

Georgia Entomological Society Arthropod Survey

2014

2014 Georgia Entomological Society

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Apple

Apple insect and mite IPM in GA has for several years been quite stable. Jim Walgenbach at NCSU continues to provide cooperative, as-needed research and extension support to the GA apple industry. Resistance problems with codling moth (CM, *Cydia pomonella*) and Oriental fruit moth (OFM, *Grapholita molesta*), our key fruit-attacking pests, have tended to be farm-specific. In many orchards insecticide applications timed by temperature-driven developmental models still provide excellent control of these key pests. However, significant GA apple acreage exhibits signs of resistance to phosmet (Imidan), methoxyfenozide (Intrepid) and/or novaluron (Rimon). Fortunately orchards experiencing faltering insecticide performance have gotten good to excellent CM/OFM control with pheromonal mating disruption.

Brown marmorated stink bug is readily evident in GA's mountain counties, but to date has not been problematic in apples, peaches or vegetables.

Woolly apple aphid (WAA, *Eriosoma lanigerum*) which has been well controlled in GA apples for at least 30 years has in recent years become problematic in isolated blocks. Betsy Beers, WSU, has shown that spinetoram (Delegate) is quite damaging to populations of the parasitoid *Aphelinus mali*. Elimination of spinetoram use, or restricting its use to late-season, seems to be allowing re-establishment of WAA biocontrol in GA apples, as problematic WAA infestations were reduced in 2014.

Blueberry

Since its first detection in the state of Georgia in 2011, spotted wing drosophila (SWD) remains the key pest of blueberries. Blueberry crop losses in 2012 and 2013 averaged around 20%. However, as a result of statewide educational programs through traditional (presentations at grower meetings at county level and train-the-trainer workshop series for extension agents at the district level) and digital means (UGA Blueberry Blog) blueberry growers' awareness of the problem has significantly increased which enabled them to implement management programs in a timely manner. Consequently, overall crop loss was much lower during 2014. On average, SWD management costs around \$100 per acre to blueberry growers.

Due to multiple applications of primarily broad-spectrum insecticides (OPs and pyrethroids) to control SWD, a significant increase in secondary pest problems, which include scales, aphids, thrips, gall midges, and bud mites, has recently been observed. This year approximately 10% of the blueberry acreage was treated with 1-2 insecticide applications to control these secondary insect pests. Unfortunately, the secondary pest problems will most likely get worse until alternative control strategies for SWD have been developed.

Corn

Very low infestations of stink bugs occurred in 2014, although preventive sprays were still used widely. Fall armyworm whorl infestations were larger and earlier than normal, and some acres were treated. Bt corn adoption is probably about 70 -80% in the state. Cost of Bt technology about \$16 to \$28 per acre depending on trait package.

Cotton

Thrips and stink bugs continued to be the primary insect pests infesting cotton during 2014. Mean insecticide applications were 2.7 per acre, mean percent yield loss to insect damage was 2.5, and mean losses + costs were \$87 per acre. Thrips populations were near normal but migration to seedling cotton occurred later in May than normal for the second consecutive year. Thrips management continues to be a priority and neonic seed treatments were supplemented with foliar sprays when populations are high. Stink bug infestations were moderate at best, but fields exceeded thresholds and insecticide applications were made. Spider mites are a pest we are monitoring closely, for several years a significant portion of cotton acreage has been infested (40 percent in 2014). However, only a small percentage of cotton has been treated for spider mites due in part to good management practices and avoiding insecticides prone to flare infestations. Other insect pests observed in cotton include corn earworm, beet and fall armyworm, tarnished and clouded plant bugs, cotton aphid, and silverleaf whiteflies.

Forest

Southern Pine Beetle Pheromone Trapping / Pine Beetle Aerial Survey

The Georgia Forestry Commission (GFC) participates annually in the southern pine beetle (SPB) trapping program. Insect traps are deployed in early spring by GFC foresters and are checked weekly for at least four weeks. In the spring southern pine beetle prediction survey, USDA Forest Service, Department of Defense (Fort Stewart), and Georgia Forestry Commission, established a total of 52 traps statewide. All prediction traps in Georgia indicated low SPB populations/activity for 2014. (See 2014 Southern Pine Beetle Prediction Map): <http://gatrees.org/forest-management/forest-health/pine-bark-beetles/2014%20Southern%20Pine%20Beetle%20prediction.pdf>

Two areas of the state saw noticeable beetle activity in 2014; Bryan and Glynn counties along the coast and Washington and Greene counties in the piedmont.

