

PENNSTATE



College of
Agricultural
Sciences

Vineyard Floor Management

Mark L. Chien
Wine Grape Educator
Penn State Cooperative Extension
Lancaster, PA
mlc12@psu.edu



Aspects of Vineyard Floor Management

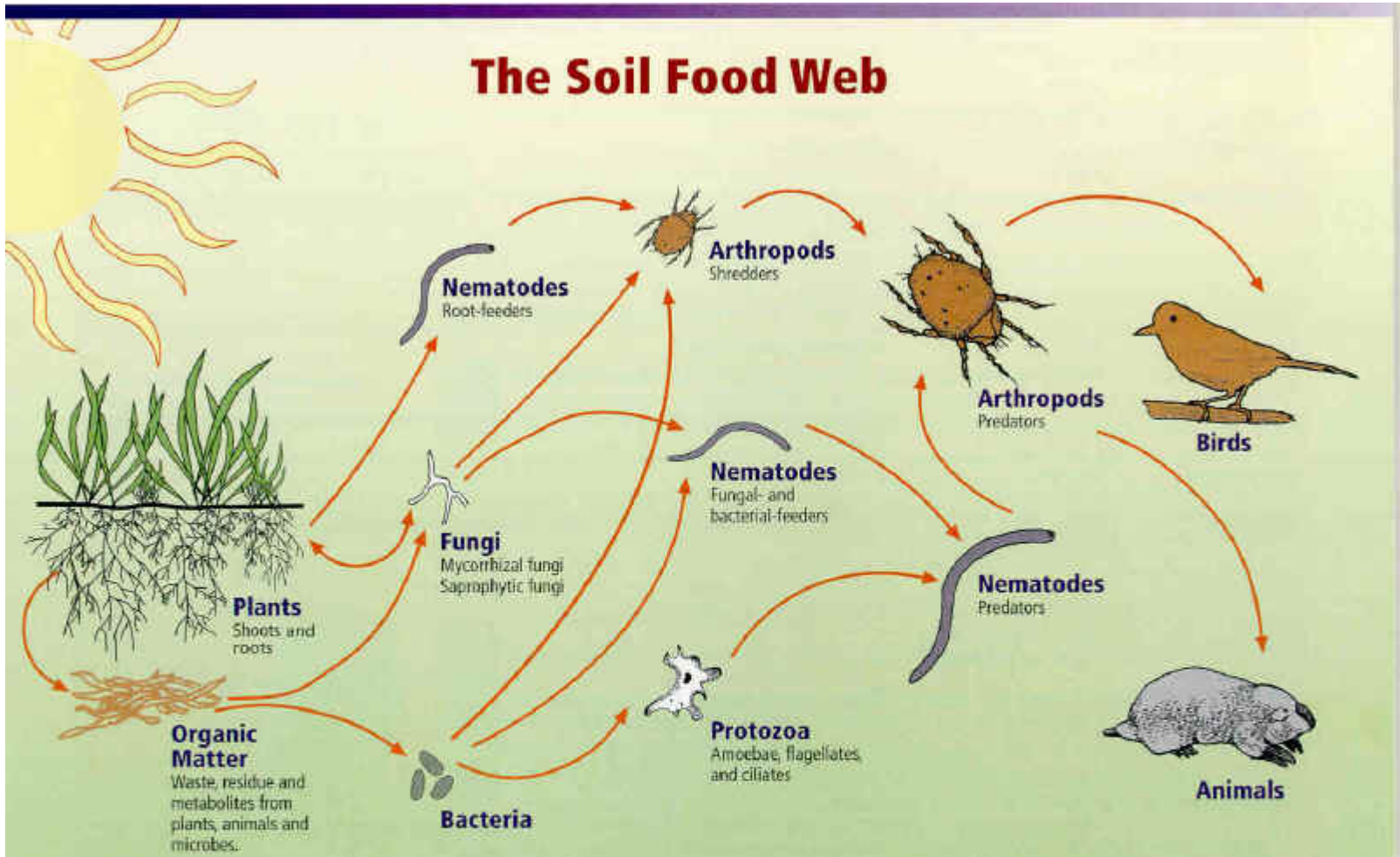
- Influence on grape and wine quality
- Soil Ecology - taking care of it and keeping it where it belongs
 - Soil health: chemical, physical, biological
 - Erosion
 - Vine nutrition
 - Water management: maintain PAW
 - Food web
- Plants – vines, cover crops, plants, weeds, etc.
- Disease and pest control
 - Nematodes
 - Phylloxera
 - Many insect pests reside in the soil – JBs, GRB, etc.
 - Fungi and bacteria
 - Vertebrate pests
- Economics of managing the floor

Terra Firma: the soil and what grows in

- The French and Terroir^{it}
- The source of all nutrients and water
- The root zone
- It defines vine size
- We spend a lot of time on it but don't think about or understand it



The Soil Food Web



First trophic level:
Photosynthesizers

Second trophic level:
Decomposers
Mutualists
Pathogens, parasites
Root-feeders

Third trophic level:
Shredders
Predators
Grazers

Fourth trophic level:
Higher level predators

Fifth and higher trophic levels:
Higher level predators

Soil Compaction: the enemy of good soil and vine health

- Soil tilth and structure
- Vines and soil organisms need to breathe, too
- Post planting top dressing with compost
- What equipment does to soil
- Mature vineyard in row ripping



Ways to Manage the Vineyard Floor

- Clean till
 - New vineyards
 - Mature vineyards
- Cover crop
 - Native
 - Commercial grass mix
 - Special mix for plant diversity
 - Introduced



When is a plant a weed?

