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Studies in Porto Rican Fungi

Botany

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STUDIES IN PORTO RICAN FUNGI

BY

ESTHER YOUNG

A.B. Miami University, 1914

THESIS

Submitted in Partial Fulfillment of the Requirements for the

Degree of

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May 29 1905

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

Ethel Young

ENTITLED *Studies in Porto Rican Fungi*

BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE

DEGREE OF *Master of Arts*

F. L. Stevens

In Charge of Major Work

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Head of Department

Recommendation concurred in:

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Committee

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I INTRODUCTION

During the years 1912 and 1913, Dr. F. L. Stevens made extensive collections of parasitic fungi in Porto Rico, Desecheo and Mona Islands. The collection was placed in the herbarium of the University of Illinois, and I have made use of this material in my studies, working chiefly on the two genera *Phyllosticta* and *Cercospora*.

The genus *Cercospora* of about 700 species, contains many important parasites chiefly causing leaf-spotting. The spots are variable in size and color, often bordered by a dark margin with a sordid white center due to the fungal hyphae which penetrate into the leaf. The spots are usually definite though in some instances indefinite or even lacking. If conditions are favorable, growth is abundant and the spots may become hoary or the leaf may be covered with a smoky-brown mass, due to the large number of spores. The fruiting bodies are conidia which are borne on the ends of hyphae or conidiophores. These vary in number and size. They may be simple or branched, and are brown in color. They are often abruptly bent at the point of spore production, and thus conidial scars are left. Conidiophores are usually fasciculate, but they may arise singly from the stomata of the leaf. As a rule, they vary in length and septation with age. The conidia are hyaline, usually several-septate and vary in size and shape. They are elongate, clavate, fusoid or straight, and sometimes attenuate at the end farthest from the conidiophore. Each cell of the conidium is capable of germination, and very often spores falling on the leaf produce germ tubes and infest the host through the stomata. Very few cross inoculations have been made, and little is really known concerning the limitations of the species. When the host plants

are different, minor variations in size, color, septation, etc. of the conidia and conidiophores, or in macroscopic appearances of the spots are generally employed in distinguishing species.

The genus *Phyllosticta* is very large, comprising nearly 1200 species, only a few of which have been determined by comparison or cultural studies. These forms produce leaf-spots which may be circular, angular, or indefinite. The genus differs from *Phoma* in that it inhabits only the leaves, while the latter may spread over the fruit, twigs or stems; also in that *Phoma* never produces a definite spot. The leaf-blotch caused by *Phyllosticta* is due to a weakening or killing of the leaf-tissue by the mycelium which spreads throughout the leaf. When conditions are favorable, the spots develop rapidly and the greater part of the leaf from the margin to the mid-rib may become involved. Sometimes the spots are brown, giving the appearance of sunburn, or again they may be of a yellowish color, or sordid-white. The center of the spot often falls out, and eventually when affected to such an extent that they can no longer function, the leaves fall, thus weakening the vitality of the host. Instead of being borne on naked conidiophores as in *Cercospora*, the conidia are produced in pycnidia. These are usually on the upper surface of the leaf, though sometimes below. They may occur singly or in clusters, and may be immersed, erumpent, or superficial. When immersed, a beak pierces the epidermis, thus facilitating the escape of conidia. The pycnidia are lenticular to globose, usually brown or black, and opening by a pore or ostiole. The conidia are hyaline, usually ovate to elliptical, though sometimes spherical, and they vary in length from 2 to 60 μ . The perfect stage of this form is known in but few cases.

It has been the custom to designate as new those forms which

have never been reported on the particular host, or on any genus of the same family, and which are distinct from any form on a related host. In working over some fifty different forms, I have found fifteen which are in this sense new species. However I hesitate to describe these new forms as *Phyllosticta* rather than *Phoma*, since I believe there is no tenable distinction between these two genera. They are alike in the character of conidia and pycnidia, which seem to me to be the most important characters. The general nature of the spot cannot serve as a distinguishing feature since they are both definite and indefinite on the leaves, nor does it seem justifiable to make the location of infection the basis for distinguishing genera. The final designation, however, of these and related forms must be made after a monographic study of the genera has been completed.

II SPECIFIC DESCRIPTIONS OF PHYLLOSTICTA.

1. *Phyllosticta adianticola* sp. nov.

