THE OCCURRENCE OF *COLLETOTRICHUM* spp. ON *STYLOSANTHES* spp. IN FLORIDA AND THE PATHOGENICITY OF FLORIDA AND AUSTRALIAN ISOLATES TO *STYLOSANTHES* spp.

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ABSTRACT

Colletotrichum *spp. were frequently isolated from* Stylosanthes *spp. growing in field plots at the Agricultural Research Center, Fort Pierce, Florida. Accessions of* S. hamata, S. humilis, S. scabra *and* S. subsericea *were severely affected.* Colletotrichum gloeosporioides *was recovered almost three times as frequently as* C. dematium *f. sp.* truncata. *On any one* Stylosanthes *accession under similar environmental conditions, the two* Colletotrichum *spp. produced macroscopically identical symptoms. Symptom character, however, varied with host and environmental conditions.* Glomerella cingulata, *the sexual state of* C. gloeosporioides, *was isolated from* Stylosanthes *spp. in Florida for the first time.*

In greenhouse pathogenicity tests C. gloeosporioides *was more pathogenic to* Stylosanthes *spp. than* C. dematium *f. sp.* truncata. *Commercial cultivars Cook, Endeavour and Seca were relatively resistant to both* Colletotrichum *spp. in these tests, however, La Libertad, Paterson and Schofield were severely affected by one or both* Colletotrichum *spp. Verano was moderately affected. Differences in pathogenicity between Florida and Australian sources of* C. dematium *f. sp.* truncata *and* C. gloeosporioides *were found. The importance of surveying indigenous flora for potential pathogens and of screening accessions in the greenhouse and field before forage legumes are introduced and established in new areas is discussed.*

INTRODUCTION

Stylosanthes is the most important forage legume genus in subtropical and tropical Australia (Anon 1977) and its use is increasing in other countries (Anon 1972, Brolmann 1976, Wickham 1977). It is comprised of annual and perennial types that grow under a variety of geographical, climatic and soil conditions (Burt and Miller 1975, Hutton 1970). The genus contains members that are tolerant to drought, low temperatures, frost and flooding (Anon 1976, Brolmann 1977, McIvor 1976).

During the 1970's, a fungal leaf spot and stem canker, caused by *Colletotrichum gloeosporioides* (Penz.) Sacc., became severe on *Stylosanthes* lowering forage and seed production (O'Brien and Pont 1977, Irwin and Cameron 1978) and affecting experimental plantings in Florida (Sonoda *et al.* 1974) and South America (Anon 1972, 1976). In screening *Stylosanthes* spp. for resistance to *C. gloeosporioides*, often the same accessions reacted differently in different countries (Anon 1972, Baldion *et al.* 1975, Irwin and Cameron 1978, Sonoda, Kretschmer and Brolmann 1974) suggesting that geographical strains of this fungus may exist. Recently, *C. dematium* f. sp. *truncata* (Schw.) v. Arx was found to be pathogenic to *Stylosanthes* spp. in Florida and present on seed harvested in Australia (Lenné and Sonoda 1978b). Results from preliminary screening tests suggest that Australian and Florida strains of *C. dematium* f. sp. *truncata* differ (Lenné and Sonoda 1978b). More information on the occurrence and effect of *Colletotrichum* spp. on *Stylosanthes* spp.,

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particularly on relationships between geographical sources of these fungi, is needed if selecting and breeding for resistance is to be successful. This paper reports a survey of the occurrence of *Colletotrichum* spp. on *Stylosanthes* at the Agricultural Research Center, Fort Pierce, Florida (ARC-FP); symptomatology on different *Stylosanthes* spp. and the pathogenicity of Australian and Florida sources of *C. gloeosporioides* and *C. dematium* f. sp. *truncata* to 96 accessions of *Stylosanthes* including 13 species.

