Apple Disease Management

Pick TN 2022

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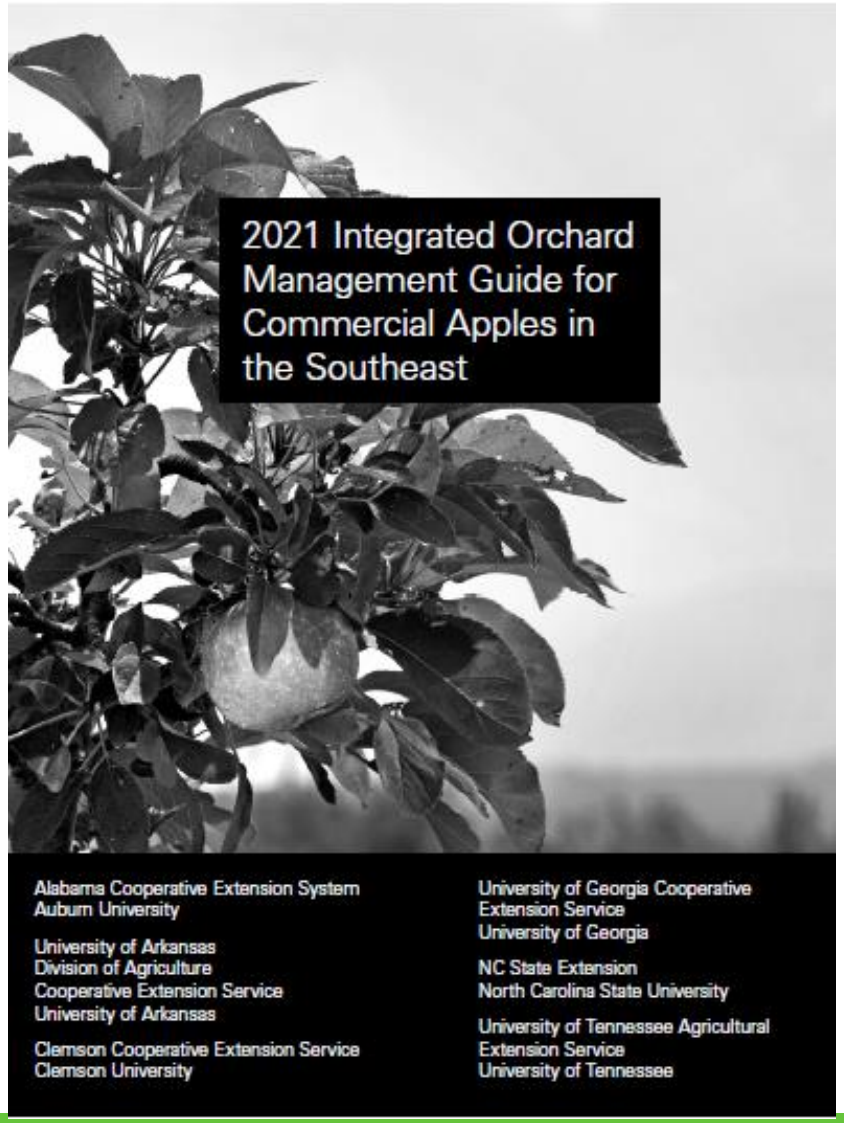
Since 1963, the IR-4 Project (IR-4) has been the primary entity in the United States to **facilitate registrations of conventional pesticides and biopesticides on Specialty Food crops (fruits, vegetables, nuts, herbs, spices) and non-food Environmental Horticulture crops**.

Commercial Orchard IPM Guide



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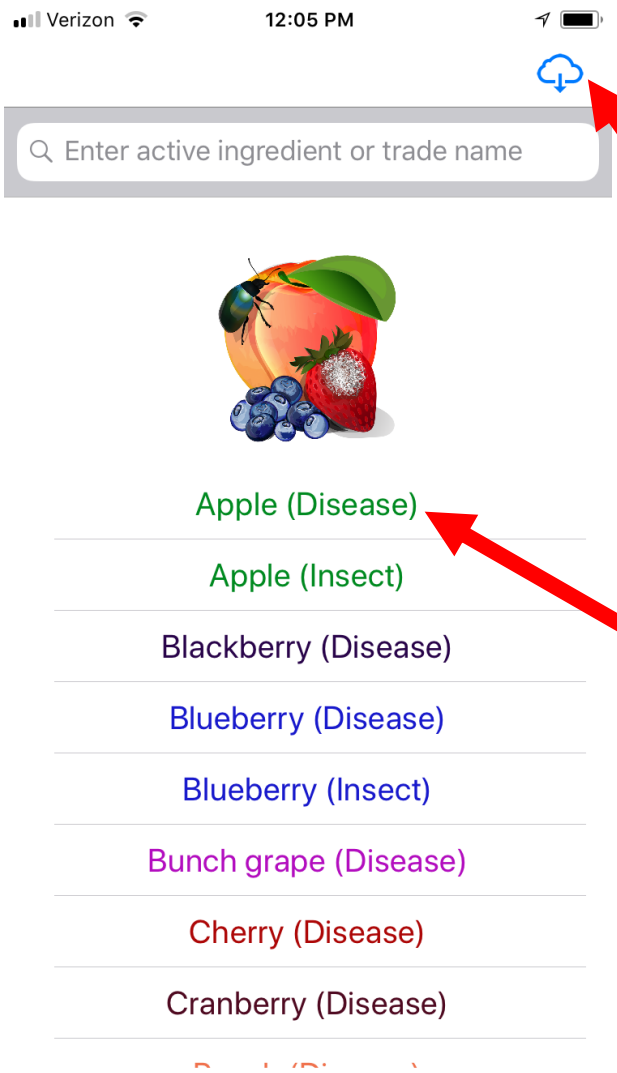
“MyIPM” – free mobile app

