

Implementation of Integrated Pest Management Strategies in the Specialty Crops:

Supporting Stakeholders and Clientele in the Florida Panhandle

M. Haseeb^{*1}, S.D. James¹, L. Simeon¹, J.C. Legaspi², A. Bolques³, L.H.B. Kanga¹

¹ Center for Biological Control, College of Agriculture and Food Sciences, Florida Agricultural and Mechanical University, Tallahassee, FL 32307;

² USDA-ARS, Center for Medical, Agricultural and Veterinary Entomology, Tallahassee, FL 32308; ³ FAMU Research and Extension Center,

College of Agriculture and Food Sciences, Cooperative Extension Program, Florida A&M University, Quincy, FL 32352

Abstract

Florida A&M University (FAMU) has been carrying out activities in support of extension integrated pest management (IPM) for many years now. The program has an established transdisciplinary group of faculty distributed in five research and extension centers/programs which is responsible for delivering IPM solutions to stakeholders and clientele since June 2010. These centers/programs facilitate FAMU's capacity to link with a diverse group of clientele and stakeholders who guide programming and have a working relationship with a variety of clientele. IPM has now been identified as an integral component of the programming in all the Centers/programs. The IPM team serves to maximize all available resources, ensuring collaboration and synergy and ultimately more effective use of available resources. The FAMU's Extension IPM Program is strongly supported by the Extension/Research Administrators as well as our stakeholders and clientele. The project primarily focuses on IPM implementation for specialty crops (small fruits, vegetables and nut crops). The project brings together a diverse group of transdisciplinary faculty and collaborators to address to IPM implementation in the specialty crop (fruits, vegetables and nut crops), and 2) IPM implementation in communities. In addition, our team targets, i) IPM support for pest diagnostic facilities, and ii) IPM education for pesticide applicators and provides CEUs (continuing education units) for professional advancement and career building. Every year, seasonal field days and workshops are being organized to support small-scale growers to improve their knowledge, skill sets and abilities to sustain food security and specialty crop productivity in the Florida panhandle.

Introduction

The major goal of the FAMU's IPM Program is to provide critical knowledge-based solutions which will enable the stakeholders and clientele to effectively protect and/or conserve plant, animal and human resources through the implementation of pertinent components of the National IPM Roadmap. The project targets several goals of the National IPM Roadmap including, i) Production Agriculture, ii) Natural Resources and Recreational Environment, and iii) Residential and Public Areas. It targets four CPPM (Crop Protection and Pest Management) areas: i) Plant Protection Tactics and Tools, ii) Diversified IPM Systems iii) Enhancing Agricultural Biosecurity, and iv) IPM for Sustainable Communities. The project supports NIFA's five years strategic plan: Science Goal 1-Catalyze exemplary and relevant research, education, and extension programs, sub-goal 1.1 Advance our Nation's ability to achieve global food security and fight hunger by supporting food security with comprehensive IPM approaches that are economically viable, environmentally sound, and will help to protect human health.

The following are the target audience:

- Small farm specialty crop growers
- Extension specialists
- Pesticide applicators
- Backyard gardeners
- Community school partners
- Public
- Students
- Hobbyists
- Retirees

Program Description

The team has delivered cost-effective IPM strategies to stakeholders and clientele using in-person and using remote linkages. The following are the specific delivery methods used by the FAMU's IPM team:

- Organize seasonal field days and workshops
- Offer visits to IPM demonstration sites
- Present in the local, regional, and international meetings
- Publish extension and outreach materials in local news papers and other media outlets
- Offer digital guidance using FAMU's server