MATERIALS AND METHODS

From May 1977 to January 1978, *Stylosanthes* spp. growing in field plots at the ARC-FP were surveyed for *Colletotrichum* spp. Small pieces of leaves (approx. 25 mm^2), stems and inflorescences (approx. 1 cm lengths), with lesions suspected to be caused by *Colletotrichum* spp., were surface sterilized and plated out on oatmeal agar (OMA) (Lenné and Sonoda 1978). Isolates were subcultured onto and maintained on OMA.

Mechanically scarified seed of 96 *Stylosanthes* accessions were germinated in fine sand in Petri plates (Lenné and Sonoda 1978a) and in most cases were transplanted to Jiffy Mix in Styrofoam cups in the greenhouse (5 seedlings/cup). Seedlings of *S. capitata* (CIAT 1078, 1097, 1405 and IRFL 1817) and *S. guianensis* (IRFL 2352) were intolerant to Jiffy Mix and grown in Oldsmar fine sand. Seedlings were inoculated with *C. dematium* f. sp. *truncata* and *C. gloeosporioides*, from Australia and Florida when three to four weeks old. Each of the four fungi were sprayed separately on three cups of each *Stylosanthes* accession as 5 –6 $\times$ 10^5 conidia ml^{-1} suspensions (Lenné and Sonoda 1978b). Three cups of seedlings were sprayed with sterile water. Sprayed seedlings were covered with plastic bags and incubated in the laboratory (Lenné and Sonoda 1978b). After 48 hours, bags were removed and the seedlings replaced in the greenhouse. Disease reaction was rated eight days after the incubation according to the following scale: 1 = no lesions, 2 = 1–3 lesions $seedling^{-1}$, 3 = 4–8 lesions $seedling^{-1}$, 4 = scattered lesions, 5 = abundant lesions with defoliation, 6 = seedling death.

RESULTS

Isolations

From lesions on 40 accessions of *Stylosanthes* spp. growing in field plots at the ARC-FP, *C. gloeosporioides* was isolated from 21 accessions and *C. dematium* f. sp. *truncata* was isolated from eight (Table 1). Five accessions yielded both species. From May to October 1977, the sexual state of *C. gloeosporioides, Glomerella cingulata* (Stonem.) Spauld. and v. Schrenk, was found in cultures from one accession (*S. humilis* PI 404718) only. From November 1977 to January 1978, however, 13 of 21 isolates of *C. gloeosporioides* reproduced sexually in culture. Six of these isolates also reproduced sexually on their hosts.

Culture and Morphology

Cultural and morphological characteristics of all isolates were relatively uniform within each *Colletotrichum* species and typical of those reported previously for *C. dematium* f. sp. *truncata* and *C. gloeosporioides* from *Stylosanthes* spp. and other forage legumes (Lenné and Sonoda 1978b, 1978c). Dark perithecia of *G. cingulata*, averaging 90–220 um in diameter (mean 178 um), developed singly and in glomerate masses in cultures of *C. gloeosporioides* on OMA. Mature asci averaged 48.5–66.3 $\times$ 10.2–11.5 um (mean 57.9 $\times$ 10.7 um) and hyaline ascospores averaged 16.1–21.2 $\times$ 4.3–6.4 um (mean 19.1 $\times$ 5.4 um).

Symptomatology

Lesions caused by *C. gloeosporioides* and *C. dematium* f. sp. *truncata* were macroscopically identical as reported previously (Lenné and Sonoda 1978b, 1978c).

TABLE 1

Occurrence of Colletotrichum *spp. on* Stylosanthes *spp. at the ARC-FP*†

Species	No. of accessions sampled	No. of accessions with			
		C. dematium f. sp. *truncata*	*C. gloeosporioides*	*Glomerella cingulata* S*	W
S. capitata	1	0	0	0	0
S. erecta	1	0	0	0	0
S. guianensis	13	2	4	0	1
S. hamata	8	1	7	0	4
S. humilis	2	2	2	1	2
S. leiocarpa	1	0	0	0	0
S. montevidensis	2	0	0	0	0
S. scabra	10	2	8	0	6
S. subsericea	1	1	0	0	0
S. viscosa	1	0	0	0	0

† Agricultural Research Center, Fort Pierce, Florida .
* S=Summer (sampled before October 31), W=Winter (sampled after October 31).

