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Studies on some Septoria Species from India – I.

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Species of the genus *Septoria* Fr. have received good deal of attention from mycologists and plant pathologists alike. They incite diseases of a large number of economic plants such as cereals, vegetable crops, ornamentals, fruit and shade trees. While the characters of the genus appear so well defined, in having pycnidia with hyaline, septate scolecospores, in actual practice of identification, there has been great deal of confusion. Species of *Phaeoseptoria* Speg., *Selenophoma* R. Maire, *Cylindrosporium* Grev., *Stagonospora* Sacc., *Rhabdospora* Dur. & Mont. etc. are often described as species of *Septoria* and vice versa. While large number of species are merely grouped under leaf spot fungi, many of them are seed borne forming large blotches and reduce the crop yields considerably.

In the regional lists of fungi from Europe and North America, large number of *Septoria* species are described. Even in India, out of 64 species so far listed, 30 species are reported from the temperate regions in the hill tops. The distribution of *Septoria* species appears to be more in number in the temperate climatic regions than in the tropics. In the present paper an account of some of the *Septoria* species collected by the writers is reported. which are either new species or new records for the region. The type materials of the new species are deposited in National Fungus Collections, Plant Industry Station, Beltsville, Maryland, U. S. A., Herb. C. M. I. Kew, England, and Herb. Crypt. Ind. Orient, New Delhi.

The authors wish to express their deep sense of gratitude to Dr. F. Petrak for kindly giving the Latin diagnoses of the new species.

1. A new *Septoria* species on *Acanthospermum hispidum* D. C.

Acanthospermum hispidum D. C. is a common herb growing on dry waste lands all over India. The plants develop conspicuous thorn on cypsela which makes the plant an obnoxious weed. Soon after

the rains, an angular leaf-spot disease incited by *Septoria* species has been noticed in several places in Poona. The infection spots resemble those incited by phytopathogenic bacteria. The fungus is presented as an undescribed species of *Septoria* with the name *S. acanthospermi*. No *Septoria* species is reported on this host-genus so far.

Septoria acanthospermi Sukapure and Thirum. Sp. nov.

Infection spots foliicolous, spots varying in size, 1—5 mm. in diameter more or less angular, limited by veinlets, dark brown with central region which is light in colour and bearing small black pycnidia; margins of infected spots are slightly raised; pycnidia scattered, but more frequently aggregated, chiefly epiphyllous, erumpent, brown, 37—55 × 30—50 μ, globose to subglobose, opening by slightly protruding ostiole, pycnidial wall thick, smooth, pseudoparenchymatous, pycnidiophores indistinct; conidia extruded out from the pycnidium in cirrhi, straight or curved 20—30 × 1—1,5 μ, 2—3 septate tapering to the apex, and blunted or truncate at base.

Maculae quoad magnitudinem variae, 1—5 mm. diam., plerumque angulares et nervis limitatae, obscure brunneae, in centro pallidiores, ad marginem subincrassatae; pycnidia in centro macularum dispersa, saepe etiam numerosa et tunc plus minusve aggregata, plerumque epiphylla, globosa vel subglobosa, ostiolo erumpente praedita, 37—55/30—50; pariete crassiusculo, pseudoparenchymatico; conidia filiformia, recta vel curvula, 20—30/1—1,5 μ, 2—3-septata, apicem versus acuminata, postice obtusa vel truncata.

In folis *Acanthospermi hispidi* D. C. H. A. C. C. 121 (Typus) leg. R. S. Sukapure, Pimpri, Poona, India, 25th July, 1957.

The fungus was isolated in artificial culture from diseased leaf tissues. The colonies are olive green, to black, growth being very slow and crustose. Even after 20 days incubation the size of the colonies rarely exceeds 1 cm. in diameter. The fungus readily produces pycnidia and pycnidiospores on potato dextrose agar. The pycnospores germinate in water by means of one or two germ. tubes within 24 hours. During germination the swollen cells of the spores often separate and develop secondary conidia.

