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DEPARTMENT OF BOTANY
(PREVIOUSLY DEPARTMENT OF BIOLOGY)

Volume III.

1954

Numbers 4 and 5¹

4.—NEW SPECIES OF CLAVICEPS

By

R. F. N. LANGDON, M.Agr.Sc., Ph.D.
Department of Botany,
University of Queensland.

5.—THE ORIGIN AND DISTRIBUTION OF
CYNODON DACTYLON (L.) PERS.

By

R. F. N. LANGDON, M.Agr.Sc., Ph.D.
Department of Botany,
University of Queensland.

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Previous botanical papers from the Department of Biology are listed below:—

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By S. T. Blake, M.Sc.
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New Species of *Claviceps*

By

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New Species of *Claviceps*

By R. F. N. LANGDON, M.Agr.Sc., Ph.D.

Claviceps sulcata Langdon sp. nov.

Sclerotia saturate brunnea, usque ad 12 mm. longa, recta vel curvula, elongata, a latere leviter complanata, sulcis 2 longitudinalibus latis haud profundis praedita. Stromata cum stipite usque ad 18 mm. longa; capitula 1.5 mm. diam., subflava; perithecia 240–300 × 100–120 μ ; asci usque ad 200 μ longi. Conidia hyalina, allantoidea, 10–20 × 3–6 μ .

In plantis *Brachiariae dictyoneurae*.

Specimens examined: On *Brachiaria dictyoneura*. Southern Rhodesia, 1938, 33471 (SA)* Type. On *Brachiaria nigropedata*. South Africa, 1928, 23227 (SA). On *Brachiaria platynota*. Uganda, 14241 (CMI). On *Brachiaria brizantha*. South Africa, 1932, 26149 (SA); Southern Rhodesia, 1919, 11859 (SA).

Claviceps cynodontis Langdon sp. nov.

Sclerotia saturate brunnea, fusiformia, recta vel curvata, usque ad 5 mm. longa, 0.5 mm. lata. Stromata lucida; stipes usque ad 6 mm. longus; capitula 0.5 mm. diam. Perithecia 170 × 100 μ ; asci 90 μ longi. Conidia hyalina, reniformia, 10–20 × 4–6 μ .

In plantis *Cynodontis dactyli*.

Specimens examined: On *Cynodon dactylon*. South Africa, 1944, 34105 (SA) Type; Gold Coast, 1947, 759 (UQ); India, 1945, 760 (UQ); Nyassaland, 1949, 34941 (CMI).

An ergot on *Cynodon dactylon* in France (Cornu 1870) and Italy (Grasso 1952) has been reported as *Claviceps purpurea*. Grasso has described the conidia of Italian specimens as reniform, but the dimensions are less than those quoted by other workers, although the range of Grasso's material overlaps that of specimens I have seen. In the perfect state, the Italian specimens are similar to the specimens described in this paper. It is likely that the ergot of *Cynodon* in Europe is *Claviceps cynodontis*. The range of *Claviceps cynodontis* may be greater than is suggested by the specimens examined. Ergot on *Cynodon dactylon* has been reported from Burma (Rhind and Seth 1945). Records of *Cerebella* in various areas imply the presence of ergot (Langdon 1942A) and the occurrence of an ergot on *Cynodon dactylon* in Ceylon and the Philippine Is. can therefore be deduced from the presence of *Cerebella* on *Cynodon dactylon* in those areas (Petch 1922; Sydow 1917). There can be little doubt that *Claviceps cynodontis* extends from India through Burma to the Philippine Is.

Claviceps queenslandica Langdon sp. nov.

Sclerotia subglobosa, usque ad 3 mm. lata, nonnumquam sulcata, minute granulosa, pallide flava. Stromata flava; stipes usque ad 3 mm. longus; capitula globosa, 0.75–1.5 mm. diam.; perithecia 220–260 × 120–150 μ ; asci 80–170 × 5 μ ; ascospori 70–130 μ . Conidia oblonga vel subcuneata, 10–20 × 3.5–5 μ .

In plantis *Paspali orbicularis*.

* The following abbreviations have been used to denote herbaria where the specimens are located—

SA = Herbarium, Union Department of Agriculture, Pretoria, South Africa.

UQ = Herbarium, Department of Botany, University of Queensland.

CMI = Herbarium, Commonwealth Mycological Institute, Kew.

Specimens examined: On *Paspalum orbiculare*. Bruce Highway, Sth. Qld., 1949, 497 (UQ) Type.

This species, known only from the indigenous *Paspalum orbiculare*, is distinguished from *Claviceps paspali* by its longer and narrower conidia, and by the pale yellow colour and matt surface of its sclerotia. The latter are in contrast to the greyish, wrinkled and fissured sclerotia of *Claviceps paspali*. *Claviceps queenslandica* differs also in the size of its perithecia and ascospores.

Langdon (1942B) deduced that there was an ergot species affecting *Paspalum orbiculare* which was present in Queensland before 1887, but he was not able to grow good specimens of the fungus in its perfect state. In 1949 sclerotia of the type reported on this host in 1942 were collected in swampy country near Deception Bay in South Queensland. The conidia associated with these sclerotia were similar to the conidia on ergot-infected *Paspalum orbiculare* collected in September, 1934, and March, 1935, from Beerwah and Glasshouse respectively. These latter specimens were from the Pathological Collection of the Queensland Department of Agriculture and Stock, and are of interest because the first mentioned specimen was collected before *Claviceps paspali* was recorded from Australia. Development of ascostromata from sclerotia collected in 1949 has given the proof of an indigenous ergot of *Paspalum orbiculare* in Queensland.

Paspalum orbiculare infected with ergot has been collected from many localities in south-east Queensland. An examination of the conidia and sclerotia has led to the conclusion that the grass is a host for *Claviceps paspali* as well as *C. queenslandica*. Inoculation of *Paspalum orbiculare* with conidia of *Claviceps paspali* has resulted in infection, but *Paspalum dilatatum*, the typical host of *Claviceps paspali*, has never become infected when inoculated with *Claviceps queenslandica*. The latter result is of course not unexpected, because *Paspalum dilatatum* was ergot-free until the introduction of *Claviceps paspali* about 1935, even though that grass has been widely grown in Queensland for over 50 years during which time it must have been exposed repeatedly to inoculation with *Claviceps queenslandica*.

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