Nineteen Southern Pine Beetle spots were detected across the state; for a total of 49.4 acres. Early detection flights began on July 9, 2014 when pine bark beetle activity was reported in Glynn County, Georgia. Aerial survey crews conducted a systematic survey of coastal Georgia and found active pine bark beetle infestations on Saint Simons Island - 10 spots (41.6 acres), Richmond Hill - 5 spots (3.7 acres), and Fort McAllister State Park - 1 spot (3.1 Acres). The Southern Pine Beetle spots in Washington - 2 small spots (.5 acres) and Greene Counties - 1 spot (.5 acres) were associated with the February ice storm damage.

Ground crews conducted inspections of each area and determined the spots to be Southern Pine Beetle. Landowners were assisted in making sound management decisions, and each infested area has been harvested. Follow-up inspections were conducted to insure no infested trees were left with active beetles.

Redbay ambrosia beetle and laurel wilt disease are now established in over 40 counties in the state and they are now found in locations that contain sassafras only suggesting they will be able to spread throughout the state.

The emerald ash borer was found in the Atlanta area in 2013. It has now been recovered from 9 metro Atlanta counties.

The hemlock woolly adelgid entered the northeast corner of the state in 2003. It now occurs in all north Georgia counties where hemlock is a component of the forest.

Livestock, Poultry, and Pets

Beef Cattle

Horn flies are the main pest of pastured cattle, causing irritation and aggravation to cattle because of their blood-feeding habit. Horn fly suppression is dependent on insecticides, although there are few options that effectively reduce horn fly numbers for more than a few days. Nationwide, Georgia ranks 30th in cattle production, with just over a million head produced annually, amounting to a farm gate value of \$646 million. To control horn flies (and other ectoparasites such as stable flies, face flies, lice, etc.), Georgia cattlemen invest ca. \$5.7 million annually.

Broilers

Georgia continues to be the nation's number 1 broiler producing state. Broilers rank at the top of Georgia's agricultural commodities, bringing in \$4.7 billion annually, or 34% of the state's farm gate value.

Worldwide, darkling beetles (*Alphitobius diaperinus*), whose larvae are known as lesser mealworms, are the primary pest of broiler production. These insects burrow into wooden building structures and insulation to pupate, damaging facilities and lowering insulative capacity. Costs of repairs and insulation replacement increase production costs. When litter is removed and applied to pastures or fields as soil amendment, beetles are distributed and may migrate to nearby homes, creating neighborhood friction. Lesser mealworms feed on dead birds and feces, thereby acquiring numerous pathogens which they can transfer to uninfected birds when consumed. They also maintain Salmonella in their guts during pupation, so that newly emerged adult beetles are infectious to chickens. Alphitobius populations worldwide have been shown resistant to most of the pesticides registered for their suppression, so management strategies are extremely limited. Management tactics have some effect on beetle numbers, but there are no tactics that significantly reduce beetle populations.

All Georgia broiler houses are infested with darkling beetles and broiler producers spend approximately \$7.2 million annually for Alphitobius suppression. Losses to the beetles are estimated at \$3.5 million annually, for a total cost of lost production and control ca. \$10.5 million annually in the state.

Caged Layers

Table eggs are Georgia's 4th most lucrative commodity, with an annual value to the state of over \$798 million (ranking Georgia 7th nationally). The principal pest in caged layer houses is the house fly, which causes spotting of eggs, degradation of equipment through fecal contamination, and neighborhood consternation when flies migrate away from the poultry farm to nearby residences. Because of suitable conditions inside layer houses, house flies can be a year-round problem. Producers use manure and water management, trapping, biological control (fly parasitoids), and various pesticides to suppress house flies around caged layer operations. Worldwide, house flies have shown to be resistant to most insecticides, so control is seldom adequate. Losses due to flies combined with costs of management are estimated to total \$6.97 million annually.

Northern fowl mites are the second most significant pest in layer flocks. These mites are bloodsuckers that spend their entire life cycle on the chicken host, causing itching, scabbing, anemia, and general bird discomfort and lack of thriftiness. Losses due to reduced feed conversion efficiency and reduced egg production are estimated at \$1.75 million annually, while suppression costs (primarily acaricides) are about \$1.7 million per year, totally \$3.45 million statewide annually.

