Pomes, Stones, &
Other Little Berries

Master Gardeners
Fruit Short Course

R. David Myers
Extension Educator, Agriculture
An Equal Opportunity Employer

Agriculture

Extension Research Projects - Agriculture 2010

CMREC Upper Marlboro Facility

✓ Vineyard Research - Southern Maryland Vineyard Team

✓ Fruit Research - Apples, beach plums, peaches, peentos, blueberries, wine & table grapes

2011 Meadow Orchard &
New 2013 Meadow Bush & Hops Yard
Extension Research Projects—Agriculture 2010
CMREC Upper Marlboro Facility

✓ Sustainable Vegetable Research - No-till & strip till leafy greens, squash, watermelons, sweet corn, ornamental corn, popcorn, pumpkins, peas, beans & others

✓ West African & Caribbean Specialty Vegetables - Eggplant, hibiscus, hot peppers, amaranth, basil & others
Southern Maryland Fruit Team
CMREC, Upper Marlboro
Dave Myers
Ben Beale
Herb Reed
Joe Fiola
Chris Walsh
New Fruit Team Project
Streuobstwiese – Meadow Orchard

Streuobstwiese in Baden-Württemberg, Germany
New Fruit Team Project
Streuobstwiese – Meadow Orchard

Streuobstwiese is a German word that means a meadow with Scattered fruit trees or fruit trees that are planted in a field.

Streuobstwiese, or a meadow orchard, is a traditional landscape in the temperate, maritime climate of continental Western Europe.

In the 19th and early 20th centuries, streuobstwiesen were a kind of a rural community orchard that were intended for productive cultivation of fruit.

Excerpted from Wikipedia, the free encyclopedia
Meadow Orchard: Streuobstwiese
A Sustainable Commercial Fruit Production Approach
Southern Maryland Fruit Team
Dave Myers, Herb Reed, Ben Beals, Joe Fiola & Chris Walsh
University of Maryland Extension
CMREC, Upper Marlboro Research Farm
2011

Fruit & Nut Trees:
1) Breda Medlar
2) Lodi Apple
3) Brown Turkey Fig
4) Moon Glow European Pear
5) Hosoi & Shinko Asian Pear
6) Montmorency Tart Cherry
7) Eastern Seedling & Collins PawPaw
8) American Persimmon
9) Fuyo Oriental Persimmon
10) Blue Damson Plum
11) Japanese Heartnut
12) American Filbert

Experimental Design:
- 3 Randomized Reps: 2 Trees/Rep, 14 Tree Varieties, 72 Total Tree Plots.
- Orchard Density: 18’ Between Row Spacing X 15’ In Row Spacing.
- Training Systems: Traditional

Protocol:
- Organic and soft pesticide canopy evaluations, with conventional orchard floor management utilizing herbicides and fertilizers.
- Tree growth, disease and yield assessments will determine viability.
Meadow Orchard 2011
CMREC, Upper Marlboro

Fruit & Nut Trees:
1) Breda Medlar
2) Lodi Apple
3) Brown Turkey Fig
4) Moon Glow European Pear
5) Hosoi & Shinko Asian Pear
6) Montmorency Tart Cherry,
7) Eastern Seedling & Collins PawPaw
8) American Persimmon
9) Fuyo Oriental Persimmon
10) Blue Damson Plum
11) Japanese Heartnut
12) American Filbert

Southern Maryland Fruit Team
CMREC, Upper Marlboro
Dave Myers
Ben Beale
Herb Reed
Joe Fiola
Chris Walsh
Meadow Orchard 2011
CMREC, Upper Marlboro

Protocol:

Organic and soft pesticide canopy evaluations, with conventional orchard floor management utilizing herbicides and fertilizers.

Tree growth, disease and yield assessments will determine viability.
New Meadow Bush & Hops Yard
2013 CMREC, Upper Marlboro
Industry Catalogs

ACN INC.
Fruit Tree Catalog & Reference Guide

Stark Bro’s.
Fruit Tree and Landscaping Catalog

Nourse
Grow Berries!
2007 All-Season Berry Collection
Exciting New Varieties

Kencove
FREE SHIPPING
on qualifying orders
Details.Page.44

Jersey Asparagus Farms, Inc.
The Company That Grows With You

University of Maryland Extension
Solutions in your community
Agriculture Bulletins

A. Fruit Production Bulletins
5. Vineyard Reckoning
6. Evaluation of the Perpendicular-V Peach Orchard Training System for Southern MD
7. Applicability of the Peach Perpendicular-V Training System for Southern Maryland

B. Vegetable Production Bulletins
1. 2008 Vegetable Enterprise Budgets
2. Ethnic Vegetable Production
Do We Need Pesticides?

• Organic Trade Association

• Current Organic Food Sales 1-2%

The Rodale Institute has set a goal of 100,000 certified organic U.S. farmers, representing five percent of the 2 million American farmers, by the year 2013. In May 2003. Certified organic U.S. farmers now number approximately 12,200. —The Rodale Institute,
Farmers Feed the World

• The world's population is over 6 billion people, soon to be 7 billion or 8 billion. Norman Borlaug, who won the Nobel Peace Prize for his contribution to agriculture, passed away recently at the age of 95.

