WEB-BLIGHT OF INTRODUCED FORAGE LEGUMES IN FLORIDA*

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ABSTRACT

Thirty-five introductions of different legume species introduced into Florida as possible pasture plants were susceptible to web-blight (Rhizoctonia solani). *Of these, siratro* (Phaseolus atropurpureus) *has shown most promise as a perennial pasture legume in preliminary tests. Thirty-seven other introductions appeared to be resistant to the disease.*

In summer 1970, a severe leaf and stem blight was observed in a one acre plot planted to summer growing legumes at the Agricultural Research Center, Fort Pierce, Florida. The plot contained introductions from different areas of the world that had been introduced as part of a search to locate suitable tropical and temperate legumes to improve Florida pastures. Ten greenhouse-grown plants from each of 350 introductions were planted in single rows, 10 ft long and 7 ft apart. In some instances seeds were planted directly into the field. Species within the same genus were usually planted in the same area to facilitate comparisons. About 75 additional introductions were planted in June, 1968. The plants were cut to a height of 6 in. in early spring and were trimmed when necessary to prevent encroachment between plants in adjacent rows. Many introductions did not adapt to the growing conditions and consequently died.

The symptoms and signs of the disease were similar to that of the aerial *Rhizoctonia* of Fordhook lima bean (Weber 1935) and web blight of bush snap bean (Weber 1939). A similar disease on siratro (*Phaseolus atropurpureus*) in Australia was briefly referred to by Hutton (1968). The first symptom of the disease on most of the plants was a water soaked spot on a leaflet. The water soaking gradually spread over the whole leaflet and, in most cases, the whole leaf. The mycelium of the fungus eventually grew over the leaf surface and heavy defoliation occurred in some introductions. Sclerotia (0.20 to 0.49 mm in length) were found on the surface of leaves, petioles, and stems of infected plants. On Difco potato dextrose agar two types of isolates were noticed. One produced large sclerotia (up to 1 cm in length) whereas the other isolate did not. The isolates producing sclerotia belong to a strain of *Rhizoctonia solani* Kuhn (*Thanatephorus cucumeris* (Frank) Donk) similar to or the same as the *Corticium microsclerotia* Weber described by Weber (1939).

Table 1 shows plants from which the organism was isolated along with a rating of the severity of the disease. Table 2 shows plants on which no symptoms of the disease were observed. Many selections in Table 2 may have escaped infection rather than be resistant to the disease. The disease appeared to be especially severe on the *Phaseolus* types and more severe where the growth was dense. The expression of symptoms was most severe in early October, but most of the new growth on all introductions was free of the disease by the end of October.

The most important legume introduction susceptible to the disease was siratro (*P. atropurpureus*). Siratro is the first perennial tropical legume that has been successful in preliminary testing in Florida (Kretschmer 1966). The same symptoms have been observed in siratro in small test plots for several years by one of the authors (A.E.K.). Clipping siratro appeared to retard the disease. The disease was found in the summer of 1970 in the only large commercial planting of siratro in

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Florida known to the authors. The disease had negligible effect on the quality of pasture, although many leaves within the canopy dropped due to the disease. The disease may remain relatively innocuous or it may become serious on siratro, in which case a resistant variety will need to be developed or a more resistant legume suitable for Florida pastures will have to be found.

TABLE 1

Legumes at the Agricultural Research Center, Fort Pierce infected with web-blight in the summer of 1970

Scientific name	IRFL[1]	PI[2]	CPI[3]	IRI[4]	Severity[5]
Calopogonium sp.	880				†
Centrosema brasilianum	975			1975	††
,, *plumieri*	1069	330567			†††
,, *pubescens*	861	316452			††
	862	311505			†
	978			1346	††
	979			1976	††
Centrosema virginianum	980			1266	††
Desmodium distortum	727	316564	18297		††
,, *intortum*	897				††
Dolichos argenteus	1078	330575			†††
,, *axillaris*	859	316454			††
Glycine wightii	866		25421		††††
Phaseolus atropurpureus	910			1201	††
	911			1390	††††
	912		16878	1391	†††
	913		18556	1392	††
	916			1553	†††
	917		18556	2543	†††
Phaseolus bracteatus	918			1603	†††
	919			2277	†††
Phaseolus caracalla	920			1018	††
	921			1268	†
	923			1463	†††
	924			1543	††
Phaseolus lathyroides	1055				†††
,, *panduratus*	929			1149	†††
,, *sp.*	926			2535	††
	936			2093	†††
	940			2287	††
	941			2288	††††
Teramnus uncinatus	not-numbered				†
,, *volubilis*	1015				††††
Vigna racemosa	1117	330613			††
,, *vexillata*	1008			2443	††

[1] Agricultural Research Center, Fort Pierce plant introduction number.
[2] United States Department of Agriculture plant introduction number.
[3] Australian plant introduction number.
[4] IRI Research Institute, Brazil plant introduction number.
[5] † A few leaves and stems infected.
†† Infections scattered in plot.
††† All plants in plots infected.
†††† Plants nearly completely defoliated.

TABLE 2

Legumes at the Agricultural Research Center, Fort Pierce not affected by web-blight in the summer of 1970

Scientific name	IRFL[1]	PI[2]	CPI[3]	IRI[4]
Alysicarpus longifolius	721	316554	16671	
Calopogonium mucunoides	748		4962	
,, *sp.*	1003			2138
Centrosema plumieri	1070	330568		
,, *pubescens*	883			
,, ,,	977			1282
,, ,,	1089	330570		
,, *sp.*	983			2068
,, ,,	984			2387
Desmodium barbatum	907			2539
,, *intortum*	897			
,, *ovalifolium*	760			
,, ,,	903			1678
,, ,,	904			1681
,, ,,	905			1682
Desmodium salicifolium	1091	330573		
,, *sp.*	881			
Phaseolus lathyroides	925			2284
,, *sp.*	890			
Rhyncosia minima	985			1401
,, *phaseoloides*	1097	330597		
Stylosanthes guyanensis	955			1288
,, ,,	957			1348
,, ,,	1060			
,, ,,	1065			
,, *humilis*	848			
,, ,,	850			
,, ,,	851		40267	
,, ,,	852		34752	
,, ,,	853		33829	
,, *sp.*	780			
,, ,,	968			1589
,, ,,	969			1951
,, ,,	970			1991
,, ,,	972			2427
,, ,,	1059			
Zornia diphylla	996			1292

[1] Agricultural Research Center, Fort Pierce plant introduction number.
[2] United States Department of Agriculture plant introduction number.
[3] Australian plant introduction number.
[4] IRI Research Institute, Brazil plant introduction number.

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