- The American lawn mentality
- Adjusting to a new vineyard aesthetic: is it a weed or diversity?
- Encouraging biodiversity in a monoculture
- Sustainable and organic vineyard management systems
- Examples: Fetzer and Benzinger, Brickhouse, Zind-Humbrecht, Domaine Leflaive



Benzinger Vineyard in Sonoma



Bonterra in Mendocino

Cover Crops

Benefits:

- Prevent soil erosion
- Improve water penetration
- Improve soil tilth
- Builds organic matter
- Nitrogen fixing bacteria
- Provides plant diversity
- Habitat for beneficials
- Aesthetic value

Disadvantages:

- Competing for resources
- Attract some pests
- Spring frost
- Cost of establishment and maintenance

Establishing a Cover Crop

- When? Late August through October
- Soil preparation: kill grass > disc > harrow > drag
- Planting – seed rate is very important
- Even distribution, use a seed drill if possible
- Pray for rain
- Don't drive on it

Maintaining the Vineyard Floor

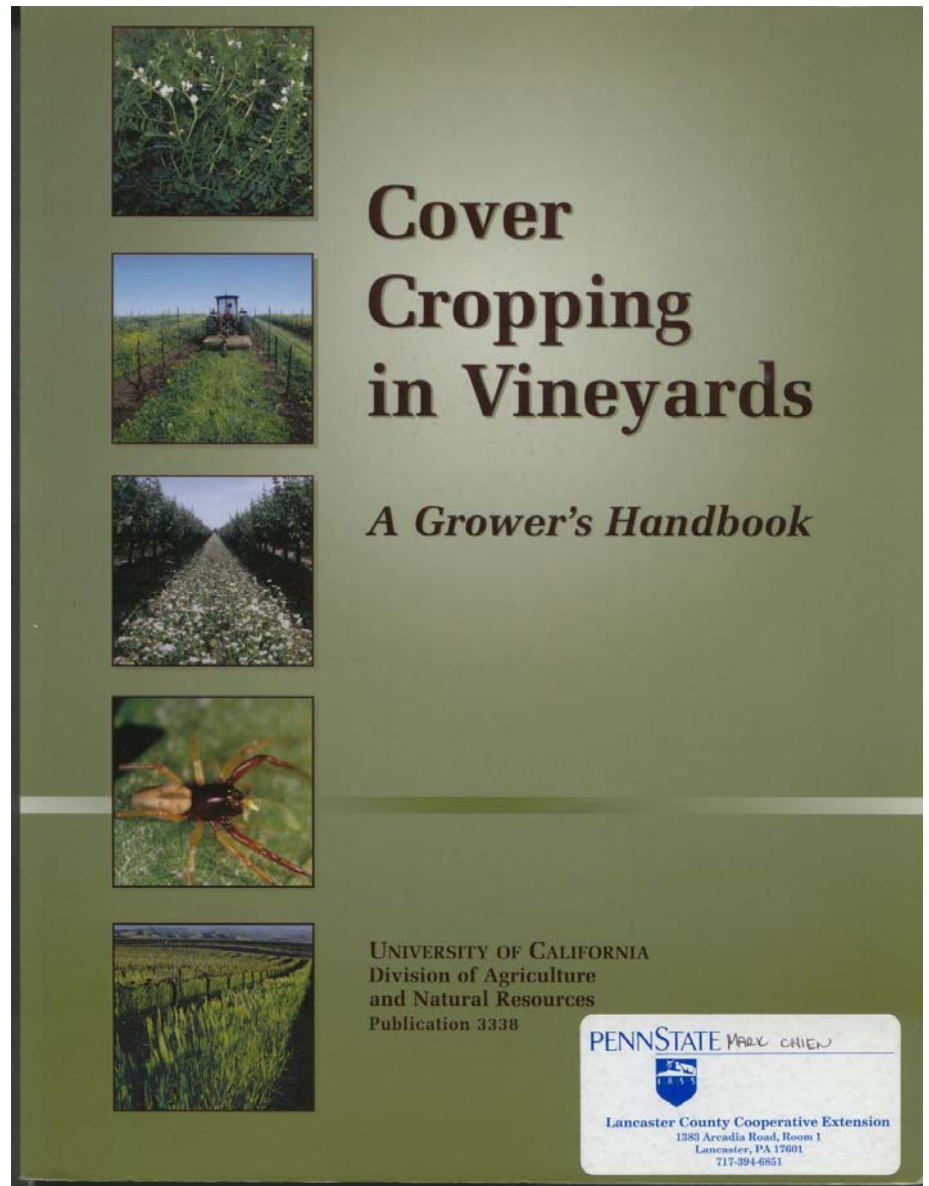
- Herbicides – pre and post emergent
- Cultivating - types of implements and timing
 - Rotovator, spader, disc, rippers
- In row management
 - Clean cultivate with hoe (manpower or mechanical)
 - Herbicide strip
 - Grass under the vines

Hilling up and Taking down

- cover up the grafts
- provides weed control
- requires skill and the the right equipment



The book on vineyard floor management from UC Davis: oldie but still goodie



Cover Cropping in Vineyards

A Grower's Handbook

UNIVERSITY OF CALIFORNIA
Division of Agriculture
and Natural Resources
Publication 3338

PENNSTATE MARK CHIEW



Lancaster County Cooperative Extension
1383 Arcadia Road, Room 1
Lancaster, PA 17601
717-394-6851