used on peanuts for Sclerotinia blight, are broken down rapidly by soil microbes. For example, Rovral has a ½ life of 35 days in virgin soil, and only 2 days after 3 prior applications of Rovral (Slade et al., Pesticide Science). This "enhanced biodegradation" has not been evaluated with our peanut white mold fungicides, but it could also explain some of the unpredictable efficacy, especially in fields where these products have a long use history. The same products that we use on peanuts are now labeled for use on our rotational crops like cotton, corn and vegetables, so selection pressure is high.

Progress Report

The first phase of this project was completed in 2019, ie. the collection of pathogen isolates. Plans were to start screening those isolates in the lab that winter, and take isolates with the greatest range of sensitivity to the field in microplots this past spring. Covid restrictions and quarantines prevented that from happening. Significant white mold developed in Georgia peanut fields again in 2020, even in some sprayed fields. More isolates of the pathogen were collected from these fields and added to the collection. Approximately 400 isolates of *S. rolfsii* are now in storage. A subset of 40 isolates was used to establish an ED_{50} to Elatus and Provysol, our newest white mold fungicides. Those values were 0.13 and 0.42 parts per million, respectively, indicating a high level of activity. This data will serve as a reference standard for sensitivity to these fungicides if resistance is suspected in the future after years of more intensive use. The larger set of isolates will now be screened against one discriminatory dose of Elatus, Provysol, Abound, Convoy and tebuconazole to see if any are resistant to these fungicides. The microplot study planned for 2020 will be established this spring. In addition, soils from fields with different fungicide use histories have been collected, and the ½ life of Convoy is currently being determined in each soil. Together these trials should help us understand if resistance and/or enhanced biodegradation is occurring to any of these fungicides, and if so, how widespread it is.