• Borlaug wrote, "Over the next 50 years, the world's farmers and ranchers will be called upon to produce more food than has been produced in the past 10,000 years combined, and to do so in environmentally sustainable ways."
Master Gardeners, Pesticides, and the Public

• Avoid making pesticide recommendations - protect yourself and the Master Gardener Program

• Make referrals - HGIC, Faculty, Supply Centers, University Recommendation bulletins

• If pesticide usage is discussed -- always remind the client to consult the label

• If it's not on the label it's not legal

• Promote non-pesticide IPM tactics

• Promote the wearing of PPE - Personal Protective Equipment
Master Gardeners, Pesticides, and the Public

• Use the chemical or common name not the brand name
• Remain unbiased at all times - You are an educator for the University of Maryland responsible for scientific fact not personal opinion
• Remember no one knows everything - You are not required or expected to always have an answer
Pesticides & Health -- Reduce Pesticide Exposure

- Wear PPE – Personal Protective Equipment
- Precautionary statements – Signal words: Danger, Warning, or Caution (See page 245)
- The body and pesticide entry routes: Oral, Dermal, Inhalation, and Eyes
- Acute Toxicity – LD$_{50}$ Value (mg of chemical/kg of body weight lethal to 50% of animals tested)
- The lower the LD$_{50}$ the higher the toxicity (See page 245)
Proper Pesticide Usage

• Identify pest
• Determine the EIL (Economic Injury Level) and ET (Economic or Action Threshold)
• Apply all non-chemical control options:
  Resistant host varieties  Biological control
  Cultural control  Mechanical control
  Sanitation
• Choose appropriate chemical - properly apply
• Proper calibration
TOU Verses EIL

➢ Threshold of Unacceptability (TOU) – A Personal Pest Density Approach

Iceberg Mentality

Attack

TOU

Keep in Mind
Economic Injury Level -- EIL: 

“The lowest pest population density that will cause economic damage. At the EIL -- Cost of Control = Benefit of Control.”

Economic Threshold (Action or Treatment Threshold) - ET:

“The density of a pest at which control measures should be implemented to prevent an increasing pest population from reaching the EIL -- ET is generally 80% of the EIL.”
IPM Mechanics

EIL = Pest Density (P)

\[ P = \frac{C}{V \times D} \]

C = Cost of Control
V = Value of Crop
D = Damage

Note: At EIL Benefit = Cost; B=C
Action Threshold Is Low For Fresh Fruit Market Therefore A Control Action Will Need To Be Taken

Because Action Threshold Is Much Higher For Apple Sauce No Control Is Taken
Site Selection And Preparation

- Location Suitability
- Orientation & Layout
- Soil & Fertility Amendment
- Sod Establishment
Remediation Of Orchard Replant Sites

John M. Halbrendt
Fruit Research & Extension Center
Biglerville, PA
Jmh23@psu.edu
Poorly established trees will never reach full production potential.
Four-year-old plum orchard
70% of trees lost to Stem Pitting
Control of PSP by soil fumigation
Rapeseed can be a Beneficial Rotation Crop
Preparing To Plant

- Planting Method
- **Watering Capability**
- Final Planting Site Preparation
- **Use Labor Reducing Planting Equipment**
- Deer Control Fencing
Successful Planting

- Tree Placement
- Pollinator Positioning
- Avoid J-Rooting
  Orient & Prune
  Damaged Roots
- Firm Soil Around
  Roots To Exclude Air
- Make Initial Pruning
  And Heading Cuts
- Install Support And
  Training System If
  Required
The Non-Bearing Years

♦ Control Weeds - Maintain a Weed Free Zone
♦ Apply Cover Sprays For Disease And Insect Control At Damage Threshold Periods
♦ Remove All Fruit
♦ Prune Damaged Growth
♦ Train According To System Requirements
Pruning And Training

♦ Prune For Proper Scaffold Limb Development
♦ **Prune To Control Size**
♦ Prune To Promote Sunlight Utilization
♦ **Prune To Develop A Canopy Which Maximizes Leaf To Trunk Area Ratio**
♦ Prune To Maintain Health
Pome - Apple

Recommended Rootstocks

♦ G-30, EMLA-7, EMLA-7A, EMLA-111 – Semi-Dwarf 20 Year Tree

Clonal Rootstock History:
Malling (M) – First Clonal Stocks from England, Vegetative Propagation
MM (EMLA) -111 – Malling X N Spy var.—for wholly apple aphid resistance
MAC-9 – Michigan Apple Clone #9 (M-9) – Malling 9 X Malling 26
MARK – Virus Free MAC-9
BUD-9 – A Hardier M-9 Release from Russia
GENEVA (G-16) – Recent Fireblight Resistant Releases from New York

♦ M-9, BUD-9, G-16, EMLA-26, MARK – Dwarf 15 Year Tree, Fireblight Susceptible, Must be Supported

♦ G-16 – Fireblight Resistant, Must be Supported
♦ G-30 – Fireblight Resistant,
Pome - Apple

Recommended Varieties For Reduced Sprays

♦ Liberty, Priscilla, Prima - All Scab Immune

♦ Stayman - Standard Excellent Maryland Variety

♦ Gala, Fuji, Rambo, Ginger Gold, McIntosh, Gala, Cortland, Red Delicious, Golden Delicious, Jon De Coster, Mutsu, Braeburn, Stayman, York Imperial, Rome Beauty, Fuji, Yataka, Royal Court, Empire, Crown Empire, Granny Smith - Superior Fruit Quality; All Fire Blight Susceptible
Pome - Apple

Ripening Dates

♦ August 5 – November 5

Training Systems

♦ Free Standing Central Leader - Heinike Spread & Head System
♦ HYTEC; Hybrid Tree Cone
♦ Vertical Axis
♦ Slender Spindle

Pruning

♦ Head At Planting to 30” Whips
♦ Prune Annually During Dormancy
♦ Remove Damaged Or Blighted Wood Immediately
♦ Carefully Follow Training System

Planting Instructions, Densities & Pollinators

♦ Plant In The Spring, Trim And Spread Roots, Place the Majority of Roots & Lowest Scaffold Limb Towards Prevailing Wind
♦ 250 – 800 Trees/Acre; In Row Spacing 8–12’ & Between Row 16–20’
♦ Position Pollinator Trees Strategically
Key Pest Problems of Apple & Pear:

Diseases: Fire Blight, Leafspot, Scab, Rust, Powdery Mildew, Fruit Spots, Fruit Rots
Key Pest Problems of Apple & Pear:

Plum Curculio

Insects: Aphids, Scales, Mites, Leafrollers, Plant Bugs, Plum Curculio, Codling Moth, Pear Psylla, Apple Maggot