2. A new species of *Septoria* on *Leucas biflora* R. B.

Leucas biflora is an under-shrub belonging to the family Labiatae. The flowers are white and in distant axillary verticillasters. The plants growing in Botanical Garden of Fergusson College, Poona, were found to be severely infected by a leaf spot disease. Microscopic examination revealed that the causative organism was a species of *Septoria*. Comparative studies indicated that the fungus is different from *Septoria bakeri* Syd. described on species of *Leucas*, in the type of infection symptom produced, and spore measurements.

The fungus is presented as an undescribed species under the name *Septoria leucadis*. The descriptions are as follows:

Septoria leucadis, Sukapure and Thirum. sp. nov.

Infection foliicolous, spots prominent, small, circular 1—2 mm. in diameter, dark-brown to almost black above, paler brown below, margin indistinct, slightly raised, not coalescent; pycnidia 25—30 × 20—30 μ, not prominent, few, nearly concolour with the spot, hardly visible with hand lens, present only on the upper surface, at first subepidermal, then erumpent, dark-brown, subglobose, somewhat elongate; ostiole small or obscure, appearing late or absent: pycnidial wall thin, 3—4 μ, composed of closely knitted, deeply pigmented cells, pycnidiospores hyaline, somewhat obclavate with tapering blunt bases and narrowly tapering apices, straight or only slightly curved, 1—2 septate, 15—20 × 1—1,5 μ.

Maculae prominulae, minutae, orbiculares, 1—2 mm. diam., obscure brunneae, saepe plus minusve nigrescentes, in hypophyllo pallide brunneae, indistincte marginatae, lenissime incrassatae, non confluentes; pycnidia pauca, obscure brunnea, etiam sub lente aegre visibilia, semper epiphylla, primum subepidermalia, postea erumpentia subglobosa, interdum ellipsoidea, ostiolo minuto, saepe indistincto praedita; pariete membranaceo 1—4 μ crasso, pseudoparenchymatico; conidia hyalina, filiformia, postice saepe incrassata, obtusa, antice attenuata, recta vel parum curvula, 1—2 septata, 15—20/1—1,5 μ.

In foliis *Leucadis biflorae* R. B. H. A. C. C. 127 (Typus) leg: R. S. Sukapure, Poona, India, 16th Oct. 1958.

3. A new *Septoria* species on *Pulicaria wightiana* Clke.

Pulicaria wightiana Clke, is an annual belonging to the family Compositae with yellow flowers. The flowers are showy and the plants are often grown in gardens. A leaf spot incited by a *Septoria* species has been collected on plants growing near Pimpri. No *Septoria* species has so far been reported on this host genus. Comparative studies of the spore measurement revealed differences with other *Septoria* on Compositae. The fungus is presented as an undescribed species under the name *Septoria pulicariae*, with the following description:

Septoria pulicariae Sukapure and Thirum. Sp. nov.

Infection spots foliicolous, circular to slightly irregular, 2—4 mm in diameter, first brown later with a well marked whitish centre, sorrounded by a dark brown to black raised margin, often coalescent to form large patches. Pycnidia abundant, scattered, appearing as black spots; 60—80 × 55—90 μ in diameter, spherical or slightly flattened; ostiole inconspicuous, appearing as small pore; pycnidial wall composed of several layers of cubical to ovoid cells from which the sporophores are developed. Pycnidiophores variable from prominent bottle shaped structure to short nipple-like ones bearing conidia.

Pycnidiospores extruded out from the pycnidium in thick masses, narrowly filiform to obclavate, more or less curved, truncate at one end and rounded at the other. 1—3 septate measuring 30—45 × 1—2 μ.

