emerging (usually minor) pests in the coming years, including dogwood borer, pear psylla, San Jose scale, apple leaf midge, and ambrosia beetle damage in some orchards.

**Efficacy of new pheromone lures for monitoring brown marmorated stink bug**

*Investigator(s): Faruque Zaman, Daniel Gilrein, Peter Jentsch and Arthur Agnello*

*Location: Participating Long Island tree fruit farms*

Cornell Cooperative Extension of Suffolk County joined with regional collaborators to monitor brown marmorated stink bug \([BMSB, Halyomorpha halys (Stål)]\), populations in two fruit orchards using newly developed USDA # 10/20 pheromone lures. 12 traps were set near the forest borders adjacent to a 20-acre peach, a 10-acre apple orchard, and a 25-acre mixed (apple, peach, vegetable, cherries etc.) planting on eastern Long Island, NY. Four treatments were compared using the same pyramid trap type in each case: 1) #10/20 (~10 mg load) + MDT lure (AgBio; 66 mg); 2) Un-baited Control; 3) Commercial lure A; and 4) Commercial lure B. Each treatment was replicated three times (one in each peach, apple and mixed orchard). Traps were set in the field from May 5 to October 2. Traps were checked weekly for BMSB adults or nymphs. USDA # 10/20 lures were changed every 2 weeks and synergists every 4 weeks. Traps baited with #10/20 + MDT pheromone recorded first adult captures on May 12 (peach, Wading River, 135 GDD calculated from Jan. 1). During the entire season 6 male and 3 female BMSB were captured in # 10/20 traps. No BMSB were captured in control traps. About 25 BMSB adults and several nymphs were reported from residential landscapes in the Calverton and Riverhead area. One adult was captured from an apple tree during the fruit survey. The findings suggest this insect is now established and breeding in the eastern part of the Long Island and growers are advised to be watchful in the coming years.

This project was funded by the USDA-BMSB Specialty Crop Research Initiative Project Number 59-1931-2-230.

**Nursery, Landscape & Ornamentals**

*In vitro breeding of Syringa vulgaris, the common lilac*

*Investigators: Mark Bridgen*

*Location: Long Island Horticultural Research and Extension Center and Ithaca*

The common lilac, *Syringa vulgaris*, is valuable because it is a popular upright, deciduous shrub which is widely grown in the northern United State. Plants grow 8-15’ tall and have sweetly fragrant flowers that are arranged in dense, pyramidal, terminal clusters (panicles) usually flowering on Long Island in mid- to late-May. The flowers that are produced on lilac shrubs have a long postharvest vase life and make excellent fresh cut flowers. Lilacs are a member of the olive family, *Oleaceae*, and have been a garden favorite for many years because of their winter-hardiness in U.S. hardiness zones 3-7.

The objective of this project is to introduce new and improved *Syringa vulgaris* cultivars that have benefit to the American people and commercial ornamental plant industries. Plants of selected somaclones have been planted outside and are being evaluated. The ornamental plant market is eager for new varieties of lilacs and in vitro mutagenesis is a major and strong source
of variability. Mutant plants of *Syringa vulgaris* were created through the process of somaclonal variation. Somaclonal variation is the variation that is seen in plants that have been produced by plant tissue culture. Changes that are produced via plant tissue culture can be genetically stable and propagated for commercial production.

**Display gardens at Cornell University’s LIHREC**

**Investigators:** The Cornell Gardeners  
**Location:** Long Island Horticultural Research and Extension Center

Since 2004, a group of volunteers known as the Cornell Gardeners, has maintained display gardens at Cornell University’s LIHREC as part of the University’s outreach mission. Their goals are to share knowledge and expertise about gardening, and to offer help and assistance about gardening to the public. The display gardens are planted along the north and northwest edges of the LIHREC property. These gardens include, from east to west: the Herb Garden, which includes a pergola, designed and constructed by the gardeners, the Bulb Garden which displays tulips, daffodils, and other spring bulbs followed by summer blooming Asiatic, Oriental, and LA hybrid lilies, and later geophytes such as *Alstroemeria*, the Fragrance Garden, that focuses on perennials, annuals, shrubs and trees that delight the sense of smell, the Evergreen Garden, covering the periphery with evergreens and having a focal point of a stone bench, the Butterfly and Pollinator Garden, and the Cottage Garden, a collection of perennials, grasses, shrubs and small trees, designed to provide color and points of interest throughout the year.