Apple Maggot
Try this with honey bees!
The Mason Bees - Osmia Species

- Hornfaced Bee
  *Osmia cornifrons*

- **Solitary**
  3500 Species of Bees in America

- **Docile**
  Posses Civility

- **Efficient**
  300-400 Bees/Acre & Prefer Fruit Trees

- **Timely**

- **Trouble Free**
April 15th 2001
Full Bloom
RM 65-110 Vineyard Sprayer

Air Blast Sprayers

RM 25 Utility w/ 5 Nozzle Boom

ATV Sprayers
Spray Program for Multi-Tree Fruit Orchards

Many local orchards are composed of multi-fruit combinations producing for fresh market apples, peaches, pears, plums, nectarines, and cherries. Aggressive fruit tree spray programs are required to achieve high quality fruit. These multi-fruit orchards create many spray management challenges for the achievement of good pest control in accordance to label guidelines. Therefore, the following multi-fruit orchard spray program for the control of major tree fruit pests and diseases may offer some assistance. Labeled as noted in 2010 for All Tree Fruit – Pomes: Apples & Pears Stones: Peaches, Plums, Nectarines, and Cherries.

Many local orchards are composed of multi-fruit combinations producing for fresh market apples, peaches, pears, plums, nectarines, and cherries. Aggressive fruit tree spray programs are required to achieve high quality fruit. These multi-fruit orchards create many spray management challenges for the achievement of good pest control in accordance to label guidelines. Therefore, the following multi-fruit orchard spray program for the control of major tree fruit pests and diseases may offer some assistance. Labeled as noted in 2010 for All Tree Fruit – Pomes: Apples & Pears Stones: Peaches, Plums, Nectarines, and Cherries.

Spray Program for Multi-Tree Fruit Orchards

Many local orchards are composed of multi-fruit combinations producing for fresh market apples, peaches, pears, plums, nectarines, and cherries. Aggressive fruit tree spray programs are required to achieve high quality fruit. These multi-fruit orchards create many spray management challenges for the achievement of good pest control in accordance to label guidelines. Therefore, the following multi-fruit orchard spray program for the control of major tree fruit pests and diseases may offer some assistance. Labeled as noted in 2010 for All Tree Fruit – Pomes: Apples & Pears Stones: Peaches, Plums, Nectarines, and Cherries.
## Organic Approach Substitutions:

<table>
<thead>
<tr>
<th>Conventional Product</th>
<th>Organic Certified Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captan® &amp; Tonsin-M®</td>
<td>Surround® &amp; Sulfur</td>
</tr>
<tr>
<td>Rally®</td>
<td>Kaligreen (Powdery Mildew Eradicant)</td>
</tr>
<tr>
<td>Listed Insecticides</td>
<td>Neem® or Pyganic® or Entrust® (Stone Fruits Only)</td>
</tr>
<tr>
<td>Agrimycin®</td>
<td>Fixed Copper (Apples &amp; Pears Only)</td>
</tr>
<tr>
<td>Gramoxone® or Roundup®</td>
<td>Scythe®</td>
</tr>
</tbody>
</table>

---

**NOTE:** This is a specimen label for electronic distribution. Refer to product label on container for specific directions for use.
### Spray Program for Multi-Small Fruit Plantings

Many local farms are composed of multi-small fruit combinations producing for fresh market blueberries, raspberries, blackberries, strawberries, and grapes. Aggressive fruit spray programs are required to achieve high quality fruit. These multi-small fruit plantings create many spray management challenges for the achievement of good pest control in accordance to labeled instructions. Therefore, the following multi-small fruit spray program for the control of major fruit pests and diseases may offer some assurance. Labeled as no-tam 2016 for All Small Fruit - Strawberries, Blueberries, Raspberries, Blackberries, and Grapes.

<table>
<thead>
<tr>
<th>FUNGICIDES/INSECTICIDES</th>
<th>RATE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lime Sulfur (ME)</td>
<td>10.0 gal</td>
<td>Downward Fall Fertilizer</td>
</tr>
<tr>
<td>JMS® Stylet Oil (NC)</td>
<td>1.0 gal</td>
<td>Apply Tuesday 10-8-15 (50% 5H)</td>
</tr>
<tr>
<td>Kocide® 84 (MI)</td>
<td>2.0 lbs</td>
<td>Other Hard Coppper</td>
</tr>
<tr>
<td>Captan® 5W (ME)</td>
<td>2.0 lbs</td>
<td>General Protector</td>
</tr>
<tr>
<td>Ziram® 40W (ME)</td>
<td>5.0 lbs</td>
<td>General Protector</td>
</tr>
<tr>
<td>(Except for Raspberry use from Yarnell's)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur 4W (ME)</td>
<td>3.0 lbs</td>
<td>General Protector</td>
</tr>
<tr>
<td>(Grape variety sensitivity)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rally® 40W (3) (Except for Blackberry use 10W)</td>
<td>4.0 oz</td>
<td>Raspberries, Blackberry</td>
</tr>
<tr>
<td>Provado® 2W (11)</td>
<td>14.5 oz</td>
<td>Fruit Flints, Fruit Spots, Raspberries &amp; Blackberry, and Powdery Mildew &amp; Can Bacterial Spots</td>
</tr>
<tr>
<td>P dispose® 40W (3)</td>
<td>1.5 oz</td>
<td>Fruit Flints, Fruit Spots, Raspberries &amp; Blackberry, and Powdery Mildew &amp; Can Bacterial Spots</td>
</tr>
<tr>
<td>Switch® 62.5 WG (9/12)</td>
<td>11.0 oz</td>
<td>Anticancer, Mummy Berry, Anthracnose, Sour Rot &amp; Botrytis</td>
</tr>
<tr>
<td>Portex® 33 (15)</td>
<td>4.0 pts</td>
<td>Downy Mildew &amp; Red Starch</td>
</tr>
</tbody>
</table>

### Insecticides

<table>
<thead>
<tr>
<th>INSECTICIDES/BRAC</th>
<th>RATE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provado® Admire® (4A)</td>
<td>4.0 oz</td>
<td>Grubs, Aphids, Hoppers &amp; Oranges (4A)</td>
</tr>
<tr>
<td>Casertan® (4A)</td>
<td>3.0 pts</td>
<td>Spider Mite, Plant Bug, Spotted Winged Root Hopper</td>
</tr>
<tr>
<td>Brigade® (4W) (Except strawberry)</td>
<td>3.0 oz</td>
<td>Spider Mite, Plant Bug, Spotted Winged Root Hopper</td>
</tr>
<tr>
<td>Malathion® (18B)</td>
<td>2.0 pts</td>
<td>Scale, Fruit Moths &amp; Whitefly</td>
</tr>
<tr>
<td>Sevin® 50W (1A)</td>
<td>4.0 oz</td>
<td>Japanese Beetles, Horns &amp; Sp blasted Bean</td>
</tr>
</tbody>
</table>

*Rate for 30-100 gal Acre Concentrate Spray
*Be sure to follow all labels closely for PHI and REI!

