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Screening germplasm for resistance to *Sclerotinia minor* with a leaf assay

Terry Wheeler and Mark Burow
Texas AgriLife Research
Lubbock, TX

Summary: The leaf assay was tested on spanish, bunch, and runner type peanuts. There was no relationship between the leaf assay and field ratings for the spanish and bunch peanuts. There was a significant relationship between the leaf assay and field ratings for the runner peanuts. Three different isolates were used in the initial tests to determine the effect that fungal isolate had on the results. An aggressive isolate of the TX1 group was used to screen additional runner germplasm. Of the lines screened, 12 had lower disease ratings than the resistant check, Tamrun OLO7, and 38 entries had ratings less than the susceptible check, Langley.

Report: The objective of the project was to screen germplasm with a leaf assay against the fungus, *Sclerotinia minor*. The assay was conducted on spanish, bunch-type, and runner germplasm. Initial tests were conducted on germplasm that was also tested in a *Sclerotinia* infested field, and a comparison was made between the leaf assays and the field ratings. There was no consistent relationship between the field ratings and the leaf assay for spanish (Fig. 1A) and bunch-types (Fig. 1B). However, there was a correlation between the field disease ratings and leaf assay for the runner types (Fig. 1C).

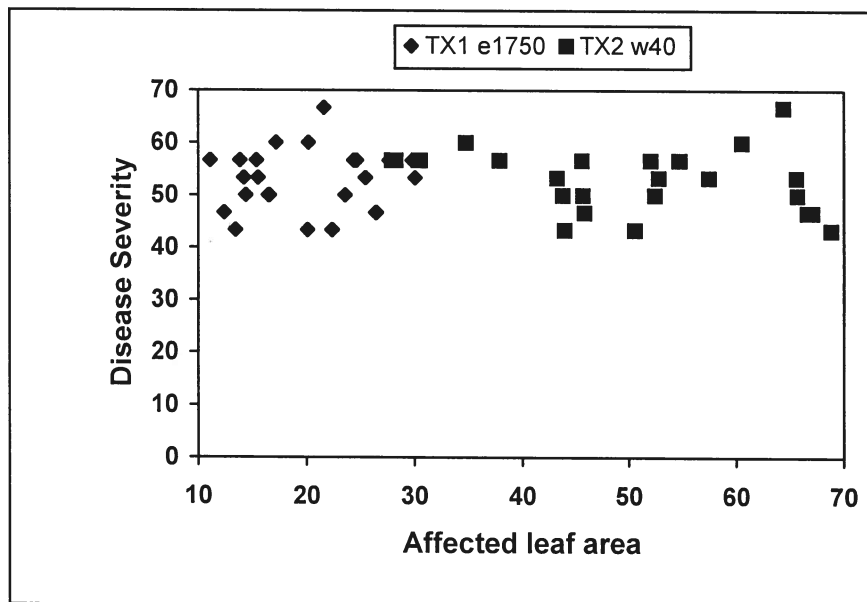


Fig. 1A Relationship between disease severity caused by *Sclerotinia minor* in the spanish peanut field test and affected leaflet area values from detached leaflet assay trial 1 using the aggressive (e1750) and moderately aggressive (e1105) TX1 isolates and the aggressive (w40) TX2 isolate. Disease severity, which is the percentage of whole plots affected by *Sclerotinia* blight, ranges from 0 to 100 where 0 = no visual symptoms and 100 = all plants dead. Affected leaflet area was calculated according to the formula: (lesion area / leaflet area)*100.

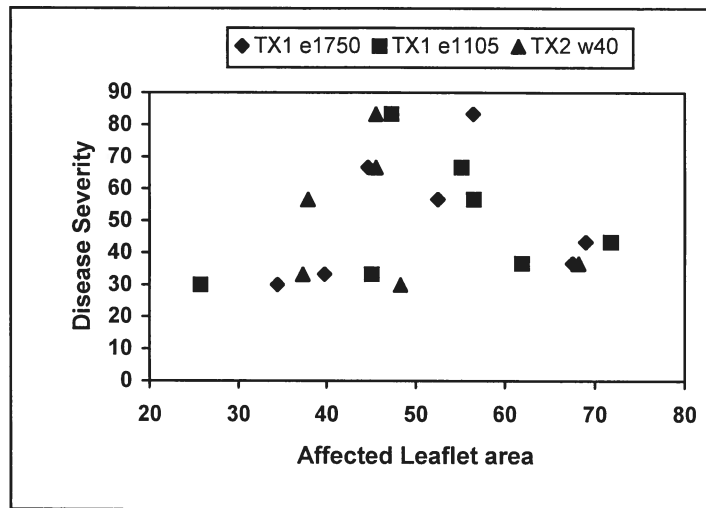


Fig. 1B Relationship between disease severity caused by *Sclerotinia minor* in the bunch-type peanut field test and affected leaflet area values from detached leaflet assay trial 1 using the aggressive (e1750) and moderately aggressive (e1105) TX1 isolates and the aggressive (w40) TX2 isolate. Disease severity, which is the percentage of whole plots affected by *Sclerotinia* blight, ranges from 0 to 100 where 0 = no visual symptoms and 100 = all plants dead. Affected leaflet area was calculated according to the formula: (lesion area / leaflet area)*100.