Spots amphigenous, ovate to ovate-cuneiform, often acute at the basal end, 4-12 mm. in diam., older portions ashen-gray, 1-2 X 2-4 mm., border yellowish-brown; pycnidia few, epiphyllous, brown, spherical, 72-120 mu. in diam., ostiole distinct, dark-bordered, 12 mu. in diam.; conidia hyaline, ovate, slightly pointed at one end, 4.8 - 7.2 X 2.4 mu.

On leaves of *Adiantum tenerum* Sw. in Porto Rico: Manati, 4299 (type); Utuado, 4588; Quebradillos, 5000.

Apparently very common in all parts of the island of Porto Rico, though with very sparse pycnidia. This species is accompanied by a species of *Melanomma*.

2. *Phyllosticta Sacchari* Speg.

Rev. Facult. Agr. Veter. La Plata 1896, p. 239.

On *Saccharum* in Porto Rico. Juana Diaz, 102.

3. *Phyllosticta panici* sp. nov.

Spots indefinite, diffuse; pycnidia few, often in clusters, epiphyllous, dark-brown to black, spherical, 72 - 144 μ in diam., mycelium a brown mass of septate hyphae; conidia hyaline, ovate, 4.8 - 9.6 X 3.6 μ .

On leaves of *Panicum maximum* Jacq. in Porto Rico: Coamo, 830 (type); Martin Pena, Heller 377.

4. *Phyllosticta Colocasiae* Hhnel,

Sitz.-ber. Akad. Wiss. Wien. 116: 142. 1907.

On *Dieffenbachia* in Porto Rico: Monte de Oro near Cayey, 5670.

5. *Phyllosticta Colocasicola* Hhnel.

Sitz.-ber. Akad. Wiss. Wien, 116: 142. 1907.

On *Colocasia* in Porto Rico: Caguas, 504.

6. *Phyllosticta commelinicola* sp. nov.

Spots indefinite, diffuse; pycnidia subepidermal, numerous on the upper surface, light-brown, 96 - 168 μ in diam., ostiole distinct, dark-bordered, 24 - 48 μ in diam.; conidia hyaline, ovate, 9.6 - 14.4 X 4.8 - 7.2 μ .

On leaves of *Commelina nudiflora* L. in Porto Rico: Hormigueros 214 (type).

7. *Phyllosticta Coccoloba* Ellis & Ev.

Ann. Rep. Missouri Bot. Gard. 9: 118. 1898.

In our specimens, the spots and spores differ somewhat from those of the description, the spots being larger and reddish-purple

becoming gray in the center. The spores are shorter, measuring 2.4 - 4.8 X 2.4 mu.

8. *Phyllosticta momisiana* sp. nov.

Spots diffuse, sordid-white to yellow, margin indefinite, mostly affecting the apical and marginal portions of the leaf; pycnidia numerous, epiphyllous, dark-brown, spherical, 48 - 60 mu in diam., ostiole distinct; conidia hyaline, ovate, 4.8 - 7.2 X 2.4 mu.

On leaves of *Momisia iguanaea* (Jacq.) R. & S. in Porto Rico: Coamo, 834 (type).

9. *Phyllosticta pithecolobii* sp. nov.

Spots amphigenous, subcircular to ovate, 5 - 10 mm. in diam., yellowish-brown to white in the center, margin slightly raised and darker, dark-brown below; pycnidia located mostly along the nerves, numerous on the upper surface, densely clustered, few below, spherical, regular, dark-brown, 120 - 240 mu in diam., ostiole distinct, dark-bordered, 24 mu in diam.; conidia hyaline, ovate, pointed at one end, 4.8 - 7.2 X 1.8 - 2.4 mu.

Very common wherever the host was seen.

On leaves of *Pithecolobium unguis-cati* (L.) Benth. in Porto Rico: Desecheo, 1576 (type); Yauco, 3267.

10. *Phyllosticta pithecolobii monensis* var. nov.

Spots very much like those of the species but smaller, being 3 - 5 mm. in diam., margin darker and more regular; pycnidia smaller, 48 - 120 mu in diam.; conidia ovate, rounded at the ends, 4.8 X 2.4 mu.

On leaves of *Pithecolobium unguis-cati* (L.) Benth. in Porto

6

Rico: Mona Island, 6137 (type).

It is perhaps significant that the host on Mona Island was of the thornless form. Though systematists do not recognize this as a distinct variety or species, the fungus upon it is distinctly different from that found on the excessively spiny Porto Rican form of host.

11. *Phyllosticta Divergens* Sacc.

Malpighia 5: 281. 1891.