### Multi-Small Fruit Spray Calendar

<table>
<thead>
<tr>
<th>Month</th>
<th>Action</th>
<th>Date</th>
<th>Rate</th>
<th>PHI</th>
<th>REI</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 10</td>
<td>Strawberry Bloom</td>
<td>Captan® 5W 5.0 lbs</td>
<td>1.0 lbs</td>
<td>3-5 day PHI</td>
<td>4-6 day REI</td>
</tr>
<tr>
<td>April 15</td>
<td>Strawberry Bloom/Blueberry Early Bloom</td>
<td>Captan® 2.0 lbs</td>
<td>0.5 lbs</td>
<td>3-5 day PHI</td>
<td>4-6 day REI</td>
</tr>
<tr>
<td>April 25</td>
<td>Strawberry Full Bloom/Blueberry MID/Bloom</td>
<td>Captan® 2.0 lbs</td>
<td>0.5 lbs</td>
<td>3-5 day PHI</td>
<td>4-6 day REI</td>
</tr>
<tr>
<td>May 5</td>
<td>Strawberry 2nd Cover &amp; Harvest Spray/Blueberry 1st Cover/Blueberry Bloom Spray/Blueberry 1st Cover/Blueberry Bloom Spray</td>
<td>Captan® 5.0W 1.5 lbs</td>
<td>0.5 lbs</td>
<td>3-5 day PHI</td>
<td>4-6 day REI</td>
</tr>
<tr>
<td>June 1</td>
<td>Strawberry 2nd Cover &amp; Harvest Spray/Blueberry 2nd Cover/Blueberry 1st Cover</td>
<td>Captan® 2.0W 1.5 lbs</td>
<td>0.5 lbs</td>
<td>3-5 day PHI</td>
<td>4-6 day REI</td>
</tr>
</tbody>
</table>

### Herbacenes/BRAC

<table>
<thead>
<tr>
<th>HERBICIDES/BRAC</th>
<th>RATE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gramoxone® [22]</td>
<td>1.0 qts</td>
<td>Barnyard, Directed Spray</td>
</tr>
<tr>
<td>Roundup® [9]</td>
<td>1.0 qts</td>
<td>Barnyard, Directed Spray</td>
</tr>
<tr>
<td>Dwayne® 200E (15)</td>
<td>4.0 lbs</td>
<td>Spring/Summer 30 day PHI</td>
</tr>
<tr>
<td>Princep® HL (5)</td>
<td>1.0 lbs</td>
<td>Spring/Summer, High pH Soil</td>
</tr>
<tr>
<td>Sulfur® [12]</td>
<td>2.5 lbs</td>
<td>Spring/Fall, 1 yr Established (Except strawberry)</td>
</tr>
<tr>
<td>Atrazine® [14] or Shark® [14]</td>
<td>2.0 oz</td>
<td>Directed Spray to Waterbands, 3 day PHI</td>
</tr>
<tr>
<td>Sunlight® [15]</td>
<td>2.0 qts</td>
<td>Spring/Summer, Directed 60 day PHI (Except strawberry)</td>
</tr>
<tr>
<td>Prostar® [16]</td>
<td>1.5 pts</td>
<td>Summer, Directed 30 day PHI</td>
</tr>
<tr>
<td>Silkstar® [17]</td>
<td>4.0 qts</td>
<td>Fall, Directed 1yr Established</td>
</tr>
</tbody>
</table>

*Lowest Rate Recommended Initially

### Organic Approach Substitute

- **Conventional Product**
- **Organic Certified Product**
- Captan® Sunscreen® & Surfarin®
- Rally® Ethylene (Blueberry Mould, Botrytis)
- Malathion® or Benzathion®
- Captan®

*Important Note: The calendar spray dates given are an average estimate for Anne Arundel and Prince George's County small fruit production, and may vary by location in Southern Maryland. Be sure to check your specific sprayer schedule against the schedule of the University of Maryland. Use this guide to supplement your research fruit plots. Remember to always "Read the Label".*

B. David Myers

Extension Agent, Agriculture
**Organic Approach Substitutions:**

<table>
<thead>
<tr>
<th>Conventional Product</th>
<th>Organic Certified Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captan®</td>
<td>Surround® &amp; Sulfur</td>
</tr>
<tr>
<td>Rally®</td>
<td>Kaligreen (Powdery Mildew Eradicant)</td>
</tr>
<tr>
<td>Listed Insecticides</td>
<td>Neem® or Pyganic® or Entrust® or Dipel®</td>
</tr>
<tr>
<td>Gramoxone® or Roundup®</td>
<td>Scythe®</td>
</tr>
</tbody>
</table>

*Important Note: The calendar spray dates given are an average estimate for Anne Arundel and Prince George’s County small fruit production, and may vary by location in Southern Maryland. Be sure to adjust your spray schedule application dates accordingly. The above recommendations very closely reflect the current spray program utilized at the University of Maryland Research and Education Center, Upper Marlboro Facility for its research fruit plots. Remember to always “Read the Label”.*

