General Principles of Organic Disease Management:
Healthy plants resist disease – high quality soil most important
Use rotations and cover crops, if possible
Encourage biological diversity, both above and below ground
Understand what is needed to keep your crop healthy
Know what problems may occur and scout for problems
Experience is indispensable – be a good observer
Grow adapted varieties at optimum time
Organic disease management is all about prevention
  In-season products are often not completely effective
  Organic does not mean substituting an “organic” product for a conventional pesticide
  Most disease organisms need wet conditions to infect and spread
  Plant crops in open and well ventilated areas to dry foliage more quickly
  NO OVERHEAD IRRIGATION IF POSSIBLE (if using overhead, water when plants will dry most quickly such as sunny mornings)

Common Diseases in Georgia and Tips on Organic Management

A. Vegetables:

Tomatoes
Leaf/fruit spots: Alternaria, Septoria, Bacterial spot, etc.
Usually present every year, problematic during rainy periods
Survives on infected plant debris from one season to another
  • Some resistance in certain varieties
  • Rotate, balanced nutrition and water (but do not overfertilize!), high quality soil, organic sources of nutrition including compost
  • Plant in open, sunny areas, stake, mulch, space widely, NO OVERHEAD IRRIGATION
  • Commercial disease control products have limited effectiveness, copper most effective but should not be used repeatedly
  • High tunnels avoid effects of most foliar pathogens and fruit cracking, but may lead to other problems in some cases.

Leaf mold (Fulvia fulva)
Mainly a greenhouse/high tunnel problem
Thrives in high humidity situations
  • May occur in the field in high humidity microclimates
  • Improve air circulation to lower humidity around plants
  • Situate high tunnels in open areas, fans may be necessary
  • Sanitation to remove diseased plant material
Late blight (*Phytophthora infestans*)
Usually rare in piedmont of Georgia and south except in wet years
May be hard to prevent if correct environmental conditions prevail.
Fungus does not usually survive in field. Sources: transplants, greenhouses (year round production), may blow in from neighboring areas
- If transplants are purchased, examine closely for disease
- Plant tomatoes in open exposed areas
- Copper may be used if conditions for infection are correct

Soil borne diseases: tomato vulnerable to several
Most soil borne pathogens can attack many different hosts
Strategies for prevention similar for all soil borne disease problems
Microbial rich soil reduces pathogen survival in soil
Rotation and water management important, avoid sites with heavy wet soil

Fusarium wilt (*Fusarium oxysporum* f.sp. *lycopersici*)
Most hybrids have resistance
Pathogen is specific for tomatoes
Occurrence is usually spotty
Use care with soil source when constructing raised beds
- Three year rotation minimum for tomatoes
- High organic matter to enrich soil microbial community
- Resistance or grafting onto resistant rootstocks in problem areas

Southern Blight (*Sclerotium rolfsii*)
As with other soil borne disease, usually spotty in occurrence
Can also occur on many other crops, especially pepper, beans
Loves hot, wet weather
Look for distinctive signs of disease around base
- Remove plants promptly, do not compost
- No resistance available
- Rotate away from highly susceptible crops, water management
- High organic matter to enrich soil microbial community

Nematodes: Root knot nematode and others
Very important but often unseen soil problem
Root knot most widespread and damaging in vegetables
Resistance available in some hybrid tomatoes
Common on non-resistant tomatoes, and most other vegetables and fruits.
Results in poor plant health, often an overlooked problem
- Long rotations, use of appropriate resistant cover crops
- Good quality compost, maintain biologically active soils
- Uninterrupted yearly cultivation of vegetables at particular risk
- Grafting onto resistant tomato rootstock may be option
Cucurbits (squash, melons, cucumbers)
Squashes (winter and summer) especially problematic to grow during summer
Many insect pests as well (stink bugs, stem borers, pickle worm)

Downy and Powdery Mildew (these two are not at all related)
Do not survive in field, spores blow north each year
Overwintering greenhouse crops may be another source
May not arrive until early summer
Varieties with some resistance available
High humidity and heat favors powdery mildew
Downy mildew needs some leaf wetness. Outbreaks associated with rain.
  * Plant for good air circulation, sunny locations
  * Separate planting in space and time if feasible, squash free periods
  * Balanced fertility, most diseases are encouraged by excess N
  * Some products may be effective before infection occurs, especially on powdery mildew

Cucurbit Yellow Vine Bacterial Disease/Squash bugs
Sudden yellowing, wilting, and collapse of plants at start of fruiting (stem borers in summer squash cause similar symptoms)
Bacterial disease that is transmitted by squash bugs
Overwinters in adult squash bugs
  * Manage squash bugs (target early before large numbers occur)
  * Remove diseased plants promptly so young bugs do not pick up
  * Possibly row covers, trap crops

B. Fruit:
Fruits listed on this handout have disease issues that may require attention each year. Other types of fruit, such as rabbiteye blueberries, figs, muscadine grapes, can often be successfully grown in Georgia without pest problems if attention is given to preventative measures. Since most fruits, with the exception of strawberries, will remain in one spot for possibly many years, proper soil preparation and using suitable cultivars are extremely important. These plants will start to decline, and may die, if neglected. Do your homework. There are some great guides on growing fruit. Spotted wing drosophila is becoming a problem on all small fruit, especially brambles/strawberries.

Brambles
Cane diseases
There are a number of cane and foliar diseases that can occur on blackberries and raspberries. Remove canes after fruiting. Do not leave pruned canes in orchard. Manage weeds. Supply organic matter. Water when needed (drip), optimize fertility. Blackberry varieties: Natchez, Ouachita, Kiowa, Chickasaw, Apache
Raspberry varieties: Heritage
**Strawberries**
Cool season crop and can be grown successfully without pesticides if given good growing conditions. Botrytis fruit rot when wet. Root issues in poor wet sites. Hilling of soil can help. Mulch well with straw. Rotate. Use high quality transplants! Suggested varieties: Chandler, Camarosa, Sweet Charlie

**Peaches/plums**
Most stone fruits, including peaches, cherries, nectarines, and apricots, are extremely difficult to grow organically in a warm, humid climate. There are some acceptable varieties of plum for the southeast that will likely produce fruit most years. Brown rot is the most important disease and can devastate a crop during a rainy year. Good sanitation and maintaining tree health are essential.
Recommended plum varieties: Methley, Bruce, Chickasaw

**Apple:**
Can be a tricky crop to produce organically due to pest pressures
Fire blight most important consideration – use resistant cultivars and rootstocks
Summer rots also an issue – use good biological orchard management
Avoid excessive use of sulfurs and coppers, and insecticides
There are several good publications on organic apple growing – consult them

**Pear:**
Most commercial pear varieties are very susceptible to fire blight. Fire blight resistant pears are relatively pest free and easier to grow than apples. Check guides for optimal growing conditions.
**Resistant varieties: USE THESE**
Kieffer, LeConte, Magness, Maxine, Moonglow, Old Home, Orient
**Susceptible varieties: DO NOT USE THESE**
D’Anjou, Bartlett, Bosc, Clapp’s, Comice, Red Bartlett, Starkrimson, Winter Nellis

**Suggestions for more information:**
ATTTRA (National Sustainable Ag Information Service) Many great publications on organic production [https://attra.ncat.org/publication.html](https://attra.ncat.org/publication.html)


The Organic Gardener’s Handbook of Natural Pest and Disease Control, Rodale Press

Sustainable Agriculture at UGA [http://www.caes.uga.edu/topics/sustainag/](http://www.caes.uga.edu/topics/sustainag/)