

# Camptomeris Leaf Spot on *Leucaena* spp. in Colombia

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## ABSTRACT

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*Camptomeris leucaenae* severely defoliated experimental plantings of *Leucaena leucocephala* in Colombia. Although 17 accessions of this forage legume, including commercial cultivars Cunningham and Peru, were moderately to highly susceptible to the pathogen, potential resistance was found in six accessions of *L. leucocephala* and several accessions of five other *Leucaena* spp. This is the first record of *C. leucaenae* on *Leucaena* spp. in Colombia and the first report of damage caused by the fungus.

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*Leucaena leucocephala* (= *L. glauca*) is a tree legume native to the subhumid and humid tropics of Central America (5). Its value as a high-quality protein forage in association with grasses is being investigated in tropical Latin America (2), Australia, Hawaii, and other countries (1).

A leaf spot incited by *Camptomeris leucaenae* (Stev. & Dalbey) Syd. was first recorded on *L. glauca* in Puerto Rico in 1919 (4). Although this fungus has since been recorded in Jamaica, Santo Domingo, and Venezuela (3,4), damage to *L. glauca* has not been reported.

In August 1978, a fungal leaf spot was observed in experimental plantings of *L. leucocephala* CIAT 734 at the CIAT Research Station, Santander de Quilichao, Colombia. Within 2 mo, plants were severely defoliated. Identification of the pathogen as *C. leucaenae* was confirmed by the Commonwealth Mycological Institute. Because of the potential of this disease to damage *L. leucocephala* as a forage legume, investigations were begun. This article describes the morphology and symptomatology of *C. leucaenae* and its pathogenicity to *Leucaena* spp.

## MATERIALS AND METHODS

A screening trial to observe reactions of 38 accessions of *Leucaena* spp. to *C. leucaenae* was established near an affected CIAT 734 planting at Santander de Quilichao. Seeds were mechanically scarified and germinated on moist filter paper in petri dishes. Seedlings were grown in a 1:1 soil/sand mixture in plastic bags in the greenhouse. *Rhizobium* inoculum was applied several times. At 16 wk, plants were set in a randomized field plot. For each accession, two replicates, each of two plants, were planted 1 m apart in rows 1.3 m apart.

Triple superphosphate (100 kg/ha), lime (100 kg/ha), and potassium chloride (40 kg/ha) were applied. Disease severity was rated each month; reactions of *Leucaena* spp. to *C. leucaenae* after 8 mo in the field are given in Table 1.

## RESULTS

**Morphology.** *C. leucaenae* produced dark brown to black sporodochia, 100–180  $\mu$ m in diameter, on the lower surface of leaflets of *Leucaena* spp. Conidiophores were unbranched, smooth, and pale brown and curved inward. Mature conidia, measuring 38–63  $\times$  9–14  $\mu$ m, had two or three septa and were pale brown, very finely verruculose, obclavate with rounded ends, and straight to slightly curved. The fruiting structures were as described for *C. leucaenae* (4).

**Symptomatology.** Symptoms caused by *C. leucaenae* were similar on each *Leucaena* sp. Chlorotic patches 1–5 mm in diameter, occasionally with dark brown centers, developed on upper surfaces of diseased leaflets. On lower surfaces, the fungus sporulated profusely and appeared as patches or spots of crowded black pustules. Patches often coalesced, causing chlorosis and abscission of leaflets. In time, secondary pathogens, particularly *Colletotrichum gloeosporioides*, infected the damaged leaves and caused further leaf loss and dieback.

**Pathogenicity.** All plants in each accession reacted similarly. Accessions of *L. diversifolia*, *L. esculenta*, *L. pulverulenta*, *L. shannoni*, and *L. trichodes* were completely resistant after 8-mo exposure to *C. leucaenae* in the field (Table 1). None of the 23 accessions of *L. leucocephala* screened was completely resistant. The majority, including commercial cultivars Cunningham and Peru, were moderately to highly susceptible, but six *L. leucocephala* accessions were only slightly susceptible (Table 1).

