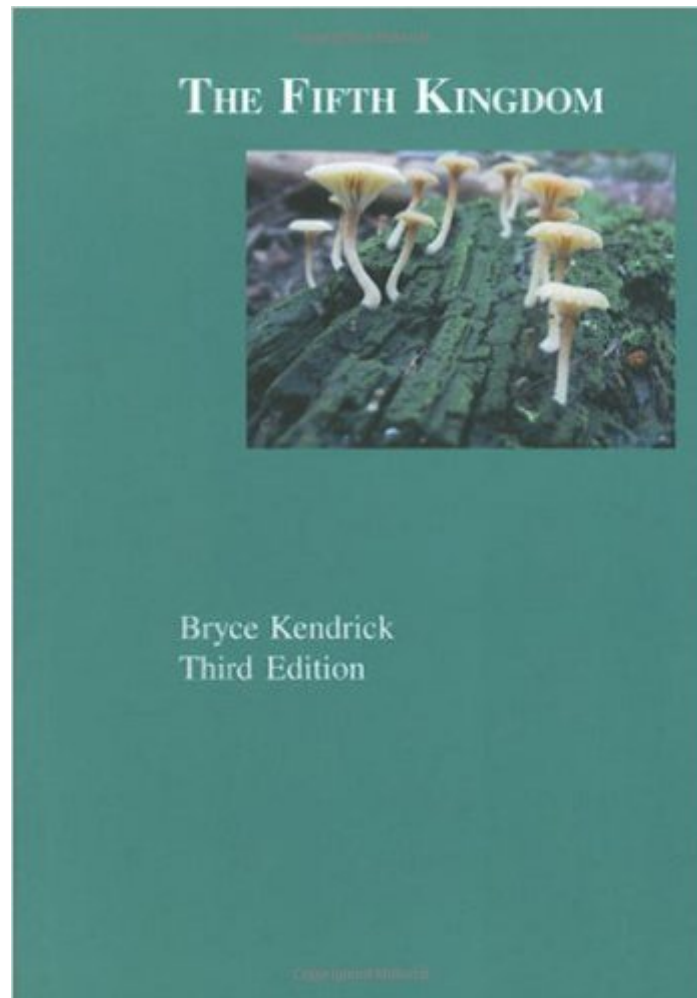


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The Fifth Kingdom



Synopsis

The Fifth Kingdom, Third Edition, is a compact but comprehensive encyclopedia of all things pertaining to mycology. Bryce Kendrick, a world-renowned mycologist, explores every aspect of the fungi, from aflatoxin to zoospores, with an accessible blend of verve and wit. The 24 chapters are filled with up-to-date information on classification, yeasts, lichens, spore dispersal, allergies, ecology, genetics, plant pathology, predatory fungi, biological control, mutualistic symbioses with animals and plants, fungi as food, food spoilage and mycotoxins, poisonous and hallucinogenic fungi, medical mycology, antibiotics and organ transplants. Personal anecdotes drawn from a lifetime of involvement with fungi, and a comprehensive glossary make this a perfect introduction to the kingdom of the fungi. The author's website contains many color photographs of the fungi in the book. An accompanying CD-ROM is available from the author through his website: <http://www.mycolog.com>.

Book Information

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Customer Reviews

A lot of this book is about fungi reproduction, and therefore, fungi sex -- although a lot of reproduction is anamorphic (asexual). Currently, there are over 100,000 fungi described scientifically (over 10,000 species of mushrooms), but Dr. Kendrick estimates that this is less than one tenth of the Earth's mycota (fungi). This book, of course, does not discuss all 100,000 fungi. It discusses fungi classifications, and some of the most important fungi. Fungi is omnipresent and includes mushrooms, yeasts, lichens (a combination of fungus and alga) - but it does not include

slime moulds, which are basically amoeboid (without a cell wall) and do not produce hyphae. Some fungi can grow almost any place, withstanding great temperature extremes. Other fungi is so specialized it grows parasitically on the exoskeletons of certain insects. The first half of this book talks about where fungi live; what they eat; what they look like to the naked eye, and microscopically; their genetic make-up, down to DNA and RNA sequencing, and how those genes are passed on - from sex to airborne sporulation. The second half of the book is much easier to understand, but as Dr. Kendrick points out, it helps to read the first part to understand the second part. There is a section on fungi that attack plants and fungicides used in agriculture. Don't think all fungi are bad - there is also a section on how fungi can be used as a biocontrol against insects and weeds. The last chapter talks about the commercial use of fungi, with the obvious important nod to *Penicillium notatum*. Cyclosporine is another important drug developed from fungi. *Aspergillus niger* is used to manufacture citric acid. The sections on how fungi exploit plants and animals - - and how plants and animals exploit fungi - is fascinating.

The fungi are a unique group: diverse, fascinating, destructive as well as beneficial, sometimes almost impossible to kill, and still mostly unknown. It is estimated that of the 100,000 described fungi that this represents only one-tenth of the actual species. I've read a number of books on the fungi over the years, starting back in the mid-80s, and this is the best text I've seen. It's well written, interesting, the coverage is broad as well as deep, and it's technical without becoming ponderous and unreadable. The fungi are a fascinating group. They are hard to kill with antibiotics because of their polymer xylan cell wall. They reproduce in odd ways, often forming hundreds of nuclei prior to mitosis. They can produce carcinogenic compounds such as beta aflatoxins that infect rice and peanut butter and can cause esophageal cancer, which is common in China. *Stachybotrys atra* can cause central nervous system damage. The laboulbeniomyces is an entirely parasitic group that attacks insects. Fungi such as cordyceps and auricularia have been used for centuries in Chinese herbal medicine. Auricularia in particular has been found to be helpful for heart ailments and is being further researched in the west. Mycoplasmas are the smallest organisms known that have a cell wall, and can cause disease in humans. Then there's the famous ergot fungus that can infect cereal grains. The fungus produces an alkaloid that causes powerful vasoconstriction that cuts off circulation to the extremities, causing gangrene. Said to be one of the most painful ways to die, the victims died screaming in agony. It sometimes killed entire villages during the Middle Ages.

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