R. David Myers  
Extension Agent, Agriculture
A Pest Control Strategy!
Peach Tree Borer  Apple Maggot  Coddling Moth
Stem Girdler  Spider Mite  Thrips  Scale
Japanese Beetle  Aphid  Leafhopper  Whitefly
• Fireblight is caused by a bacterium, *Erwinia amylovora*.
• Epidemics cause tree death and orchard removal.
• This limits pear production in the eastern US. It also limits apple production in warmer areas of MD.
Apple Fireblight Evaluation

1=Dead, 10=No Disease

Ginger Gold, Honey Crisp, Royal Court, Crown Empire, JonDeCoster, Yataka, Nittany, Snap Stayman, Cameo, Suncrisp, Sun Fuji, Braeburn, Pink Lady
# Apple Rootstock Fireblight Susceptibility

<table>
<thead>
<tr>
<th>Rootstock</th>
<th>Fireblight Susceptibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>M9, Bud9</td>
<td>Susceptible</td>
</tr>
<tr>
<td>M26</td>
<td>Highly-Susceptible</td>
</tr>
<tr>
<td>M7a</td>
<td>Susceptible</td>
</tr>
<tr>
<td>M106</td>
<td>Tolerant</td>
</tr>
<tr>
<td>M 111</td>
<td>Tolerant</td>
</tr>
<tr>
<td>Geneva 16</td>
<td>Tolerant</td>
</tr>
<tr>
<td>Geneva 30</td>
<td>Tolerant</td>
</tr>
</tbody>
</table>
High-Density Apple Variety
Fire Blight Resistance Trial on Dwarfing Rootstocks

✓ Fire blight susceptibility apple varieties on two dwarfing rootstocks: fireblight susceptible M9/Bud 9, to fire blight resistant Geneva 16.

✓ The varieties included in the trial are Royal Court, Macoun, Ginger Gold, Pioneer Mac, and Honeycrisp, (Crown Empire and Gala replacement trees)
Thank You!

ACN
Blossom Blight
Trauma Blight
Graft Union Necrosis GUN verses
Graft Incompatibility GI
GUN Tree Loss Weak and Fireblight Death

August 10, 2012

M/Bud9  G16

50 50 80

% Healthy

% Dead & Weak GUN

LSD – 24.05
P – 0.0326
The Establishment of an Organic Apple and Asian Pear Orchard:

Principal Investigator: Chris Walsh  Co-Investigator: Jim Hanson
Field Supervisor: Mike Newell  Graduate Assistant: Andrea Ottesen
CULTIVAR EVALUATION

3 disease resistant varieties: LIBERTY, GOLDRUSH, ENTERPRISE

3 Asian pear varieties: OLYMPIC, ATAGO, NITAKA

3 standard commercial: GALA, FUJI, CORTLAND
<table>
<thead>
<tr>
<th>Date</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/10/04</td>
<td>Pyganic, Sulfur, Surround</td>
</tr>
<tr>
<td>4/20/04</td>
<td>Pyganic, Sulfur</td>
</tr>
<tr>
<td>4/20/04</td>
<td>Solican &amp; Gramoxone</td>
</tr>
<tr>
<td>4/30/04</td>
<td>Dithane &amp; Topsin</td>
</tr>
<tr>
<td>5/5/04</td>
<td>Sulfur, Pyganic &amp; Surround</td>
</tr>
<tr>
<td>5/5/04</td>
<td>Mancozeb &amp; Imidan</td>
</tr>
<tr>
<td>5/13/04</td>
<td>Mancozeb, Imidan &amp; Topsin</td>
</tr>
<tr>
<td>5/24/04</td>
<td>Sulfur, Pyganic &amp; Surround</td>
</tr>
<tr>
<td>5/24/04</td>
<td>Imidan, Nova, Provado, Captec</td>
</tr>
<tr>
<td>6/7/04</td>
<td>Pyganic, Sulfur, Surround, Entrust</td>
</tr>
<tr>
<td>6/7/04</td>
<td>Imidan, Thiodan, Captec, Topsin</td>
</tr>
<tr>
<td>6/17/04</td>
<td>Pyganic, Sulfur, Surround, Entrust</td>
</tr>
<tr>
<td>6/17/04</td>
<td>Imidan, Nova, Provado, Captec</td>
</tr>
<tr>
<td>6/28/04</td>
<td>Fertilize McGeary 5-3-4</td>
</tr>
<tr>
<td>7/15/04</td>
<td>Pyganic, Sulfur, Surround, Entrust</td>
</tr>
<tr>
<td>7/15/04</td>
<td>Imidan, Nova, Provado, Captec</td>
</tr>
<tr>
<td>7/22/04</td>
<td>Pyganic, Sulfur, Surround, Entrust</td>
</tr>
<tr>
<td>7/22/04</td>
<td>Imidan, Captec, Topsin, Vydate</td>
</tr>
<tr>
<td>8/4/04</td>
<td>Fertilize McGeary 5-3-4</td>
</tr>
<tr>
<td>8/5/04</td>
<td>Imidan, Captec, Topsin, Thiodan</td>
</tr>
<tr>
<td>8/20/04</td>
<td>Captec, Topsin &amp; Sevin</td>
</tr>
</tbody>
</table>

**CONVENTIONAL MATERIALS 2004**

<table>
<thead>
<tr>
<th>Date</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/10/04</td>
<td>Warrior, Dithane, Rubigan</td>
</tr>
<tr>
<td>4/20/04</td>
<td>Dithane &amp; Topsin</td>
</tr>
<tr>
<td>5/5/04</td>
<td>Mancozeb &amp; Imidan</td>
</tr>
<tr>
<td>5/13/04</td>
<td>Mancozeb, Imidan &amp; Topsin</td>
</tr>
<tr>
<td>6/17/04</td>
<td>Pyganic, Sulfur, Surround, Entrust</td>
</tr>
<tr>
<td>6/28/04</td>
<td>Imidan, Nova, Provado, Captec</td>
</tr>
<tr>
<td>7/15/04</td>
<td>Pyganic, Sulfur, Surround, Entrust</td>
</tr>
<tr>
<td>7/22/04</td>
<td>Pyganic, Sulfur, Surround, Entrust</td>
</tr>
<tr>
<td>8/4/04</td>
<td>Roundup</td>
</tr>
<tr>
<td>8/5/04</td>
<td>Imidan, Captec, Topsin, Thiodan</td>
</tr>
<tr>
<td>8/20/04</td>
<td>Captec, Topsin &amp; Sevin</td>
</tr>
</tbody>
</table>
CORTLAND ORGANIC AND CONVENTIONAL HARVEST