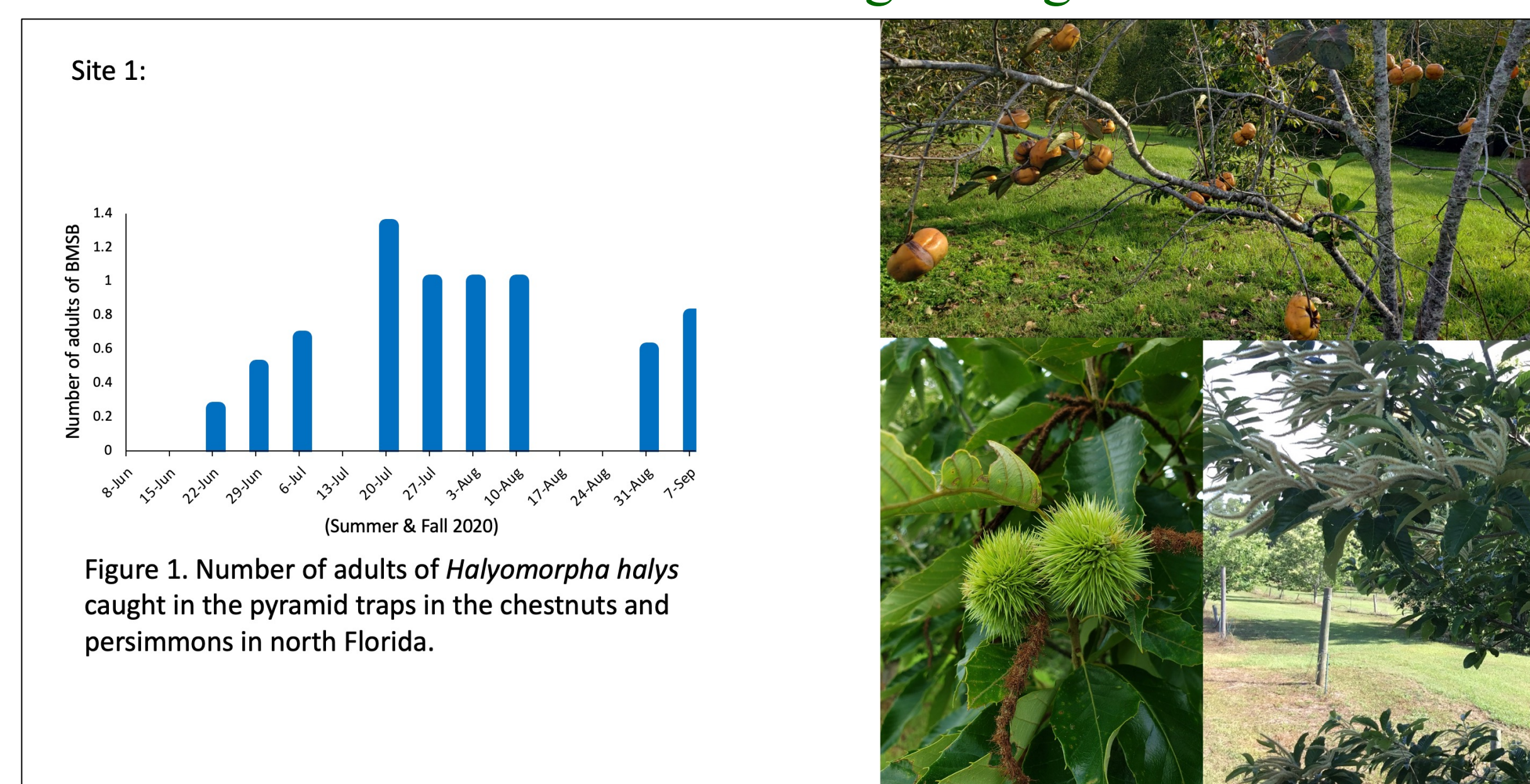
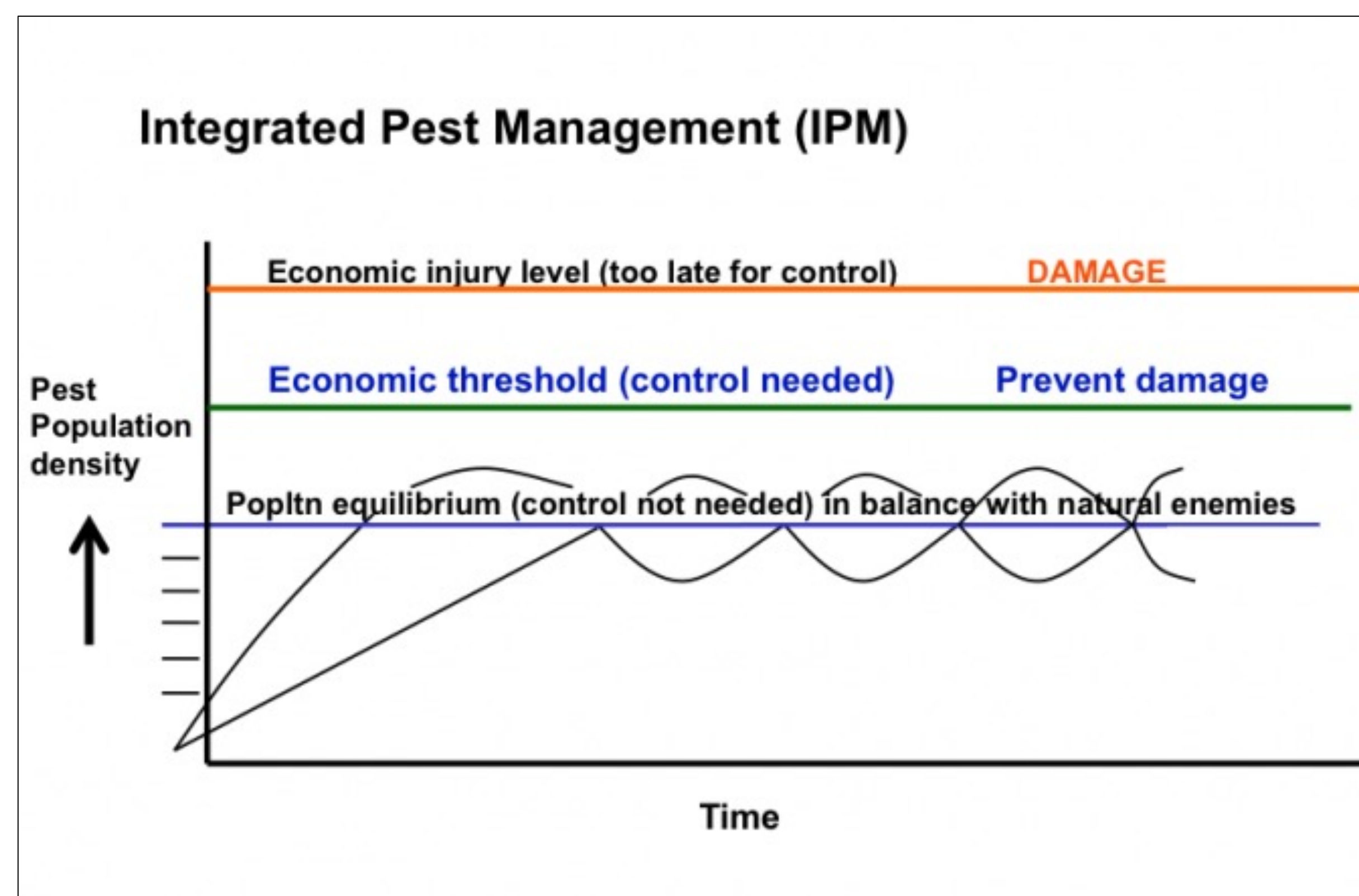