**Silica slag tested for leaf spot control on hakonechloa**

**Investigators:** Margery Daughtrey, Wade Elmer and Lynn Hyatt  
**Location:** Long Island Horticultural Research and Extension Center

Growers of hakonechloa have observed foliar fungal infections during production in container culture in soilless mixes, but these diseases have not been problematic after plants have been established in ground beds in the landscape. A trial was established on 22 May14 to look for any benefit of adding an agricultural silica slag (CaO & SiO2) to the potting mix. Silicon has been found to be helpful for minimizing effects of stress and reducing disease symptoms in a number of research studies—these benefits are dependent upon the plant being a silicon accumulator. Because grasses, including hakone grass, tend to accumulate silicon, we wished to explore whether a silicon amendment might be helpful to this crop during production in soilless mixes (which are largely lacking silicon). Plugs of ‘*Hakonechloa macra aureola*’ were potted into 1 gal pots filled with SunGro Metro 865, with or without silicon amendments. There were 5 treatments (200, 400, 800, and 1,600 kg Si/ha, and a no-slag control). Twelve plants were given each treatment, arranged in a randomized complete block design, at 3 locations: the Connecticut Agricultural Experiment Station, a LI nursery and the LIHREC. Plants at the LIHREC were grown in sun from 22 May-2 June, and then moved to a hoop house with 50% shade, with automatic overhead irrigation at 6 am and 6 pm for 15 minutes. No disease symptoms appeared during the trial. Plants were rated for top appearance on 17 Sept, and tops were harvested for dry weights. Roots were rated 18 Sept. At harvest, plants given no silicon slag appeared smaller and thinner than those receiving slag treatments, but fresh and dry weights collected did not show significant differences. Treatments receiving 400 and 800 kg/ha were visually the most vigorous, and analysis of top ratings indicated that the no-silicon treatment was different from
these (Tukey’s LSD, $P = 0.05$). Root ratings showed a similar pattern, with the treatment with no silicon being rated lower than those with 400 and 800 kg/ha silicon. Silicon amendment appears to hold some potential for improving hakonechloa quality. Additional studies will be needed to assess whether silicon will have any effect on foliar disease.

**Control of wax scale and azalea bark scale on nursery and landscape ornamental**

**Investigators:** Daniel Gilrein and Lucille Siracusano  
**Location:** Long Island Horticultural Research and Extension Center

Several treatments were evaluated for control of two scale insects in three separate trials. In the first two trials, treatments targeting crawler stages of wax scale (*Ceroplastes ceriferus*) on container-grown *Ilex x meserveae* ‘China Girl’ (3-gal.) and azalea bark scale on *Rhododendron* ‘Taurus’ (20-gal.) included sprays of Distance IGR (pyriproxyfen 0.86EC, Valent Professional Products) at 12 fl oz/100 gal, TriStar 8.5SL (acetamiprid 0.76SL; Cleary/Nufarm) at 16.5 fl oz/100 gal, or Garden Tech Sevin Concentrate (carbaryl 2F, TechPac) at 0.75 fl oz/gal. Sevin was applied at half the label rate for this product but comparable to the commercial Sevin SL (4F formulation, 4 lb ai/gal) label rate (1 qt/100 gal). M-Pede insecticidal soap (potassium salts of fatty acids 49%S) at 0.5% was included with all insecticides to improve wetting on foliage. A water-only spray was included as a control. Sprays were applied to just drip on July 19 and July 29 using a CO2-powered backpack sprayer fitted with a TeeJet 8006 VS nozzle operating at 30 psi. Treatments were replicated five (holly) or four (rhododendron) times, using single-plant replicates. Treated plants were allowed to dry after each spray then arranged in a completely randomized design on drip irrigation (holly) in full sun or on hand watering as needed (rhododendron) in a shaded area. Treatments were evaluated on Sept. 17 and 18 (holly) and Oct 28 (rhododendron) by tallying the numbers of live scales on one stem (about 24”) per plant (holly) or most recent three years’ growth on three stems per plant (rhododendron). Sooty mold on rhododendrons, already apparent on plants prior to the trial, was visually rated on Sept. 28 based on percent coverage of stems (0 – 100%).

