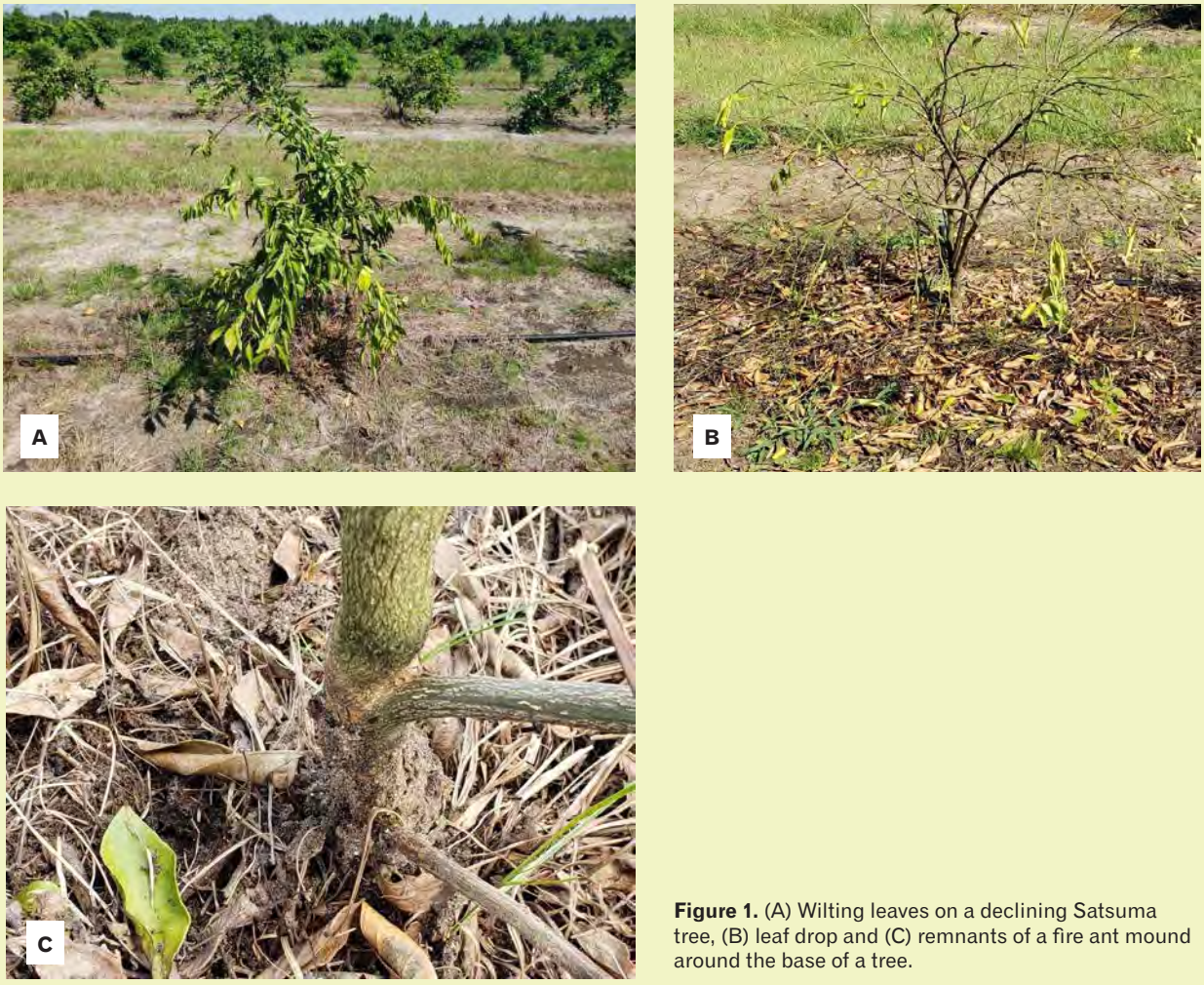

Figure 1. (A) Wilting leaves on a declining Satsuma tree, (B) leaf drop and (C) remnants of a fire ant mound around the base of a tree.