Maculae foliicolae, orbiculares vel subirregulares, 2—4 mm diam., primum brunneae, postea in centro expallescentes, linea obscure brunnea vel nigra marginatae, saepe confluentes et magnam folii partem occupantes; pycnidia numerosa, dispersa, maculas nigrescentes efficientia, 60—80 × 55—90 μ diam., globosa vel ellipsoidea, ostiolo indistincto, poro minuto aperto praedita; conidia filiformia vel obclavata, plus minusve curvula, postice truncata, antice obtusa, 1—3-septata, 30—45 × 1—2 μ, in cirrhis pro ratione crassiusculis extrusa; conidiophora variabilia, subulata vel minute papilliformia.

In foliis *Pulicariae wightianae* Clke. leg: R. S. Sukapure, Pimpri, Poona, India, 8th Oct. 1960. H. A. C. C. 128 (Typus).

4. Leaf spot of *Hydrocotyle asiatica* (Linn.) Urb.

Hydrocotyle asiatica = (*Centella asiatica* L.) is a common herbaceous plant growing in moist places. A leaf spot disease incited by a species of *Septoria* was described by Ramkrishnan, T. S. and Ramakrishnan, K. (1950), from Anamalais, South India on *Hydrocotyle javanica* Thunb. They ascribed the species to *Septoria hydrocotyles* Desm. In the present studies a *Septoria* species different from *Septoria hydrocotyles* but identical with *Septoria asiatica* Speg. has been collected near Koyana valley. The disease was found to be severe in plants growing in low-lying areas and causing necrotic lesions on leaves.

The fungus was isolated in pure culture on yeast glucose agar, from the infected leaf tissue after surface sterilization. The hyphae from the germinating spores branch and extend rapidly becoming interwoven, light brown and slimy. Pycnidia are developed within 14 days. The narrowly filiform recurved pycnidiospores produced in cultures measure about 40—50 μ and are slightly larger than those produced on the host.

Pathogenicity was established by inoculation experiments. The incubation period for the fungus in host being 3—15 days and this varied considerably with age of the leaves and temperature conditions.

5. *Septoria* blight of cow-pea.

Vigna catajang Walp. a member of Leguminosae is largely cultivated in various parts in India and resembles the string beans. It is scandent annual and is of considerable economic importance in dry-land farming. A species of *Septoria* inciting spotting of leaves and young shoots and resulting in blighting of leaves and premature drying of the crop was noticed in Poona. Comparative studies indicated that the fungus agrees with *Septoria vignae* on *Vigna* sp. reported by P. Hennings from Africa, and has not so far been recorded in India.

Septoria vignae P. Henn. (Ann. Mus. du Congo VII, Fasc. II, 1908).

Infection foliicolous, spots irregular, prominent, 2—5 mm. in diameter, at first brown and surrounded by a raised darker brown border, later turning greyish-white and surrounded by dark red or black margin, with black dot like pycnidia; central region thin and membranous, and margin relatively thick. Spots not raised, distinct, limited by veinlets, scattered, sometimes coalescent.

Pycnidia amphigenous, 50—100×60—120 μ, numerous, chiefly epiphyllous, scattered throughout the spots, brownish-black, immersed in the host tissue, circular, slightly flattened; ostiole narrow, pycnidial wall 6—7 μ, composed of rectangular cells firmly compressed into a compact parenchymatic structure, pynidiophores indistinct. Pycnidiospores hyaline, filiform, straight or slightly curved, truncate at base and pointed at apex, usually 3 septate measuring 16—30× 1—1,5 μ.

On leaves of *Vigna catajang* Walp. 23rd July 1957, Poona. leg: R. S. Sukapure. Recently V. G. Rao describes this as new spec.

6. Leaf blight of *Cessulia axillaris* Roxb.

Cessulia axillaris Roxb. is a beautiful weed belonging to family Compositae. The plants growing in large patches at Pimpri were severely damaged by a leaf blight. Microscopic examination showed that a species of *Septoria* was responsible for this leaf spot disease. Comparative studies indicated that the fungus is identical with *S. cessuliae* Edward and Naim recorded from Allahabad in 1958 except for the pycnidiospores which are little small. The description is as follows:

Septoria cessuliae Edw. & Naim (Sci. & Cult. *23*: 617: 1958).