In a third trial, several insecticide treatments were compared for control of late-stage (probably 3rd instar) wax scale on *Ilex x meserveae* ‘China Girl’ holly. Treatments included SuffOil-X (paraffinic oil, BioWorks) at 2% alone or tank mixed with Distance IGR (pyriproxyfen 0.86EC, Valent Professional Products) at 12 fl oz/100 gal, Kontos (spirotetramat 2F, OHP) at 3.4 fl oz/100 gal, TriStar 8.5SL (acetamiprid 0.76SL, Cleary/Nufarm) at 16.5 fl oz/100 gal or Garden Tech Sevin Concentrate (carbaryl 2F, TechPac) at 0.75 fl oz/gal. A water-only spray was included as a control. Sprays were applied as before on Sept. 18. Treatments were replicated five times using single-plant replicates. Treatments were evaluated on Nov. 3 - 5 by tallying the numbers of live and dead scales on three 7”-stems per plant and calculating the percent surviving scales per plant. For all trials, ANOVA and pairwise comparisons of untransformed treatment means using Tukey’s HSD test were performed.

In the first two trials, insecticide treatments timed for crawlers were highly effective for controlling both scale species with significantly less sooty mold coverage on insecticide-sprayed rhododendron foliage than on water-sprayed plants. In the third trial no treatment was highly effective, although there were significantly (about 60%) fewer wax scales on hollies sprayed with Sevin than those sprayed with water. There was only a slight reduction in numbers of
scales in other insecticide treatments, not significantly different from unsprayed plants. There was no phytotoxicity in any treatment in any trial.

Control of Douglas fir needle midge on Douglas fir Christmas trees
Investigators: Daniel Gilrein and Lucille Siracusano
Location: LIHREC, Riverhead, NY and Mattituck, NY

TriStar SL (acetamiprid 8.5SL, 0.76 lb ai/gallon, Cleary) was evaluated as a foliar spray for control of Douglas fir needle midge (Contarinia pseudotsuga) on Douglas fir Christmas trees. Work was conducted on infested foliage in late summer from an eastern Long Island Christmas tree farm with 5 – 7’ Douglas firs. Ten trees showing signs of needle midge infestation (galled needles) were randomly assigned to TriStar and control treatments. TriStar SL was applied as a foliar spray on August 5 using a backpack sprayer. PentraBark (99.8% alkylphenol ethoxylate, polysiloxane polyether copolymer, propylene glycol; Quest Products) was included in the treatment at 6 fl oz/100 gal. Spray was applied thoroughly to completely wet foliage. Control trees were left unsprayed. Treatments were replicated eight times using single-tree replicates. On August 26, 10 galled needles were collected from each tree and dissected under magnification to determine if larvae were present and, if so, whether they were alive, dying (moribund), or dead. Larvae were determined to be dead if they appeared off color, desiccated, and broken down; moribund larvae were off-color, not desiccated or broken down but also not moving when touched with a probe. Live larvae were normally colored (white/translucent) and showed movement when gently prodded. Data were analyzed using ANOVA using untransformed treatment means and Tukey’s HSD test.

Although a small proportion of damaged needles taken from each tree had no apparent infestation (0 – 3 needles per tree), it was clear from the remaining foliage that TriStar was having a significant impact on larvae and appeared to be effective for controlling Douglas fir needle midge in this trial, with 98.4% larvae moribund or dead on TriStar-treated trees compared with 2.8% on control trees. There was no apparent residue or phytotoxicity due to treatment.

Preemergence Herbicides Crop Safety: IR-4
Investigators: Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil
Location: Long Island Horticultural Research and Extension Center

A trial was conducted for the USDA IR-4 Project to determine the safety of four preemergence herbicides for use on several ornamental species. Treatments were applied to container-grown annuals, herbaceous perennial, and woody crops within eleven days of transplant and again at six weeks after treatment.