The nature of lesions, however, varied among *Stylosanthes* spp. and with environmental conditions. From May to October, on most *Stylosanthes* spp., leaf spots were 1–4 mm in diameter with pale centres and narrow dark margins. Lesions on stems, petioles and inflorescences were 0.5–5 mm and similar in colour to leaf spots. In severe infestations, lesions coalesced resulting in leaf loss, stem girdling and reduced seed production. On most accessions of *S. guianensis,* however, lesions were uniformly dark brown and developed as patches and irregular-shaped necrotic areas. Leaves with lesions were distorted. Coalescence of lesions on susceptible accessions caused leaf loss, dieback and extensive stem surface necrosis. Stem girdling was rare. On two prostate-growing *S. guianensis* accessions (IRFL 1885, 1887), leaf spots had pale centres and broad dark margins. On *S. montevidensis,* lesions were limited to stems and were similar to those on most *S. guianensis* accessions.

From November to January, lesion character changed. On most *Stylosanthes* spp. dark margins of lesions bacame broader and on *S. humilis* and *S. scabra,* lesions were completely black. Coalescence of lesions on these species caused extensive stem surface blackening which was more pronounced on sides exposed to the sun. Seed production was greatly reduced. Stem girdling was rare. On *S. guianensis* and *S. montevidensis,* dark brown lesions turned black.

In field plots, many accessions were only slightly affected by *Colletotrichum* spp. Leaf spotting and stem cankering was abundant on several accessions, including *S. hamata* (CPI 38842), *S. humilis* (PI 400311), and *S. scabra* (PI 405090). *Stylosanthes hamata* (IRFL 7303, 7413), *S. humilis* (PI 404718), selections of *S. scabra* (CPI 40292), and *S. subsericea* (PI 405092) were the most severely affected.

Pathogenicity tests

Within most species of *Stylosanthes,* there was considerable variation in reaction to *Colletotrichum* spp. (Table 2). All tested accessions of *S. fruticosa* and *S. humilis,* however, were moderately to severely affected by the four colletotrichums. *Colletotrichum dematium* f. sp. *truncata* and *C. gloeosporioides* moderately to severely affected 29% and 43% of *S. capitata* accessions, 42% and 77% of *guianensis,* 27% and 40% of *S. hamata,* 50% and 67% of *S. scabra,* 40% and 100% of *S. subsericea,* and 33% and 100% of *S. viscosa,* respectively. *Stylosanthes calcicola,* indigenous to Florida, was moderately affected by the four colletotrichums. *Stylosanthes erecta, S. leiocarpa* and *S. montevidensis* were slightly to moderately affected by *C. dematium* f. sp. *truncata* and moderately to severely affected by *C. gloeosporioides*. *Stylosanthes* *sundaica* was moderately to severely affected by all fungi. An unusual white-flowered *S. hamata* (IRFL 7306A) was resistant to all fungi. One or both sources of *C. dematium* f. sp. *truncata* were more pathogenic than *C. gloeosporioides* on eight accessions only and as pathogenic as *C. gloeosporioides* on 17 accessions.

The reaction of commercial cultivars was variable. Paterson and Schofield were moderately to severely affected by all four fungi. La Libertad was slightly affected by *C. dematium* f. sp. *truncata* and severely affected by *C. gloeosporioides*. Verano was slightly affected by *C. dematium* f. sp. *truncata* from Florida and moderately affected by the other colletotrichums. Cook, Endeavour and Seca were slightly affected by all four fungi.

Of 96 accessions screened for their reaction to Florida and Australian sources and *Colletotrichum* spp., 24 accessions had different reactions to geographical sources of *C. dematium* f. sp. *truncata* and 31 had different reactions to geographical sources of *C. gloeosporioides* (Table 2). There was no correlation between geographical origin and disease reaction within any *Stylosanthes* species.

