Joseph A. Fiola, Ph.D.
Specialist in Viticulture and Small Fruit
Western MD Research & Education Center
18330 Keedysville Road
Keedysville, MD  21756-1104
301-432-2767 ext. 344; Fax 301-432-4089
jfiola@umd.edu
http://extension.umd.edu/smallfruit
Vineyard Pest Management

Insect, Weed, and Vertebrate Pest Management for New Vineyards

Joseph A. Fiola, Ph.D.
Specialist in Viticulture and Small Fruit
University of Maryland Extension
Western Maryland REC, Keedysville, MD
Vineyard Pest Management

IPM/SVP/ICM Program Components
A “Whole Plant Health Care Plan”

- **Cultural Practices**
  - site selection
  - site preparation
  - soil management
  - cultivar selection
  - cultural practices
    - canopy management
    - nutrition

- **Disease/Insect Management**
  - monitoring/trapping
  - forecasting
  - control choices
    - pesticides/mating disruption

- **Weed Management**
  - cultivation
  - cover crops

- **Other Pests - vertebrates**
  - birds, deer, raccoons
Vineyard Pest Management

“The most important thing you can put into the vineyard is your footprints!”
Vineyard Pest Management

Proximity to Woods

Increased pressure from:
- Wildlife
  - habitat
- Insects
  - wild vines
- Diseases
  - reduced air movement
Vineyard Pest Management

Grape Berry Moth

GRAPE BERRY MOTH ADULT MALES
TRAP COLLECTION - 1988
SOUTH JERSEY

Male GBM in 9 pheromone traps

20
15
10
5

June 28  13  20  27  Aug 3  9  16  28

Total male moths from 3 vineyards
Vineyard Pest Management

- Native to China, Japan, Korea, and Taiwan.
- Broad host range including many important agricultural crops such as tree fruit, small fruit, legumes, vegetables, and ornamentals.
- Typically 2 generations per year (up to six).
Vineyard Pest Management

Photos courtesy of Doug Pfeiffer and Dean Polk
Vineyard Pest Management
Spotted Winged Drosophila

by Alex Surcica

Photo by G. Arakelian
Vineyard Pest Management

Other Insects

Multicolored Asian Lady Beetles

Grape Leafhopper

Grape phylloxera

MALB
Vineyard Pest Management

Protect Beneficial Insects

Lady Beetles
Vineyard Pest Management

Vineyard Weed Management

Mange weeds BEFORE You plant!
Vineyard Floor Management Options

• Under the Row
  – Herbicide strip
  – Mechanical weed management
  – Ground Cover
Vineyard Pest Management

Vineyard Weed Management
Vineyard Pest Management

Weed Types – Life cycle

• Annual – 1 year life cycle
  – Germinate, grow, seed, then die in the same season
    • Summer annual - germinate in spring/summer, grow, seed, and die in the same season.
    • Winter annual - germinate in fall – stay small; Grow, seed, and die in the next season.

• Biennial – 2 year life cycle
  – Germinate and grow in one season; overwinter;
  – seed then die in next season.

• Perennial – continuous life cycle
  – Germinate and grow in one season; overwinter, above dies but roots stay alive.
  – Repeat from root next season.
Vineyard Pest Management

Weed Types – Plant type

• Grasses
  – annual and perennial

• Broadleafs
  – annual and perennial
Vineyard Pest Management

Herbicide Types

• Pre-Emergence
  – Stops weeds as soon as they germinate
  – Timing very critical

• Post-Emergence
  – Kills weeds after they emerge
  – Can be injurious to vines
Vineyard Pest Management

Under the row management: Herbicide Strip

• Advantages
  – Minimal competition
  – Minimal impact on soil structure
  – Low labor
  – Aesthetics

• Drawbacks
  – Expense
  – Low labor
    • Hunting season
  – Short and long term effect on vines?
Vineyard Pest Management

Herbicide Sprayer Types
Vincent Pest Management

Vineyard Weed Management

Be extremely careful!

Glyphosate – 2 years later!
Vineyard Pest Management

Under the row management: Mechanical Weed Control

Advantages
• Minimal competition
• No long term effect on vines
• “Hilling-up”

Drawbacks
• Impact on soil structure
• Labor/frequency
• Equipment
Vineyard Pest Management

Mechanical Weed Mgmt.
Vineyard Pest Management

Mechanical Weed Mgmt.
Vineyard Pest Management

Under the row management: Ground Cover

Advantages
- Benficial competition
  - Water
  - Nutrients
- No long term effect on vines
- Erosion control

Drawbacks
- Establishment
- Maintenence
  - Labor
- Equipment
- Early competition
  - Establish year 2 or 3
Vineyard Pest Management

Ground Cover
Vineyard Pest Management

Birds

Migratory or Local
Vineyard Pest Management

Birds

‘BirdX’

GULLS
REPEL stubborn gulls from off-shore oil platforms, helipads, landfills, marinas and beaches.

PIGEONS
SCARE pesky pigeons from rooftops, open parking lots and parks.

GEESE
BANISH territorial geese and ducks from lakefronts, golf courses and corporate parks.

STARLINGS
CHASE starlings from airfields, orchards, vineyards and trees.
Vineyard Pest Management

Bird Netting

Fruit-zone netting
Vineyard Pest Management

Raccoons and others
Vineyard Pest Management

Deer
Vineyard Pest Management

Dogs

Pairs of dogs can protect 20-30 acres. Hyperactive dogs that would normally be destroyed are sources from animal shelters.
Vineyard Pest Management

Deer Fencing
Vineyard Pest Management

Deer Fencing

Fig. 11. Deer-fence design with tension spring.
Vineyard Pest Management

Deer Fencing
The “Ultimate” Exclusion Deer Fence