

Academy for Lifelong Learning

Penland 110 : 9:30-10:45am

Feb 8, 15, 22, Mar 1, 2017

Past, Present and Future of Pest Control

Dr. Andy Dyer, Dept of Biology & Geology

Over the past century, we developed increasingly potent and sophisticated pesticides, but the evolution of pesticide-resistant species has kept pace, resulting in the percentage of crops lost to agricultural pests in 2014 being no less than it was in 1944. In this course, Dr. Dyer examines one of the world's most pressing problems as a case study. Understanding the fundamentals of ecology and biology behind this cycle is the first step to escaping this unwinnable race.

The book *Chasing the Red Queen: The Evolutionary Race Between Agricultural Pests and Poisons* will be the basis for this series. I encourage all participants to read the relevant chapters before each session to enable the conversation.

Session 1- The Rules of the Evolutionary Game

Chaps 1-3: Introducing the Red Queen. The basic rules of evolutionary and population biology, how do they apply to farms and farming, and how pesticides make successful farming harder.

Session 2- How Did We Get Here?

Chaps 4-6: Ignoring the Red Queen. What we grow, how we grow it, and how technology is not the answer.

Session 3- Case Histories of Pesticide Resistance

Chaps 7-10: Trying to Beat the Red Queen. Where have we gone wrong, how bad is it, and again why technology is not the answer.

Session 4- Reversing the Tide, Winning the Race

Chaps 11-15: Playing the Red Queen. Why complexity is better than simplicity, using biological rules instead of technological tools, and ensuring food security.

Andy Dyer is Professor of Biology at USC Aiken. He is author or coauthor of about 40 journal articles and book chapters in plant ecology. Dr. Dyer's research interests are in population and community ecology, invasive species ecology, habitat restoration, and ecosystem complexity. His current lab research focuses on population biology of invasive grasses, including competitive ability, germination traits, and species interactions. He regularly teaches Ecology & Evolution, Principles of Botany, Seasonal Flora, Restoration Ecology, and Environmental Life Science.