- MyIPM – an app designed to help commercial growers make disease management decisions
- useful to help identify pests & diseases, especially on-the-go

“MyIPM” – free mobile app

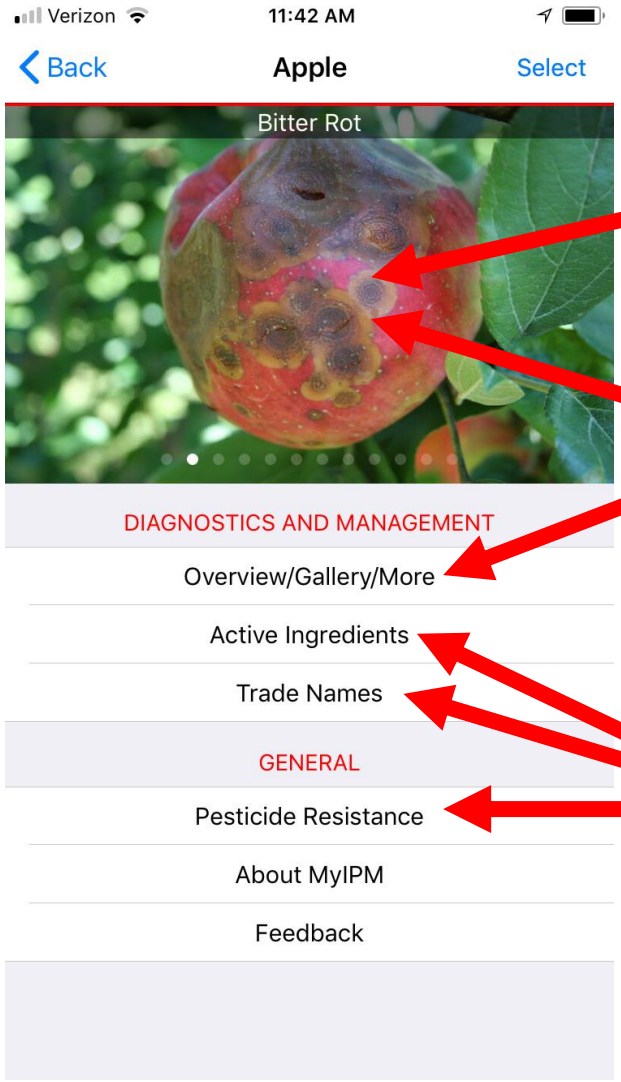


Select the Cloud icon to choose content to download

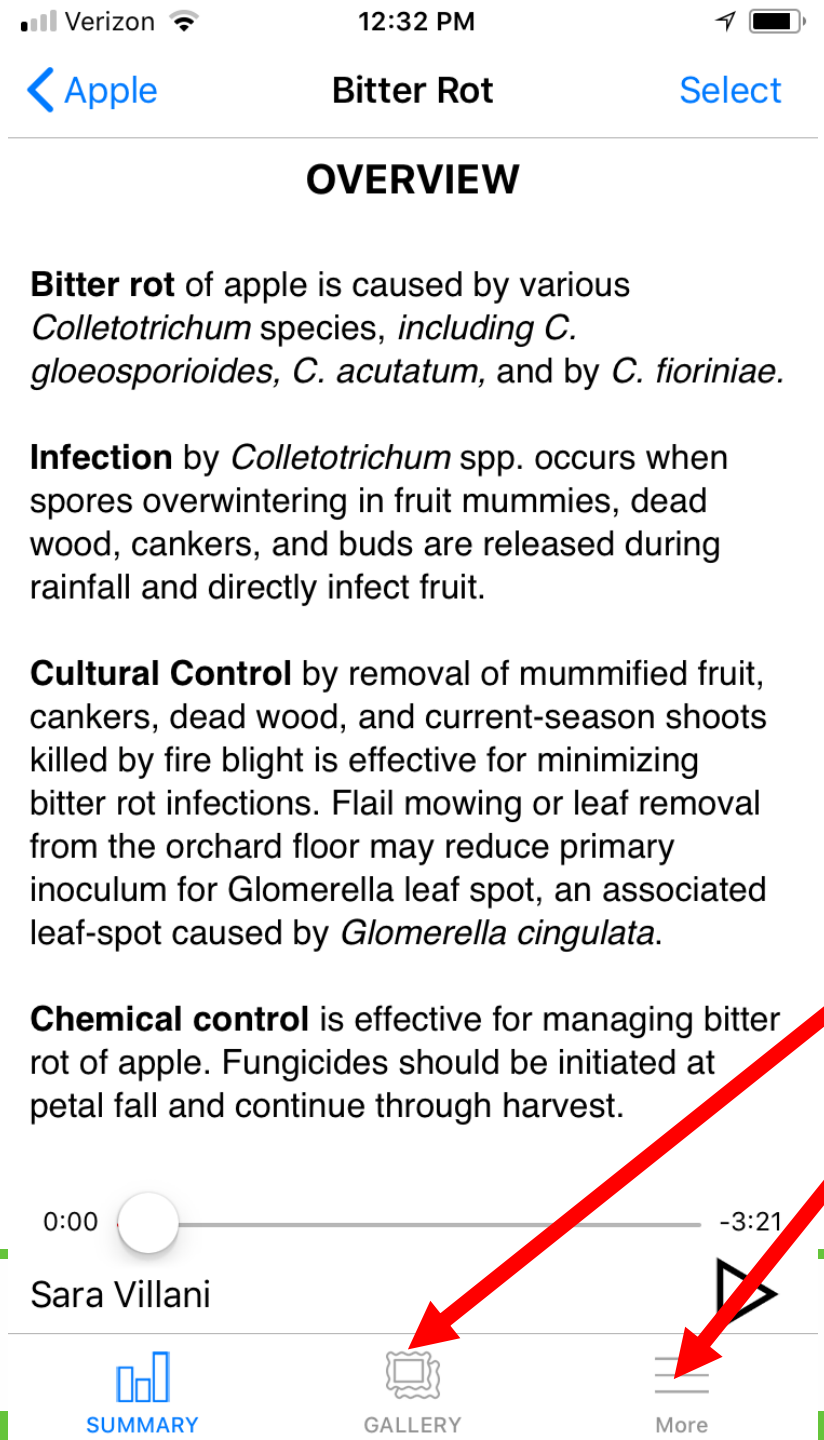
- you can download all content, or only topics you want

Once you’ve downloaded your topics, click one to see content

“MyIPM” – free mobile app



- Swipe photos left/right to see different diseases or pests
- Click on picture or Overview/Gallery/More for photos and management info
- Active Ingredients, Trade Names, & Pesticide Resistance geared towards commercial growers



MyIPM Mobile App

Example of "Overview" screen including

- Pathogen name
- Disease cycle
- Cultural control strategies
- Chemical control strategies
  - Chemicals geared towards commercial growers
- Click "GALLERY" to see more photos
- Click "More" for additional info

Identify major disease problems

- Disease pressure varies by variety, site, and management practices

Some of the most common apple diseases in TN

- Fire blight
- Cedar apple rust
