

ALGAL RUSTS OF DIFFERENT PLANTS IN WEST BENGAL

The algal genus *Cephaleuros* is well known as plant parasitic organism on a large number of plants including different crops in different areas of the world. (Bouriquet, 1932 ; Kaden, 1933 ; Yadava, 1955 ; Rosetti, 1959 a and b.) The genus has also been reported from different parts of India as plant parasite of different types of plants (Venkataramani, 1956 ; Yadava, 1956 ; De Jong, 1952 ; Satyanarayana, 1965 ; Butler, 1934 and Garg, 1951).

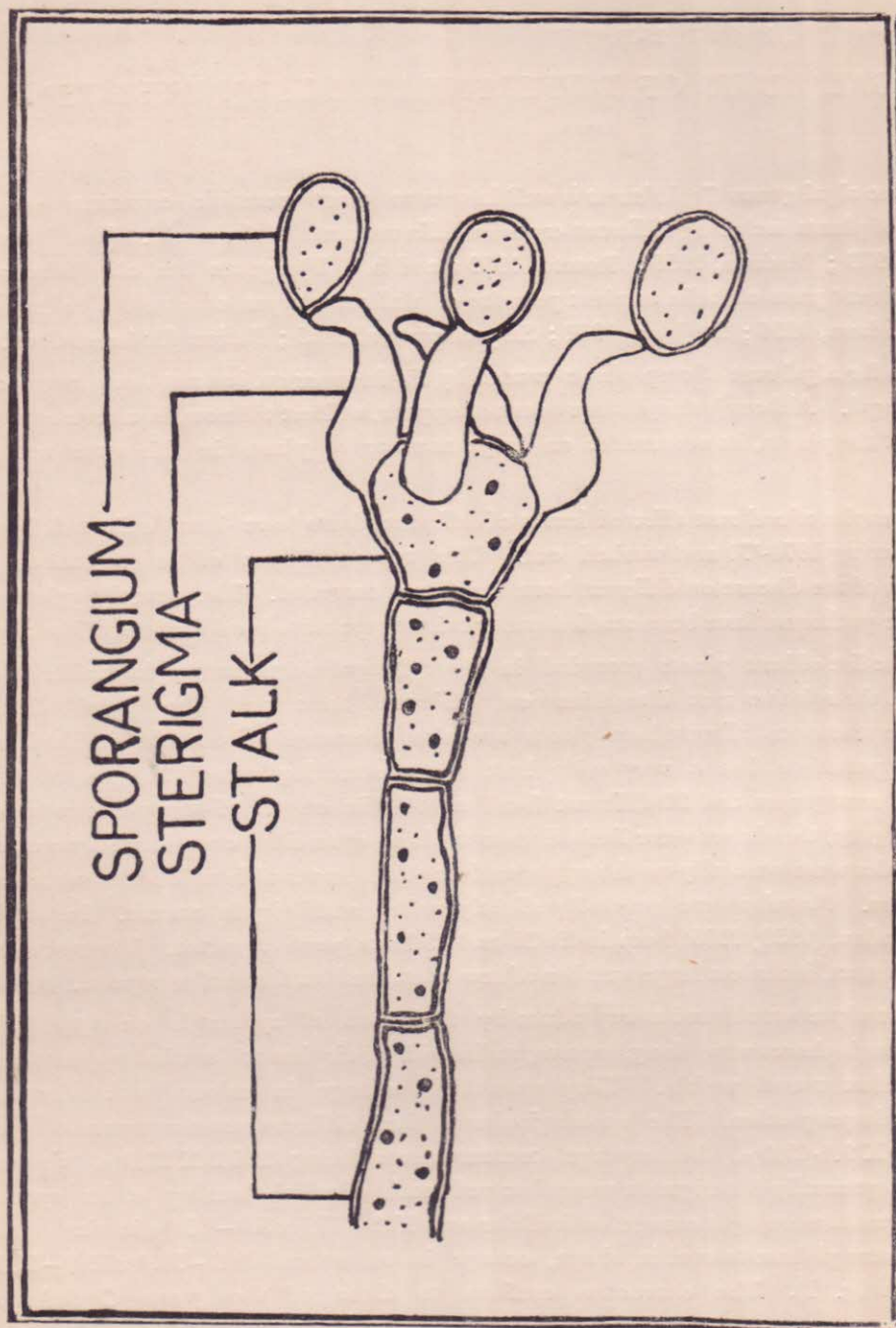
So far algal rust of crop plants caused by *Cephaleuros* sp. has not been reported from West Bengal. Although this disease does not appear, at least till now, in a severe proportion on any of the plants, its occurrence on large number of plants in this state needs to be recorded.