Infection spots foliicolous, at first ellipsoid, becoming elongated and somewhat irregular, varying in size, from 2—6 mm, usually single but often coalescent to form large patches, pale brown with dark brown margin, surrounded by pale halo, 2—4 mm wide. Pycnidia 45—75×45—60 μ. very few, scattered, usually on the upper surface, erumpent, protruding above, dark-brown, globose to sub-globose, ostiole not prominent, pycnidial wall, thick composed of 2—5 layers of brown, oblong, rectangular cells, Pycnidiophores indistinct; pycnidiospores hyaline, extruded out at maturity 21—37×2,0 μ. narrowly filiform or less often moderately curved, tapering at apex and rounded at base, 2—3 septate.

On leaves of *Cessulia axillaris* Roxb. 10th June, 1958, Pimpri, Leg: R. S. Sukapure.

7. Leaf spot of garden rose incited by *Septoria rosae* Desm.

Garden rose, *Rosa* sp. is susceptible to a large number of fungal diseases. In India two species of *Septoria*, namely *S. rosae* Desm. and *S. rosarum* West, are known to cause the leaf spotting of roses. Plants

growing at Lonavala were found to be attacked by a *Septoria* species. Comparative studies showed that the species is identical with *Septoria rosae* Desm., which was previously reported by Butler from Darjeeling.

On leaves of *Rosa species* 25th September 1959, Lonavala, Leg: M. J. Thirumalachar.

8. *Septoria lycopersici* Speg.

Lycopersicum esculentum Mill. is attacked by a large number of leaf spott fungi, such as *Alternaria solani* (Ell & Martin) Jones and Grout, *Cladosporium fulvum* Cke. and *Septoria lycopersici*. The leaf blight due to *Septoria* is world-wide in occurence and of great economic importance in Europe and America due to severe defoliation it causes. In India *Cladosporium fulvum* causes more damage and *Septoria* is not of much economic importance. Tomato plants growing at Agriculture College, Poona, were found to be attacked by *Septoria lycoperisici*. From India Ramakrishnan and Sundaram (1941) reported it from Madras and Thirumalachar et al. (1956) from Bombay State.

On leaves of *Lycopersicum esculentum* Mill. 24th August, 1959, Poona, Leg: R. S. Sukapure.

9. An undescribed species of *Septoria* on *Blainvillea latifolia* D. C.

Blainvillea latifolia a member of the Compositae, is a common weed of dry waste lands. An angular leaf spot disease has been collected during rainy season which causes considerable blighting of the leaves, Microscopic examination revealed that fungus inciting leaf spot was a species of *Septoria*. No *Septoria* species has so far been recorded on the genus *Blainvillea*. The fungus is presented as an underscribed species under the name *Septoria blainvilleae*.

Septoria blainvilleae Sukapure & Thirum. Sp. nov.

Infection spots foliicolous, spots varying in size from 1—4 mm. in diameter, circular to polygonal, limited by veins, reddish-brown with a paler centre, appearing as discoloured brownish patches on the lower side, often coalescent and forming large patches. Pycnidia inconspicuous, sparsely developed, scattered, chiefly epiphyllous, deep-seated, dark-brown, subglobose to spherical. 30—55 × 40—50 μ, ostiole small, pore like, pycnidial wall thin, composed of one layer of rectangular cells; pycnidiophores indistinct; pycnidiospores hyaline, acicular, straight to silghtly curved, 18—27 × 1,5—2,0 μ. thin-walled, 1—3 septate, narrowly tapering towards both ends.

Maculae foliicolae, quoad magnitudinem variae, 1—4 mm diam., orbiculares vel angulares, nervis limitatae, rubiginosae, in centro expallescentes, in hypophyllo pallide brunneae, saepe confluentes et majores folii partes occupantes; pycnidia inconspicua, laxe dispersa, plerumque epiphylla, obscure brunnea, globosa vel subglobosa, 30—55 × 40—50 μ, ostiolo indistincto poro perforato praedita; pariete

tenuiter membranaceo, pseudoparenchymatico; conidia hyalina, acicularia, recta vel parum curvula, 18—27 × 1,5—2 μ, 1—3-septata, utrinque attenuata et acuminata.