Figure 1. Number of adults of *Halysmoria halys* caught in the pyramid traps in the chestnuts and persimmons in north Florida.



Since 2010, the CBC IPM team has been instrumental in the development and implementation IPM in vegetables, small fruits and communities in the Florida panhandle. The team's collaborative activities resulted in a substantial increase in the number of underrepresented and minority students receiving experiential IPM training. Another excellent outcome is that an increased number of underrepresented small-scale specialty crop growers who have benefited from the team's extension activities. Small-scale growers were able to reduce pesticides usage by 20-35%.



Pests of Vegetables and Action Thresholds			
Species Common Name	Species Scientific Name	Crops	Thresholds
Melon thrips	<i>Thrips palmi</i>	Pepper	2-3 larvae/plant or adults/flower or fruit Ratio of 1 pirate bug/180 thrips is adequate to suppress thrips density
Western flower Thrips	<i>Frankliniella occidentalis</i>	Tomato	1 thrips/plant
Pepper weevil	<i>Anthonomus eugenii</i>	Pepper	5% fruit damage
Southern green Stinkbug	<i>Nezara viridula</i>	Tomato	1 nymph or adult/plant
Silverleaf whitefly	<i>Bemisia argentifolii</i>	Tomato, pepper	0.50 nymph on terminal leaflet or 1 adult/leaf
Green peach aphid	<i>Myzus persicae</i>	Tomato, pepper	3-4/plant
Twospotted spider mite	<i>Tetranychus urticae</i>	Tomato, Bean, Pepper	10 nymph or adult/plant