Aquilegia canadensis 'Little Lanterns', Asclepias incarnata, Begonia 'Tuberous Go-Go Rose', Catharanthus roseus 'Pacifica XP Polka Dot', Chasmanthium latifolium, Delosperma nubigenum 'Basutoland', Gaura lindheimeri 'Crimson Butterflies', Hemerocallis x 'Green Flutter', Heuchera sanguinia 'Bressingham', Hibiscus x (moscheutos) 'Lady Baltimore', Hibiscus syriacus 'Aphrodite', Hosta fortunei 'Gold Standard', Ilex crenata 'Steeds', Ilex x meserveae 'Mesog' (China Girl), Muhlenbergia capillaris, Muhlenbergia dubia, Portulaca
**grandiflora 'Happy Hour Orange', Rosmarinus officinalis 'Arp', Rudbeckia hirta 'Tiger Eye Gold', and Salvia sylvestris 'Blue Hill' were treated with one or more of the herbicides at 1X, 2X and 4X label rate. The herbicides were Dimension 2EW, Town 6EC, Biathlon 2.75G, and Marengo 0.0224G.**

Phytotoxicity was observed and recorded as percent injury at 1, 2, and 4 weeks after each treatment. No injury was observed in *Hemerocallis*, *Rosmarinus*, or *Salvia* treated with Biathlon; *Hemerocallis*, *Ilex crenata*, or *Ilex meserveae* treated with Dimension; or *Gaura*, *Heuchera*, or *Muhlenbergia* treated with Tower. Severe injury was observed in Begonia treated with Dimension and *Aquilegia* and *Catharanthus* treated with Tower.

**Ornamental Grass Safety with Over-the-top Applications of Select Herbicides: IR-4**  
**Investigators:** Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil  
**Location:** Long Island Horticultural Research and Extension Center

As ornamental grasses, especially native species, become more popular in the trade as attractive, low-maintenance additions to the landscape, additional management tools are needed by growers and landscape managers. Since 1963, the IR-4 Project has been the major resource for supplying pest management tools for specialty crop growers by developing research data to support new EPA tolerances and labeled product uses. A trial was conducted for the USDA IR-4 Project to determine the safety of two preemergence herbicides for use on ornamental grass and sedge species. Treatments were applied to container-grown grasses and sedges within eleven days of transplant and again at six weeks after treatment.

Samples of *Ammophila breviligulata*, *Carex buchanani 'Red Rooster', Carex morrowii 'Ice Dance', Chasmanthium latifolium, Deschampsia cespitosa, Festuca glauca 'Elijah Blue', Hakonechloa macra 'Aureola', Leymus arenarius 'Blue Dune', Muhlenbergia capillaris, Pennisetum alopecuroides, Pennisetum orientale, Schizachyrium scoparium, and Sporobolus heterolepis were treated with Dimension 2EW or Pendulum 2G or both, each at the 1X, 2X, and 4X label rate.

Phytotoxicity was observed and recorded as percent injury at 1, 2, 4, and 6 weeks after the first treatment (before the second timing) and 1 and 2 weeks after the second treatment. Fresh weights and root rating data were collected at 4 weeks after the second treatment. No foliar or root injury was observed and no decrease in fresh weight was detected for *Ammophila*, *Hakonechloa*, *Leymus*, *Muhlenbergia*, and *Sporobolus* treated with Pendulum. Moderate foliar and root injury and decreased fresh weight was observed for *Deschampsia* and *Festuca* treated with Dimension at high rates. For all other crop/herbicide combinations tested in this trial, minor foliar and/or root injury was observed.

**Granular Herbicide Effects Through Vapors in Enclosed Growing Areas**  
**Investigators:** Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil  
**Location:** Long Island Horticultural Research and Extension Center

Marengo G (indaziflam) will soon be available for use in enclosed structures like greenhouses and hoop houses. One issue that needs to be addressed is whether Marengo G is volatile in such
enclosures and if so, will it harm desirable plants. A study was established at the LIHREC in 2014 to examine the potential for volatile fume injury.

Treatments consisted of two rates (200 and 400 lb prod./A) of Marengo G-eco and Marengo G-verge. Plants tested were Tomato 'Super Sonic', Coleus ‘Limelight', Petunia 'Easy Wave Rosy Dawn', and Parsley 'Italian Dark Single'.