In foliis *Blainvilleae latifoliae* D. C. leg: R. S. Sukapure, Pimpri, Poona, India, 28th Sept., 1958. H. A. C. C. 122 (Typus).

10. A new species of *Septoria* on *Heracleum concanense* Dalz.

Heracleum concanense Dalz, is a member of Umbelliferae. It is an erect perennial herb with white flowers. A group of plants growing at Katraj Ghats were found to be affected severely by a leaf spot disease. Microscopic examination revealed the causal organism to be a species of *Septoria*.

In the species under study, the pycnidia are well developed and not of imperfect acervulus type and the spores are much smaller than that of *Phleospora heraclei* (Lib.) Höhn. The fungus is presented as an undescribed species under the name *Septoria heraclei-concanensis*. The description is as follows:

Septoria heraclei concanensis, Sukapure and Thirum. Sp. nov.

Infection foliicolous, spots elongated, 5—6 mm in length and 2—3 mm. wide often coalescing and forming necrotic patches, reddish brown with a paler centre above, evident below as discoloured, brownish patches, later the central region becoming whitish, with the pycnidia developed in the centre. Pycnidia epiphyllous, numerous, 73—95 × 60—100 μ. in diameter, scattered, pale-brown, spherical to somewhat flattened, with a broad shallow beak of darker brown or almost black cells and a well defined rather large ostiole, 20—25 μ in diameter, wall consisting of an outer layer of irregular flattened cells and an inner layer of polyhydral cells, bearing the sporophores. Pycnidiospores hyaline to subhyaline thin-walled, acicular, straight or slightly sinuous, 24—33 × 1,5—2 μ.

Maculae foliicolae, 5—6 mm longae, 2—3 mm latae, saepe confluentes et tunc majores folii partes occupantes, rubiginosae, in hypophyllo brunneolae, in centro expallescentes, postea albidae; pycnidia epiphylla, in macularum centro evoluta, numerosa, 73—95 × 60—100 μ, pallide brunnea, globosa vel plus minusve depressa, ostiolo bene evoluto, 20—25 μ crasso; pariete pseudoparenchymatico, extus e cellulis irregularibus, compressis, intus polyedricis composito; conidia hyalina vel subhyalina, acicularia, recta vel parum curvula, 24—33 × 1,5—2 μ.

In foliis *Heraclei concanensis* Dalz. leg: R. S. Sukapure, Katraj, 20th Aug. 1958, H. A. C. C. 125 (Typus)

Pure cultures were readily obtained on potato dextrose agar. In about 6 days the colonies turn black and become hard and produce a small amount of mycelium. Small droplets of amber coloured liquid

appeared upon the colony-surface. These droplets later became filled with conidia which oozed out in pinkish mass.

The pycnidiospores are mostly 3 septate and are more regular in shape than those produced on the host. The size and shape of pycnidia and pycnidiospores in artificial culture are more or less the same as those found in nature. Pycnidiospores germinated better in nutrient solution than in distilled water. They became swollen, elongated and vacuolated, and deeply constricted at the septa. The germ tubes are well developed after 18 hours incubation in moist chamber.

11. Leaf spots of *Sonchus oleraceus* Linn.

Sonchus oleraceus Linn is an erect, annual herb, 1—3 ft. in height, belonging to the family Compositae. Several plants growing in Katraj Ghats and in neighbourhood of Pimpri were found to be affected by leaf spots due to species of *Septoria*. Since there is no previous record of this fungus in India, studies were undertaken. Two species of *Septoria* were associated in the infection patches. One was identical with *Septoria sonchina* Thüm. and the other resembling *S. sonchi* Sacc.

Septoria sonchina Thüm. (Pilzfl. Sibir. n. 634).

