



Celebrating **150** *years of agriculture*

Five Microfungi that Changed the World

Keith Seifert, Ph.D.

Abstract:

Most of us pay little attention to fungi before they end up on our dinner plates. Our planet is filled with microscopic fungi hardly visible without microscopes, a hidden world full of strange stories and unexpected beauty. It is also a powerful world, with profound effects on human history, human health and the international economy. The fungal life style is unimaginable to humans, who live on completely different scales of time and space. If we were thousands of times smaller, we would see societies of tubular cells strung into long, flexible pipes, winding together to form structures large enough to sometimes intrude into our own macro-vision of the world. To eat, fungi send enzymes into the surrounding soil or plant or wood and then absorb the pre-digested nutrients. To reproduce, they rely on microscopic spores, sending them into the air, floating them on water or sticking them onto the legs of passing insects. How could such strange organisms change the human world? There are millions of species. Some fungi see humans as a great opportunity. By developing agriculture, humans created a buffet of possibilities for fungal pathogens to find an easy meal. Some fungi guard their food by saturating it with toxic chemicals called mycotoxins. Crop diseases and mycotoxins have led to the collapse of economies, caused human and animal disease and starvation, and the mass migration of human populations. But at the same time, other fungi produce antibiotics and drugs that have added decades to average human life spans. Join us for a scientific, social and historical (and sometimes funny) exploration of the microfungus world. You will learn how zombie fungi continue to save the lives of thousands of people all over the world, how a disease affecting flocks of turkeys in the United Kingdom revealed a surprising mystery behind soya sauce production in Asia, how the discovery of penicillin affected the outcome of the Second World War, and why you should meditate about fungal spores when you look out the airplane window. Along the way, we will also discuss food and drink, potatoes and chili peppers and why some cultures prefer tea to coffee.

Biography:

Keith Seifert is a mycologist specializing in the identification and classification of moulds, especially those producing toxins in crops and foods. A native of Sudbury, Ontario, he has worked as a scientist for AAFC since 1990. He is currently the President of the International Mycological Association, and is known as a speaker for his humorous and philosophical touch.



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