Pets

Approximately 3.5 million Georgia households have dogs and cats. The three major arthropod pests affecting pets are fleas, ticks, and mosquitoes. Because fleas transmit tapeworms, ticks transmit pathogens such as Ehrlichia, and mosquitoes carry heartworm, pest treatments and disease preventatives amount to over \$128 million annually.

Pasture

Extensive fall armyworm infestations in grass pastures later in the summer needed control; pyrethroids were most commonly used.

Peach

Pest pressure from fruit-attacking insect pests [plum curculio (*Conotrachelus nenuphar*), assorted stink bugs, green June beetles) in peach orchards across GA & SC was light to moderate in 2014. Premature tree decline associated with scale, lesser peachtree borer and peachtree borer continues to cause serious losses. Cover sprays do little to control/suppress these key tree pests. Scale control is demanding but doable with rigorous application of dormant oils. Every acre needs to receive two dormant, dilute oil applications applied at a low tractor speed (2-3 mph). Aggressive follow up is required where ever control breaks are observed. Lesser peachtree borer control is stable where dilute, pre-bloom chlorpyrifos sprays are complimented by augmented cover sprays and post-harvest chlorpyrifos. The ongoing re-registration of chlorpyrifos is expected to limit the number of applications of this key material. Peachtree borer infestations are worsening. Peachtree borer populations (univoltine) are now showing the same upward population trends previously seen with the multivoltine lesser peachtree borer. Utilization of safer, but less effective, organophosphate-replacement cover sprays for the past 15+ years appears to be the key element in the emergence of these previously well-control species as primary tree-killing pests.

Pheromonal mating disruption of peachtree & lesser peachtree borers is effective in the Mid-Atlantic and Upper Mid-Western peach production areas, but this technology has struggled with our higher pest abundance, and longer, warmer growing seasons. Cottrell has for years worked to adapt mating disruption to the southeastern lesser peachtree borer/peachtree borer complex. There is optimism that Shin-Etsu's newest dispensers will last long enough to work under our conditions. In late winter of 2015 Cottrell initiated an 800+ acre, on-farm lesser peachtree borer/peachtree borer mating disruption trial in central GA.

A sap beetle (*Carpophilus* spp.)/picnic beetle (*Glischrochilus* spp.) complex has emerged in recent years as an occasional, but where abundant, very damaging pest of sound, ripening mid- and late-season peaches. Problems seem to be more severe in wet years. Support from the South Carolina Peach Council has facilitated preliminary work on insecticide bioassays, survey and implementation of sap beetle pheromone trap-and-kill technology used on stone fruit in western Australia. Initial trials trap-and-kill trials showed promise. Work examining the potential orchard floor sanitation will be begun in 2015.

Peanut

The 2014 peanut growing season began cool and wet with heavier and later than normal tobacco thrips, *Frankliniella fusca*, pressure. Thrips migration into peanut occurred in late May; heaviest infestations of immature thrips were observed in early June. From mid-June through the end of harvest in November, rainfall was scarce in most peanut growing areas, and the non-irrigated portion of the crop (~50%) suffered from the drought.

Three of the most important arthropod pests of peanut are typically more severe under hot, dry conditions. 2014 was an outbreak year for lesser cornstalk borer (LCB), *Elasmopalpus lignosellus*, and two spotted spider mite (TSSM), *Tetranychus urticae*. The peanut burrower bug (PBB), *Pangeaus bilineatus*, also thrives in hot, dry environments, and losses in Georgia from this insect were the highest since 2011. About 2.8% of Georgia's peanut crop was downgraded to segregation 2 in 2014. We estimate less than half of the segregation 2 peanuts were damaged by insects, but this still represents a significant economic loss for producers. LCB, PBB, and TSSM infestations in irrigated peanut fields were typically minor and in general did not require pesticide applications.

A variety of foliage feeding caterpillars was present in peanut in 2014. Pressure varied significantly by location, and while infestations may have been above normal, the number of acres treated with insecticide(s) for caterpillars was probably close to average.

Insect pressure in peanut was atypically high in Georgia in 2014 with most infestations and losses occurring in non-irrigated fields. Non-irrigated peanut yields ranged from 0 to over 5000 lbs/acre depending on drought stress and pest severity. Yield of irrigated peanuts was exceptional in 2014; the state wide average yield over irrigated and non-irrigated fields was over 4000lbs/acre.

