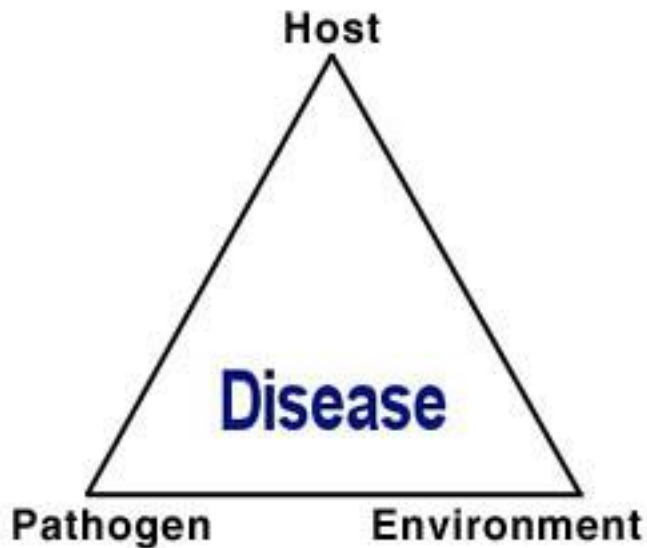


Pathogen	Disease Cycle	Dispersal	Typical Symptoms	FSF Examples
Fungi	Grows on or through plants, needs living host or decaying organic matter as food, forms thread like forms, mycelium	Produces spores, moved by wind, machinery, water, tools, insects, people, once lands in right conditions spores germinate and begin again	Mildews, molds, wilts, soft rots, stunted growth, curly leaves,	Phytophthora in peppers and squash, leaf mold tomatoes, downy mildew, late blight, damping off, fusarium in garlic
Bacteria	Single cell, need living host or organic matter as food, stays in infected plants, needs warmth and moisture to germinate (dry summers = less bacterial infections)	Spread by splashing water or anything that comes in contact with infected plants or soil	Leaf spots, soft rots, scabs, wilts	Soft rot in potatoes, scab on potatoes
Viruses	Sub-microscopic, invade host cells and then multiply	Spread by feeding insects/bugs, mainly aphids & leaf hoppers	Symptoms look like genetic abnormalities, twisted growth, mottling	Aster yellows in lettuce, viruses in summer squash

Practical Plant Pathology
Organic Growers School Spring Conference,
March 13, 2016

Vanessa Campbell
Full Sun Farm

I. Disease Triangle; where can we break the connection?



Managing versus controlling disease, prevention instead of cure
Observation, developing your “farmer’s eye”

II. Major Types of Pathogens:

- A. Fungi and fungus-like organism
- B. Bacteria
- C. Viruses

III. Disease Management Practices and Strategies

A. Targeting the Plant/Host

- Resistant Varieties
- Healthy plants are more resistant plants
- Grafting

- Introducing Beneficial Fungi to colonize root systems and/or boost plant's natural defense mechanisms

B. Targeting the Pathogens:

- Manage possible sources of pathogen, debris, weeds, seeds
- Manage dispersal of pathogen, wind, soil, insects, humans, rain, equipment
- Spraying and Biocides

C. Targeting the Environment

- soil: cover cropping, compost, raised beds, crop rotation, deep plowing
- water: irrigation, drainage
- temperature: timing of planting, hoop house, row covers, soil covers,
- air flow: plant spacing, trellising, site selection

IV. Common Diseases of WNC and some possible management strategies

A. Fungi:

1. Phytophthora/ late blight
2. Fusarium
3. Cercospora
4. Mildews
5. Bottom Rot (*rhizoctonia solani*)

B. Bacteria

1. Scab
2. Bacterial Wilt
3. Early Blight

C. Viruses

1. Aster Yellows
2. Cucumber Mosaic Virus

Resources:

Websites: sooooo many

www.livegpath.cals.cornell.edu (great pictures)

www.vegetablemndonline.ppath.cornell.edu

www.plantpathology.ces.ncsu.edu : sign up for alerts, disease diagnostic clinic

E-Xtension – wow! Lots of articles and webinars

<http://organicgrowersschool.org/2641/organic-disease-control/>

Books:

Pests of the Garden and Small Farm by Mary Lousie Flint

Vegetable Disease Handbook

Vanessa Campbell

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