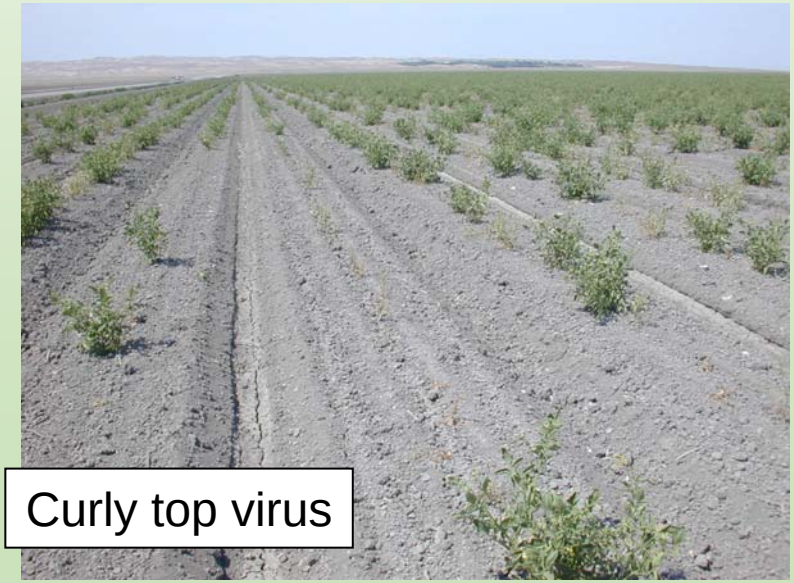
Disease Control in Organic Tomato Production

- Avoidance
- Cultural
- Biological
- Chemical

Fusarium root and crown rot



Curly top virus

Verticillium wilt

- Exclusion
  - Verticillium wilt
  - Fusarium wilt
  - Nematodes
- Resistant varieties
- Genetic diversity of crop

Cultural Controls

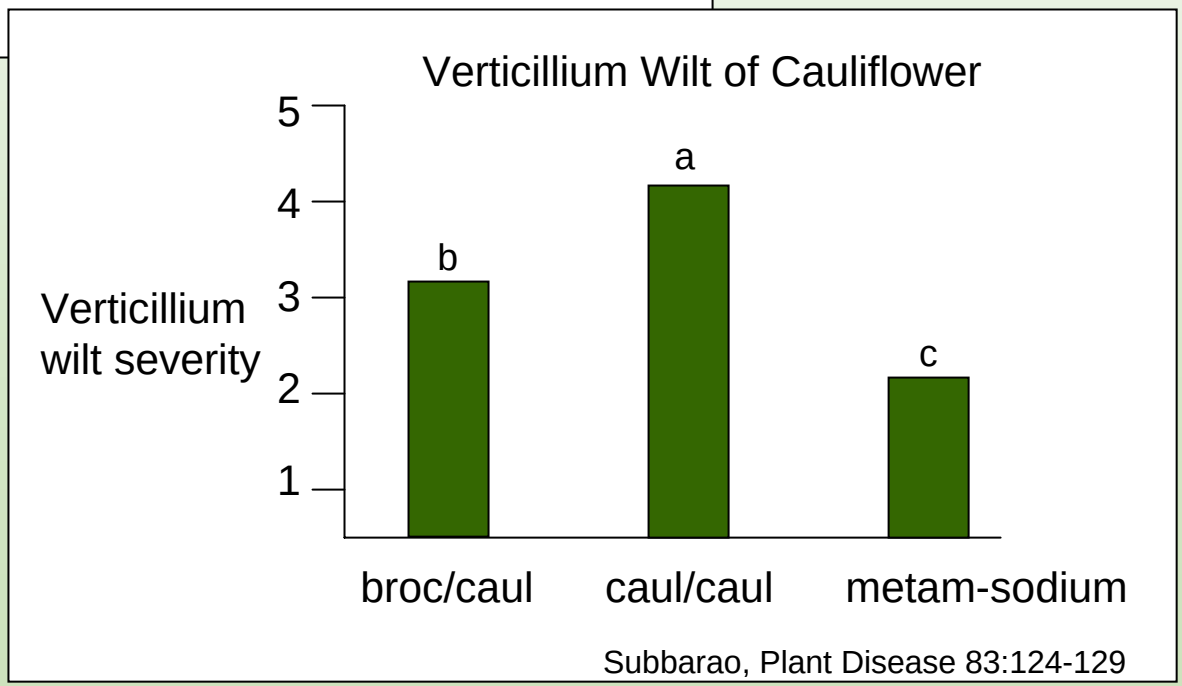
- Site selection
- Rotation
- Cover crops
- Microbial activity/competition for nutrients
- Broccoli residues vs Verticillium
- Sudan grass

