

# Agronomic Crops Impact Report 2020

► The Agronomic Crops Program delivers research-based integrated information to improve producer management decisions while increasing profitability. Extension offers expertise in agronomy, pathology, entomology, weed science, agricultural engineering, and soil fertility for all major field crops.

## Auburn University Plant Disease Laboratory

During 2020, the Auburn University Plant Disease Laboratory ran 1,809 routine plant/soil samples. A survey of 1 percent of clients indicated that a client saved an average of \$589/sample by following recommendations. With 1,809 routine plant samples submitted to the lab in 2020, clientele had an estimated savings averaging more than \$1,065.



## Alabama Crops Report Newsletter

In spring 2020, the Agronomic Crops Team needed a way to compile information from Alabama Extension specialists and regional agents and disseminate it to growers throughout the state. This was especially relevant as all Extension meetings shifted to virtual platforms in 2020 because of COVID-19. The *Alabama Crops Report Newsletter* was introduced in May 2020 and included timely information, research updates, and events from members of the team. Twenty-four editions were delivered electronically from May to December. The newsletter was comprised of 172 articles by 21 contributors on the Agronomic Crops Team. It currently has 140 subscribers, 69 percent of which are highly engaged. The newsletter will continue in 2021 and be paired with an Alabama Crops Report podcast.

Articles in the newsletter are short (fewer than 500 words) and typically paired with pictures, tables, or graphs. Many articles link to longer publications, such as the integrated pest management guides and various fact sheets, on the Alabama Extension website. Previous editions of the newsletter are archived on the website and available to readers at any time.

The *Alabama Crops Report Newsletter* requires individuals to subscribe. They then receive the newsletter via email on Tuesday mornings. The newsletter is also shared on social media (Twitter and Facebook). The audience consists primarily of growers in Alabama but also includes other Extension personnel, agricultural media, and growers in nearby southeastern states. You can subscribe and read previous editions on the Alabama Extension website at <https://www.aces.edu/blog/topics/crop-production/alabama-crops-report-newsletter/>

## Environmental Nutrient Management for Efficient Production Systems

Poultry is the second-largest agricultural commodity in the state of Alabama. The poultry industry generates an estimated 1.5 million tons of poultry litter containing approximately 19,350 tons of phosphorus (P). If properly managed, poultry litter is a good source of nutrients for pasture and row crop lands. However, repeated land application results in phosphorus buildup in the soil to extremely high levels. A statewide soil-sampling program was conducted between 2018 and 2020. It covered 18 Alabama counties, 68 producers' fields, five Alabama soil regions, and more than 32,000 acres in row crop, pasture, and hay lands.

This effort led to a collection of more than 850 soil samples from five soil regions of Alabama and four soil depths covering top 0 to 24-inch soil layers. The five soil regions were the Appalachian Plateau, Coastal Plain, Limestone Valley, Piedmont Plateau, and Blackland Prairie. The team analyzed the soils for soil nutrients such as phosphorus, potassium, calcium, magnesium,

iron, aluminum, and micronutrients. The study recorded several astonishing findings. Extension professionals observed a case of phosphorus stratification on many Alabama farms. This observation has both agronomic and environmental implications. The team informed the farmers about the nutrient levels on their farms.

Farmers perceived both short-term and long-term benefits from this program. In the short term, the program trained farmers to collect soil samples regularly and taught them how to interpret soil test results to benefit their operation. In the long term, growers will save money on costly fertilizers and avoid the overapplication of manure and fertilizers. The program will result in a reduced phosphorus footprint in the environment.



## On-Farm Variety Trials

In a recent survey, 632 Alabama growers provided a list of their top ten most important issues. Variety selection was one of the top three answers. In particular, variety trials performed on their respective farms was a high priority. In response, the Agronomic Crops Team established sixteen on-farm cotton variety trials across the state representing major production areas and niche environments. The USDA Cotton Varieties Planted report indicated that nearly half of all Alabama cotton acres planted were comprised of the top-yielding variety from our on-farm variety trials. Results from these trials were shared with growers and agricultural industry representatives through the Alabama Extension website, various media outlets, social media, publications, and other forms of communication. On-farm variety trials provide real-world data to farmers and consist of varietal performance on their respective farms and trends in consistency across different growing regions. This information, in turn, helps growers make informed decisions about what varieties to plant or not to plant, thus increasing their net profit potential.

## Herbicide Stewardship and Application Education

The latest weed control updates, recommendations, and best management practices of auxin herbicides were presented to target audiences during auxin training, spring row-crop meetings, summer field days, small group farm visits, or by Extension newsletters, emails, various websites, social media, phone calls, and text messages. Program outputs in 2020 included three Extension IPM guides, ten timely information updates, and six news articles. A total of 2,218 stakeholders received weed control information in row crop meetings, auxin training, and virtual field days. The program conducted 61 field studies throughout Alabama.