Transitional Organic Cortland

Conventional Cortland

2004 Harvest
NITAKA ORGANIC AND CONVENTIONAL HARVEST

2004
Pome - Pear

Recommended Varieties For Reduced Sprays

♦ Magness, Moonglow, Potomac - Fire Blight Immune
♦ Asian Pear - Highly Disease Resistant (Organic)
♦ Seckel - A Sugar Pear, Small, Excellent Quality, Pest Resistance

Recommended Rootstocks

♦ Standard Tree - Domestic Bartlett Seedling

Ripening Dates

♦ August 25 - September 20

Training Systems

♦ Free Standing Co-Dominate Central Leaders
Pome - Pear

Pruning
♦ Head At Planting to 30” Whips
♦ Prune Annually During Dormancy
♦ Remove Damaged Or Blighted Wood Immediately

Planting Instructions, Densities & Pollinators
♦ Plant In The Spring, Trim And Spread Roots,
  Place The Majority Of Roots & Lowest Scaffold
  Limb Towards Prevailing Wind
♦ 200 Trees/Acre; In Row Spacing 15’ & Between
  Row 20’
♦ Position Pollinator Trees Strategically; At Least
  Three Varieties Required

Major Pest Problems
♦ Diseases - Fire Blight, Leafspot, Scab, Rust,
  Powdery Mildew
♦ Insects - Aphids, Scales, Mites, Leafrollers, Plant
  Bugs, Plum Curculio, Codling Moth, Pear Psylla,
  Apple Maggot
Stones - Peach, Nectarine, Plum

Recommended Varieties Reduced Sprays

♦ Peaches: Candor, Garnet Beauty, Flamin Fury, Red Haven, Loring
♦ All Nectarine Varieties Are Highly Susceptible To Brown Rot
♦ Plums: Methley – Sweet & Juicy, Stanley – Prune Type

Recommended Rootstocks

♦ Peach & Nectarine: Standard Tree - Domestic Lovell, Halford Seedlings
♦ Plum: Myro 29C (Myrobalan)

Ripening Dates

♦ July 5 - September 25
Stones - Peach, Nectarine, Plum

Training Systems
♦ Free Standing Open Center
♦ Perpendicular-V-System
♦ Central leader

Pruning
♦ Head At Planting To 24-28”Whips, Determine Scaffold Limbs For 18” Crotch & Headback Scaffolds In Second Year
♦ Prune Annually During Dormancy In Late Winter, Remove Dead Wood

Planting Instructions, Densities & Pollinators
♦ Plant In The Spring, Trim And Spread Roots, Place The Majority Of Roots & Lowest Scaffold Limb Towards Prevailing Wind
♦ 150 - 200 Trees/Acre; In Row Spacing 15-18’& Between Row 20-24’
♦ Self-Fruitful
Key Pest Problems of Cherry, Peach, Nectarine, & Plum:

**Diseases:**
- Peach Leaf Curl
- Brown Rot
- Peach Scab
- Cherry Leaf Spot
- Rusty Spot
- Plum Black Knot
- Peach Canker (Cytospora)
Key Pest Problems of Cherry, Peach, Nectarine, & Plum:

Insects:
- Scale
- Plant Bugs
- Stink Bugs
- Aphids
- Plum Curculio
- Oriental Fruit Moth
- Japanese Beetle
- Peach Tree Borers

Figure 3: Peach Insect Life Cycles
19th century farming superstition - “Horsewhip peach trees before breakfast on Good Friday to insure a good harvest.”
Avera
g
ge Per Acre Peach Yield
Training System Comparison

Open Center: 136 trees/Acre X 45.9 lbs/tree
= 6,202 lbs/Acre

V-System: 272 trees/Acre X 42.1 lbs/tree
=11,451 lbs/Acre

2001 & 2002 Combined
## Peach Orchard Study
### Upper Marlboro REC

### Perpendicular-V Pros
- Heavy Early Yields/Acre
- New Varieties are Quick to Market
- Compact Orchard with Twice the Number of Trees/Acre
- Lower Input Costs

### Perpendicular-V Cons
- Pruning and Scaffold Development Laborious
- Harder to Size Control Trees
- Fruit Thinning & Harvesting is More Difficult
- Higher Disease Pressure – Irregular Spray Coverage
Review of Fungicides for Peach Disease Management

Norman Lalancette, Ph.D.
Associate Professor of Plant Pathology
Extension Specialist in Tree Fruit Pathology

Rutgers Agricultural Research and Extension Center
Bridgeton, New Jersey
Brown Rot Blossom Blight & Fruit Rot

*Monilinia fructicola*
Peach Scab

*Fusicladosporium carpophilum*
Peach Rusty Spot vs. Powdery Mildew

Peach Rusty Spot

Peach Powdery Mildew

Peach Rusty Spot
Beach Plums

Recommended Varieties For Reduced Sprays

♦ Nursery Selections

Recommended Rootstocks

♦ Propagated Cuttings – Natural Seedling

Ripening Dates

♦ Late July – Early September

Training Systems

♦ Spreading Bush – Open Center

Pruning

♦ Prune Annually to Open Canopy
Beach Plum
Nurseries
Wholesale and retail suppliers of beach plum plants.

