



## **The Southern Nursery IPM (SNIPM) Working Group**

### **IPM Priorities Key Pests, Plant Diseases and Weeds for Container and Field-Produced Nursery Crops in the Southeast U.S.**

The Research, Extension, and Regulatory themes below are based on stakeholder focus groups held in 2009, 2011, and 2014. After discussion amongst members of the Southern Nursery IPM (SNIPM) working group and stakeholders, the caucus could not define the separation between the three main categories of Research, Extension, and Regulatory. Indeed, many of the priorities in nursery crops require an integrated effort of all three areas to meet the challenges posed by the focus group members. Moreover, the combination of numerous nursery plant species, their subsequent pest and plant disease complexes, and varied production environments, i.e., field and container nurseries, full sun and shade structures, created a lengthy list of initiatives. The framework and presentation of the themes and their initiatives below is based on that organized and published in Fulcher et al. (2012). In that publication, four main themes were used to organize the overall Research, Extension and Regulatory initiatives or priorities. The framework has been updated to account for the most recent focus group meeting in 2014. A table of the high priority pests, plant diseases, and weeds is also provided below. The pests were organized by focus group members who considered prevalence, difficulty to control, damage potential, and severity of injury into their final choices. Therefore, use the priorities outlined below combined with a pest or pest complex from Table 1 to produce a research, extension or regulatory priority.

General operational initiatives for four research and Extension themes for nursery IPM. The initiatives within each theme are listed in order of highest priority as voted by focus group attendees in 2014.

1. Apply nursery IPM within a whole-systems approach
  - a. Promote efficient pesticide applications directed at susceptible pest life stages to minimize risks and increase effectiveness.
  - b. Demonstrate relationships between production practices (e.g., pruning, fertilization, water quality, irrigation, leaf wetness, spacing, sanitation, and use of cover crops) and pest population dynamics.
  - c. Optimize monitoring, scouting, and pesticide application timing to manage the pest complex (weeds, arthropods, plant disease) rather than individual species.
  - d. Screen insecticides and formulations with reduced impacts on secondary pests and nontarget species (e.g., natural enemies and pollinators).
  - e. Increase use of plant phenology indicators to predict seasonal pest activity.
  - f. Quantify differences in container- and field-grown plants for pest susceptibility and pesticide efficacy.

2. Key Pest Biology; Optimize pest monitoring and management tactics
  - a. Develop training on pest and disease scouting, utilize manual and digital recognition techniques, early pest and disease detection and development, and use of action thresholds.
  - b. Develop improved management guidelines, identification techniques and outreach literature.
3. Develop and adapt new technology and technology transfer to practitioners.
  - a. Develop decision aids to improve pesticide and fungicide selection by improving access to product label information including pests, plant diseases, or weeds controlled, crop tolerances, application doses, mode of action, worker protection standards, rotations, rainfastness, and guidelines for effective use.
  - b. Develop a regional website to effectively distribute nursery IPM news and information.
  - c. Develop a nursery scouting certification program delivered ideally via distance education.
  - d. Increase use and access to digital diagnosis through county Extension offices.
  - e. Develop decision aids to improve herbicide selection by improving access to label information including weeds controlled, crop tolerances, application doses, rotations, and guidelines.
  - f. Use of unmanned aerial vehicles (drones) for scouting for pests, weeds, and diseases; detecting blow over; targeted spray applications; worker productivity management; and sales and inventory management.
4. Assess economics and actual costs; validate benefits of adopting IPM
  - a. Pesticide efficacy trials should include cost analysis and include generic products and formulations as alternatives.

**Table 1. Arthropod, plant disease, and weed pests identified by focus group members as key management priorities and listed in order chosen in Quincy, FL, in February 2014. Members completed a pre-survey of these pests based on prevalence, difficulty to control, damage potential, and severity of injury. During the focus group meeting, SNIPM members and focus group participants discussed the pests and then focus group members only produced a final reorganization by vote using a sticker caucus.**

<b>Arthropods</b>	<b>Plant Diseases</b>	<b>Weeds<sup>z</sup></b>
Eriophyid mites	Boxwood blight	Spurge (C)
Flea beetles	Rose rosette virus	Oxalis/woodsorrel (C)
Spider mites, <i>incl.</i> red spider mite	Stem Cankers, <i>incl.</i> <i>Seridium</i> , <i>Fusarium</i> /cold injury, and others	Liverwort (C)
Fire ants	Bacterial leaf spot/blights	Eclipta (C)
Armored scales: Japanese maple scale, tea, white peach	Powdery mildew	Bittercress (C)
Soft scales: calico, lecanium, wax	Conifer tip blights (Phomopsis and others)	Groundsel (F, C)
Aphids	Fireblight	Crabgrass (F)
Granulate ambrosia beetle	Foliar nematodes	Nutsedge (F)
Thrips ( <i>incl.</i> chilli thrips)	Crown gall of rose	Bermudagrass (F)
Root grubs/weevils	Black root rot (Thielaviopsis)	Horseweed (marestail) (F, C)
Clearwing moth (e.g., dogwood, peachtree, lilac/ash borer)	Fungal leaf spots, <i>incl.</i> black spot	Chickweed (F, C)
Broad mites	Cercospora	Glyphosate resistant horseweed (marestail) (F, C)
Brown marmorated stink bug	Vascular wilts	Henbit (F)
Japanese beetle	Anthraco nose	Glyphosate resistant pigweed (F)
Leafhoppers	Pythium and Phytophthora	Morningglory (F)
Bagworm	Bacterial leaf scorch	Pigweed (F)
Maple tip borer	Rust (Passilora)	Annual bluegrass (C)
FHAB ( <i>incl.</i> emerald ash borer)	Target spot	Mulberryweed (F, C)
Crape myrtle bark scale	Rhizoctonia root rot and web blight	Ragweed (F)
black twig borer	<i>Botrytis</i>	Chamberbitter (F, C)
Kudzu bug		Bindweed (F)
		Johnsongrass (F)
		Horsenettle (F)
		Glyphosate resistant johnsongrass (F)

<sup>z</sup>Weed species are listed by perceived abundance and management difficulty but the list does not represent a complete listing of important species or current abundance For example: glyphosate resistant johnsongrass is listed as a species of concern but is currently documented to be present in agronomic crop fields in only 3 states in lower Mississippi valley.