Garden cleanup for better vegetable disease management in 2021

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Today's talk:

- Vegetable garden sanitation
  - Post-season (now)
  - Pre-season and garden planning
- Notes about compost

Sanitation for disease management

Common sources of disease-causing pathogens:

- Plant debris
- Weeds
- Unmanaged plants, especially those closely related to crop plants
  - “Volunteers”

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End of season sanitation

- Collect row cover
  - Reuse with caution, especially if history of soilborne diseases
  - Shake / brush off soil
  - Store in dry area, wound or braided

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End of season sanitation

- Remove all trellis materials, hoops
  - Hose / pressure wash to remove debris, soil
  - Sanitize metal, fiberglass materials in spring

- Wooden materials: reuse with caution
  - Bacterial pathogens are notorious for persistence on stakes

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End of season sanitation

- Remove all diseased plant material (including roots)
  - Trash, burn, or bury diseased plants
  - DO NOT COMPOST

- Otherwise healthy plant material: can be composted, weed-eaten and tilled in
  - Till sooner rather than later

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End of season sanitation

- Collect synthetic mulches
  - Hose or pressure wash fabric / landscape mulch
    - Sanitize in the Spring
  - Trash plastic mulches
  - Paper/leaf/compost mulches may be tilled in, but consider impact on brown:green ratio

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Sanitation timelines

- Sanitation activities are more effective when implemented early
  - Less time for disease to overtake unmanaged crops
- Ex: frosted plants, bolted plants, harvested determinate crops
- Coordination with cover crop?
  - Allow adequate establishment
  - Ensure reasonably broken down


https://www.lovethegarden.com/uk-en/article/cabbages-brassica-oleracea

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Cover crop groups

Lower

Higher disease risk

- Grasses (warm or cool season)
- Non-legume broadleaves
- Legumes
- Brassicas


Oat


Mustard

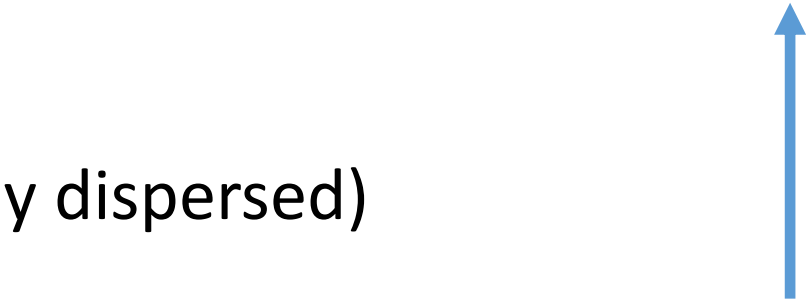

Buckwheat


Hairy vetch

Pathogen groups and disease potential in veg rotation

- Fungi and oomycetes with a soil phase and broad host range
- Nematodes
- Certain vectored viruses
- Other fungi (mostly aerially dispersed)
- Bacteria
- Remaining vectored viruses
- Rust and powdery mildew fungi, downy mildew water molds

Higher disease risk



Lower disease risk

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Pre-season sanitation

- Certified pathogen-free, or heat-treated seed
  - Hot water treatments for seed savers
  - Contact county agent for programming
- Varieties with resistance to commonly occurring diseases

Photo:http://vegetablemdonline.ppath.cornell.edu/NewsArticles/HotWaterSeedTreatment.html

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Disease resistance is specific: see ID-133

<u>Important diseases in the home garden:</u>

- Tomatoes: early blight, Septoria, bacterial spot
- Peppers: bacterial spot, anthracnose
- Cucurbits: downy mildew, powdery mildew, anthracnose
- Peas and beans: rusts, powdery mildew, anthracnose
- Lettuces: resistance to bolting
- Cole crops: black rot, downy mildew

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Pre-season sanitation

- Sanitize plastic potting materials
  - Spray off remaining soil, potting mix
  - 10% bleach solution [1 part bleach to 9 parts water]
  - Soak approx. 10 min, fresh water rinse
- Pasteurize potting media
  - Heat to 180F for 30 min
  - Moisten prior to heating and ensure mix is uniformly warmed
  - Use soon after pasteurization
- Purchase pre-sterilized media