On day of treatment, May 13, 2014, the hoop house substrate, a woven landscape fabric, was pre-moistened to allow granules to adhere to the surface. The hoop house trial area was enclosed, then plants were placed on treated or untreated landscape fabric. Plants were maintained in the closed house for duration of trial. Temperatures in hoop house did not exceed 90°F at any time. The result of injury ratings taken on three dates (May 14, 20, and 27) indicated that no visible injury occurred at any time during the trial. Fresh weights, measured on June 2 suggest that under normal growing conditions, volatile fumes of indaziflam will not built up in an enclosed structure to the level of causing visible plant injury to nearby crops.

**Efficacy of Indaziflam Rates and Formulations for Container Weed Control**

**Investigators:** Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil

**Location:** Long Island Horticultural Research and Extension Center

Two granular formulations of Marengo 0.0224G (indaziflam), G-eco and G-verge, were compared at three application rates, 100, 200, and 400 lb prod./A. The level of efficacy was evaluated on three common and troublesome weed species, common groundsel (*Senecio vulgaris*), bittercress (*Cardamine spp*.), and annual bluegrass (*Poa annua*). The weeds were sown in flats containing standard greenhouse growing media shortly after the treatments were applied on May 20, 2014.

The results of four evaluations over an eight week period suggest that both formulations performed equally well on bittercress. However, both *Poa annua* and groundsel were significantly better controlled by the G-eco than by the G-verge formulation. This difference in control was first observed at the evaluation performed two week after treatment. So it appears that the difference in control is more a matter of the property of the granule formulation than any increase in herbicide breakdown over a period of time.

**Plant Tolerance to Treatment 'Splash Back' within Enclosed Hoop house**

**Investigators:** Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil

**Location:** Long Island Horticultural Research and Extension Center

With the recent EPA approval of indaziflam (Marengo) for application in enclosed greenhouses and hoop houses, there are several issues that need to be addressed concerning the application and efficient use of this preemergent herbicide. One such question concerns application along the edges inside empty houses that will soon be filled with potentially sensitive bedding plants. If indaziflam sprays are applied to plastic or glass sides, will there be an injurious ‘splash back’ occurring later when regular irrigation resumes once the house is re-occupied? A study was conducted at the LIHREC in 2014 to answer this question.
Treatments of Marengo 0.622 SC at 14.5 fl oz/A were applied in an empty unheated hoop house that was covered in white polyethylene film with a woven landscape fabric substrate. Sprays were applied in two-foot wide swaths in one or all of three zones: (1) on the floor adjacent to the wall, (2) along the base of the wall, or (3) on the wall four feet above the floor (on the curve of the hoop house wall). In addition, a treatment of Sureguard 51WDG was applied to all three zones. These areas were used to simulate possible locations of intentional or inadvertent spray deposit.

Following treatment, in order to realistically simulate exposure, flats of six commonly grown ornamental and vegetable transplants were placed in three locations near and beneath the spray zones. The flats were moved into position eight hours after treatment application and maintained in the closed hoop house.

Visual ratings of plant response were recorded throughout the trial and after 21 days, the trial plants were harvested and aboveground fresh weight was measured. The results indicate that of the transplant species tested (coleus, petunia, portulaca, parsley and two tomato cultivars), coleus and portulaca were the most sensitive to indaziflam. Even so, the injury level did not rise above 18% for any species exposed to indaziflam. Flumioxazin, which is not labeled for use in closed structures, caused much greater injury to all six plant species. The results indicate that there is a fairly high level of bedding plant tolerance to inadvertent indaziflam exposure in an enclosed house.

**Crop Safety with Lebanon Products**  
**Investigators:** Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil  
**Location:** Long Island Horticultural Research and Extension Center

A container study was initiated in June 2014 to evaluate the response of two herbaceous ornamental bedding plants to incremental rates of dithiopyr formulated on a granule either with or without the insecticide bifenthrin. On June 17, individual plugs of *Impatiens* 'Impreza White' and *Salvia* 'Evolution Deep Violet' were transplanted into 4-inch square pots. The growing media was a standard nursery mix of 70:20:10 fine bark:compost:sand, pH: 6.4 with Harrell's 20-4-10 (8-9 mo.) and dolomite lime. Treatments were applied seven days after transplant. Within ten minutes of application plants were irrigated with one-half inch of water.