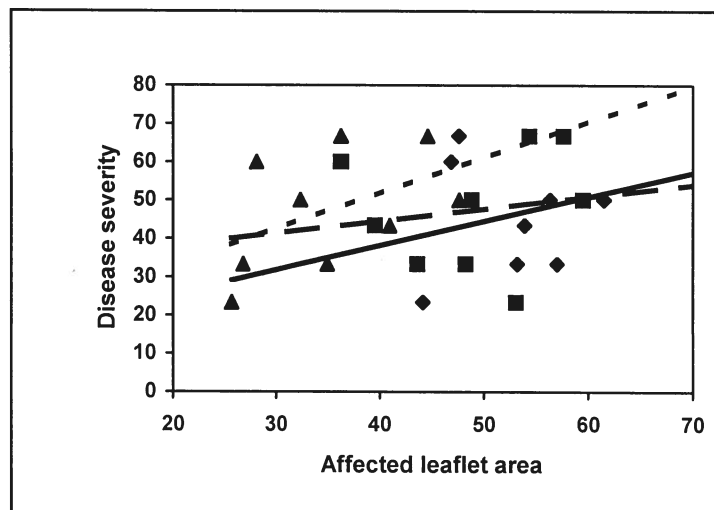


Fig. 1C Relationship between disease severity caused by *Sclerotinia minor* in the runner peanut field test and affected leaflet area values from detached leaflet assay trial 1 using the aggressive (e1750) and moderately aggressive (e1105) TX1 isolates and the aggressive (w40) TX2 isolate. Disease severity, which is the percentage of whole plots affected by *Sclerotinia* blight, ranges from 0 to 100 where 0 = no visual symptoms and 100 = all plants dead. Affected leaflet area was calculated according to the formula: (lesion area / leaflet area)*100.

Additional runner lines were tested with the assay. If the resistant check (Tamrun OLO7) or susceptible check (Langley) was not significantly different, or the overall assay indicated minimal disease, then it was thrown out. There were 56 entries that were thrown out. The entries included in Table 1 met the criteria of a successful test. In discussions with my graduate student over the tests that did not perform adequately, he thought that the inoculum preparation was not done correctly for those cases. That will be corrected in 2008. As seen in Table 1, 12 lines had leaf assays that were numerically < than the disease found on the resistant check, and 38 entries had values < the susceptible check. The entries with the lowest values relative to Tamrun OLO7 would be recommended to test in the Sclerotinia blight site.

Table 1. The effect of *Sclerotinia minor* on a leaf assay with selected peanut lines, relative to the resistant check, Tamrun OLO7 and the susceptible check Langley.

Line	Relative rating OLO7	Relative rating to Langley
05lub209	0.47	0.23
05lub216	0.70	0.34
45204	0.75	0.43
63069	0.78	0.25
63062	0.81	0.26
05lub295	0.81	0.40
05lub222	0.81	0.40
lub202	0.84	0.27
05lub206	0.86	0.42
05lub208	0.86	0.42
45218	0.87	0.50
05lub298	0.97	0.48
lub201	1.00	0.32
45213	1.03	0.59
05lub212	1.04	0.52
45206	1.07	0.61
45216	1.09	0.63
lub205	1.09	0.35
05lub213	1.15	0.57
45208	1.17	0.68
45203	1.18	0.68
63059	1.25	0.40
05lub220	1.26	0.63
45202	1.27	0.73
45215	1.35	0.78
45207	1.38	0.79
45212	1.43	0.83
05lub217	1.47	0.73
45217	1.53	0.88
45205	1.58	0.91
05lub207	1.58	0.78
05lub215	1.58	0.79
lub203	1.66	0.54
63058	1.91	0.62
63077	2.06	0.67
05lub299	2.19	1.09
63074	2.53	0.82
63068	2.62	0.85
45209	2.65	1.53
63057	2.69	0.87
63052	3.91	1.26
45344	15.22	4.92

The average percent disease for an entry was divided by the average percent disease for the check.