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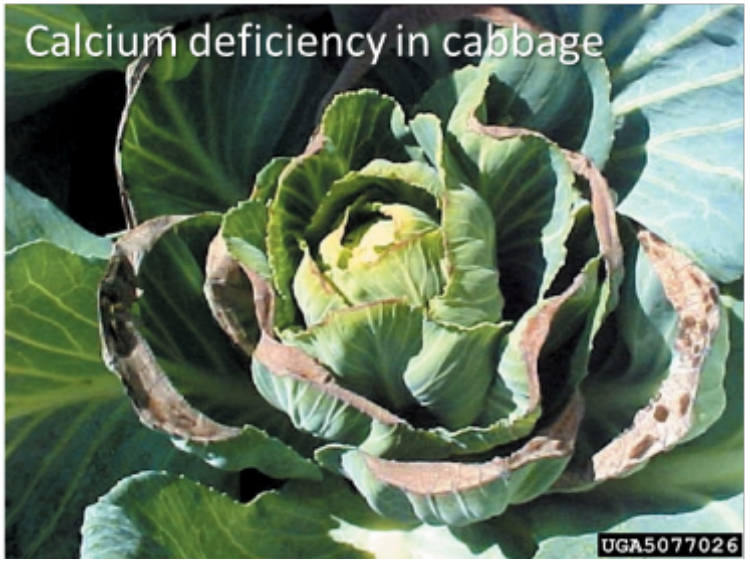
Sellmer et al. 2007; psu.edu extension

Pre-season sanitation



- Terminate cover crop (if used)
  - Earlier tends to be better than later
  - Till or mow and remove?
- Soil sampling and adjustments
  - County extension agents
- Plan crop rotation among plant families, even on the square-foot scale
- Sanitize fabric mulch
  - 10% bleach solution followed by fresh water rinse

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Pre-season sanitation

- Sanitize metal or fiberglass trellis materials
  - 10% bleach solution [1 part bleach to 9 parts water]
  - Soak approx. 10 min, fresh water rinse

Compost basics


Wszelaki, 2005

- Composting is active
  - "Managed rotting"
- Give the organisms what they need to get the job done
  - Water
    - Thoroughly moist but not dripping
  - Air
    - Turn pile no less than every two weeks; more often if odorous, very wet, or slow to break down
  - Adequate substrates

Fountain et al., UK Extension publication HO-75

Compost basics

- Optimal brown:green ratio (aka, carbon to nitrogen) of substrate is approx. 30:1
  - Consider the contents of your pile and correct accordingly
  - Fertilizer?

Table 2. C:N ratios of organic matter usable in composting.

Food scraps	15:1
Grass clippings	19:1
Rotted manure	20:1
Oak leaves	26:1
Leaves in general	35:1 to 85:1
Straw	80:1
Pine needles	60:1 to 110:1
Newspaper	170:1
Sawdust	625:1