In a survey conducted at 20-plus Extension crop meetings and auxin training, 632 respondents farming 551,801 row crop acres reported that Alabama Extension weed control information saved them \$11.69 per acre. More than 63 percent indicated that they used Extension weed control recommendations on their farms in the past year. This resulted in a 2020 savings of more than \$6,452,008 on row crop production in Alabama.

## Peanut Pod Blast Program

In 2020, twenty Alabama Extension Peanut Pod Blasting workshops were conducted at the Wiregrass Research and Education Center in Headland. The workshops helped 225 peanut growers in the Wiregrass region increase their profits \$3.4 million by digging their peanuts at optimum maturity. A total of 520 samples were processed by Extension staff at no cost to the farmers and resulting in savings to the grower of





\$13,000. Peanut growers also realized an additional \$18 per ton in increased grades of peanuts harvested resulting in \$303,750 in increased revenues. The return on investment for Alabama Extension resources spent was \$664 for every dollar invested in this program.

## Sixty-First Consecutive Cotton Scouting School

The cotton entomology team hosted the sixty-first consecutive Cotton Scouting School, Alabama Extension's longest running programming event. Because of COVID restrictions, the 75 attendees participated virtually. Continuing education units in pest management and pesticide application points were available to those who took part in the program.

The cotton entomology team also conducted approximately 30 field trials in 2020 to evaluate current and future IPM strategies and monitor resistance for pests of cotton, soybeans, and peanuts. Populations of corn earworms were collected and screened for Bt resistance across the state, but resistance was not detected. The statewide pheromone-trapping program for corn earworm and soybean looper moths was also conducted to provide growers with an in-season indicator of pest populations. The team collected insecticide and technology efficacy on pests of cotton (thrips, plant bugs, stink bugs, and bollworms) and soybeans (stink bugs and leaf defoliating caterpillars) in multiple locations across Alabama. Results from our trials are available in Extension publications "2020 IPM Projects Advancing Alabama Cotton Production" (ANR-2735) and "2020 Cotton Insect Loss Report" (ANR-2714).



## Weed Management Strategies for Alabama Cropping Systems

Thirty-one weed management field trials were conducted in 2020 with the goal of mitigating herbicide resistance and advocating for best management practices. Extension's weed science research program supported the state approval of four 24(c) Special Local Needs (crop protection) labels for the use of Fierce herbicide in Alabama winter wheat to control certain grass and broadleaf weeds. This would apply to 130,000 planted acres of winter wheat. A testimonial from one row crop grower implementing Extension recommendations offered the following: "We row crop around 8,000 acres with a rotation of corn, cotton, wheat, soybeans, and pumpkins. Due to the ever-changing landscape or resistant weeds like Palmer Amaranth, as a producer we can get blinded by the simplest of challenges. Little did we know our biggest challenge ahead would become resistant ryegrass.... With the help of Brad Meyer, Green Point Ag, and the recommendation and research from Dr. Russell and his staff at Auburn University Crop, Soil, and Environmental Science we used a tank mixture of Zidua, Gramoxone and First Shot. To this point we are as clean as we have ever been with typical winter weeds but our start without any resistant ryegrass is extremely encouraging in our ever continuing fight. Thank you to Dr. Russell and his team and Auburn University for the research and the much needed help."

## The Seed Is Where It's at in Cotton Production

Since the mid-1990s, seeds have become an increasingly important input in terms of cost and management. Seeds provide genetic potential and now also deliver traits and treatments that decidedly influence pest management.

In 2020, the Agronomic Crops Team investigated several aspects of seed-related issues in cotton, including seed quality, physical handling, planting rates, and planting patterns.

- Twelve bags of seed were collected and comparisons were made of warm and cool germ data from the parent seed company and the North Carolina Department of Agriculture. These were then planted in mid-May in Brewton with moisture and temperature favorable for rapid stand establishment. Conditions overwhelmed any seed-quality issues. Yields were far more affected by variety than by germ data.

- Seeds are a living entity subject to injury from handling. Seeds dropped four times from a height of seven feet showed some negative effects, but those exposed to six hours of high temperatures (140 degrees F) did not.
- The price of cotton seed has increased almost twentyfold during the last 25 years, compelling interest in reduced seeding rates. In trials at Brewton and the Wiregrass Research and Extension Center, the Agronomic Crops Team measured comparable yields from seeding rates ranging from 1.2 to 3.0/foot.
- Cotton has long been produced in standard rows—typically 36 to 40 inches—to accommodate planters and harvesters. Wide-row spacings may reduce seed and picker costs and minimize the effects of in-season drought. Conversely, late-season conditions (high humidity, cloudiness, rain) contribute to boll rot and hard lock. In studies at Brewton and the Wiregrass Research and Extension Center, cotton planted in 48-inch rows produced yields comparable to standard 36-inch rows.



