Saying Good-Bye to *Gibberella zeae*

John F. Leslie
Department of Plant Pathology
Kansas State University
Manhattan, Kansas

In the Beginning

- *Fusarium* initially described in 1809 as *Fusisporium*
- *G. zeae* probably first described as *Sphaeria zeae* in 1822
- Petch separates *G. zeae* from *G. saubettini* in 1936
- Wollenweber and Reinking redescribe *F. graminearum* in 1935, as the species survives the massive condensation from > 1000 species to 65 species, 55 varieties and 22 forms

Die Fusarien

ihre Beschreibung, Schadwirkung und Bekämpfung

Von

Dr. H. W. Wollenweber und Dr. O. A. Reinking

Oberregierungsrat und Mitglied der Biologischen Reichsanstalt für Land- und Forstwirtschaft Berlin-Dahlem

vorm. Professor der Phytopathologie an der Universität der Philippinen; Leiter der Tropenpflanzen-Krankheitsforschungen der United Fruit Co., Boston, U. S. A.

Mit 95 Textabbildungen

BERLIN
VERLAGSBUCHHANDLUNG PAUL PAREY
Verlag für Landwirtschaft, Gartenbau und Forstwesen
SW 11, Hedemannstraße 28 u. 29
1935

Snyder and Hansen

- Most important papers - AJB (1940) 27, 64-67, AJB (1942) 28, 738-742.
- Reduced sections Elegans and Martiella to two species, *F. oxysporum* and *F. solani*
- Eventually reduced whole taxonomic system to nine species
- *F. graminearum* becomes a part of the massive species, *Fusarium roseum*
- **Eventually lost favor because the system did not convey enough information**
- **Name alone is insufficient to trace much of the work during this time**

Colin Booth

- Published “The Genus *Fusarium*” (1971)
- Major achievements
  - expanded information on perfect states
  - introduced information on condiophores and conidiogenous cells
- First description of *G. zeae* tied to a type that is extant and intact today. Formal retypification not until 1995 by Keith Seifert.

THE GENUS FUSARIUM

by

C. BOOTH

Commonwealth Mycological Institute, Kew, Surrey

COMMONWEALTH MYCOLOGICAL INSTITUTE
KEW, SURREY, ENGLAND
1971

Gerlach & Nirenberg

- The Genus *Fusarium* - A Pictorial Atlas (1982)

- Based in Wollenweber's lab and used similar techniques and philosophies
- Molecular-based techniques are indicating that many of these species are valid.
- No indications of any splits in *F. graminearum*, that could equate to the known lineages/phylogenetic species

Mitteilungen aus der Biologischen Bundesanstalt für Land- und Forstwirtschaft
Berlin-Dahlem