On fruit of *Albizia lebeck* (L.) Benth. in Porto Rico: 1875.

This fungus is probably *Phyllosticta divergens* Sacc., which is reported on the leaves of this host, though there is no definite spot on the fruit as is described on the leaves. The conidia agree in length but are narrower than those of the description.

12. *Phyllosticta guanicensis* sp. nov.

Spots scattered, amphigenous, round, 1 - 2 mm. in diam., yellowish-brown with a reddish-brown, slightly raised margin; pycnidia epiphyllous, few, scattered, spherical, 96 - 120 μ in diam., ostiole distinct, 12 - 15.8 μ in diam.; conidia hyaline, ovate, somewhat irregular, granular, 4.8 - 9.6 X 4.8 μ .

On leaves of *Guilandina crista* (L.) Small in Porto Rico: Guanica, 359 (type).

13. *Phyllosticta erythrinicola* sp. nov.

Spots few to numerous, scattered, small, circular, amphigenous, sordid-white, margin definite, regular, brown, centers falling out with age, portion of the leaf about the spot yellowish-brown; pycnidia epiphyllous, scattered, dark-brown, spherical, 36 - 72 μ in diam., ostiole very dark, indistinct; conidia hyaline, ovate, minute,

2.4 - 3.6 X 1.2 mu.

On leaves of *Erythrina micropteryx* Poepp. in Porto Rico: Villa Alba, 110 (type); Jajome Alta, 5633; Yauco, 3157; Mayagüez, 68.

Very common in all parts of the island, causing serious spotting of the foliage.

This species is distinct from *Phyllosticta Erythrinae*, which is reported on the branches of *Erythrina Lithospermae*. The pycnidia described are much larger, 90 - 180 X 60 - 70 mu, and lenticular in shape; the conidia were described as linear-ovate, 6 - 8 X 2 mu.

14. *Phyllosticta portoricensis* sp. nov.

Spots amphigenous, small, grayish becoming reddish-brown, circular to ovate, margin even, somewhat darker; pycnidia epiphyllous, few, scattered, dark-brown, spherical, regular, darker around the border, 60 - 90 mu in diam., ostiole distinct, 24 - 30 mu in diam.; conidia hyaline, subspherical to ovate-oblong, 9.8 - 14.4 X 4.8 - 7.2 mu.

On leaves of *Croton lucidus* L. in Porto Rico: Guanica, 325 (type).

15. *Phyllosticta cissicola* Speg.

Anal. Mus. Nac. Buenos Aires III. 13: 332. 1910.

On *Cissus sicyoides* L. in Porto Rico: Vega Baja, 382; Jajome Alta, 5633a.

16. *Phyllosticta stevensii* sp. nov.

Spots amphigenous, irregularly circular, 4 - 12 mm. in diam., sordid-white to yellowish-brown above, indefinite below, reddish-brown where appearing, margin distinct, irregular, dark-brown, pyc-

nidia epiphyllous, numerous, dark-brown, spherical to ovate, dark-bordered, 96 - 144 μ in diam., ostiole distinct, 24 μ in diam.; conidia hyaline, ellipsoidal, pointed at both ends, 7.2 - 14.4 X 2.4 μ .

On leaves of *Triumfetta semitriloba* Jacq. in Porto Rico: Coamo 119, (type); Villa Alba, 94.

17. *Phyllosticta borinquensis* sp. nov.

Spots amphigenous, numerous, yellowish-brown in the center, becoming darker near the margin, circular to ovate, 2 - 5 mm. in diam., margin rather irregularly angular; pycnidia epiphyllous, scattered, dark-brown, spherical, regular, 48 - 70 μ in diam., ostiole dark-bordered, 12 μ in diam.; conidia hyaline, ovate, 2.4 - 4.8 X 1.2 - 2.4 μ .

On leaves of *Helicteres jamaicensis* Jacq. in Porto Rico: San German, 5762, (type).

Associated with this is one of the *Sphaeriaceae*, with dark-brown, spherical perithecia, 96 - 120 μ in diam. A mycelium of brown hyphae seems to connect the perithecia and pycnidia; asci stalked; spores eight in an ascus, septate, ovate, olivaceous, 4.8 - 7.2 X 2.4 μ . Owing to the fact that the spores were immature, it was impossible to determine the genus with any degree of certainty.

18. *Phyllosticta bixina* sp. nov.

