



Illustrated Genera of Smut Fungi. Kalman Vanky. APS Press, 3340 Pilot Knob Road, St Paul MN 55121, USA. 2013. 3rd edn. viii + 288 pp. Price not mentioned.

Smut fungi is the most important group of plant pathogens which attack almost all cereals and plants distributed in 94 families of flowering and other group of plants. Just a year after publication of the monograph *Smut Fungi of the World*, another monograph, i.e. *Genera of Smut Fungi* by the same author has been published as the third edition (only a decade after the publication of its second edition in 2002). In the first edition, 55 genera were included in two phyla of the kingdom Fungi; 77 in the second edition and 104 genera in the third edition: 102 in Basidiomycota and 2 in the Ascomycota, while 3 genera are treated as doubtful.

The book under review has been divided into introduction with subtitles: classification, host plants, septal pore and host-parasite interaction, cellular host-parasite interaction types, classification and allied taxa, synonyms, excluded genera, anamorphs, ascomycetous smuts, key to genera of smut fungi based on host plant families, glossary, descriptions and illustration of genera and abbreviations. At the end, doubtful genera, regional floras, references and an index of fungal names are highlighted.

The classification of smut fungi presented in the second edition has been maintained with numerous additions at the generic level. Smut fungi distributed in 2 phyla, 2 subphyla, 4 classes, 8 orders, 27 families and 104 genera are classified in 2 phyla, Basidiomycota (102) and Ascomycota (2). A new family Floromycetaceae (order Urocystadales) is introduced and the genera are distributed in two phyla as against one phylum,

Basidiomycota in the previous editions. Twenty-eight genera have been added in the third edition. Two genera *Lundquistia* (= *Anthracocestis*) and *Tothiella* (= *Thecaphora*) have been removed. The former is synonymized and treated as *Anthracocestis*, while the latter as *Thecaphora*.

The description of genera starts with generic names in alphabetical order with original reference, diagnostic generic description and the number of species known. The host of the type species is also cited and important references after each description are provided. The type species description is supported by host plant symptoms, light microscopic (LM) and scanning electron microscopic (SEM) photomicrographs and pattern of spore germination in detail. Longitudinal and transverse sections of infected parts of host plants explain sorus morphology. Extensive use of SEM photographs leaves no room for confusion for the investigators on smut fungi, where they can check and confirm their new collection through spore ornamentation and also morphology. The remarks mentioned after generic description, regarding the distinguishing characters from allied or wrongly placed genera in the past form an important component. For example, it is only nLSU rDNA which distinguishes the two genera, *Salmicisia* and *Tilletia*.

Some information that has emerged out of this edition deals with families of flowering plant species attacked by the genera. The 104 genera of smut fungi are recorded on 94 out of 979 (600 in common use) families of plants, in which 500 are flowering plants. Likewise, some families like Cyperaceae with 26 genera and Poaceae with 22 genera are large reservoirs of genera/species of smut, while nearly 50 families each with the single genus only. Thus, the author rightly predicts the number of smut fungi to be between 4000 and 4500 species; there may be more, because smuts are not the pathogens of flowering or seed-bearing plants only, but their indistinct symptoms have escaped our eyes. More will be discovered in future. The author's line drawings of symptoms will give further incentive to new investigators on this group of fungi.

Similarly, analysis of smut families revealed that three families are large: Doassansiopsidaceae (11), Anthracoidea-ceae (11 with 9 tentatively placed)

and Ustilaginaceae (11 with 3 tentatively placed), while 14 families, i.e. Eballistraceae, Gjaerumiaceae, Erratormycetaceae, Entylomataceae, Melaniellaceae, Rhamphosporaceae, Doassansiopsidaceae, Glomosporiaceae, Mycosyringaceae, Cintractiellaceae, Citamraceae, Geminaginaceae, Pericladiaceae and Uleiellaceae are monogeneric. About 32 genera are unispecific. A unique genus *Tilletiaria* has also been included with all characters of smut fungi, but isolated and described from dead wood.

Out of 12 excluded genera in the second edition, only *Cintractiella* (Basidiomycota) and *Schroeteria* (Ascomycota) have been restored and treated as valid, extending the range of smut fungi to Ascomycota. These fungi already earlier classified into two subphyla of Basidiomycota are now put in two phyla of Fungi. The three doubtful genera: *Crozelsiella*, *Endothlaspis*, *Juliohirschhornia* are also further assessed in the book. There is a list of regional floras, as well as a 20-page bibliography for the readers. The index of all fungus names, genera and species are arranged in alphabetical order with bold numerical indicating the page of detailed description. All valid names are given in italics.

This edition with a wealth of taxonomic information packed with quality presentation, is a complete book for mycologists of smut fungi and plant pathologists who want to work with them. They can find unscanned families of plants for smut fungi. Even plant flora can help them in tracing these fungi, where members of the unrecorded families are abundant. The book is of immense use to researchers, teachers, students and amateur taxonomists working on smut fungi. The work is a reflection of the author's almost half-a-century devotion and scaling of more than fifty countries of the world to read these interesting groups of fungi. The APS Press deserves special appreciation for flawless, quality presentation and speedy publication of this book.

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