Plants were rated for visual evidence of injury or lack of vigor regularly on six occasions, until August 11, 2014. The results suggest that while there was some injury to both species at the highest rates tested, neither species responded differentially in the presence of the insecticide compared to the equivalent treatment with dithiopyr alone. The impatiens began to develop downy mildew after the fourth rating and no further evaluations were conducted on that species.

**Management of Pinellia ternata (Crowdipper)**  
**Investigators:** Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil  
**Location:** Long Island Horticultural Research and Extension Center

Crowdipper (*Pinellia ternata*) truly is an odd little plant. It is a geophyte; arising in the spring from an underground bulblike corm. The petioles and attached leaves are just about all there is
to this plant. The larger corms also give rise to a sticklike inflorescence that looks vaguely like its relative the jack-in-the-pulpit. While the jack-in-the-pulpit is a valued wildflower and welcome guest, the Crowdipper is its obnoxious cousin who won’t go away.

Crowdipper, or green dragon as it is also called, has leaves with four distinct shapes. They range from roundish spearheads to larger trifoliate with three separate leaflets. The very distinctive bulbils (aerial tubers) that form a swollen looking mass half way up the petiole are one of the ways that this weed spreads. The bulbils will harden and eventually fall to the soil and remain dormant until next season. The corms are also enlarging and reproducing on the ends of creeping rhizomes (underground stems). The flower head or spadix will become swollen with ripening seeds that disperse nearby. Altogether, these three dispersal mechanisms signal that this plant is well adapted to colonize and invade nearby areas. Crowdipper is native to East Asia where it is cultivated in some countries for its medicinal properties. The corms are poisonous, but have a variety of pharmaceutical uses when detoxified.

This weed has been found in a few locations in landscaped beds on Long Island and upstate New York recently. The reason that this plant is so worrisome is that once the corms are found in an area, it is nearly impossible to eradicate. Even removing leaves has not proven a deterrent to rapid regrowth. At this point, there are no herbicides specifically labeled to control this weed.

We established a small preliminary trial in 2013 to investigate whether fall-applied herbicides registered for landscape or field nursery use would have any residual ability to control Crowdipper emergence in the spring. Our study examined the corm and foliar fresh weights nine months after the fall treatment. The results indicate that most of the herbicides tested were ineffective. However, two pre-emergence herbicides were excellent, Casoron (field woody nursery use) and Marengo (field, container and landscape use, not commercially available on LI). The postemergence herbicide Glyphosate was only effective at the higher rates tested. This study will be repeated and expanded to look at non-chemical approaches as well. In the meantime, keep a sharp eye out for Crowdipper.

Biological Management of Mile-a-Minute Vine with Mile-a-Minute Weevil

Investigators: Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil

Location: Suffolk County, New York

In 2014, over 3,000 weevils (Rhinoncomimus latipes) were released onto mile-a-minute vine at several new infestation sites on Long Island, New York. Two were located on the South Fork and nine in Orient. The weevils were released onto these privately owned properties during the first half of July. This release date is later by two months than releases at other sites in past years. Because the weevil rearing lab in New Jersey gave priority to federal and state parks, they did not have enough weevils to ship for this project until the later date.

Despite the late release, the weevils showed evidence of good establishment through foliar feeding damage at all the new sites. However, by the end of the season, the visual estimation of weed damage was generally low to moderate with pockets of high feeding activity. The late release date and the relatively low numbers released at each site are thought to be the main
reasons for this. The weevils released in 2014 are expected to overwinter on site and should begin a new life cycle in late April. We will continue to monitor those sites in 2015.

Going forward, we plan to release more weevils (as funding permits) and conduct a county-wide survey with the help of some volunteer citizen scientists. The survey will help document the scope of the infestation of this highly invasive weed at county and state parks.