Heft 209 September 1982

The Genus Fusarium - a Pictorial Atlas

by

Prof. Dr. Wolfgang Gerlach

and

Dr. Helgard Nirenberg

with the Assistance of

Inge Eckart

Ilse Rummland

Ruth Schwarz

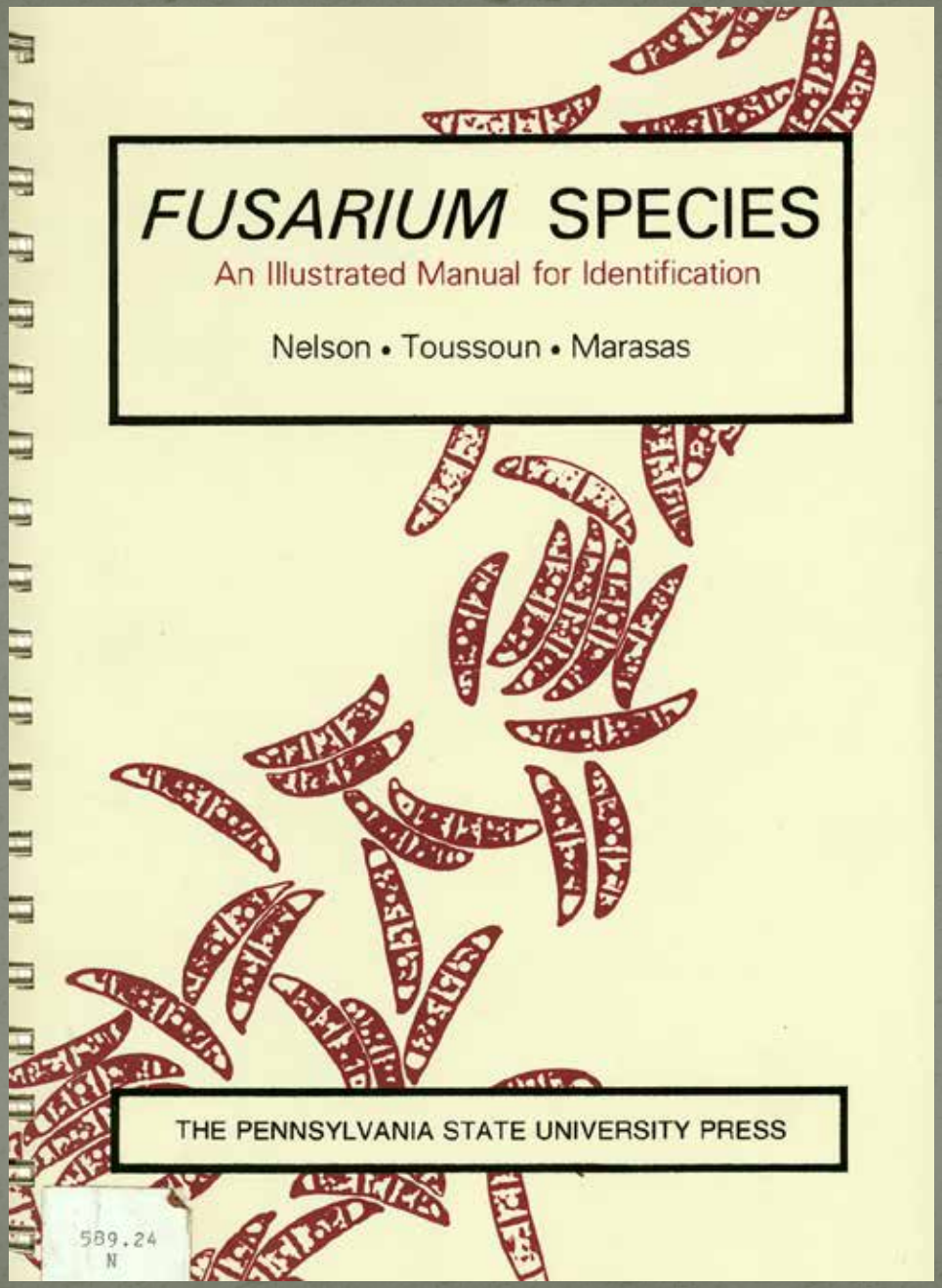
Biologische Bundesanstalt für Land- und Forstwirtschaft
Institut für Mikrobiologie, Berlin-Dahlem

Berlin 1982

Kommissionsverlag Paul Parey, Berlin und Hamburg
Lindenstraße 44-47, D-1000 Berlin 61

Nelson, Toussoun & Marasas

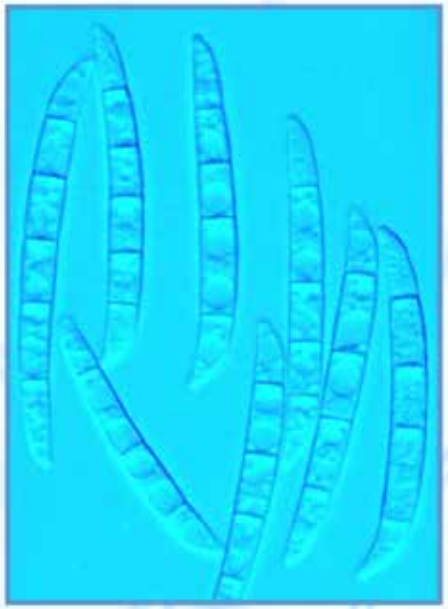
- *Fusarium* species: An Illustrated Manual for Identification (1983)
- At the time, a compromise system of all of the previous systems taking the best components from each taxonomic system


FUSARIUM SPECIES
An Illustrated Manual for Identification
Nelson • Toussoun • Marasas
THE PENNSYLVANIA STATE UNIVERSITY PRESS
589.24
N

Leslie & Summerell

- Latest (2006) summary of (mostly) well known *Fusarium* species
- Recognizes *F. graminearum*, but not the different phylogenetic species
- *G. zeae* is used as the name for the sexual stage of *F. graminearum* in the broad sense

