

## INTRODUCTION

The present issue of *Studies in Mycology* focuses on plant pathogenic *Dothideomycetes*. The *Dothideomycetes* represents the largest class of *Ascomycota*, with more than 100 families and 19 000 species. Of interest, however, is the fact that this class also contains the most genera of plant pathogenic fungi, many of which are frequently encountered by plant health officers at various ports of entry around the world. These officers are subsequently confronted by the fact that the fungus may be expressing its sexual or asexual morph, or worse, maybe sterile mycelium. Traditionally these mycologists have had a range of books with which they could try to identify these organisms based on the phenotype. In recent years however, most of these taxa have been shown to represent species complexes, with some specific to certain regions or hosts. Integrating asexual and sexual names, dealing with species that are cryptic, and genera that are poly- and paraphyletic, and a general lack of DNA data authentic for these species, is a constant stress to which these mycologists are exposed. Identifications made by these mycologists could result in losses of millions of "dollars" to farmers and producers, while wrongful introductions could again destroy local industries and markets.

The present issue focuses on five main groups of fungi that plant health officers deal with on a weekly, or daily basis, namely *Alternaria*, *Cercospora*, *Phoma*, *Pseudocercospora*, and *Septoria*.

## DEDICATION: To the plant health officers of the world

This special issue is dedicated to three exceptional colleagues, who dedicated their lives and careers to be plant health officers, striving to enhance trade, but also to protect borders from wrongful incursions. To these colleagues we owe a great deal of thanks for their unselfish dedication and commitment. Without their published works, databases, specimens and cultures, we would not have been able to produce the papers reported in this special issue.

### Gerhard H. Boerema (1925–2008)

Gerhard Boerema accepted a position as mycologist at the Dutch Plant Protection Service (Plantenziektenkundige Dienst, PD) in 1956. Gerhard became head of the Mycology Department in 1959 and fulfilled this position until his early retirement in 1988. The main tasks of the Mycology Department at that time was the diagnosis on symptomatic plant material submitted by inspectors, advisory services, companies, research stations, etc. It covered all fields such as agriculture, horticulture, greenhouse products as well as natural environment. Interesting findings were published annually in the Dutch *Tijdschrift over Plantenziekten*, continued later as *Mededelingen van de Plantenziektenkundige Dienst in Wageningen* (Yearbook PD). The diversity of topics is demonstrated in his first reports that included bark canker of apple and pear, caused by *Pezicula corticola* (1959), a new species of *Sclerotinia* as the cause of black leg in tulip (1960), and *Chalaropsis thielavioides* on carrots pre-packed in perforated polythene bags (1960). Another important task was to give internal advice concerning quarantine issues.

Shortly after he became head of the Mycology department, a new disease was found on potatoes, caused by *Phoma foveata*,

a quarantine organism at that time in Europe. The taxonomy of *phoma*-like species on potatoes was confusing, and he started his fundamental study on *Phoma*. A second important problem, *Phoma lingam* on seeds of *Brassicaceae* arose, and studies on many other *Phoma* species associated with plant material followed.

Gerhard described many synonyms of the *Phoma* species after detailed studies of herbarium material. He recognised sections in *Phoma* and published his findings in numerous papers in the period 1960–1988. He became the expert on *Phoma* worldwide. Isolates and herbarium material were weekly received for identification and the extensive correspondence in English, French and German language is still preserved at the Dutch Plant Protection Service.

Gerhard established with his team a culture collection and herbarium at PD, and most of the strains were also deposited at the culture collection of CBS. During his career, *Phoma* was his main topic, but he worked on the nomenclature of many important plant pathogens, published as "Check-list for scientific names of common parasitic fungi" in 12 supplement series in the Netherlands Journal of Plant Pathology.

Gerhard collaborated in a new *Phoma* project started at the PD to provide standardised *in vitro* descriptions of *Phoma* species. He established the morphological genus concept with a classification of *Phoma* in nine sections. In collaboration with his successor Chiel Noordeloos, Hans de Gruyter and Marielle Hamers, "*Contributions towards a monograph of Phoma*" were published in *Persoonia* during the period 1992–2003. These papers formed the base for the "*Phoma Identification Manual*" published in 2004 (CABI Publishing, Wallingford, UK). The cultures deposited at the PD and the CBS, however, laid the foundation for the next phase, which was a phylogenetic study of the sections and species in the *Phoma* complex by two PhD students, Aveskamp and de Gruyter, of which one final paper is published in this issue.

