FUNGAL PATHOGENS OF *MELOIDOGYNE JAVANICA* EGG MASSES

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THE association of fungal pathogens with egg masses of *Meloidogyne* spp. and their successful utilization in biocontrol has been demonstrated earlier[1–3]. In the present study an attempt has been made to identify the fungal pathogens associated with egg masses of *M. javanica*.

The parasitized egg masses of *M. javanica* isolated from citrus rhizosphere were initially brown in colour and turned black in the advanced stage. Infected eggs did not hatch for a long time. Three fungal species viz *Fusarium oxysporum, F. solani* and *Rhizoctonia solani* and an unidentified sterile mycelium were recovered from infected egg masses. Infection of eggs of *M. javanica* by *F. oxysporum* and *F. solani* resulted in the failure of emergence of second-stage juveniles. Juveniles emerged during the incubation of eggs in fungal spore suspension were also infected. *R. solani* did not infect the eggs as well as juveniles. *F. oxysporum* has been implicated as an effective pathogen of phytonematode eggs. Nigh *et al*[4] encountered it in the eggs of *Heterodera schachtii* in California and it has also been reported from eggs of *M. arenaria*.

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ON THE NOMENCLATURE OF FALSE SMUT FUNGUS OF RICE

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HASHIOKA[1] proposed for *Ustilaginoidea virens* (Cooke) Takahashi (False smut of rice), a new name, *Claviceps oryzae-sativae* on the basis of dark-coloured sclerotia, embedded in pseudomorphs, ascomata borne on stalked heads, cylindrical asci and filiform, multiseptate, needle-like ascospores. In doing so he disregarded the taxonomic basis for differentiating genera in the family Clavicipitaceae[2,3]. It may be pointed that generic differentiation in the family is exclusively based on the anamorphic or conidial stage and not the teleomorphic one which is identical. Diehl[2] stated that it is questionable whether any natural system of classifying the genera in Clavicipitaceae can be determined by utilizing as criteria only ascostromatic features. It is, therefore, to be expected that recourse be had to characters provided by conidial fructifications, which may well be advantageous, even as requisite here as in the classification by Nannfeldt (1932) of those many operculate Discomycetes, where comparable difficulties in segregating and defining genera have been solved by the use of the characters secondarily provided by conidial structures. It is to be expected also that the conidial structures are of similar significance in the taxonomy of many Pyrenomycetes. Indeed, in Clavicipitoideae, the genera *Epichloe, Claviceps* and *Balansia* have conidial fructifications especially convenient for this purpose. Further Diehl[2] has subdivided the subfamily Clavicipitoideae into three tribes—Clavicipitae, Balansiae and Ustilaginoideae—on the basis of fundamental differences in conidial (anamorphic) stages. The sphacelial state of *Claviceps* with wet and glutinous amerospores is so distinctive as to warrant its recognition as a separate but sole (monotypic) representative of the tribe Clavicipitae. *Ustilaginoidea*, on the other hand, is the only genus which possesses distinctive dry one-celled, verrucose, smut-like conidia, 'radula spores' borne pleurogenously on closely packed parallel hyphae. Accordingly, this stage is designated as Ustilaginoid as opposed to the sphacelial one which belongs to tubercularious form genus *Sphacelia*. Gäumann and Dodge[4] also expressed a similar view. It was noted that 'The high point of series is formed by *Claviceps*

purpurea and by *Ustilaginoidea' differing chiefly in their imperfect forms* (italics are by the present authors). The smult-like conidia of *Ustilaginoidea virens* were given the name of brown gemmae by Gaumann, because on germination they produce secondary conidia as has been observed by several authors including Butler. This character is not duplicated in genus *Claviceps*.

As a result of their parasitization of the floral parts, chiefly ovaries, the two genera produce morphologically differing structures. In *Ustilaginoidea*, it is a pseudomorph, a velvety, dirty green hard knot which replaces the ovaries in rice panicles. The pseudomorph consists of a hard central core (closely interwoven packed hyphae) over which arises a white-yellowish layer succeeded by a middle orange-yellow layer and an olive-black outermost sporiferous layer[1]. Within this pseudomorph true sclerotia develop as was first observed by Hashioka[1]. In *Claviceps*, on the other hand, the sclerotia are naked and do not develop in any structure resembling the pseudomorph of *Ustilaginoidea*.

Ustilaginoidea as a genus has for long been recognized as a member of family Clavicipitaceae of Ascomycetes as evidenced in the work of Muller and vonArx[3]. Its disposition in dematiaceous Hyphomycetes[5] disregards the polymorphism that prevails in this genus as in the case in other genera of the family Clavicipitaceae. Singh and Dube[6], without a critical assessment, have accepted Hashioka's transfer of the false smut of rice pathogen to *Claviceps*. However, as the foregoing discussion suggests the old name *Ustilaginoidea virens* (Cooke) Takahashi is a valid name. *Claviceps oryzae-sativae* Hashioka, therefore, should be treated as a synonym of *Ustilaginoidea virens*.

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OCCURRENCE OF ROOT GRUB AS A PEST OF CARDAMOM (*ELETTARIA CARDAMOMUM* MATON.)

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SEVERAL insects, mites and nematodes are reported to be associated with damage to capsule, shoot, leaf, root and rhizome of cardamom[1]. Very recently an insect pest, identified as *Basilepta* (*Nodostoma*) *fulvicorne* (Jacoby), was recorded to cause damage to roots resulting in heavy yield loss. The adult is a small, metallic green, blue or cuprous beetle, 4 mm in length. The mature grub is short and stout with glassy white body having the characteristic 'C' shape when taken out from soil. It pupates in an earthern cell and emerges as an adult after pre-monsoon showers.

All stages of the grub have been identified as damaging the feeder roots, the feeding damage is in irregular patches along the length of the roots. The affected seedlings or the plants exhibit poor growth with the leaves becoming chlorotic. It is possible to reproduce the damage symptoms viz root damage and chlorosis in pot cultures.

B. fulvicorne has not been hitherto reported as a pest of cardamom and this is the first report as a serious pest. The pest has been recorded in most of the plantations in Kerala, Karnataka and Tamil Nadu.

Further studies are in progress on the bioecology and bionomics of *B. fulvicorne*.

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