

Outreach

Title: Development of a regional pollinator protection and management guide

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Public Abstract:

Insect pollinators play a crucial role in small fruit production in the Southeast. However, agricultural pest management largely relies on pesticide usage, which creates a precarious agricultural landscape for bees. While the EPA has created regulations and guidelines for certain insecticide usage, these restrictions can be confusing for growers when choosing the best management options. As a supplement to the six integrated pest management guides for southeastern small fruit production published by the Southern Region Small Fruit Consortium, we proposed to develop a new integrated pollinator management guide. We have built a team of pollinator and IPM specialists to collaborate on the development of a guide that focuses on pollinator protection and crop-specific guidelines for pollination of fruit crops in the Southeast.

Introduction:

In today's agricultural landscape bees play a significant role in small fruit production. In the United States alone, honey bees contribute \$14.6 billion in pollination services and native bees approximately \$3 billion. Globally, pollination services have been estimated at over US\$200 billion annually and is estimated that 35% of global food production is dependent on insect pollination. The European honey bee is the most important insect pollinator for the majority of agriculture crops. The yields of some crops decrease by more than 90% when honey bees are not present. However, there are over 17,000 species of bees in the world. With nearly 3,500 species native to North America alone, and approximately 450 native, wild bee species in the eastern United States, it is not surprising that wild bees can be more effective pollinators for some crops, such as for blueberries and caneberries.

Unfortunately, the agricultural landscape is not very friendly towards bees. The intense pesticide use in fruit production may have further down-stream ecological consequences by mitigating honey bee health and wild bee health. As such, in recent years a lot of emphasis has been placed on the importance of protecting pollinators from insecticides, and as such the Environmental Protection Agency (EPA) is now restricting specific insecticide use during crop bloom (<http://www2.epa.gov/pollinator-protection>). However, this restriction does not cover fungicides, which are commonly used pre-, during, and post-crop bloom, and may also have a negative impact on pollinators. Regardless, agricultural pest management largely relies on pesticide usage and the usage restrictions and lack of guidance can be confusing for growers when choosing the best management options. While the Southern Region Small Fruit Consortium (SRSFC)

currently produces six excellent integrated pest management guides for Southeastern small fruit production, we proposed that a new integrated pollinator management guide is needed to enhance their catalog.

Description of Outreach Activity:

We are currently developing a guide that focuses on pollinator protection and crop-specific guidelines for pollination of fruit crops in the Southeast. Information in the guide is expected to encompass types of pollinators important for crop pollination, hives needed per acre, alternative pollinators (eg. non-honey bees), insecticide risk, insecticide classes and formulations, best times to apply pesticides, and other information determined by the team.

Results or Outcome:

The first step in the development process is to bring together experts in the field, and as such we have built a team of eleven specialists from six universities who have agreed to collaborate and work on the guide (Table 1). These specialists have vast and diverse expertise, which will collectively provide the best-possible management strategies for the pollinator management guide. We are proposing to meet in conjunction with the annual summer SRSFC IPM guide meeting at the Mountain Horticultural Crops Research and Extension Center in Mills River, NC to finalize our development of the pollinator management guide. Once completed in the Fall of 2020, the guide will be posted online for free as a pdf on the SRSFC website.

We anticipate that the proposed guide will help growers understand the pollination requirements of their crops, but also how to be good pollinator stewards (important for growers of non-pollinator dependent crops too), which may increase the sustainability of fruit production in the Southeast.

Table 1. IPM and pollinator experts that have agreed to participate in the development of a pollinator guide.

Co-PI/Editor	Institution	Expertise
Josh Campbell	Auburn University	IPM and crop pollination
Geoff Williams	Auburn University	Honey bee and pollinator ecology
Kristen Healy	Louisiana State University	Public health and pollinator ecology
Hannah Burrack	NC State University	IPM and crop pollination
Neelendra Joshi	University of Arkansas	Ecotoxicology, pollinator health, and IPM
Amanda McWhirt	University of Arkansas	Agroecology and small fruit production
Jon Zawislak	University of Arkansas	Apiculture
Brett Blaauw	University of Georgia	IPM and crop pollination
Keith Delaplane	University of Georgia	Honey bees and crop pollination
Doug Pfeiffer	Virginia Tech.	IPM and crop pollination
James Wilson	Virginia Tech.	Apiculture