Recommended Crop Rotations

Verticillium	3 years	small grains
Fusarium	2+ years	crops other than tomato
Phytophthora	1 year	small grains
Corky root	2+ years	small grains
Bacterial spot	1+ years	nonsolanaceous crops

Cultural Controls

- Site selection
- Rotation
- Cover crops
- Microbial activity/competition for nutrients
- Broccoli residues vs Verticillium
- Sudan grass



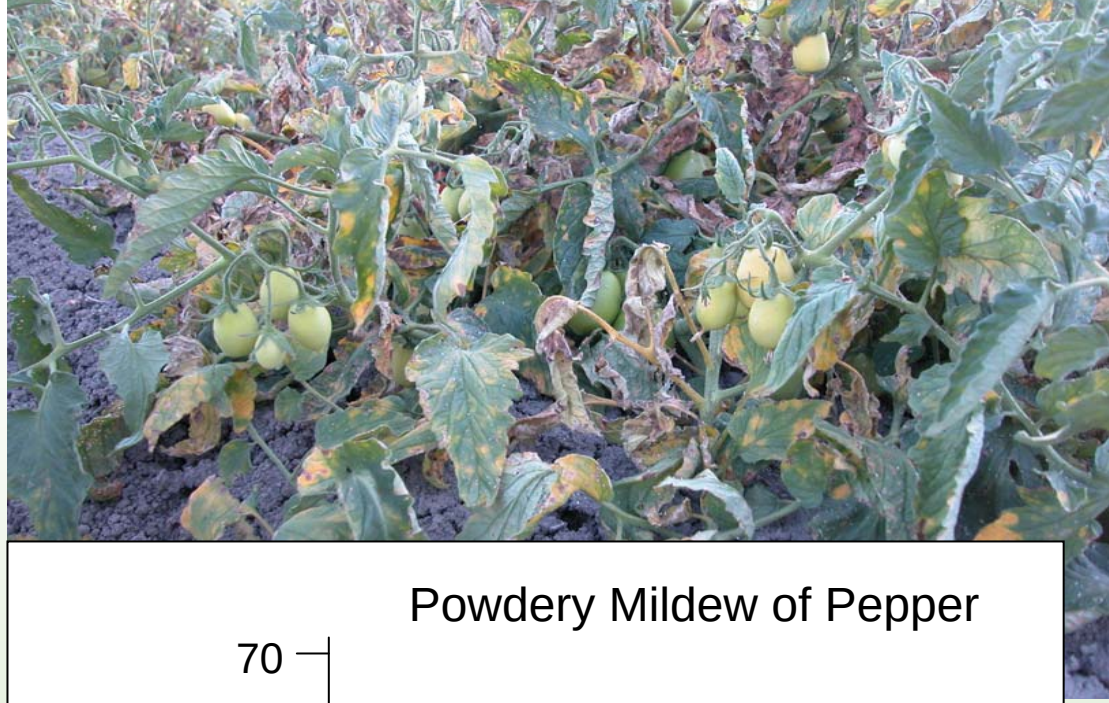
Cultural Controls Continued

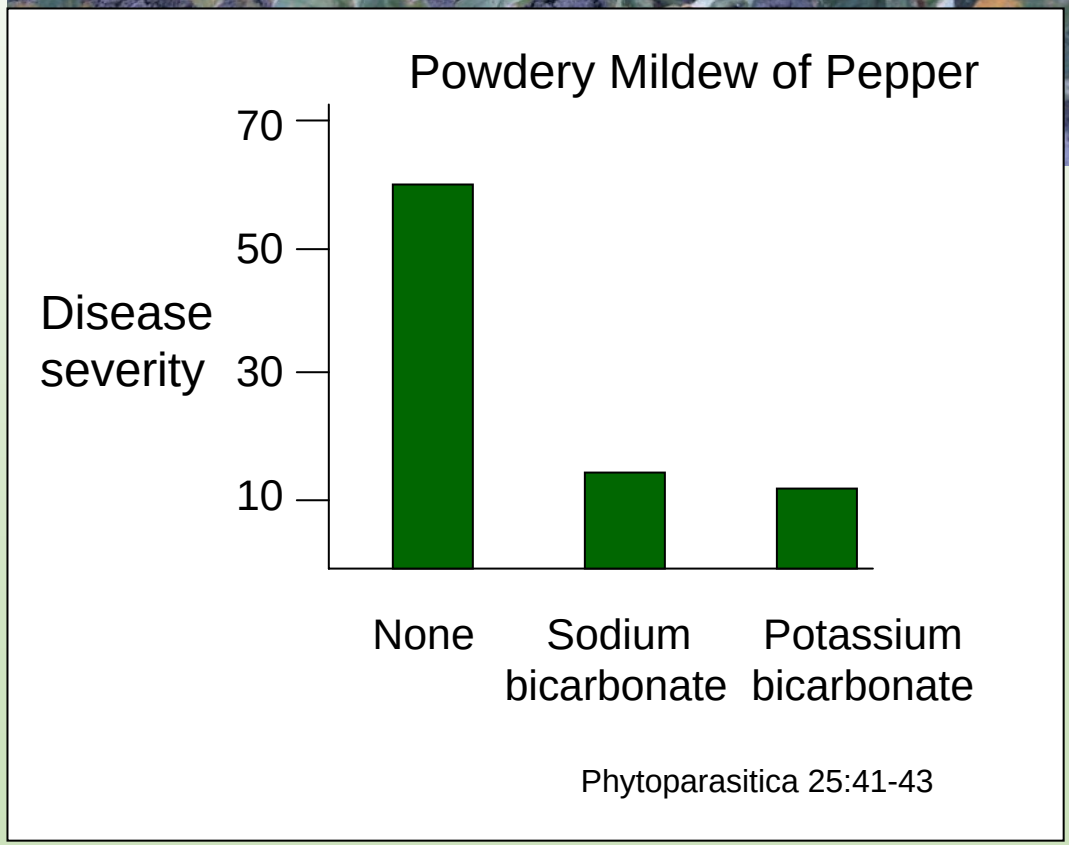
- Good drainage
- Prevent moisture on foliage
- Roguing and field sanitation
- Weed control
- Soil solarization

Phytophthora root rot

Chemical controls

- Copper
- Sulfur
- Bicarbonates





Biological and Soft Chemistries

• Actigard	induces resistance	reduces spot and speck
• Agriphage	speck and spot	untested in California?
• Kaligreen	powdery mildew	variable response
• Messenger	induces resistance	ineffective
• Serenade	broad spectrum	variable effectiveness

