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New Problems, New Day

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Abstract

New challenges are constantly on the horizon for America's agricultural producers. Cooperative Extension has, historically, played a significant role in the success of agricultural production and communities across the United States by providing science-based information and education. From Extension's role in addressing devastation affecting cotton production by the boll weevil in the late 1800s, to today's concerns regarding kudzu bugs, it is clear Extension remains not only relevant but is essential to agricultural endeavors. As we ramp up for a world population of 9 billion by 2050, the need for Extension remains.



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New problems and challenges are constantly on the horizon for America's agricultural producers. As long as these challenges exist, the educational power of Cooperative Extension will be vital and relevant to the success of agricultural industries, families, and communities in the United States and around the world.

The Past

Extension has a history and tradition of excellence (Greene, 1995). From its earliest days, Extension has been a driving force in delivering unbiased, science-based information related to agricultural production, food safety and security, consumer sciences, environmental stewardship, and positive youth development (Seevers, Graham, Gamon, & Conklin, 1997). Extension programs are "some of the best-known public services offered by land-grant universities" (Carlson, 2012, para. 1). Today, the challenges and problems may be different, but Extension remains on the forefront as the provider of solutions to our most pressing problems.

Looking back 100 years ago, soon after the Smith-Lever Act was signed creating our nationwide

Extension network, a new pest, the boll weevil (*Anthonomus grandis*) was marching across the South and ravishing the nation's cotton industry. The boll weevil has cost America's cotton producers more than \$15 billion in yield loss and control costs since it was first discovered (National Cotton Council, 2014).

Farmers began growing cotton in Georgia in 1733, a crop that became the economic engine that drove development of the colony and then the state. When Extension was formed in 1914, more than 5 million acres of Georgia land was planted in cotton. Georgia farmers were facing a strong crop and high prices when the new insect from Central America began moving its way through the cotton crops in the southeastern United States and staking its claim as the most serious cotton pest in North America (Haney, Lewis, & Lambert, 2009).

In 1892, the boll weevil was discovered in the United States in Texas. By the early 1900's, the pest had quickly spread through the cotton belt (Parencia, 1978). Strategies for managing boll weevil infestations dramatically altered the methods by which cotton was produced in the United States, and farmers relied heavily on Extension for education and advice on effective control and alternative production methods to abate the pest.

Today's Pests and Extension's Role

Today's American farmers and agricultural producers face numerous new challenges, and Extension plays a substantial role in providing information, education, and expert research-based advice.

American cotton growers face a new nemesis, glyphosate-resistant *Palmar amaranth*—also known as pigweed. Last year in Georgia alone, the weed cost cotton growers over \$100 million (Thompson, 2013). Once again, growers looked to Extension and research partners at land-grant university experiment stations for answers and solutions for management of this new invasive weed.

Improvements in technology and transportation continue to increase the opportunity for introduction of new pests. Some, like Asiatic Soybean Rust, enter the country on the wind. First identified in the U.S. in 2004 in test plots at Louisiana State University, the disease is thought to have blown into the country during Hurricane Ivan. It quickly spread across the country, and Extension was on the frontlines of solutions (Bogren, 2009).

Other pests often first appear near major transportation hubs. In 2010, a University of Georgia Extension agent received calls from local residents about a new bug in and around their homes. When the agent investigated, he found a pest he did not recognize feeding on kudzu. At first thought, it seemed a possible way to eradicate the highly invasive plant had finally been discovered. However, upon further study, Extension professionals discovered the bug was the bean plataspid, *Megacopta cribraria*, which feeds on legumes and posed a serious threat to the Georgia soybean industry. The pest can now be found across the Southeast and is marching northward. Through DNA testing, UGA scientists determined the bug is native to Japan and likely arrived in Georgia aboard an airplane at Hartsfield-Jackson International Airport—the nation's busiest airport (Dowdy, 2013).

Now that University of Georgia Extension specialist and experiment station researchers have traced this kudzu bug's genetic diversity, they can determine how fast it can adapt here. University of Georgia scientists are collaborating with researchers from Clemson University, North Carolina State

University, and the USDA in their efforts to control the pest. Armed with this knowledge, they plan to introduce a parasitic wasp that is a natural enemy of the bug in Japan. The tiny wasp is no larger than the period at the end of this sentence (Dowdy, 2013).

Whether it is a weevil or an herbicide-resistance weed devastating the Georgia cotton crop, or the newly identified kudzu bug, or disease threatening a state's soybean production, problems continue to challenge our producers, and Extension will continue to seek and share solutions.

Today and Beyond—Looking Ahead

Since the 1960s, people around the world have become more aware of the impact of agriculture on the environment. Land-grant universities and Extension face increasing demands to offer solutions, with evidence of sound solutions that protect and preserve the environment. Since the Dust Bowl of the 1930s swept across the Great Plains and discovery of the impact of chemical controls on water, air, and human health, we have been more attentive than ever to find answers that preserve future generations' quality of life.

When seeking solutions to herbicide-resistant pigweed, Extension scientists found the most sustainable solutions—hand pulling and cover crop rotations—were also the most effective to deterring the impact of the weed on crops, illustrating that despite access to some of the most innovative, high-tech tools the world has ever known, such tools are not always the best choice to address problems.

As this generation of scientists and Extension experts works to find and improve the solutions to our most pressing problems, we keep a keen eye on sustainable, environmentally sound methods and choose the best tools for the job.

Extension's founders faced a nation emerging from civil war, entering an era of industrialism and a boom in production. Today, we begin to ramp up for what experts tell us will be a doubling of the world population in a few short decades. We must find a way to provide food, fiber, feed, and fuel for the growing world demand. Our mass of arable land is smaller, and it will require ingenuity and innovation. But the world demands we increase production on fewer acres in a way that protects and preserves our planet.

As we enter our second century, the problems we face have new focus, the pests have different names, but the need for Extension's expertise and our ability to deliver needed education to producers who need it ensures we remain the best system in the world for finding and delivering sound solutions to these new challenges before us.

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