## Cotton Leafroll Dwarf Disease

Alabama is ranked fifth in cotton production in the United States with a value of approximately \$396 million (2019). Cotton leafroll dwarf disease is a new virus disease affecting cotton in Alabama. It was first detected in the state in 2017. *Cotton leafroll dwarf virus* (CLRDV) has since been found throughout the southeast and is primarily spread by cotton aphids. The virus overwinters from year to year on a variety of alternate hosts.

Extension specialists and researchers from Auburn University, in coordination with the Southern IPM Center and universities across the southeastern Cotton Belt, employed a sentinel plot system to monitor disease spread in 2020. Sentinel plots were established at multiple locations in Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. These served as an early warning system for CLRDV and provided an opportunity to monitor disease progress throughout the season.

Information gathered from the sentinel plot system was shared with stakeholders via personal communication, social media posts (7,625 people reached), the *Alabama Crops Report Newsletter*, the Alabama Row Crops Virtual course (450 views), and at regional grower meetings in the state. Extension efforts focused on providing stakeholders with information on disease incidence, symptom development, aphid pressure, and yield impacts based on planting date and variety selection.

## Alabama Peanut IPM Program

The grant-funded program Alabama Peanut IPM Program resulted in a 40 percent reduction since 2016 in spider mite outbreaks with increasing use of selective insecticides. Damage from spider mites peaked in 2016 because of intense prolonged drought that favors spider mite outbreaks on peanuts. In 2020, Portal

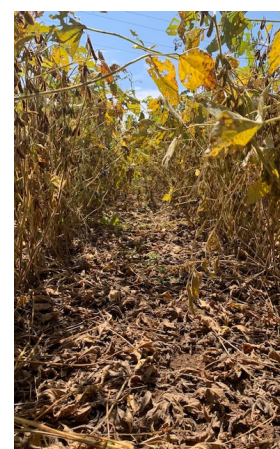


Miticide was registered for use on peanuts after support supplied by the peanut IPM program to help Alabama peanut producers. With the COVID-19 outbreak, IPM program delivery switched to virtual platforms including Facebook and Twitter. The results were more than 1,300 views of peanut scouting videos with a 76 percent IPM adoption rate, which included the use of scouting recommendations and selective insecticides. Return on investment based on statewide surveys showed a \$22 return for every Extension dollar invested.

## Observations of Soybean Rust

Soybean rust (SBR) was observed at its highest level since the disease was first reported in Alabama in 2004. The disease was detected in 64 of the 67 counties in the state; however, incidence and severity in individual fields were uncommonly high. What was most concerning was that SBR was found in counties in north Alabama at high levels in early August, which is unusual. Leaf defoliation by the R5 growth stage was observed in fields in the northern tier counties where it was unlikely that fungicides were applied. Extension specialists estimated more than a 4 percent yield loss statewide due to SBR, partly due to the rapid spread of the disease in favorable weather conditions during the summer combined with reduced fungicide use likely due to relatively low commodity prices. Severe losses from SBR were noted in south and central Alabama with a 41 percent yield loss recorded in one controlled study in Brewton and a 25 percent yield loss in a large-scale fungicide trial in Tallassee. SBR was active throughout the year, initially overwintering on kudzu along the Gulf Coast and then rapidly spreading northward through the state due to relatively wet, mild conditions during the early part of the growing season. In May, Alabama

Extension began sending SBR alerts via direct email, the *Alabama Crops Newsletter*, Extension blogs, Twitter, and Facebook to regional agents, agribusiness clientele, and farmers notifying growers of the developing SBR epidemic brewing in the state. Extension specialists estimate that approximately 20 percent more soybean acres of the 265,000 planted in 2020 was treated with a fungicide because of the SBR alert effort. This would have protected yield of about eight bu/A from SBR on more than 53,000 acres at an estimated cost of \$795,000 fungicide application cost (one application = \$15). By alerting growers to make a timely fungicide application, Extension estimates that the program saved growers \$2,685,000 (\$8/bushel soybeans) in potential yield loss from the disease. Because many growers, especially in south and central Alabama, are already aware of the SBR threat each year due to Extension's past educational programs, savings are estimated to be significantly higher, especially in years when SBR is a problem.



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