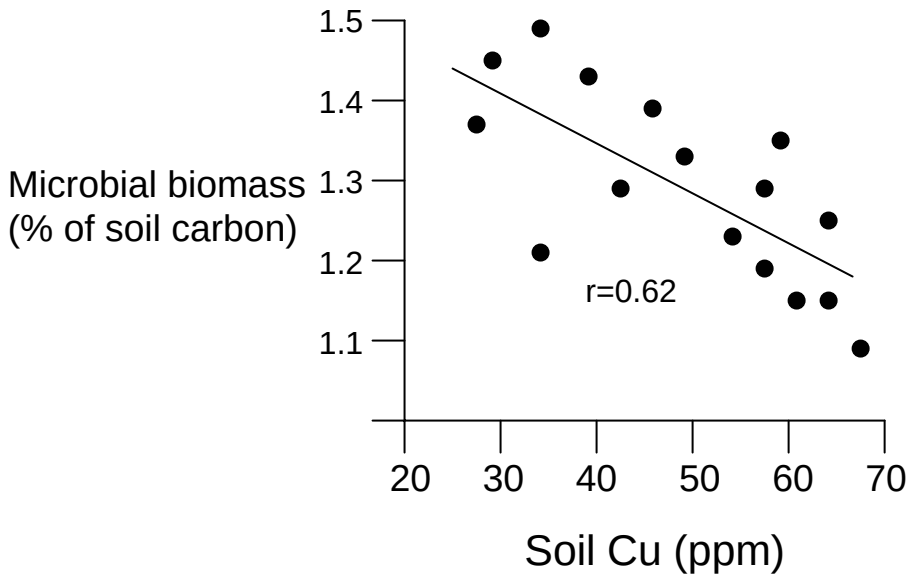

Speck


Spot

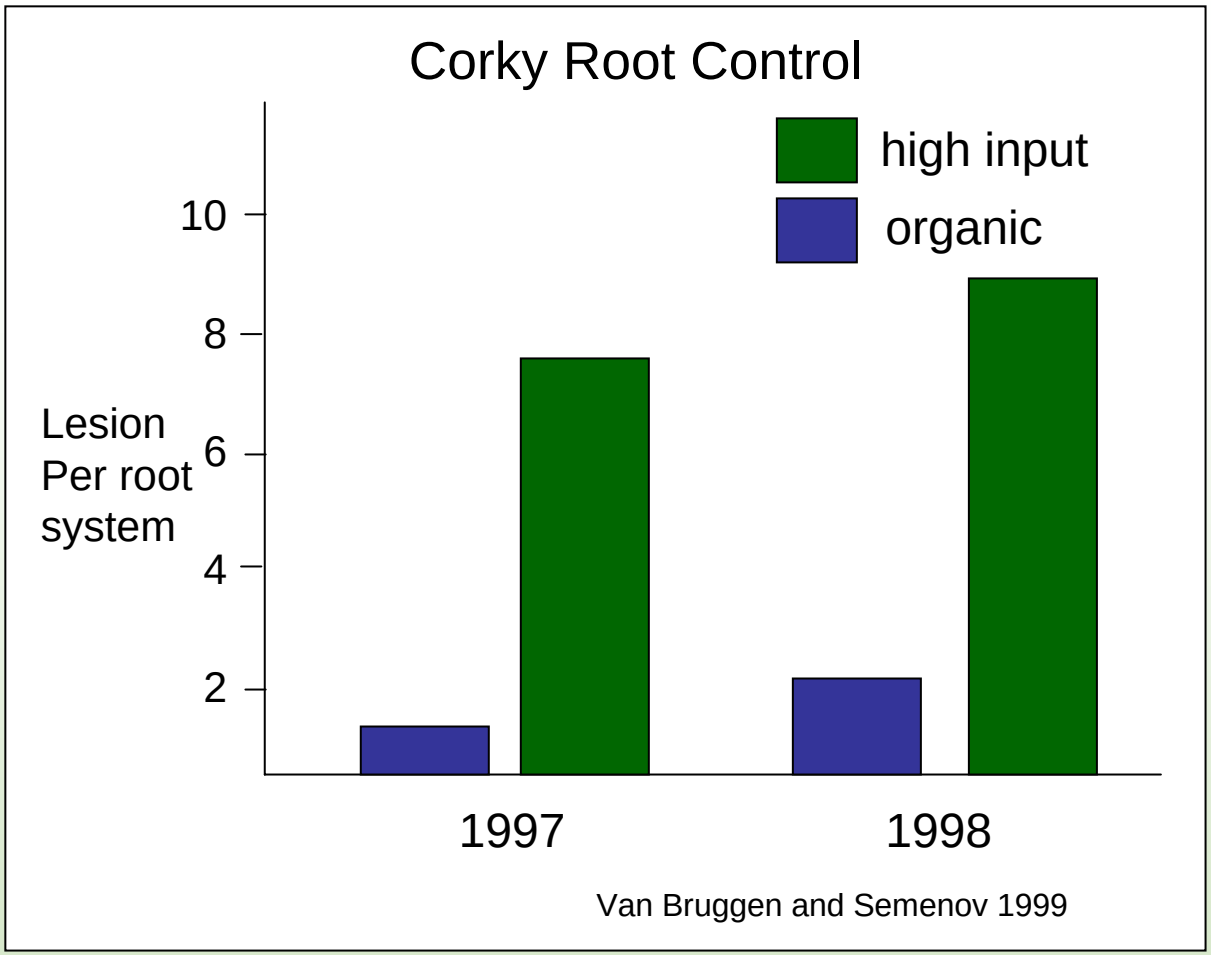
California Pesticide Use- 2004

	% use by weight
Sulfur	33.5
Petroleum oil	10.6
Metam sodium	8.9
Mineral oil	5.6
1,3-D	5.4
Methyl bromide	4.5
Glyphosate	3.6
Chloropicrin	3.0