### C.F. (Frank) Hill (1941–2009)

Caleb Francis (Frank) Hill was a mycologist at the Ministry of Agriculture and Forestry (MAF) in Auckland, New Zealand. Frank always had a strong focus on diagnostics, and in the process isolated numerous interesting plant pathogenic fungi. For instance, *Calonectria pseudonaviculata* (= *Cylindrocladium buxicola*), which is now a major quarantine problem on *Buxus* in Europe and the USA, was originally described from material Frank collected in New Zealand in 1998, and sent to CBS for a collaborative publication on *Calonectria*, a pathogen that he frequently intercepted at ports of entry into New Zealand. During his career Frank published descriptions of more than 70 novel taxa, contributed to more than 3 000 pest records in the Ministry of Agriculture and Forestry Plant Pest database, and deposited more than 1 500 specimens and cultures. To address the severe shortage of cultures and lack of DNA data in the cercosporoid complex, the CBS started to purposefully cultivate all cercosporoid fungi encountered. One of the best collectors was Frank Hill, who in his function as plant health diagnostician, encountered many pathogens both indigenous and exotic to New Zealand. Frank collected a great many of the specimens treated in the papers published in this issue (ranging from *Alternaria* to *Phoma*, and cercosporoid). It is interesting to note that the collection dates largely correspond with weekends, which gave us the impression that Frank was always roaming the countryside, botanical gardens and arboreturns, looking for interesting diseases. Without Frank's



Gerhard H. Boerema



C.F. (Frank) Hill



Flora G. Pollack

collections, these studies would not have been possible. It is only fitting then, that we also dedicate this work to him for his keen eye, and never ending enthusiasm for the subject. Frank may have passed on, but his collection of plant pathogenic fungal cultures will forever remain a living legacy for future generations to study.

### Flora G. Pollack (1919–1997)

As the United States' only plant quarantine mycologist for 12 years, Flora Pollack had the privilege of examining specimens of interesting and unusual fungi from around the world that had been intercepted at various ports of entry. Flora began working for the Bureau of Plant Quarantine in the early 1940's when it was located in the U.S. Department of Agriculture building in downtown Washington. She resigned from her job to raise her children, and 15 years later went to work again as a mycologist at the American Type Culture Collection (ATCC), then in Rockville, MD. During her six and one-half years of employment there, she improved a technique for the preservation of cultures in their original condition as received by ATCC that is still widely used for this purpose. When the opportunity arose, she returned to the U.S. Department of Agriculture in 1967. During her professional years she published many scientific articles in *Mycologia* and other journals often authored in collaboration with others. She described numerous new species in a wide range of fungal groups but had a particular fondness for coelomycetous fungi, a group that still evades accurate classification. At least one unusual species, aptly named *Monosporascus cannonballus* was described by Pollack with F.A. Uecker. Originally encountered as a harmless oddity associated with the roots of cantaloupes, many years later this fungus gained prominence as a virulent pathogen limiting the production of melons in dry areas of the world.

While working for APHIS, Flora was associated with the Mycology Laboratory, now Systematic Mycology & Microbiology Laboratory. As the plant quarantine mycologist she encountered on a daily basis fungi from around the world, many of which she deposited in the U.S. National Fungus Collections. A search of herbarium database yields over 5 000 specimens identified by Flora that remain an important resource for the identification of plant quarantine fungi as well as fodder for taxonomists tackling these difficult species. Following the tradition established by her predecessor, Alice Watson, she maintained a card file of important literature for the identification of plant-associated fungi. This file became the basis for a publication (Rossman AY, Palm ME, Spielman LJ. 1987. *A Literature Guide for the Identification of Plant Pathogenic Fungi*. St. Paul, Minnesota: American Phytopathological Society), and later the database of literature available on the Internet <<http://nt.ars-grin.gov/fungalatabases/literature/litframe.cfm>>. After retiring in 1979, Flora was asked to publish a project she had started in her spare time while working in Beltsville. She spent many hours pulling together her "*Annotated Compilation of Cercospora Names*". Published in 1987, it served as the most comprehensive reference on this genus, and provided the basis for a later update by Crous & Braun (2003) on "*Mycosphaerella and its anamorphs: 1. Names published in Cercospora and Passalora*" (CBS Biodiversity Series 1, CBS-KNAW Fungal Biodiversity Centre, Utrecht, Netherlands), which in turn set the stage for the molecular phylogenetic papers published on this complex in this issue of *Studies in Mycology*.

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