Wholesale suppliers of *Prunus maritima* plants:

**Bailey Nurseries, Inc.**
1325 Bailey Road
St. Paul, MN USA 55119-6199
800-829-8898
Fax 800-829-8894
plants@baileynursery.com
http://www.baileynursery.com

**J.G. Akerboom**
700 Main Street
Cedarville, NJ 08311
856-447-3346
sales@akerboom.com
www.akerboom.com

**Princeton Nurseries**
Ellisdale Road
Allentown, NJ 08501
800-916-1776 or 609-259-0492
adc@princeton nurseries.com
www.princeton nurseries.com

**Concord Nurseries**
10175 Mile Block Rd.
North Collins, NY 14111
(600) 223-2211
info@concordnursery.com
www.concordnurseries.com

http://www.beachplum.cornell.edu/
Beach Plums

Planting Instructions & Densities

♦ Plant All Roots Shallow – Within The Top 6” Plow Layer

♦ Amend pH To 6.0 to 6.5

♦ Space 6’ By 15’
Stone - Cherry

Recommended Varieties For Reduced Sprays

♦ Hedelfingen, Schmidt - Sweet Varieties
♦ Montmorency - Tart Cherry

Recommended Rootstocks

♦ Mazzard - Sweet Cherry
♦ Mahaleb - Tart Cherry

Ripening Dates

♦ June 25 - July 20

Training Systems

♦ Free Standing Open Center
♦ Central leader
**Stone - Cherry**

**Pruning**
- Head At Planting To 24-28"Whips, Determine Scaffold Limbs for 24-30" Crotch & Headback Scaffolds
- Prune Annually During Dormancy In Late Winter
- Remove Dead Wood

**Planting Instructions, Densities & Pollinators**
- Plant In The Spring, Trim And Spread Roots, Place The Majority Of Roots & Lowest Scaffold Limb Towards Prevailing Wind
- 200 Trees/Acre; In Row Spacing 15' & Between Row 20'
- Sweet Types Cross Pollinated, Tart Types are Self-Fruitful
Little Berry - Grape

Recommended Varieties For Reduced Sprays

♦ Concord, Niagara, Catawba – Labrusca American Varieties, All Purpose
♦ Seyval – Hybrid: Labrusca X Vinifera, White Wine
♦ Canadice, Himrod – Seedless Table Grapes

Recommended Rootstocks

♦ Labrusco & Hybrids Are Self Propagating
♦ Caudoroc 3309, S04, 5BB For Vinifera Varieties

Ripening Dates

♦ Veraisen – August 25 – October 15
Little Berry - Grape

Training Systems
♦ Cordon Support Trellis Systems:
  ✓ Bi-Lateral Cordon with Vertical Positioned Shoots;
  ✓ Six-Cane Kniffen System (3 Wire);
  ✓ Horizontal Arm-Spur (2 Wire); or
  ✓ Geneva Double Curtain (2 Wire)

Pruning
♦ Remove Old Fruit Wood To Cordon Wood After Fruiting
♦ Renewal Spurs Are Trained Every Season

Planting Instructions & Densities
♦ Plant Vines 6–8’ In Row by 10–12’ Between Row
Grape Pest Problems

Diseases: Black Rot, Crown Gall, **Downy Mildew**, Gray Mold or Bunch Rots, Powdery Mildew

Insects: Grape Berry Moth, Flea Beetles, **Japanese Beetles**, Phylloxera
Welcome to the Anne Arundel County Agriculture and Natural Resources Department!

- Newsletter
- Calendar of Events
- Current Research Projects
- Agriculture Bulletins
- Announcements
- Interactive Media

The Anne Arundel County Agriculture and Natural Resources Extension Educator works with farmers by providing technical and educational information. These services are designed to offer the latest in pest management practices and nutrient management while being sensitive to the environmental impacts on the county's water and soil resources. Agriculture programs focus on issues which include:

- Agricultural Production
- Water Quality Marketing
- Farm Management
- Environmental Quality
Interactive Media

Agriculture Program Highlights (streaming video)

Extension Web Modules - R. David Myers

1. Pasture Management
2. Pasture Herbicides
3. Handling Tall Fescue Toxicity Events
4. Modern Vegetable Production Technology for Early Market
5. Vegetable Herbicides for Controlling the Top 10 Weeds of Southern Maryland
6. Sustainable Low-Input Strip-Till & No-Till Vegetable Planting Tactics
7. Fruit Establishment Tactics to Maximize our Coastal Plain Advantage
8. Vineyard & Orchard Weed Control
9. Vineyard Establishment Supplies & Equipment

MDA - Maryland's Best

1. Try Composting - Leaf "recycling"

Other Interactive Media

1. Ethnic Specialty Vegetable Market Challenge

For more information, contact Christie Germuth

Last updated: 03/15/2009
Vineyards Supplies & Equipment
CMREC, Upper Marlboro Farm

David Myers
Extension Educator
WELCOME to this world famous wine growing region

NAPA VALLEY

...and the wine is bottled poetry...
Upper Marlboro Wine Grape Varieties

- Cabernet Sauvignon 1
- Cabernet Sauvignon 337
- Cabernet Sauvignon 5
- Cabernet Franc 1
- Cabernet Franc 3
- Chardonnay 76
- Chardonnay 96
- Chardonnay 95
- Chardonnay Colmar
- Merlot 1
- Merlot 3
- Merlot 6
- Pinot Noir 13
- Pinot Noir 15
- Pinot Noir 19
- Pinot Gris 146
- Nebbiola 1
- Vidal (hybrid)
- Sangiovese 1
- Sangiovese 2
- Sangiovese 4
- Shiraz 1
- Shiraz 7
- Traminette 1
- Petite Verdot 2
- Tannat 1
- Viognier 1
Vision and Summary of
Impact of the Upper Marlboro REC
Research Vineyard for Southern Maryland

By
Southern Maryland Vineyard Team
December 2002

Introduction

The Southern Maryland Vineyard Team has already achieved significant accomplishment by conducting the research project funded by the Tri-County Council for Southern Maryland entitled: “Developing a Coordinated Mechanism to Ease Tobacco Farmers’ Transitions to Alternative Crops.” This has truly been a team effort with the involvement of Southern Maryland County Extension Faculty, Horticultural Specialists and Campus Faculty from the Universities of Maryland and Virginia Tech; Facility Manager and Research Technicians at the Upper Marlboro Research and Education Center, staff from the Maryland Department of Agriculture; and volunteers from the Maryland Grape Growers Association and the Association of Maryland Wineries.