DISCUSSION

Colletotrichum spp. were isolated from 24 of 40 *Stylosanthes* accessions growing in field plots at the ARC-FP. *Colletotrichum gloeosporioides* was isolated almost three times as often as *C. dematium* f. sp. *truncata* from *Stylosanthes* spp., however, *C. dematium* f. sp. *truncata* was isolated more frequently from other tropical legume genera (Lenné and Sonoda 1978c). *Glomerella cingulata,* the sexual state of *C. gloeosporioides,* was found for the first time on *Stylosanthes* in Florida. It has previously been reported on *Stylosanthes* in only Australia (Lenné and Parbery 1976). Although *G. cingulata* was rarely found prior to October, it was commonly observed after this time and usually associated with black lesions. Possibly cooler temperatures, shorter days, host senescence or a combination of these factors favoured sexual reproduction. In fungi producing a sexual state, meiois promotes genetic recombination (Day 1974). Recombination in *G. cingulata* could increase the potential for production of new strains which may affect presently resistant *Stylosanthes* accessions.

On OMA, cultural and morphological characters of *C. gloeosporioides* isolates were relatively uniform. Irwin and Cameron (1978), however, distinguished two *C. gloeosporioides* types (A and B), among Australian isolates from *Stylosanthes* spp., by their pure-culture characteristics on potato dextrose agar (PDA). Although cultural comparisons on different media can only be made with difficulty, it appears that the present *C. gloeosporioides* isolates were more similar to type A of Irwin and Cameron (1978) than to type B. At the same time, the possibility that PDA may have contributed to variation observed among Australian isolates cannot be ignored. In studies on the biology and taxonomy of over 350 *Colletotrichums* spp. isolates, Lenné (1978) showed that OMA was superior to other media for pure culture studies of *Colletotrichum* spp. and that cultural characters and spore shape were considerably more variable on PDA than on OMA.

In Australia, differences in symptoms caused by *C. gloeosporioides* between accessions of *S. guianensis* and other *Stylosanthes* spp. were found to be due to strain differences (Irwin and Cameron 1978). In Florida, however, disease symptoms varied with host species and with environmental conditions. Typical lesions with pale centres and dark margins (Lenné and Sonoda 1978b) which developed on most *Stylosanthes* spp. were clearly distinguished from dark brown distorting lesions on *S. guianensis* and *S. montevidensis*. Seedlings of *S. guianensis* inoculated with *Colletotrichum* spp. from this host and from *Stylosanthes* spp. with typical lesions developed the same dark brown distorting lesions. In addition, darkening of lesions and broadening of dark margins to form completely black lesions were observed as temperatures became cooler and days shorter. When making field observations on the occurrence and