**Development of Standardized Best Management Practices for Disposing of Running Bamboo after Removal from Landscapes**

**Investigators:** Andrew Senesac, Tamson Yeh, Irene Tsontakis-Bradley and Andrew Hoil

**Location:** Long Island Horticultural Research and Extension Center

Running bamboo (*Phyllostachys spp.*) is an invasive grove-forming grass species whose planting is now prohibited in many jurisdictions on Long Island and will be in the near future for all of New York State. The issue of destruction and disposal of bamboo rhizomes that still have the potential to survive and multiply is not standardized. In an effort to develop a teachable protocol for efficient running bamboo reduction and destruction in situ, and effective destruction and disposal once removed from site, a small research project was conducted in 2014.

In late June, rhizomes were freshly dug from a large infestation of running bamboo at 360 Yaphank Ave Yaphank, New York. As soon as rhizomes were harvested, they were dissected into 2-node sections and roots trimmed off. The sections were submitted to a variety of treatments that simulated the environment the rhizomes would be exposed to in an optimally maintained compost pile. After periods of heat exposure the rhizomes were left to desiccate in the sun for periods up to three months. Following this, they were placed in regularly irrigated growing media and subsequently examined for fresh root growth. The results of this series of treatments were unexpected. Even though the segments appeared completely dead after months of desiccation and outdoor exposure, once they were returned to a friendly environment of moist, dark growing media, nearly all of the treated units (ten 2-node segments) had at least one or two that had sprouted new root growth.

These results suggest that smaller than 2-node segments are needed to permanently disable them from resprouting if left outside. In 2015, we will examine more ‘real’ world composting situations to determine the optimal rhizome size necessary to prevent resprouting.

**Nutrient Management for Field Nurseries**

**Investigator:** Mina Vescera

**Location:** Baiting Hollow, NY and Mattituck, NY

The Commercial Nursery & Landscape Program is conducting ongoing research into precision nutrient management of field-grown trees in collaboration with the Suffolk County Agricultural Stewardship Program. The objective of our research is to find optimal rates of fertilizer for field-grown trees that maintain adequate growth rates, while minimizing production cost to nursery growers and risk of nutrient leaching.
In 2014, trials were installed in field nurseries in Bating Hallow and Mattituck. Tree species were selected based on substantial numbers for treatment replication. *Quercus palustris*, *Pyrus calleryana* 'Glen's Form' (Chanticleer®), *Salix alba* ‘Tristis’, and *Zelkova serrata* ‘Green Vase’ have been the tree species used thus far. The controlled-release nitrogen test fertilizers used were Harrell’s 27-4-10 Nursery Field Mix (5-6 month release), and Everris 23-4-8 Nursery Mix (8-9 month release). Full rates based on the grower’s nitrogen rate and half rates were tested. Data collection consisted of monthly caliper measurements done at 6 inches above ground level and mid-season tissue sampling. Results were not available at time of printing this report, but they will be posted to the CCE Suffolk Nursery and Landscape webpage:
http://ccesuffolk.org/agriculture/commercial-nursery-landscape

Alternatives to Invasive Ornamentals: Native-Friendly Demonstration Garden
Investigator: Mina Vescera
Location: Long Island Horticultural Research and Extension Center

Installed in 2009, the Native-Friendly Demonstration Garden is located at the Long Island Horticultural Research and Extension Center. The Nursery & Landscape Program along with key stakeholders developed a list of alternative plants to invasive ornamentals for Long Island. Plants were selected based upon their similar ornamental characteristics and cultural requirements compared to the widely-used ornamental invasives. Alternative plants may be native or non-native, but are not invasive.

In 2014, garden maintenance included several Long Island ecotype additions to the garden: *Eragrostis spectabilis, Asclepias tuberosa, Baptisia tinctoria, Euthamia caroliniana, Lespedeza capitata, Pycnanthemum tenuifolium and Opuntia humifusa*

Efficacy of several products and rotations for managing western flower thrips
Investigator(s): Faruque Zaman, Lucille Siracusano and Daniel Gilrein
Location: Long Island Horticultural Research and Extension Center