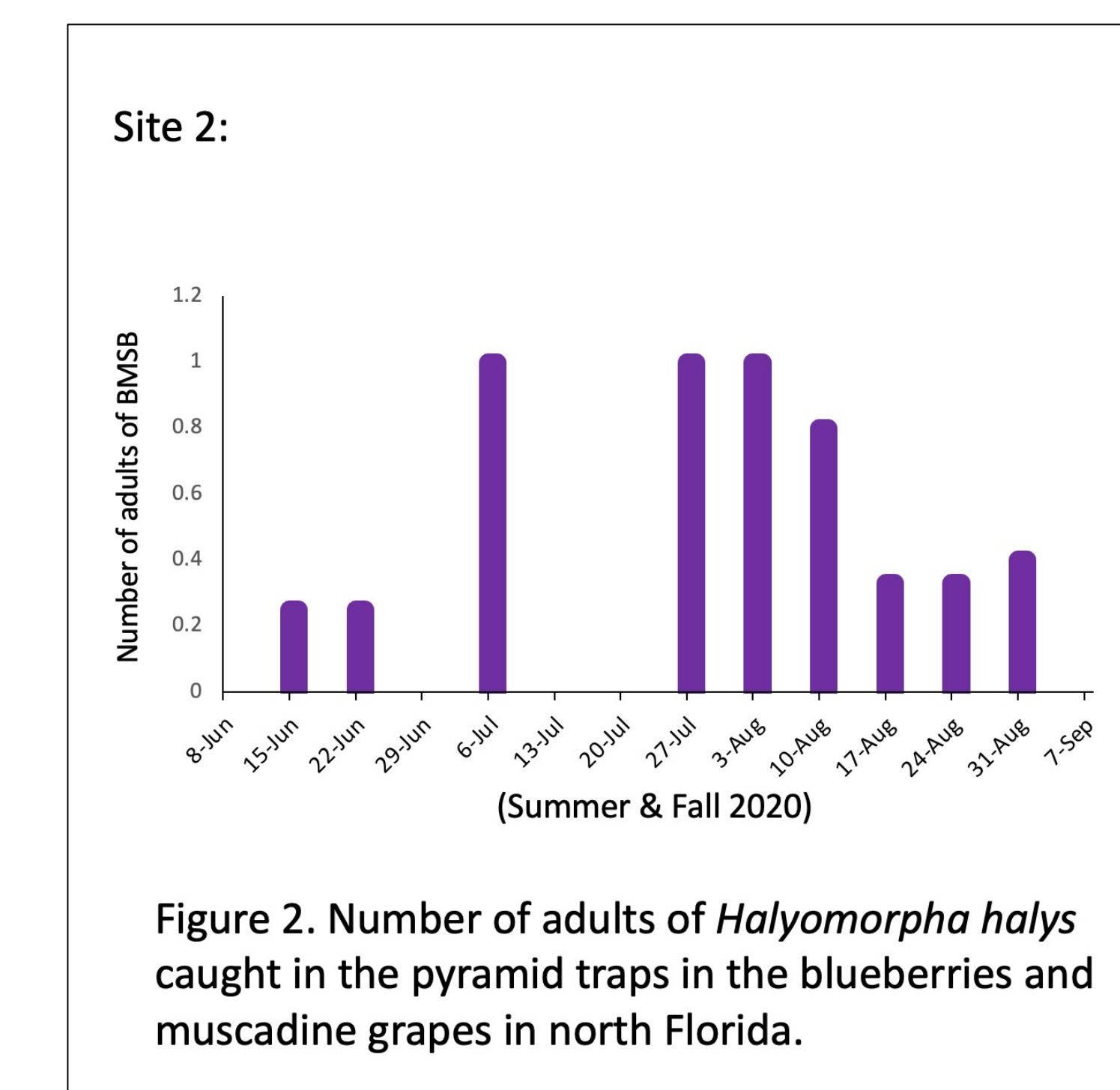


Figure 2. Number of adults of *Halysmoria halys* caught in the pyramid traps in the blueberries and muscadine grapes in north Florida.

Future Plans

- Provide identification tools and commodity-wise spread sheets on serious pest insects and their biological control agents
- Provide knowledge of new and effective traps to growers
- Provide cost-effective pest management solutions to growers including the use of trap and refuge crops
- Assist growers in diversifying their specialty crops and conservation of biological control agents
- Increase growers' knowledge, skills, and abilities in selecting pest resistance cultivars and modification of cultural practices
- Assist small-scale growers in making proper decisions to manage serious crop pests under current climate vulnerabilities

Acknowledgments

The funding support for this study was provided in part by the USDA, NIFA, CPPM Program and iPIPE (Integrated Pest Information Platform for Extension and Education) USDA, AFRI Program. Field and logistic support was provided by the faculty and staff of the Center for Viticulture and Small Fruit Research, Florida A&M University is greatly appreciated.