TABLE 2

Reaction of seedlings of Stylosanthes *spp. to* Colletotrichum *spp.*

Species	Line	Origin	Disease Incidence[1] *C. dem.*[2] F[3]	*C. dem.* A	*C. gloeosp.* F	*C. gloeosp.* A
S. capitata	PI[4] 322634	Brazil	4.1†[5]	1.8†	4.6‡[6]	3.7‡
S. capitata	CIAT 1007	Brazil	1.7	1.7	4.7‡	4.0‡
S. capitata	CIAT 1078	Brazil	1.0	1.0	1.0	1.0
S. capitata	CIAT 1097	Brazil	2.7†	1.0†	2.6	2.9
S. capitata	CIAT 1358	Venezuela	1.5	1.5	4.8‡	4.1‡
S. capitata	CIAT 1405	Brazil	1.0	1.0	1.9	1.6
S. capitata	IRFL 1817	Brazil	4.6†	3.0†	2.1‡	1.0‡
L.S.D.[7]	P=0.05	0.5				
L.S.D.	P=0.01	0.6				
S. fruticosa	CPI 34119A	Ivory Coast	4.1	4.3	5.2	5.7
S. fruticosa	CPI 41116	Ngwana	2.8†	3.6†	3.3‡	5.9‡
S. fruticosa	CPI 41219	Sudan	5.5	5.4	5.6	6.0
S. fruticosa	PI 405085	Sudan	4.5	4.3	5.9	5.9
L.S.D.	P=0.05	0.5				
L.S.D.	P=0.01	0.7				
S. guianensis	Cook[8]	Colombia	1.0	1.3	1.3	1.1
S. guianensis	Endeavour	Guatemala	1.4	1.9	1.4	1.3
S. guianensis	La Libertad	Colombia	2.2†	1.6†	4.7‡	5.4‡
S. guianensis	Schofield	Brazil	4.3	4.2	5.0	4.9
S. guianensis	CPI 11491	Argentina	1.4	1.1	1.3	1.3
S. guianensis	IRFL 1065A	Costa Rica	1.0†	1.8†	2.2‡	4.5‡
S. guianensis	IRFL 1155	Costa Rica	1.5	1.3	5.0	4.6
S. guianensis	IRFL 1164	Costa Rica	1.3†	2.0†	3.9	3.8
S. guianensis	IRFL 1169	Costa Rica	2.4†	3.0†	3.1	3.2
S. guianensis	IRFL 1185	Costa Rica	2.9†	2.3†	3.1	3.4
S. guianensis	IRFL 1199	Costa Rica	6.0	6.0	4.7	4.9
S. guianensis	IRFL 1202	Costa Rica	3.0†	6.0†	5.6‡	4.6‡
S. guianensis	IRFL 1213	Costa Rica	2.5†	4.3†	4.4‡	5.6‡
S. guianensis	IRFL 1470	Costa Rica	1.3†	2.4†	3.2‡	4.1‡
S. guianensis	IRFL 1522	Colombia	1.9	1.4	4.3‡	5.3‡
S. guianensis	IRFL 1548	Costa Rica	2.6	2.7	4.5‡	3.1‡
S. guianensis	IRFL 1752	Costa Rica	2.3	2.1	4.6	4.4
S. guianensis	IRFL 1758	Costa Rica	2.1	2.0	6.0	5.7
S. guianensis	IRFL 1855	Brazil	2.0†	5.8†	3.9	4.3
S. guianensis	IRFL 1987	Brazil	4.4	4.2	4.8	4.5
S. guianensis	IRFL 2039	Brazil	4.2†	6.0†	4.4	4.6
S. guianensis	IRFL 2048	Brazil	5.6	5.4	5.3	5.4
S. guianensis	IRFL 2352	Brazil	3.8	4.1	1.8‡	4.9‡
S. guianensis	IRFL 7547	Costa Rica	1.2	1.1	1.5	1.3
S. guianensis	IRFL 7568	Costa Rica	1.2	1.5	1.3	1.6
S. guianensis	IRFL 7569	Costa Rica	1.1	1.3	1.0‡	1.8‡
S. guianensis	IRFL 7572	Costa Rica	1.0	1.0	1.4‡	2.0‡
S. guianensis	PI 404921	Uruguay	4.9	4.8	5.8	5.6
S. guianensis	PI 405086	Paraguay	3.5†	4.8†	3.0‡	4.1‡
S. guianensis	PI 405087	Argentina	4.9†	5.8†	5.2	5.4
S. guianensis	PI 405088	S. America	1.0	1.0	5.9	5.4
L.S.D.	P=0.05	0.5				
L.S.D.	P=0.01	0.6				
S. hamata	Verano	Venezuela	1.8†	3.6†	3.4	3.7
S. hamata	IRFL 1693	Venezuela	3.3	3.5	5.7	5.1
S. hamata	IRFL 1822	Bahamas	3.6	3.8	2.4	2.1
S. hamata	IRFL 1829	Antigua	1.0	1.0	1.0‡	1.8‡
S. hamata	IRFL 7303	Florida	2.2	1.8	5.5‡	3.7
S. hamata	IRFL 7306A	Florida	1.0	1.0	1.0	1.0
S. hamata	IRFL 7413	Florida	1.7	2.0	4.3‡	3.4‡
S. hamata	IRFL 7418	Florida	2.5	2.1	2.4‡	1.6‡
S. hamata	IRFL 7423	Florida	1.5†	2.3†	2.4	2.3
S. hamata	IRFL 7501	Florida	1.1†	2.2†	2.7‡	1.8‡
S. hamata	IRFL 7505	Florida	2.6	3.0	4.5‡	3.1‡
S. hamata	IRFL 7515	Florida	1.4	1.0	1.0	1.2
S. hamata	C1[9]	Florida	1.5	1.9	2.2	2.7

