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

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2019 Report to the Georgia Peanut Commission

Multiple fungicides from several classes are available to peanut growers to manage diseases. One of the hardest diseases to control with fungicides is white mold, or stem rot caused by *Sclerotium rolfsii*. This is primarily 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 achieved at the level commonly seen for 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. Even though they are targeted toward other pathogens on those crops, the end result is the same, ie. increased fungicide exposure of soil inhabiting fungi such as *S. rolfsii* to those products, and possible selection for less sensitive strains.

Progress Report

The first phase of this project was completed in 2019, ie. the collection of pathogen isolates. Significant white mold developed in Georgia peanut fields in 2019, even in some of our sprayed fields. Isolates of the pathogen were collected from diseased plants in numerous grower fields with the problem, as well as multiple fields at the UGA experiment station that have had many years of fungicide exposure. A total of 373 isolates of *S. rolfsii* were obtained and are in storage. The 2020 portion of the study has begun. The isolates are currently being screened for sensitivity to azoxystrobin (Abound), flutolanil (Convoy) and tebuconazole (Folicur). They will also be used to determine the current sensitivity to solatenol (Elatus), a recent addition to our white mold arsenal. Isolates with the greatest range of sensitivities will be evaluated in microplots under field conditions for their response to these same fungicides. In addition, soils from fields with different fungicide use histories will be collected, and the ½ life of the fungicides will be determined and compared. The combination of 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. This information will be critical in developing recommendations for use of these valuable tools.