Fountain et al., UK Extension publication HO-75

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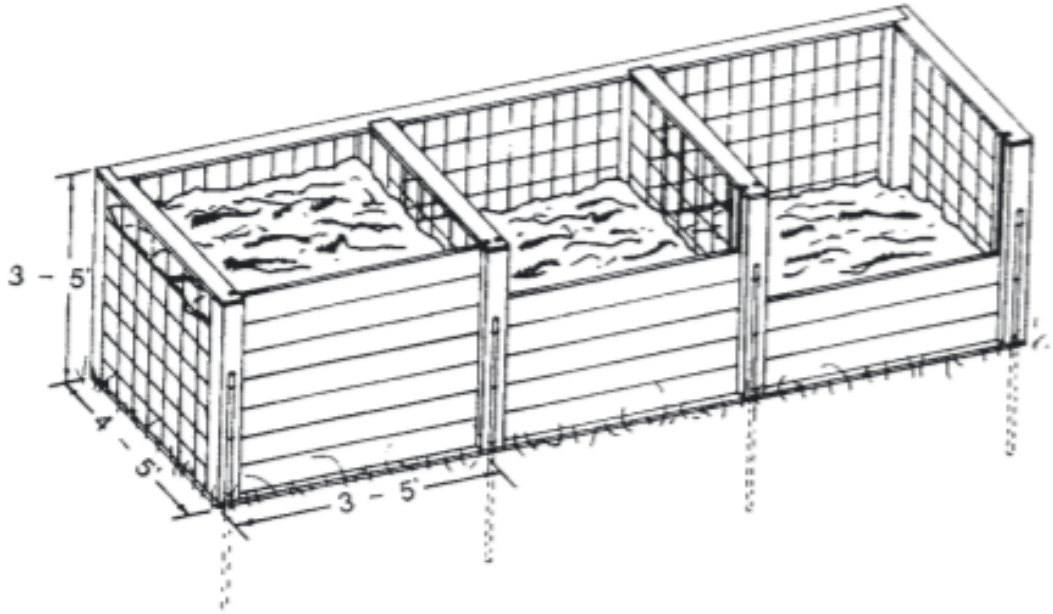
Compost basics

- DO NOT COMPOST DISEASED PLANT MATERIAL
- Compost should be well broken-down (no foul odor, uniform in appearance, dark brown to black)
  - New year, new compost pile
  - Incorporate or

  use as mulch



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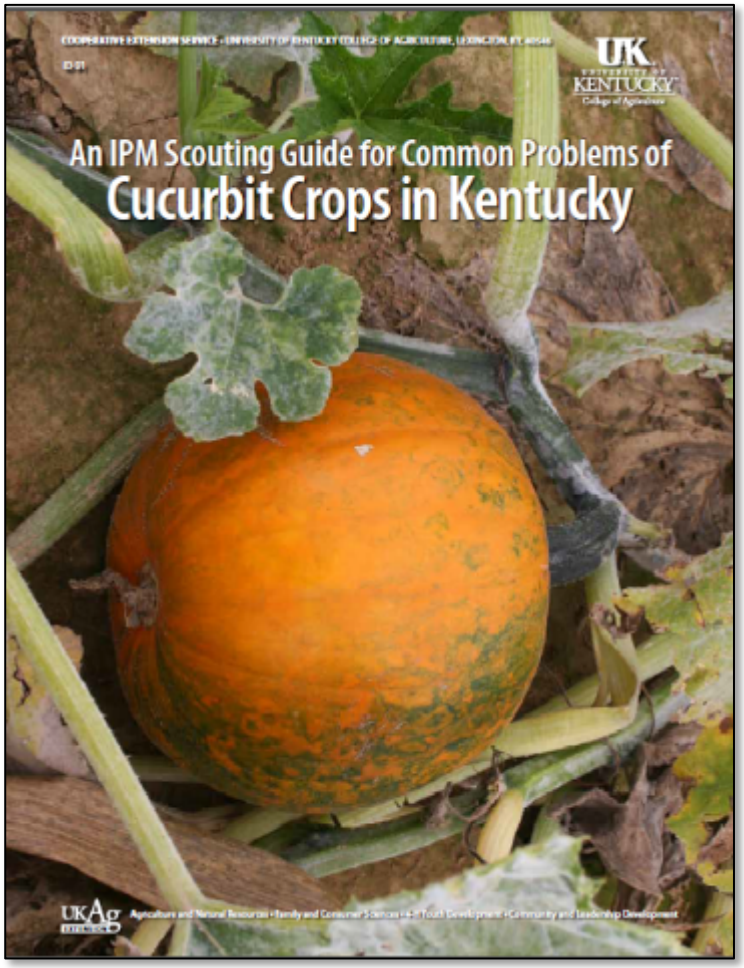

Additional resources:

- IPM Scouting Guides
- Sustainable home gardening factsheets (UK PPA publications page
- ID-128, Home Gardening in KY

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