Several insecticides were compared in a greenhouse trial for control of western flower thrips [WFT, *Frankliniella occidentalis* (Pergande)] on ‘Taishan Yellow’ marigold (*Tagetes erecta*). Treatments included two rates each of GF–2860 WG (spinetoram 20% + sulfoxaflor 20%, Dow AgroSciences), Mainspring (cyantraniliprole 1.67 SC, Syngenta), SP3009 (pyrifluquinazon 20% SC, SePRO), Venerate (MBI -206, *Burkholderia* sp. strain A396, 94.46%, Marrone Bio Innovations), and one rate each of Hachi-Hachi (tolfenpyrad 20% SC, SePRO), and Overture 35WP (pyridalyl, Valent). All insecticides were applied as foliar sprays. A water spray was included as control. Marigold plugs were planted on 2/14/2014 in 5.25-inch pots using a standard peat-based growing media (Pro-Mix BX) and maintained on sub-irrigation after establishment using soluble fertilizer (150 ppm N, Peter’s 20-10-20).

WFT from a natural population were introduced to the range while plants were still at vegetative stage and the thrips infestation was allowed to develop. Flower buds were removed from the plants until after most applications were completed (June 19) to avoid uneven migration of adult thrips to flowering plants. Flowers were allowed to remain for the last treatment applied on June 26 to evaluate any phytotoxicity on flowers and flower damage from thrips. Plants were
randomly assigned to treatments and WFT per plant were counted prior to the first application. Sprays were applied to wet (1 liter / treatment) using a CO2-powered backpack sprayer fitted with a TJ60 4003EVS nozzle operating at 30psi to eight single-plant replicates. Plants were arranged in a completely randomized design on a greenhouse bench after application. GF-2860, A20520A, SP3009, Hachi-Hachi, and Overture were applied (HOW MANY TIMES?) on a 2-week interval and four applications of Venerate were made weekly. Were control plants sprayed with water???

Treatments were evaluated by tallying the number of live adult and immature WFT on May 21, 29, June 12, 19, and 26. All plants were rated for thrips damage on 1 - 100 scale (percent foliage surface damaged or necrotic). ANOVA and multiple comparisons among treatments were performed on raw or transformed data using Tukeys’ HSD (JMP Pro 9.0, SAS Institute). WFT populations on plants were similar among treatments at the start of the trial. Overture, GF-2860, and Hachi-Hachi provided significant control of both immature and adult thrips over the period of the trial. Both rates of A20520A and SP3009 treatments reduced WFT numbers significantly but activity appears to last for about one week. Venerate was not effective on any date and WFT numbers were not significantly different from those on control plants. No injury or phytotoxicity was associated with any treatment on plants. Compared with other treatments, overall plant quality was significantly lower on control plants and those sprayed with Venerate due to high levels of thrips damage on foliage.

Turf

Evaluation of Pylex for Control of Crabgrass in Cool-Season Turf
Investigators: Andrew Senesac, Irene Tsontakis-Bradley and Andrew Hoil
Location: Long Island Horticultural Research and Extension Center

A field study was established at the LIHREC in an area with established low maintenance turf (mostly PRG) and untilled bareground areas with an abundance of crabgrass (*Digitaria ischémum* & *D. sanguinalis*). Other incidental weeds were present, including a heavy infestation of *Oxalis stricta*. *O. stricta* became evident mostly in treated areas where crabgrass had been controlled. As a result, there was little if any in the untreated control plots.

The area was treated on June 11, 2014 when crabgrass was in the early 1-2 tiller stage. A second application was made three weeks later on July 2. The treatments consisted of Pylex (topramezone) at 1.0 and 1.5 fl oz prod./A. Drive XLR8 (quinclorac) was applied alone at 64 oz prod./A. The combination of Pylex and Drive XLR8 was applied with both at reduced rates, 0.75 oz/A and 32 oz/A respectively. All Pylex treatments were applied with 0.5% MSO surfactant.

The plots were visually rated for percent control and percent ground cover of the target weed species. The results indicate that although there was a certain level of crabgrass suppression with the lower Pylex rate, the higher rate was necessary to attain commercially acceptable control. Drive applied alone provided very good crabgrass control. The combination of Pylex and Drive at reduced rates resulted in the best control which lasted more than 54 days after the initial treatment. *Oxalis stricta* was excellently controlled by all rates of Pylex and not at all by