Clemson Faculty
Simply AMAZING!

Delphine Dean
Guido Schnabel
Joseph Ryan
Delphine Dean
Gregg-Graniteville Associate Professor
Department of Bioengineering
Awards

- NSF Career Award
- Phil & Mary Bradley Award on Mentoring Creative Inquiry
Nano- and Micromechanics
Nanoparticle-Cell Interactions
Multiscale Modeling of Cells and Tissues
Engineering Medical Technologies for the Developing World

Mentors: Delphine Dean
John Desjardins
Problems with healthcare in developing countries

• General infrastructure issues: unreliable power, lack of potable water
• Broken equipment
Tanzania
Work with Tanzanian clinicians
Swaddle Metrics

• Students designed an infant monitor and warming blanket that can be manufactured in Tanzania

• Device is currently being tested in Tanzanian hospitals
Guido Schnabel
School of Agricultural, Forest & Environmental Sciences
Guido Schnabel

Research (60%)
- Studies gray mold, the second most important disease in agriculture worldwide
- Studies emerging problems that threaten SC crop production
- Co-PI on newly awarded $10 million (peach breeding) and $3 million (strawberry disease management) USDA-SCRI grants

Extension (40%)
- Regionwide fungicide resistance monitoring program
- Helps SC producers with plant disease management; focus on peaches and strawberries
- Uses cutting edge technologies to implement safe and effective pest control practices
- Team member of Clemson’s USAID-funded IPM-Innovation Lab to improve farmer lives in Southeast Asia
Honors and Awards

Award Presentation in Hawaii

• 2014 Elected to NC Strawberry Grower Advisory Board
• 2014 and 2012 The ‘Smart Way’ To Manage Resistance Award; awarded by private consultants
• 2013 Recognition of Outstanding Services as Plant Disease Senior Editor; The American Phytopathological Society
• 2011 National Lee Hutchins Award, American Phytopathological Society
Smartphone App to Implement Safe and Sound Pest and Disease Control Practices

Anticipated Launch in January 2015
Peaches on Ridges

Since coming to Clemson University in 2000, Dr. Guido Schnabel has been taking on the two big disease problems that plague peach growers in the Southeast and many stone fruit growers elsewhere.

He's had some success.

Working with other plant pathologists at the University of Georgia, he developed a simple and fast test kit, trademarked Profile, that tells a peach grower if the brown rot organism in an orchard is resistant to fungicides—and which fungicides will still work (see “Fast, easy test reveals fungicide resistance”). He and others in his laboratory are sharing an $800,000 grant to develop these resistance management kits for other diseases in other crops, such as gray mold of strawberries.

Now, he believes he’s on to a method to greatly slow down Armillaria root rot, which growers usually call oak root rot. It can knock years off the productive life of a peach orchard. The new method, which looked good in preliminary tests, is so deep in concept that growers are already trying it in their orchards.

The idea is to plant peach trees on ridges, then pull back the soil a couple of years after establishment, exposing the tops of the roots. The trees look strange, as if they’re standing on tip toes, but Armillaria cannot reach the crown to kill the tree. “The fungus does not like to grow above the soil line—that’s the key,” Schnabel said.

Commercial scale

When Chalmers Carr III, at Titan Farms, saw the initial test results, he planted 200 acres and is the first to try the method on a commercial scale (see “Titan Farms,” page 16). Oak root rot costs peach growers in South Carolina an estimated $4 million a year in direct costs, not counting lost income from sites that can no longer be used because of the disease.

The procedure aims at a weak spot in the Armillaria armor. Schnabel said: “Once it infects a peach root, it will eventually kill the root. Moreover, the fungus will move up the root to the crown of the tree. It may kill the tree quickly by shutting off its supply of water and nutrients, or it may move down into other roots, infecting them. The disease infects many kinds of forest trees and produces a type of attractable, edible mushroom called honey fungus, that grows at the base of dead trees. While the fungus does not spread easily by spores, it will grow on living trees and on dead and decaying woody material. It kills its hosts by invading the root collars and growing into the trees, or by causing extensive root death. After a tree dies, a new tree planted near that site is doomed.

Armillaria will last in the roots for years—decades—and even until the tree is removed. This fungus is not hardy in soil, and the worst infections occur in wet, poorly drained soils.”

Growers need to replant their peach orchards every 20 years or more often, he said. “The more you use the land, the more infection centers there are.”

In this test, Guido Schnabel is comparing the performance of peaches planted on ridges with those planted in the conventional way. His initial work was done with peaches in pots.

Research featured in Trade Journal
Responds to Emerging Problems Threatening the Industry
Improves Agricultural Practices in Cambodia
School of Education

Joseph B. Ryan, Ph.D.
Special Education Programs

Applied Behavior Analysis
Seclusion and Restraints
Psychopharmacology
Founder & Director Clemson LIFE (Learning is for Everyone)

News Story

- Postsecondary transition program for students age 18-23 with an intellectual disability.
- Prepare students for competitive employment and independent living.
- Teaches employment skills, independent living skills, social skills, self-advocacy and functional academics.
Founder of 3 Community Adaptive Sports Programs

Adaptive Sports Video

Challenger Baseball

Clemson Top Soccer

Equine Therapy
Active within Professional Community

- Editor of *Beyond Behavior*
- Elected Treasurer & Vice President of International Council of Children with Behavioral Disorders
Advocate for Children with Disabilities

• Conducted 2 U.S. CONGRESSIONAL BRIEFINGS (2009; 2014) proposing federal legislation regarding the use of Seclusion & Restraint in schools.
• Serves as Captain in the U.S. Navy Reserves.
  • Chief Staff Officer for Carrier Strike Group 15

• Served as Operational Planning Team Lead for *Operation Unified Response* disaster relief in Haiti following a 7.0 magnitude earthquake. Developed plans to support four primary lines of operation, including:
  • Medical (traumatic injury/critical care)
  • Logistics (transportation/dissemination of food and water)
  • Critical Engineering (horizontal engineering to/from distribution points, port repair)
  • Security (protection of relief supplies, convoy escorts).