Spots yellowish-brown, scattered, subcircular to irregular, 5 - 10 mm. in diam., numerous, amphigenous, lighter below, often bordered by an indeterminate yellow region which spreads over the leaf, older portions of the spot bordered by a distinct brownish-black margin; pycnidia few, epiphyllous, spherical, dark-brown, 92 - 148 μ in diam., ostiole distinct, dark-bordered, 12 - 24 μ in diam.

conidia hyaline, ovate, 4.8 - 6 X 2.4 mu.

On leaves of *Bixa orellana* L. in Porto Rico: Maricao, 174, (type); San German, 5794; Rosario, 4844; Mayaguez, 298; coamo, 53; Punat Santiago, 2458; Anasco, 3208; Adjuntas, 4975a.

19. *Phyllosticta eupatoricola* Kab. & Bub.

Hedwigia 46: 288. 1907.

On *Eupatorium odoratum* L. in Porto Rico: Villa Alba, 103.

20. *Phyllosticta eugeniae* sp. nov.

Spots amphigenous, circular, 2 - 4 mm. in diam., somewhat darker above than below, center dark-brown, surrounded by a lighter colored ring which is bordered by an even, dark, slightly elevated margin, centers falling out with age, leaf around the spot reddish-brown; pycnidia more numerous on the upper surface, dark-brown, spherical to ovate, 84 - 144 mu in diam.; conidia ovate, hyaline, granular, often remaining attached to their stalks, 9.6 - 16.8 X 4.8 - 6 mu.

On leaves of *Eugenia buxifolia* (Sw.) Willd. in Porto Rico: Mona Island, 6230, (type), 6091, and 6127.

An ascomycete is associated with this species. Perithecia amphigenous, dark-brown to black, spherical, regular, dark-bordered, 168 - 288 mu in diam., ostiole often opening laterally; spores hyaline, immature.

21. *Phyllosticta guareae* P. Henn.

Hedwigia 41: 113. 1902.

On *Guarea trichiloides* L. in Porto Rico: Aguas Buenas, 295.

22. *Phyllosticta araliana* sp. nov.

Spots amphigenous, yellowish-brown, circular to ovate, 4 - 8 mm. in diam., bordered by a dark-brown, regular margin; pycnidia scattered, epiphyllous, spherical, 24 - 48 μ in diam., dark-brown; conidia hyaline, ovate, slightly pointed at one end, 7.2 - 9.6 X 2.4 μ .

On leaves of *Dendropanax arboreum* (L.) Dec. & Pl. in Porto Rico: Maricao, 755 (type).

23. *Phyllosticta sechii* sp. nov.

Spots amphigenous, irregular or confluent, varying from 2 - 15 mm. in diam., sordid-white above, darker below, margin distinct, slightly raised, concolorous; pycnidia epiphyllous, dark-brown, spherical, 72 - 96 μ in diam., ostiole distinct, dark-bordered, 24 - 48 μ in diam.; conidia hyaline, ovate, slightly pointed at one end, 7.2 - 9.6 X 2.4 μ .

On leaves of *Sechium edule* (Jacq.) Sev. in Porto Rico: Mayaguez, 3357 (type).

This species differs from *Phyllosticta lagenariae* Passer in size and shape of conidia, these being described as oblong, rounded at the ends, 10 - 12.5 X 5 μ .

24. *Phyllosticta glaucispora* Delacr.

Bull. Soc. Myc. Fr. 9: 266. 1893.

On leaves of *Urechites lutea* Britton in Porto Rico:

In our specimens, the spores are somewhat larger than those of the description, measuring 4.8 - 9.6 X 2.4 μ . *Phyllosticta nericola* has hyaline spores, 8 - 10 X 3 μ , and differs only in color and a slight variation in the size of the spore. This species is distinct from *Phyllosticta Nerii* in the size of spores, those being

Associated with this is an undescribed species of *Colletotrichum* having perithecia surrounded with setae, and with hyaline, ovate spores.

25. *Phyllosticta ipomoeae* Ell. & Kell.

Jour Myc. 3: 102. 1887.

On *Exogonium repandum* (Jacq.) Choisy in Porto Rico: Manati, 5313; Mayaguez, 20; Rio Piedras, 5772; Dos Bocas below Utuado, 6600.

26. *Phyllosticta pandanicola* sp. nov.

Spots amphigenous, scattered over the leaf, grayish-white to light-brown, margin slightly darker; pycnidia located mostly along the nerves, epiphyllous, numerous, spherical to ovate, 80 - 100 X 50-60 mu, dark-brown, ostiole definite; conidia elliptical, pointed at both ends, hyaline, 96 - 144 X 2.4 - 3.6 mu.