## DISCUSSION

In Colombia, *C. leucaenae* severely affects *L. leucocephala*, causing leaf spotting and chlorosis, defoliation, and, in association with secondary pathogens, dieback. Camptomeris leaf spot must therefore be regarded as a potentially serious disease and a threat to future use of *L. leucocephala* as forage in tropical Latin America.

*C. leucaenae* was recently found on *L. leucocephala* in Costa Rica, Mexico, and Belize (J. L. Brewbaker and R. Alvarado, personal communication) and in Ecuador by the author. It has not been reported from *Leucaena* evaluation centers in Australia and Hawaii or recent surveys in

**Table 1.** Field reactions of *Leucaena* spp. to *Camptomeris leucaenae*

<i>Leucaena</i> spp.	Accession	Reaction <sup>a</sup>
<i>L. collinsii</i>	Chiapas 78-52c	2
<i>L. collinsii</i>	Chiapas 78-57	2
<i>L. diversifolia</i>	Chiapas 78-49	1
<i>L. diversifolia</i>	Guatemala 78-03	1
<i>L. diversifolia</i>	Honduras 78-77	1
<i>L. esculenta</i>	Chiapas 78-53c	4
<i>L. esculenta</i>	Chiapas 78-55	1
<i>L. leucocephala</i>	Australia K4	4
<i>L. leucocephala</i>	Belém	3
<i>L. leucocephala</i>	Belize 78-19	2
<i>L. leucocephala</i>	Brazil N.E.	4
<i>L. leucocephala</i>	Campina Grande	3
<i>L. leucocephala</i>	Chiapas 78-50	2
<i>L. leucocephala</i>	Colombia 78-85	3
<i>L. leucocephala</i>	Cunningham	4
<i>L. leucocephala</i>	Guanico	3
<i>L. leucocephala</i>	Hawaii K341	3
<i>L. leucocephala</i>	Honduras K29	4
<i>L. leucocephala</i>	Pance	4
<i>L. leucocephala</i>	Peru	3
<i>L. leucocephala</i>	Piracicaba	3
<i>L. leucocephala</i>	Salvador K8	4
<i>L. leucocephala</i>	Salvador K72	5
<i>L. leucocephala</i>	Salvador 78-10	3
<i>L. leucocephala</i>	Salvador 78-11c	2
<i>L. leucocephala</i>	Salvador 78-15	4
<i>L. leucocephala</i>	Venezuela	2
<i>L. leucocephala</i>	Veracruz K132	3
<i>L. leucocephala</i>	Yucatan 78-24c	2
<i>L. leucocephala</i>	Yucatan 78-30	2
<i>L. macrophylla</i>	Chiapas 78-65	3
<i>L. macrophylla</i>	Chiapas 78-67	3
<i>L. pulverulenta</i>	Mexico AJO 3279	1
<i>L. pulverulenta</i>	O.P. K340	2
<i>L. pulverulenta</i>	CPI 28964	3
<i>L. shannoni</i>	Chiapas 78-70	2
<i>L. shannoni</i>	Campeche 78-40c	1
<i>L. trichodes</i>	Ecuador 78-86c	1

<sup>a</sup>Reaction: 1 = no disease, 2 = 1-20% leaf area affected, 3 = 20-50% leaf area affected, 4 = more than 50% leaf area affected, chlorosis, and defoliation, and 5 = severe defoliation.

Bolivia and Brazil. This and past records (3,4) suggest that it is restricted to countries in the Caribbean region, which is generally regarded as the center of origin of *Leucaena* spp. Precautions should be taken to prevent spread of the pathogen, particularly on seed collections.

Although only 23 accessions of *L. leucocephala* were screened against *C. leucaenae*, more than 25% had high levels of field resistance. The potential to select for resistance to the pathogen therefore exists. In addition, the resistance of accessions of *L. diversifolia*, *L. esculenta*, *L. pulverulenta*, *L. shannoni*, and *L. trichodes* to *C. leucaenae* should be considered for incorporation into *L. leucocephala* in future breeding programs.

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