Fire ant management in citrus

By Lauren M. Diepenbrock

While there are many species of ants in Florida, the invasive fire ant (*Solenopsis invicta*) is the one most people are familiar with. These ants can be pests in agriculture, landscapes and structures. The pest's ability to use a variety of habitats and resources makes it challenging to manage.

In citrus groves, fire ants can be both pests and beneficial insects. Fire ants are notorious for their ability to girdle young trees when they build mounds in tree wraps and for stinging workers in groves. At the same time, some growers may benefit from their presence because they consume *Diaprepes* larvae (Whitcomb et al., 1982).

TREE DAMAGE

Fire ants can also impact trees that have been in the ground for a few years. Fire ant damage to more established trees may not be apparent initially. A satsuma grower in North Florida recently reported damage to fruit-bearing trees that included lost vigor, dropped leaves and eventually death (Figure 1). A pathology report showed two species of fungi that are known to make use of previous damage to trees, but they alone could not have killed these trees.

Upon further inspection of pictures sent to the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) plant pathology and entomology Extension specialists, something else was noticed that could have caused this decline and allowed pathogens to enter the trees. At the base of the trunks, hardened sandy soil was plastered against the tree, and visible bark was severely damaged. In this scenario, fire ants girdled several trees before a full diagnosis could be made.

INTERACTION WITH OTHER INSECTS

In other production systems, fire ants have exacerbated problems with certain honeydew-producing pests such as aphids (Kaplan and Eubanks, 2005). UF/IFAS researchers are finding an association between fire ants and lebbeck mealybugs (*Nipaecoccus viridis*). The fire ants tend mealybugs

Current UF/IFAS Bait Recommendations

Mode of Action	Trade Name	Rate/Acre	Comments
6	Clinch	1 lb	For use on bearing and nonbearing trees.
7A	Extinguish	1 lb	For use on bearing and nonbearing trees. Labeled for aerial application.
7B	Award	1 lb	For use on nonbearing trees only. Maximum of two applications per season.

Source: Florida Citrus Production Guide 2020-21

for their honeydew, which provides a carbohydrate-rich food for the ants and protects the mealybugs from other potential predators (unpublished data, K. Gaines).

In situations where fire ants may be facilitating the establishment of another pest, their management is critically important for overall grove health.

Photo by Lyle Buss, UF/IFAS

BIOLOGY OF THE PEST

Fire ant management is often only performed prior to picking to protect pickers from being stung. However, fire ant management should be considered throughout the year to prevent populations from reaching high levels.

Good fire ant management needs to account for the biology of the pest. The ants that are seen on the ground or in trees are only a fraction of the actual colony. These ants are aptly named foragers. They're the oldest members of the colony and expendable in terms of colony health. Their job is to bring back food to feed the rest of the colony. Food items are brought to the inner recesses of the mound to the oldest larvae who consume it, digest it and regurgitate it in a liquid form. It is then consumed by the younger larvae, queen and workers.

The biology is important because if you only kill what ants are visible on the surface, they will be replaced. To get control of fire ants, you must kill the queen, which means the toxin needs to penetrate the nest.

BAITS WORK BEST

Baits are the best option for managing fire ant populations. Baits work so well because the foragers bring the toxin-laced bait into the nest to feed the larvae, which will then kill off the colony over time.

For best control, the bait should be applied broadly, not just to the mound. Fire ant colonies often have tunnels that extend 5 or more feet from the visible mound that foragers use to locate food for their colony. In situations where fire ant populations are extremely high, bait applications can be followed one to two weeks later with a contact insecticide to reduce the active forager population while the bait slowly kills the rest of the colony.

See entnemdept.ufl.edu/creatures/urban/ants/red_imported_fire_ant.htm for more information on red imported fire ants.

Lauren M. Diepenbrock is an assistant professor at the UF/IFAS Citrus Research and Education Center in Lake Alfred.