Infection foliicolous, spots prominent, varying in size, 2—8 mm, in diameter, spherical or irregular, brownish with dark-brown raised margin above, lower side is much paler in colour, margin diffuse.

Infection foliicolous, spots prominent, varying in size, 2—8 mm, portion becoming discoloured and desiccated and sharply demarcated from the surrounding healthy tissue. Pycnidia abundant, scattered, epiphyllous, dark brown, globose to sub-globose, measuring 60—110 × 60—80 μ in diameter; ostiole small, circular, 4—6 μ in diameter which is surrounded by cells of deeper shade, wall thin, composed of 2—3 layers of brown oblong cells giving rise to narrowly bulbous, cylindric or awl shaped pycnidiophores. Pycnidiospores hyaline, mostly straight, or rarely curved, filiiform, 18—27 × 1,5—2,0 μ blunt on both the ends 2—3 septate.

On leaves of *Sonchus oleraceus* Linn. 20th August, 1958, Katraj, Leg: R. S. Sukapure.

Septoria sonchi Sacc. (Michelia. I, p. 183).

In association with *Septoria sonchina* Thum. another type of infection spots were found. They were small 1—2 mm, isolated at first, gradually enlarging and merging with each other. Spots are irregular in shape, with mosaic of violet and light green, dark violet colours on upper surface, while lower side is lighter. Pycnidia are abundant, amphigenous, scattered, golden brown, 120—180 × 100—150 μ in diameter, spherical with large ostiole, 25—30 μ in diameter surrounded by much darker cells than the rest of the cells of the pycnidia. Pycnidiospores hyaline 18—27 × 1—1,5 μ straight or

curved, narrow towards base, usually one-septate but sometimes two or more septate.

On leaves of *Sonchus oleraceus* Linn. 13th September 1959, Pimpri, Leg: R. S. Sukapure.

12. *Septoria artemisiae* Sacc.

Artemisia parviflora B. Ham. is a shrubby plant belonging to the family Compositae. The species is common throughout South India distributed at altitudes from 3000 to 10.000 ft. Two species of *Septoria* have been reported from India on this genus; *Septoria tabacina* Died. on *Artemisia* sp. and *Septoria nilgiriensis* Tilak, on *A. nilgirinse*. In the present studies a *Septoria* species different from both the above mentioned ones but identical with *Septoria artemisiae* Sacc. first reported on *A. vulgaris* is being reported. There is no previous record of this fungus in India.

On leaves of *Artermisia parviflora* B. Ham. 12th Oct. 1957, Mahableshwar, 2 nd Decr. 1960, Sinhgad. Leg: R. S. Sukapure.

Three species of *Septoria* are reported on *Artemisia* spp. Comparison of these a long with species under study is given in tabular form:

Species	Pycnidia	Conidia	Host.
S. artemisiae Sacc.	—	$30-33\times1,5$	*A. vulgaris.*
S. tabacina Syd. & Butl.	75×100	$52-62\times2-2,5$	*A.* sp.
S. nilgiriensis, Tilak.	80—120	$60-80\times3-4$	*A. nilgiriensis*
Present fungus	60×90	$25-30\times1,5-3$	*A. parviflora*

13. *Septoria thespesiae* Ramakrishnan, T. S. & K. on treea mallow. (Proc. Indian Acad. Sci. B. 26: 178—187. 1947).

Thespesia populnea Soland, is a tree, belonging to *Malvaceae*. It bears large palminerved leaves and yellow flowers. Spotting of the leaves due to infection by a species of *Septoria* was observed in several places near Khandala, Bombay State. Comparative studies indicated that the fungus is identical with *Septoria thespesiae* described by Ramakrishnan T. S. & K. (1947) on the same host in South India.

On leaves of *Thespesia populnea* Soland. 28th August, 1959, Khandala, Leg: M. J. Thirumalachar.

14. *Septoria cordiae* Syd. *on Cordia rothii* Roem. & Schult.