On leaves of *Pandanus* sp. in Porto Rico: Santurce, 240 (type)

III SPECIFIC DESCRIPTIONS OF CERCOSPORA.

1. *Cercospora amaryllidis* Ell. & Ev.

Jour. Myc. 3: 14. 1887.

On leaves of *Hymenocallis* sp. in Porto Rico: Santurce, 244; Coamo, 836.

2. *Cercospora hydropiperis* (Thum.) Speg.

F. Argent. Pieg. 1:191.

Helminthosporium hydropiperis Thum. M. U. n. 1087.

Cercospora polygonorum Cooke. Hedwigia 17: 39. 1878.

On leaves of *Polygonum punctata* Ell. in Porto Rico: Utuado, 4586, 4578; Coamo, 91; ---, 69; Corozal, 419; Ciales, 27; Mayaguez, 1154.

3. *Cercospora lepidii* Peck.

Rep. New York State Museum 35:

On leaves of *Lepidium* sp. in Porto Rico: Mona Island, 6352.

4. *Cercospora phyllitidis* Hum.

Bull. Torr. Bot. Club 22: 179. 1895.

On leaves of *Hibiscus tiliaceus* L. in Porto Rico: Rosario, 3793; Las Marias, 310; Dos Bocas below Utuado, 6618, 6564; Maricao, 3630, 4797.

5. *Cercospora cajani* P. Henn.

Hedwigia: 41: 309. 1902.

On leaves of *Cajanus indicus* Spreng. in Porto Rico: Aguas Buenas, 294; Aquada, 5100; Maricao, 4832; Anasco, 3556; Dos Bocas below Utuado, 6058, 6029, 6572; Guayanilla, 5874; Luguillo Forest, 5608; Hormigueros, 226; Monte de Oro, 5735; Rosario, 3798.

6. *Cercospora hibisci* Tracy & Earle.

Bull. Torr. Bot. Club 22: 179. 1895.

On leaves of *Hibiscus tiliaceus* L. in Porto Rico: Rosario, 3793; Las Marias, 310; Dos Bocas below Utuado, 6618, 6564; Maricao, 3630, 4797.

7. *Cercospora conspicua* Earle.

Bull. New York Bot. Gard. 3: 312. 1904.

On leaves of *Cleome* sp. in Porto Rico: Mayaguez, 6728, -- 19¹³.

8. *Cercospora bloxami* B. & Br. emend.

Ann. Nat. Hist. no. 1979.

Spots spherical to ovate, 2 - 5 mm. in diam., sordid-white to yellowish-brown, margin somewhat darker; conidiophores fasciculate simple, fuscis, paler at the tips, conidial scars evident, 1 - 2 septate, 75.6 - 162 X 5.4 - 7.2 μ ; conidia elongate-fusiform, acuminate at one end, 5 - 7 septate, hyaline, 50.4 - 144 X 2.7 - 3.6 μ .

On leaves of *Brassica rapae* and *Brassica napi* in Twyncross, Britain, and in Porto Rico: Bayamon, 449; Quebradillos, 5121.

This species differs from *C. armoraciae* and *C. brassicola* in size of conidiophores and size and shape of conidia. The original description of *C. bloxami* on *Brassica* is very meagre, lacking in many of the essential characters and measurements. The present emended description is drawn from the Porto Rican specimens.

9. *Cercospora portoricensis* Farle

Muhlenbergia 1901.

On leaves of *Piper hispidum* Sw. in Porto Rico: Maricao, 4802, 4792; Rosario, 4804.

10. *Cercospora vaginae* Kreuger.

Went. Mededeel. Suiker. West-Java, p. 29. 1896.

On *Saccharum* in Porto Rico: 7001. Coll. Johnston.

11. *Cercospora mucunae* Syd.

Hedwigia 42: 136. 1903.

On leaves of *Mucuna pruriens* D.C. in Porto Rico: Anasco

3535, 3601; San German, 250; Utuado, 4691, 4685; Mayaguez, 3951; Dos Bocas below Utuado, 6009, 6555; Rosario, 3779, 4704, 4806; Monte Alligrillo, 4779.

12. *Cercospora rosicola* (Pass.) Sacc.

F. ital. t. 665.

On leaves of Rosa cult. in Porto Rico: Maricao, 737, 3447, 4806.

13. *Cercospora cassavae* Ell. & Ev.

Bull. Torr Bot. Club 22: 438. 1895.