Samples of red rust affected leaves of different plants have been collected from time to time during 1970-'71 and worked out. The types and sizes of lesions and the relative intensities of the disease on different hosts have been recorded. The morphological characters of the pathogen have been studied under microscope with hand sections of the materials.

The list of host plants recorded in West Bengal is presented in Table 1. Along with this the relative rust intensities on different hosts and the brief descriptions of the symptoms on different host plants are also presented. From the table it appears that the pathogen has a very wide host range attacking some 31 plants belonging to 30 different genera and 20 different families. While colour of the pustules varied from orange to grey, the shapes were limited spots to those spreading over large irregular areas. The pustules were generally on the upper surface of the leaves although some were on both the surfaces. Pustules were generally slightly raised and hairy in nature. In earlier two reports Yadav, (1953, 1955) from India 21 and 25 hosts were reported. The present report, in that context, include a large number of new hosts, besides the earlier reports.

The algae were found to reproduce by formation of sporangia on sporangiophore. The sporangiophores were long, septate, stalks with their heads swelled up into a small, more or less round vesicle. They were light orange in colour with deep orange granular impregnation. The sporangiophores from different samples measured generally $105-399.0 \times 9.4-45.0 \mu$, the average measurements being $238.2 \times 29.9 \mu$. tip one On the vesicle generally 4 sterigmata were observed each of which bearing at its sporangium. The sterigmata were light orange, unicellular and $16.0-45.6 \times 5.0-15.0 \mu$ in size. Sporangia on them were globose to oval in shape, orange in colour and $19.0-30.4 \times 19.0-22.8 \mu$ in size (Text-fig. 1). The characters conform to those of the genus *Cephaleuros*.

Occurrence of algal rust disease on such wide range of plants, most of which are economically important, appears worthy to be recorded.



Text-fig. 1. Camera lucida drawing of a single sporangiophore with sporangium of *Cephaeleuros* sp. (X 500).

Table 1. Host plants of algal red rust recorded in West Bengal.

Sl. No.	Local Name	Sc. Name	Host plant	Family	Severity	Symptoms
1.	Cashew nut (Kaju Badam)	<i>Anacardium occidentale</i>	Anacardium	Anacardiaceae	++	Pustules of greenish grey colour, 1-3 mm. dia., on upper surface.
2.	Mango (Aam)	<i>Mangifera indica</i>	Mangifera	Anacardiaceae	++	On leaf & petiole. Usually on lower surface of leaves. Initially greenish grey, hairy, later greenish orange hairs appear. 3-6 mm. dia. Max. 1 cm.
3.	Custard Apple (Ata)	<i>Anona squamosa</i>	Anona	Anonaceae	+	Greenish orange spots of 1.5-2 mm. dia. on upper surface of leaves.
4.	Anko Kul	<i>Carissa spinarum</i>	Carissa	Apocynaceae	+	Orange coloured pustules of 1-3 mm. dia. on upper surface of leaves.
5.	Wild plant	<i>Echites caryophyllatus</i>	Echites	Apocynaceae	+	Orange coloured pustules of 2-3 mm. dia. on upper surface of leaves.
6.	Bainchi	<i>Flacourtia ramontchii</i> var <i>sapida</i>	Flacourtia	Biaceae	++	Orange coloured spots on upper surface. 0.5-2 mm. diameter.
7.	Ashok	<i>Saraca indica</i>	Saraca	Caesalpiniae	+	Orange pustules of 2-5 mm. dia. on upper surface of leaves. Pustules also on petiole and near base of leaf lamina.
8.	Arjun	<i>Terminalia arjuna</i>	Terminalia	Combretaceae	++	Orange coloured spots on upper surface of leaf 1-3 mm. in diameter.
9.	Vernonia	<i>Vernonia</i> sp.	Vernonia	Compositae	++	Bright orange pustules 1-3 mm. dia. on upper surface of leaves
10.	Gama	<i>Excoecaria agallocha</i>	Excoecaria	Euphorbiaceae	+	Upper surface of leaves. Orange coloured, elevated pustules with 1-3 mm. dia.
11.	Gama (Spinus)	<i>Sapium indicum</i>	Sapium	"	++	" " " " " " " "
12.	Punnag	<i>Calophyllum inophyllum</i>	Calophyllum	Guttiferae	++	Greyish green pustules on upper surface. 1 mm. dia.
13.	Magnolia	<i>Magnolia grandiflora</i>	Magnolia	Magnoliaceae	++	Circular deep orange centre & greenish orange peri-pustules of 3-5 mm. dia. on upper surface. Sometimes upto 12 mm.
14.	China Rose	<i>Hibis rosa-sinensis</i>	Hibis	Malvaceae	+	Grey or dull orange spots of 0.5-1 mm. dia. on upper surface of leaves.
15.	Guava (Peyara)	<i>Phidium guajave</i>	Phidium	Myrtaceae	+	Reddish orange spots on upper surface of leaf. Large no. of spots sometimes cover whole leaf surface. 1-1.8 mm. [Contd.]