TABLE 2—*Continued*

Reaction of seedlings of Stylosanthes *spp. to* Colletotrichum *spp.*

Species	Line	Origin	Disease Incidence[1] *C. dem.*[2] F[3]	*C. dem.* A	*C. gloeosp.* F	*C. gloeosp.* A
S. hamata	C2	Florida	2.6	2.4	3.8	3.4
S. hamata	C5	Florida	2.5†	1.0†	2.3	2.9
L.S.D.	P=0.05	0.6				
L.S.D.	P=0.01	0.8				
S. humilis	Paterson	Australia	4.4	4.4	5.2	5.0
S. humilis	IRFL 886	Liberia	5.5	5.2	6.0	6.0
S. humilis	IRFL 1209	Costa Rica	5.9	6.0	6.0	6.0
S. humilis	IRFL 1412	Australia	5.1	5.5	6.0	6.0
S. humilis	PI 400311	Rhodesia	5.8	5.8	5.4	6.0
S. humilis	PI 404718	Paraguay	3.5	3.6	4.8	4.2
L.S.D.	P=0.05	0.6				
L.S.D.	P=0.01	0.8				
S. scabra	Seca	Brazil	1.8	1.5	2.8	2.6
S. scabra	CPI 34907	Brazil	3.7†	4.9†	5.4	6.0
S. scabra	CPI 40205	Brazil	2.1	1.8	1.9‡	3.4‡
S. scabra	CPI 40291	Brazil	4.8	5.3	3.9‡	2.8‡
S. scabra	CPI 40292	Brazil	1.0	1.0	1.0	1.3
S. scabra	PI 405090	S. America	4.8	5.3	4.8	4.4
L.S.D.	P=0.05	0.6				
L.S.D.	P=0.01	0.8				
S. subsericea	CPI 38604	Mexico	4.5	4.9	5.8	6.0
S. subsericea	PI 387956	Mexico	1.9	2.1	3.2‡	6.0‡
S. subsericea	PI 387959	Mexico	1.8	1.7	5.8	5.4
S. subsericea	PI 405092	Mexico	3.1	2.8	5.3	5.4
S. subsericea		Unknown	1.9	1.7	5.4	5.7
L.S.D.	P=0.05	0.6				
L.S.D.	P=0.01	0.8				
S. viscosa	CPI 33941	Mexico	1.9†	1.0†	4.1‡	2.9‡
S. viscosa	CPI 34904	Brazil	1.9	2.4	4.8‡	3.7‡
S. viscosa	IRFL 1692	Brazil	1.0	1.0	4.8‡	3.6‡
S. viscosa	IRFL 1712	Brazil	3.2	3.4	3.6‡	5.3‡
S. viscosa	IRFL 1713	Brazil	1.0†	2.5†	5.1	4.8
S. viscosa	PI 405093	Brazil	3.5	3.7	6.0‡	4.3‡
L.S.D.	P=0.05	0.7				
L.S.D.	P=0.01	0.9				
S. calcicola	C_1	Florida	3.6	3.2	4.1	3.8
S. erecta	IRFL	Ivory Coast	2.4	2.2	4.3	4.1
S. leiocarpa	PI 404534	Brazil	3.8†	2.7†	4.9	4.6
S. leiocarpa	PI 404536	Brazil	2.1	2.8	4.6	4.2
S. montevidensis	PI 404541	Brazil	1.9†	1.0†	6.0‡	5.1‡
S. montevidensis	PI 404925	Uruguay	3.4†	1.0†	6.0	5.7
S. sundaica	CPI 47477	Indonesia	4.2	4.6	5.0	5.8
L.S.D.	P=0.05	0.7				
L.S.D.	P=0.01	0.9				
L.S.D.[10]	P=0.05	0.6				
L.S.D.	P=0.01	0.7				