- Fruit rots (bitter rot, white rot, black rot)

Apple & pear – fire blight

Bacteria – *Erwinia amylovora*

Photo: P.G. Psallidas
bugwood.org

Plan for fire blight

- Prune out and destroy fire blight strikes, cankers, and dead wood
- Have a spray plan established before trees break dormancy next year

Plan for fire blight

- Silver tip: copper
- Green tip – ½ inch green: copper
- Bloom: streptomycin or copper or double nickel + Cueva
- Petal fall: copper

Cedar apple rust

Fungus - *Gymnosporangium juniperi-virginianae*

Plan for cedar apple rust

- Eliminate eastern red cedar as much as possible in vicinity of apples to reduce inoculum
- Have a spray plan established before trees break dormancy next year
  - Tight cluster – pink: captan, or mancozeb, or FRAC 7 (SDHI [Fontelis]), or FRAC 11 (QoI [Flint]
  - Petal fall: DMI or mancozeb
  - Cover sprays - continue rust management until 30 days after petal fall: DMI or mancozeb

Apple fruit rots (caused by fungi)

1. **Bitter rot** - *Colletotrichum acutatum & gloeosporioides* (& Glomerella leaf spot)
2. **White rot** – *Botryospaeria dothidea*
3. **Black rot** – *Diplodia seriata* (& frogeye leaf spot)