Copper sulfate	2.3
Copper hydroxide	1.5

Calif. Dept. Pesticide Regulation

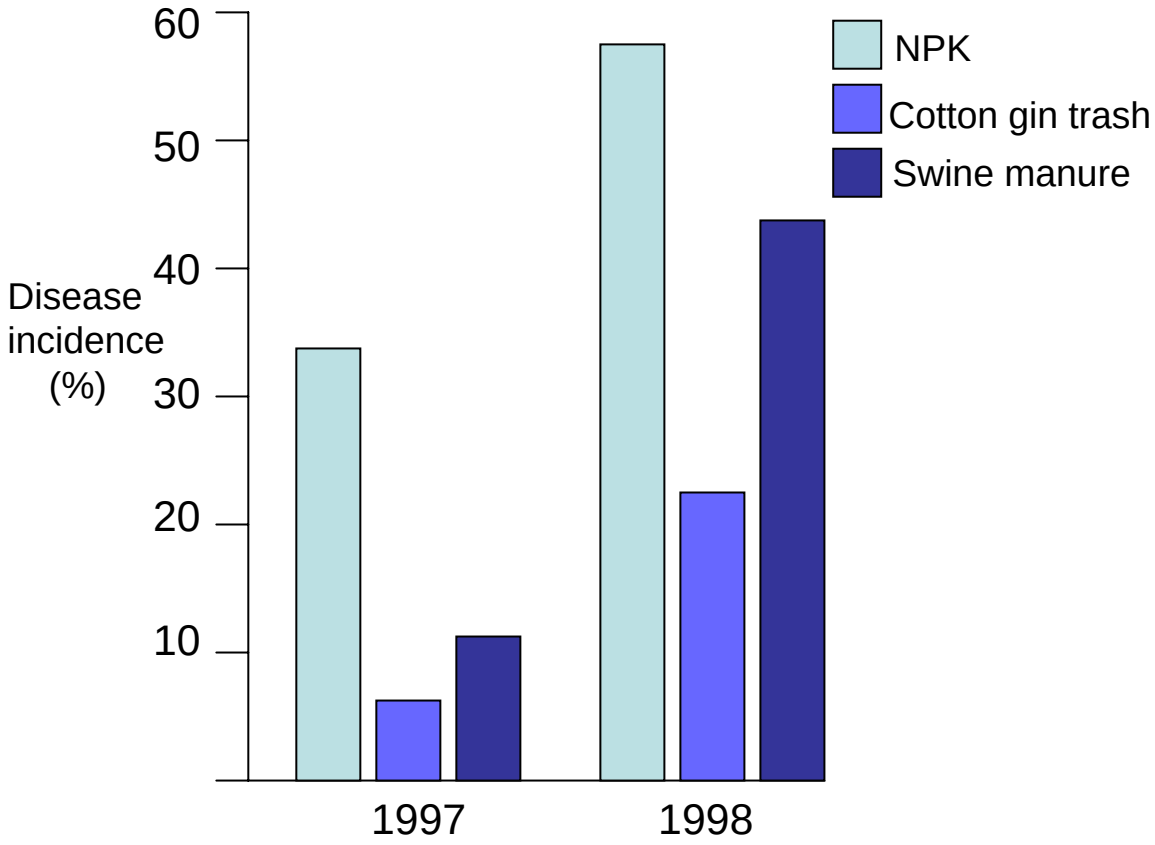


Dahlin et al. 1997. Soil Biol. Biochem. 29:1405-15


Corky Root Control
high input
organic
10
8
6
4
2
Lesion
Per root
system
1997
1998
Van Bruggen and Semenov 1999

