

and *Alocasia indica* Schott, the leaves and rhizomes of which are extensively used as vegetables in the Central Provinces and Berar. The disease has been found to cause considerable loss as the leaves become unfit for human consumption and the yield of the corms are appreciably reduced.

The first symptom of the disease is the occurrence of minute, round to oval, dark sage-green coloured spots which are roughly arranged in streaks all over the upper surface. During rainy season these spots are mostly localised on the upper surface of the leaves, only a few scattered ones on the lower side, but during winter they are equally prominent on both the sides. The spots on the upper surface of the leaves are dark sage-green in colour while on the lower surface as eucalyptus green² but they are similar in their nature of growth and size. Corresponding yellowing or marking on the opposite sides are not found in either case. Within three to four weeks these spots become larger in size, varying from 0.5 mm. to 1 cm. in diameter, and invariably coalesce later to form larger patches. With the advance of the disease the colour changes to light yellow and then light brown. Such affected leaves lose their lustre and drying starts from the periphery towards the centre. After a few days the leaves die. Excess of soil and atmospheric humidity are most favourable for the spread of the disease. Younger leaves were more susceptible to the disease than the older ones.

The pathogen was isolated from the infected leaves and pure cultures were maintained on glucose-agar tubes where the growth appeared within 24 hours. By inoculating, the disease could be artificially reproduced in its natural conditions. The infection could be induced on the lower as well as on the upper side of the leaves. The disease appeared within 24 hours on the lower side and after 48 hours on the upper side during rainy months and after 3 to 4 days during winter season. On reisolation the same organism was always obtained. It was observed that primary symptoms appeared when small quantities of the organism were placed on healthy leaves while by placing larger amounts the secondary effects were produced. In cross-sections the bacterium was noticed in the parenchymatous tissues and in the palisade cells.

On glucose agar medium the organism formed round, smooth and depressed colonies, varying from 0.5 mm. to 4 mm. in diameter. The bacterium is motile, highly refractive and rod-shaped, varying in its size from 1.33 to 3.13 μ in length and 0.66 to 1.33 μ in breadth, the average measurements being 2.13 μ \times 0.93 μ . Growth on agar-agar streaks is smooth, soft and of spreading type with slimy surface having fine ridges. The organism has so far not been identified.

Further work is in progress.

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BACTERIAL LEAF-SPOT ON ARUM

DURING July 1944 in almost all the vegetable-growing areas of Nagpur, leaves of arum (*Colocasia antiquorum* Schott) were found spotted all over the surface, which on examination, proved to be due to some bacteria. As far as known to the author, the bacterial leaf-spot disease of arum has not so far been reported from anywhere else. A few bacterial diseases have been recorded on different species of *Colocasia* and *Alocasia*. Jones³ (1901) reported that *Bacillus carotovorus* Jones [now according to International rules changed to *Bacterium aroideae* (Townsend) Stapp.], caused a rapidly progressing soft wet rot of roots, rhizomes, fruits and fleshy stems of vegetables and other plants; *Alocasia macrorrhiza* and *Colocasia esculenta* were also attacked by this organism. Ciferri¹ (1927) states that inoculation experiments with a strain of *Bacillus carotovorus* (*Bacterium aroideae*), isolated from the rotted rhizomes of *Xanthosoma sagittifolium*, gave positive results on the original host as well as on *Colocasia antiquorum*, *Alocasia macrorrhiza*, etc. In 1936, it has been reported from Hawaii that *Colocasia esculenta* is subject to two major corm rots, one a soft rot associated with an unidentified *Pythium* and with *Phytophthora colocasia*, frequently accompanied in a secondary capacity by *Bacillus carotovorus* (= *Bacterium aroideae*). All attempts to reproduce the typical features of the rot, as observed in field by Parris⁴ (1936), gave negative results, and the development of the disease is believed to be due to the combined action of either or both the above-mentioned weakly parasitic Phycomycetes and unfavourable soil conditions.

The bacterial leaf-spot disease has been found to occur on *Colocasia antiquorum* Schott,

1. Ciferri, R., "Notæ mycologicæ et phytopathologicæ," Series II, N. 1-15, *Riv. Patol. Veg.*, 1927, 17, 209, 94. 2. Dauthenay, H., *Repertoire de Gouleurs*. 3. Jones, L. R., *Vermont Agr. Exp. Sta. Report*, 1901, 13, 299-332. 4. Parris, G. K., *Rep. Hawaii, Agr. Exp. Sta.*, 1936, p. 33-40.