the **Fusarium** Laboratory Manual



John F. Leslie
Brett A. Summerell

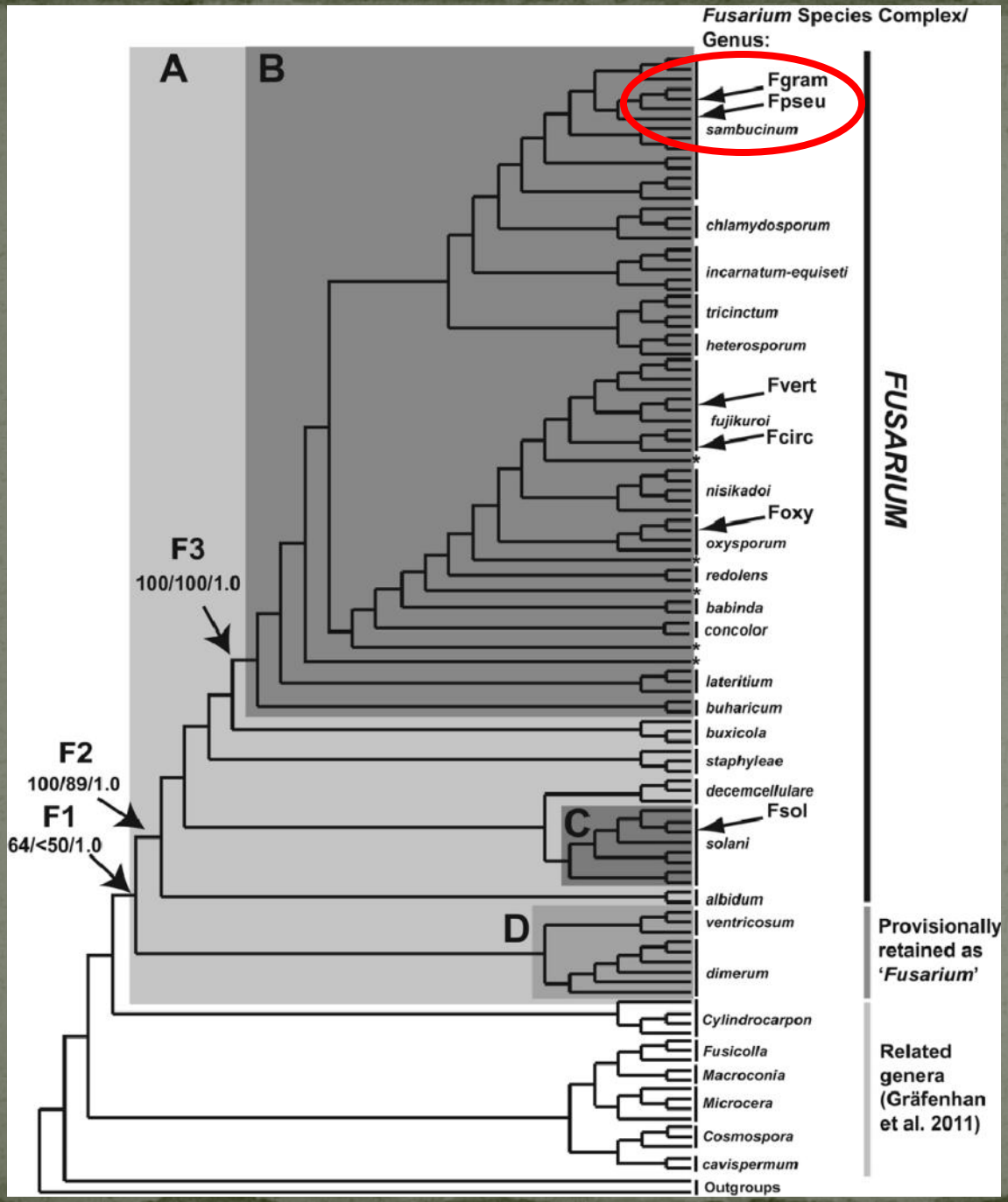
photographs by
Suzanne Bullock

Dual Nomenclature

- Tradition has been to give one name to the asexual stage (anamorph or imperfect stage) and a second name to the sexual stage (teleomorph or perfect stage).
- Article 59 of the Melbourne Code adopted in July 2011 got rid of the practice of two names and also removed the preference for sexual stage names, saying only that the dual names were heterotypic and that only one name was to be retained.

Geiser *et al.*

- Multi-author letter to the editor of *Phytopathology* published in May 2013
- Notes different places in a phylogenetic tree where a line could be drawn that would encompass "*Fusarium*"
- Retains most entities presently considered *Fusarium*
- Recommends retention of the *Fusarium* names and retiring the names of the sexual stages.



From:
Geiser *et al.* (2013) *Phytopathology* **103** (5): 400-408

Implications

- Some scientific binomials will be disappearing
- Common disease names – Fusarium Head blight, Gibberella ear rot – are not affected
- Expectation is that *Fusarium* names will be retained and that the *Gibberella* (and other sexual stage names associated with species of *Fusarium*) will be retired.
- Plan to use *Fusarium graminearum* as the name for the fungus that causes Fusarium Head Blight of wheat in the United States

(i.e. Why taxonomy is really important!)