On leaves of Cassavasp. in Porto Rico: Dos Bocas below Utuado, 6557.

In our material the conidiophores are longer and sometimes septate, brown in color except for the hyaline tip.

14. *Cercospora densissima* Speg.

Fg. Arg. novi. v. crit. p. 341. 1889.

On leaves of Sida sp. in Porto Rico: Mona Island, 6361, 6354.

15. *Cercospora chamaecristae* Ell. & Kell.

Jour. Myc. 4: 71. 1888.

On leaves of Cassia occidentalis L. and Cassia alata L. in Porto Rico: Dos Bocas below Utuado, 6054; Santurce, 269a; Anasco, 3586; Mayaguez, 1276.

In our specimens, the host C. occidentalis has a definite spot. The length of the conidiophores varies slightly from those of the description, being as long as 216 mu; and the conidia are usually 3 - 5 septate.

16. *Cercospora borinquensis* sp. nov.

Spots definite, amphigenous, reddish-brown, varying from spherical to irregular, often coalescing to form large brown patches on the leaves; conidiophores fasciculate, simple, septate, brown, 72 - 144 X 3.6 - 5.4 μ ; conidia clavate, slightly curved, hyaline, 3 - 7-septate, 36 - 54 X 5.4 - 7.2 μ .

On leaves of *Calopogonium orthocarpum* Urban in Porto Rico: Mayaguez, 6752 (type).

17. *Cercospora guanicensis* sp. nov.

Spots amphigenous, spherical to ovate, yellow to greenish-brown above, reddish-brown below; conidiophores densely fasciculate, septate, unbranched, 76 - 96 X 4.8 μ ; conidia oblong-cylindric, subhyaline, slightly curved, 3 - 6 septate, granular, 39.6 - 96 X 3.6 - 7.2 μ .

On leaves of *Guilandina crista* in Porto Rico; Guanica, 6845, 6840 (type).

18. *Cercospora stevensii* sp. nov.

Spots amphigenous, reddish-brown above, black below, 1 - 2 mm. in diam.; conidiophores densely fasciculate, simple, cylindrical, brown, septate, often peculiarly twisted; conidia hyaline, clavate, slightly curved, 3 - 5 septate, granular, 32.4 - 72 X 3.6 - 6.2 μ .

On leaves of *Andira* sp. in Porto Rico: Dos Bocas below Utuado, 6549, 6008 (type).

19. *Cercospora bradburyae* sp. nov.

Spots amphigenous, varying from spherical, 1 - 2 mm. in diam. to diffuse, yellowish-brown to rusty-red; conidiophores densely fas-

ciculate, simple, fuscis, 12 - 36 X 3.6 - 4.8 μ ; conidia elongate-cylindrical, hyaline, 5 - 7 -septate, 48 - 96 X 2.4 - 3.6 μ .

On leaves of *Bradburia pubescens* in Porto Rico: Mayaguez, 6296 3930; 479; Luguillo Forest, 5609; Dos Bocas below Utuado, 6588; San German, 5796, 5833, 5785; Guayama, 5412; Jayuya, 446a; Hormigueros, 225a; Caba Rojo, 6482; Rosario, 446 (type).

20. *Cercospora maricaoensis* sp. nov.

Spots diffuse, brown, scattered over the leaf, amphigenous, more numerous above than below; conidiophores loosely fasciculate, often branched, septate, pale olivaceous, 54 - 144 X 5.4 - 7.2 μ ; conidia oblong-cylindrical, hyaline, sometimes slightly curved, 3 - 5 septate, 36 - 81 X 3.6 - 5.4 μ .

On leaves of *Teramnus uncinatus* (L.) Sw. in Porto Rico: Maricao 764; Dos Bocas below Utuado, 6554 (type); ----, 5815; Caba Rojo, 2271.

21. *Cercospora malachrae* sp. nov.

Spots scattered, amphigenous, spherical, 2 - 5mm. in diam., centers white, surrounded by a black, slightly elevated margin, a portion of the leaf about the spot reddish-purple to purplish-black, often large areas infected; conidiophores fasciculate, dark-brown, few-septate, 63 - 144 X 3.6 - 5.4 μ ; conidia hyaline, clavate, 90 - 108 X 3.6 μ .

On leaves of *Malachra rotundifolia* in Porto Rico: San Sebastian, 5199 (type); Ponce, 5003; Guanica, 338a; Yauco, 3246; San German, 5840; Vega Baja, 431, 381.

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