Pecan

The pecan crop was short due to a cool wet spring followed by very dry weather during the critical July-August period when nuts grow rapidly. Poor pollination reduced crop size and quality. Prices were

strong for growers with a crop to sell. Aphids were the most problematic pest group, and many growers sprayed for scorch mites as well.

Sorghum

Sugarcane aphid infestations occurred on about 30K acres (essentially every sorghum field south of I20 in the state). Almost all acres were treated at least once, mostly with a Section 18 label for Transform WG @ about \$10 per acre. Fall armyworm in the whorl of later plantings needed control.

Soybean

Stink bugs and soybean looper were the primary insect pests infesting soybeans during 2014. Kudzu bugs were present but at very low levels, and only a few fields required treatment. Lesser cornstalk borer was a significant problem on late May and June planted soybeans.

Urban and Structural

The tawny crazy ant, *Nylanderia fulva*, has shown up in Albany (August 2013) and Camden and Glynn counties (August 2014). Hunch is that this major nuisance ant pest will be restricted to the lower half to one-third of GA and coastal GA.

Several changes to insecticide labels (pyrethroids and neonicotinoids) have occurred over the past several years. For pyrethroids, changes (in OTC and professional markets) restrict where products can be applied. To prevent water contamination, for instance, they cannot be applied to hard surfaces, cannot be applied more than 3 feet high, must be applied crack and crevice, and must be applied over overhangs when applied to soil. For neonicotinoids, new labels will have a pollinator protection box with language mandating that products not be applied to plants with flowers on them.

Although bed bug problems continue to be common in Georgia (mainly in commercial accounts), many companies (including some large ones) not equipped to handle them (multiple visits and labor intense), or averse to the liability, are not pursuing bed bug work. Although bed bugs get a lot of attention, termites and ants are still more profitable for most companies. On the pest control side, ants (Argentine ants) continue to be the number 1 pest encountered by companies who conduct residential pest control in GA. Bed bugs show up mainly in commercial accounts. Moreover, the bed bug problem in the south and southeast is not as bad as it is in the midwest and northeast. Attractants for bed bug traps is an active area of research. The "ClimbUp" pitfall trap continues to be the industry standard for traps. Heat continues to be used to control bed bugs, mainly as an alternative to pyrethroid resistant populations; pyrethroid resistance in bed bugs is severe and widespread. There are no chemicals on the horizon that will alleviate this situation soon. Essential oils are being looked at, but are not promising. Heat, when used improperly, can worsen bed bug problems by driving bugs from heated premises. Dogs as inspection tools are all over the map when it comes to efficiency; the handler has proven to be a key to the success of dogs as inspectors.

Complaints about kudzu bugs were lower than previous years. Certainly the cold winter the past couple years has helped.

Vegetables

2014 was a relatively normal year for insect pests of vegetables.

The most pressing pest situation continues to be management of cowpea curculio in southern peas. This pest is resistant to all registered insecticides and threatens cowpea production in Georgia. Growers reported field failures with all registered insecticides even when applied on a two day spray schedule. Replicated efficacy trials have not been able to identify potential insecticides for cowpea curculio management.

Lepidoptera pest pressure was moderate in cole crops and greens. Diamondback moth was present in significant numbers (which differs from previous 3 years). While all insecticides showed respectable efficacy, less than expected efficacy was noted in commercial production and in replicated field trials. This reduced efficacy was noted even with our newest chemistries, the Group 28 insecticides.

Silverleaf whitefly populations were generally lower and later than expected in Tift and Colquitt Counties, where this pest is an annual pest in the fall vegetables. Insecticides showed little evidence of resistance issues with the neonicotinoids that have been experienced in the past. Tomato yellow leaf curl was noted in some fields but generally occurred late and had minor impacts on yield.

Thrips populations were relatively light in onions and minimal spraying was required. Tomato Spotted Wilt Virus was also of minor concern in 2014.

Twospotted spider mites required treatment in a variety of vegetables (mostly cucurbits) in early summer. This pest appears to be developing into a much more consistent problem than it has historically been.

Wheat

Some fields of susceptible varieties had significant Hessian fly damage in the spring. Aphids and barley/cereal yellow dwarf disease levels were low across the state.