Table 1. [Contd.]

Sl. No.	Local name	Host plant Sc. name	Family	Severity	Symptoms
16.	Jhati	<i>Eugenia bracteata</i>	Myrtaceae	+	Upper surface of leaves. Orange coloured, elevated pustules with 1-3 mm. dia.
17.	Jam	<i>Syzygium cumini</i>	Myrtaceae	+	Greyish green pustules of 1 mm. diameter on upper surface.
18.	Bel ful	<i>Jasminum sambac</i>	Oleaceae	++	Grey or dull orange spots of 0.5-1 mm. dia. on upper surface of leaves.
19.	"Seoli"	<i>Nyctonthes arborescens</i>	Oleaceae	+++	Bright orange pustules of 2-3.5 mm. dia. on upper surface of leaves.
20.	Shia-Kul	<i>Zizyphus oenoplia</i>	Rhamnaceae	+	Orange coloured spots of 0.8-2 mm. dia. on upper surface of leaves.
21.	Rangan	<i>Ixora eoccinea</i>	Rubiaceae	+	Orange coloured pustules of 1-3 mm. dia. on upper surface of leaves.
22.	Rangan	<i>Ixora stricta</i>	Rubiaceae	+	Greyish green pustules of 1-2.5 mm. dia. on upper surface of leaves.
23.	Wood Apple (Bel)	<i>Aegle marmelos</i>	Rutaceae	+	Orange coloured, elevated, hairy pustules on upper surface of leaves. Dia. 3 mm.
24.	Lime (Pati Lembu)	<i>Citrus aurantifolia</i>	Rutaceae	+	On both surface of leaves. Greenish orange pustules of 1-3 mm. dia.
25.	Sabra	<i>Glycosmis pentaphylla</i>	Rutaceae	++	Upper surface of leaves. Orange coloured, elevated pustules with 1-3 mm. dia.
26.	Tri Kanta-gati	<i>Azima tetracantha</i>	Salvadoraceae	+++	Mostly on upper surface growing extensively covering whole surface of leaf. Orange in colour. Sometimes on lower surface also.
27.	Kusum	<i>Schleichera trijuga</i>	Sapindaceae	+	Greyish green pustules on upper surface with 2 mm. dia. Necrotic brownish spot on lower surface 1 mm. dia.
28.	Lichi (Lichu)	<i>Litchi chinensis</i> (<i>Nephelium litchi</i>)	Sapindaceae	+	Greenish orange pustules of 1.5-3 mm. dia. on upper surface of leaves. Lower surface light necrotic.
29.	Sapota (Sabeda)	<i>Achras sapota</i>	Sapotaceae	+	Grey orange spots on upper surface of leaf. 5-3 mm. in India.
30.	Pakur	<i>Ficus infectoria</i>	Urticaceae	++	Orange coloured spots of 1.5-3.5 mm. dia. on upper surface of leaves.
31.	Jack fruit (Kanthal)	<i>Artocarpus integrifolia</i>	Urticaceae	+	Yellowish orange pustules of 2-3 mm. dia. on upper surface of leaves.

+- : Very Low ; + : Low ; ++ : Medium ; +++ : High ; ++++ to +++++ : Very high

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