Cordia rothii Roem. and Schult. is a small sized tree belonging to the family *Boraginaceae*. The fruit has a strong mucilage. A species of *Septoria* inciting leaf spots is of common occurrence in plants growing in neighbourhood of Poona. The species was recorded by Sydow H. & P. and Butler E. J. on the basis of the material collected by Chibber from Poona under the name *Septoria cordiae* Syd. The species under study is identical with the same.

On the leaves of *Cordia rothii* Roem. & Schult. 6th July 1956. Poona. Leg: M. J. Thirumalachar.

15. *Septoria mortolenis* Penz. and Sacc. (Fungi mortol. nr. 27).

Acacia arabica Willd. popularly known as 'Catechu' yields the valuable gum arabic and tanin materials. It is a member of Mimosae growing in dry waste lands. The leaflets are small and the plants are armed with prominent thorns. A *Septoria* species inciting leaf spot and premature defoliation of trees was observed in several plants growing in Poona. Detailed studies of fungus with reference to its morphology and identity showed that the fungus is identical with *Septoria mortolensis* Penz. and Sacc. which is recorded previously on *Acacia* sp. and also on *Acacia arabica* from Sasvad, Bombay State. The description is as follows:

Infection foliicouls, spots small circular 0,5—1 mm in diameter but in case of heavy infection becoming coalescent and forming big patch which may occupy the whole leaflet, dark-brown to black in colour, slightly raised, appearing like a tar-spot; pycnidia numerous, scattered, not prominent, amphigenous but chiefly on the lower surface, creosote-brown to black in colour, spherical or flattened at ostiolar end; ostiole small, obscure, appearing late or absent, thick walled, 150—200×143—225 μ; pycnidiospores hyaline, straight or often slightly curved, 50—60×3—3,5 μ, cylindrical, narrowed towards base and pointed to blunt at apex. 3—4 septate.

On leaves of *Acacia arabica* Willd. 29th August 1959, Poona, Leg: R. S. Sukapure.

16. *Septoria arcuta* Cke. on *Ficus bengalensis* L.

Ficus bengalensis popularly known as banyan tree is planted on the road side as avenue trees and often grown near temples and river banks. A species of *Septoria* inciting severe leaf spot and causing premature defoliation is of common occurrence in Poona district. The species *S. arcuta* was recorded on *F. bengalensis* from Kanara by Kulkarni, on *Ficus* species by Hobson and on *F. indica* L. and *F. benjamina* Willd. by Buttler. The species under study is also indentical with *S. arcuta*.

On leaves of *Ficus bengalensis* L. 16th June, 1956. Leg: R. S. Sukapure, Pimpri.

17. Leaf spot of *Ficus tsiela* Roxb. incited by *Septoria brachyspora* Sacc.

Ficus tsiela is another species of *Ficus* planted as shade tree. It is a large spreading tree without aerial roots. Leaf spotting due to infection by a species of *Septoria* was observed in several places in Katraj Ghats. Comparative studies indicated that the fungus is identical with *Septoria brachyspora* Sacc. described by Saccardo

on *Ficus elastica* and afterwards reported by Chibber (1911) on *Ficus tsiela* from Khed, Bombay State.

On leaves of *Ficus tsiela*, Roxb. 15th August 1958, Katraj, Leg: R. S. Sukapure.

18. *Septoria pipulae* Cke. on *Ficus religiosa* L.

Ficus religiosa L. is popularly known as the peepal tree. It usually grows as epiphyte on other trees and is extremely destructive to neglected buildings, when it roots in the joints of the masonary. The tree is held with great veneration by Hindus and Buddhists. A speciies of *Septoria* was found to incite leaf spotting in plants growing near western Bombay. The species was recorded by Cooke from material collected by Hobson from Belgaum, Mysore State, under the name *Septoria pipulae* Cke. The species under study is identical with *S. pipulae*.

On leaves of *Ficus religiosa* L. 30th August, 1960, Chiplun, Leg: R. S. Sukapure.

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