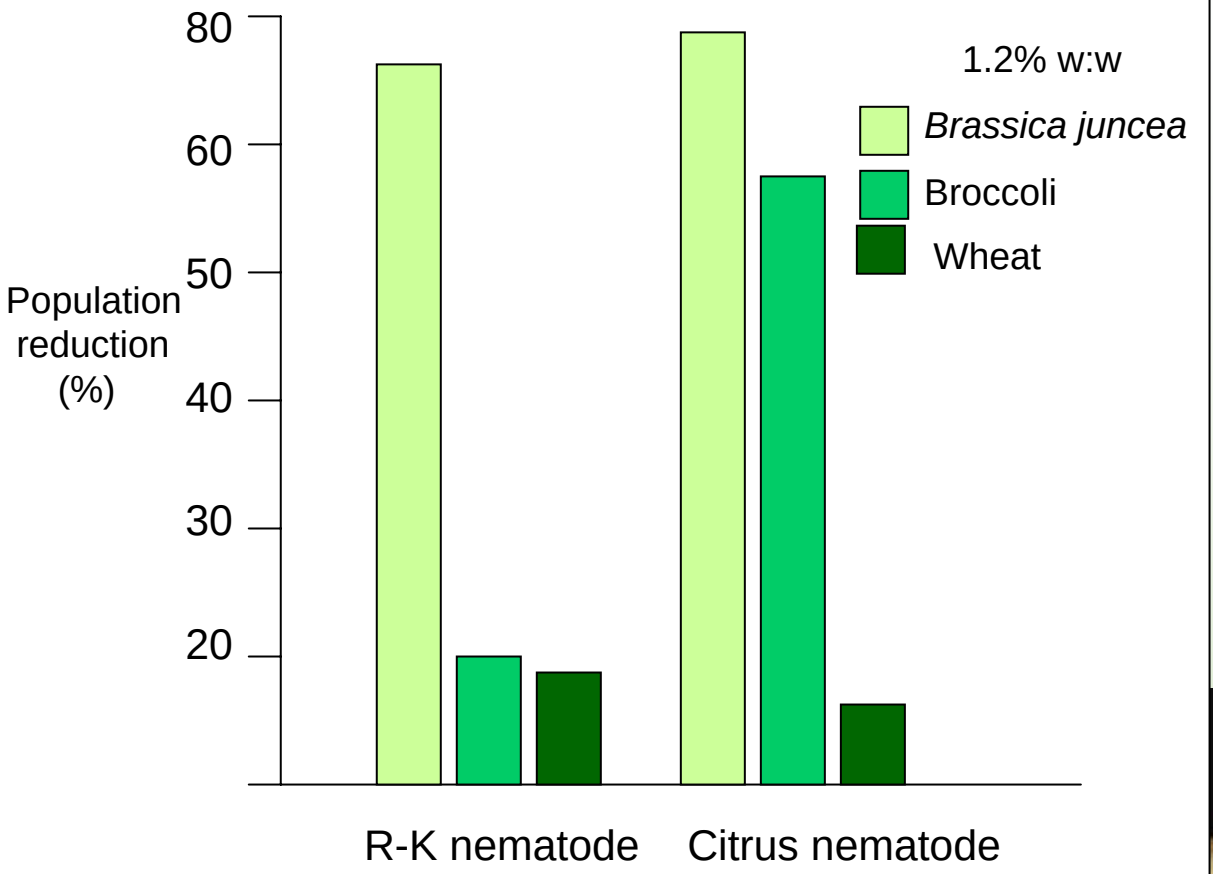
Corky root

Soil Amendments and Southern Blight



Bulluck. 2002. Phytopathology 92:181-189

Green Manures and Nematode Suppression



Zadasa and Ferris. 2004. Soil Biol. & Biochem. 36:1017-1024

Tobacco mosaic virus

Late blight

Botrytis