1 Rating scale: 1=no lesions, 6=seedling death.
2 *C. dematium* f. sp. *truncata*, *C. gloeosporioides.*
3 F=*Colletotrichum* spp. from Florida, A=*Colletotrichum* spp. from Australia.
4 PI=United States Department of Agriculture Plant Introduction Number, CIAT=Centro Internacional de Agricultura Tropical Plant Accession Number, IRFL=ARC-FP Accession Number, CPI=Commonwealth Plant Introduction Number, Australia
5 †=Significanty different reaction to the two geographical sources of *C. dematium* f. sp. *truncata.*
6 ‡=Significantly different reaction to the two geographical sources of *C. gloeosporioides.*
7 L.S.D.'s for comparing means within species or groups.
8 Cultivar name.
9 Cx=Recent accessions.
10 L.S.D. for comparing all means.

severity of *Colletotrichum* damage, it is important to realize that disease symptoms may be influenced by host and environment.

Colletotrichum gloeosporioides was generally more pathogenic to *Stylosanthes* spp. than was *C. dematium* f. sp. *truncata,* supporting results of preliminary tests (Lenné and Sonoda 1978b). For most *Stylosanthes* spp. on which *C. dematium* f. sp. *truncata* was pathogenic, *C. gloeosporioides* was equally more pathogenic. On eight accessions, however, *C. dematium* f. sp. *truncata* was more pathogenic than *C. gloeosporioides.* The pathogenicity of each fungus should be determined before *Stylosanthes* selection and breeding programs are planned.

Commercial cultivars Cook, Endeavour and Seca were relatively resistant to all four colletotrichums tested. Paterson and Schofield, however, were slightly affected by all four fungi and La Libertad was severely affected by both *C. gloeosporioides* isolates. Due to such disease problems, the latter cultivars are no longer grown at many evaluation sites in South America and their use in other regions should be considered with caution. Although Verano stylo was only moderately affected by *Colletotrichum* spp., yield trial results (J. M. Lenné, unpublished data) suggests that even moderate levels of infection cause significant losses in dry matter. Differences in pathogenic specialization between Florida and Australian sources of *C. dematium* f. sp. *truncata* and between Florida and Australian sources of *C. gloeosporioides* were clearly evident from their significantly different reactions on many *Stylosanthes* accessions. Results of screening studies in South America (Anon 1972, Baldion *et al.* 1975) suggest there are pathogenicity differences between Florida and Australian and South American *Colletotrichum* spp. from *Stylosanthes* spp. It should be realized, therefore, that *Stylosanthes* accessions resistant in one region, may not be resistant to *Colletotrichum* spp. in other regions. Because *Colletotrichum* spp. are so damaging to *Stylosanthes* spp., surveys and pathogenicity tests should be made to determine whether indigenous *Colletotrichum* spp. affect accessions being introduced into the area. Such precautions will save considerable time and effort.

The present results have shown there is potential for selection of *Stylosanthes* lines resistant to *Colletotrichum* spp. from Australia and Florida. In particular, *S. capitata,* agronomically suited to parts of South America (Dr. B. Grof, personal communication) and *S. hamata,* agronomically suited to Florida (Sonoda 1975), have considerable potential for selection for resistance. These results are from greenhouse tests. Field tests are necessary to determine if resistant lines remain so in the field. At present, due to lack of seed of many accessions, greenhouse tests are generally the only feasible method for screening large numbers of accessions. As larger quantities of seed become available, greenhouse tests should be followed by extensive field evaluation. Only if accessions pass such tests should they be considered suitable for use as tropical forage legumes.

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