Bitter rot

Fungi
Colletotrichum gloeosporiodes
C. acutatum

Photo: Alan Windham, EPP, UTIA

Glomerella leaf spot

Managing bitter rot & Glomerella leaf spot

- Cultural control
  - Sanitation
    - Prune & remove fire blight strikes
    - Remove mummufied fruit
    - Prune & remove cankers
    - Remove infected fruit if feasible
  - Glomeralla leaf spot
    - Leaf removal / flail mowing / urea application to breakdown leaf debris

Managing bitter rot & Glomerella leaf spot

- Variety selection
  - Highly susceptible
    - Golden Delicious
    - Gala
    - Jonagold
    - Granny Smith
    - Pink Lady
  - Moderately resistant
    - Red Delicious
    - Jersey Mac
    - Rome Beauty
- Fungicides
  - May be needed from petal fall through harvest (10-14 day schedule)
    - Broad-sprectrum: Captan, mancozeb, ziram, prophyte
    - Site-specific: Sovran, Flint, Pristine, Merivon, Luna Sensation, Omega

White rot – *Botryospaeria dothidea*

Photo: John Hartman, bugwood.org

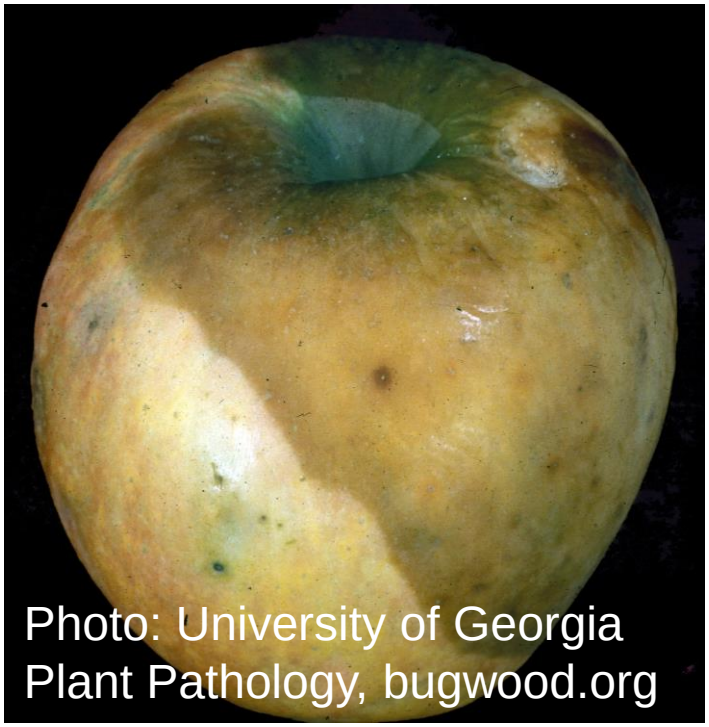


Photo: University of Georgia Plant Pathology, bugwood.org

White rot management

- Same strategies as bitter rot
  - Remove mummies
  - Prune fire blight strikes, cankers, dead wood
  - Fungicides applied petal fall through harvest

Black rot & frogeye leaf spot – *Diplodia seriata* (syn. *Botryospaeria obtusa*)

Photo: University of Georgia Plant Pathology, bugwood.org

Photo: Penn State Plant Pathology, bugwood.org

Black rot management

- Same strategies as bitter rot
  - Remove mummies
  - Prune fire blight strikes, cankers, dead wood
  - Fungicides applied petal fall through harvest

Plan for fruit rots

- Prune out dead wood and mummy fruit to reduce disease pressure
- Have a spray plan established before trees break dormancy next year
  - Silver tip (black rot): captan
  - Tight cluster to pink (black rot and frogeye leaf spot): captan
  - Petal fall (black rot, white rot, bitter rot): captan or Flint or Fontelis
  - Cover sprays (black rot, white rot, bitter rot): FRAC 7 [SDHI] or FRAC 11 [QoI] or captan

Common fungicides for apple production

Commercial

- Copper
- Streptomycin
- Captan
- Mancozeb
- 1 DMI (FRAC 3, Rally, Procure, etc.)
- 1 SDHI (FRAC 7, Aprovia, Fontelis, etc.)
- 1 QoI (FRAC 11, Flint, Sovran, etc.)

Residential

- Copper
- Streptomycin
- Captan
- Mancozeb
- Immunox (myclobutanil, DMI)
- Sulfur

Fungicide cancellation news

- EPA considering cancelling most uses of certain dithiocarbamates (thiram, **ziram [apple scab, rust, sooty blotch, bitter rot],** ferbam) and iprodione
  - These products important in some specialty crop disease management programs
  - As multi-site fungicides, also important for disease management

Apple disease management resources

Commercial fungicide recommendations

- 2021 Integrated Orchard Management Guide for Commercial Apples in the Southeast

Home garden fungicide recommendations

- UT Extension PB 1622 (recently updated)

MyIPM app

- Diagnostic photos and management recommendations

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