Since the planting of the vineyard on April 4, 2001 until now, the project has progressed according to plans. The trellising and cordon establishment is now complete for this 27-variety research vineyard. Valuable information for Southern Maryland’s fledging wine industry has already been obtained. Variety and clonal variations have been observed for disease resistance, early canopy and cordon development, winter hardiness, and vine survival. Current and future vinters of Southern Maryland have enthusiastically welcomed this information as well as the hands-on demonstration of vineyard establishment process.

Vision

The early successes achieved by this research project are only the first steps in achieving a long-range goal of developing a viable wine grape industry in Southern Maryland. Currently, there are 12 wineries in the State of Maryland, yet, not a single one resides in any of the five Southern Maryland Counties. However, there are three aspiring wineries, and as many in the long range planning stages for Southern Maryland. Several commercial vineyards in Southern Maryland produce grapes to supply wineries, and other small hobbyist winemakers. The Association of Maryland Wineries indicates that only 50% of the required grape production is being met by the state grape growers. Since state law requires that a Maryland labeled wine consists of 75% or more of Maryland grown grapes, then the only way more Maryland wine may be produced is through the increase of grapes grown. Maryland wineries are also required by law to purchase grapes grown in Maryland before purchasing out of state. These factors, as well as a major vineyard industry research commitment made by the University of Maryland and partner organizations, have spawned a boom in the Maryland Grape Growers Association’s roster to over 200 growers statewide. Undoubtedly, research, and education are key components for the successful transition of area farmers into this new venture. The Southern Maryland Vineyard Team would like to continue this vineyard research and demonstration project for another three years. This additional project time would allow the full maturation of the vineyard. Future data
Vineyard Reckoning

The Southern Maryland Vineyard Team wishes to share the account of the Southern Maryland research vineyard planted at the Upper Marlboro Research and Education Center. The research vineyard contains 25 vinifera and 2 hybrid varieties, all tolerant to grapes and 2 hybrids that are used for winemaking. The project goals are to screen for varieties with good yields for the development of a Southern Maryland wine industry. The project has been a success. This vineyard is comprised of 32 vines each of which of the 27 varieties, having 8 vines in four randomized replications. The 864 vines are spaced 10” on each row and 6” within the rows, occupying a total area of 1.19 acres.

The following tables reveal the actual itemized costs for vineyard supplies and labor. A complete breakdown of labor activity and time involved in the accomplishment of tasks gives good insight to the labor investment required.

### Vineyard Supply Log

**Upper Marlboro REC**

**March 1, 2001 to August 31, 2002**

#### MATERIAL BURDEN 2001 COST

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Sub Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trellis Materials</strong></td>
<td>3,572.12</td>
</tr>
<tr>
<td>180 - 3’ x 4’ x 2” Treated Posts CCA</td>
<td>1,035.00</td>
</tr>
<tr>
<td>180 - 10 lb units of 11 GA Galvanized Bar Wire</td>
<td>28.07</td>
</tr>
<tr>
<td>120 - 4”x5”x10” End Posts Treated CCA</td>
<td>97.00</td>
</tr>
<tr>
<td><strong>Pesticides</strong></td>
<td>2,331.31</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>5,903.43</td>
</tr>
</tbody>
</table>

### VINEYARD LABOR LOG

**Upper Marlboro REC**

**March 1, 2001 to August 31, 2002**

#### LABOR BURDEN 2001 & 2002

<table>
<thead>
<tr>
<th>Task</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layout of Vineyard Soils</td>
<td>5</td>
</tr>
<tr>
<td>Plant Posts and Brace Anchors</td>
<td>6</td>
</tr>
<tr>
<td>Auger holes</td>
<td>10</td>
</tr>
<tr>
<td>Assty, Feeble, Line - As Planting</td>
<td>6</td>
</tr>
<tr>
<td>Vine Pruning</td>
<td>27</td>
</tr>
<tr>
<td>Drive Posts</td>
<td>19</td>
</tr>
<tr>
<td>Auger in Anchors</td>
<td>15</td>
</tr>
<tr>
<td>Drive Wire</td>
<td>18</td>
</tr>
<tr>
<td>Control Wire</td>
<td>20</td>
</tr>
<tr>
<td>Trellis Irrigation Lines</td>
<td>24</td>
</tr>
<tr>
<td>Irrigation Training Stakes</td>
<td>8</td>
</tr>
<tr>
<td>Herbicide Applications 2001</td>
<td>19</td>
</tr>
<tr>
<td>Pesticides, Insecticides 2001</td>
<td>10</td>
</tr>
<tr>
<td>Vine Training/Pruning 2001</td>
<td>3</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td>524</td>
</tr>
</tbody>
</table>

### MATERIAL BURDEN 2002 COST

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trellis Materials</strong></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous Irrigation Supply</td>
<td>65.50</td>
</tr>
<tr>
<td>Miscellaneous Equipment Supply</td>
<td>58.03</td>
</tr>
<tr>
<td>9 – Brace Wire 10 lbs 11 gauge</td>
<td>65.55</td>
</tr>
<tr>
<td>Galvanized Nails 80 – 22.5 lbs &amp; 120 – 50 lbs</td>
<td>16.52</td>
</tr>
<tr>
<td>2006 – Catch Wire, Clips, &amp; Vine Training Supplies</td>
<td>190.00</td>
</tr>
<tr>
<td>500 – Crimp Sleeves for Wire</td>
<td>38.00</td>
</tr>
<tr>
<td>10” x 100” Chain</td>
<td>292.56</td>
</tr>
<tr>
<td>10,000’ Trellis Tape Roll</td>
<td>136.00</td>
</tr>
<tr>
<td>40 – Trellis Tape Connectors</td>
<td>20.42</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>927.38</td>
</tr>
</tbody>
</table>

### Sub Total

**2002**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pesticides</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>1,051.59</td>
</tr>
</tbody>
</table>

**Total 2001 & 2002**

<table>
<thead>
<tr>
<th>Total 2001</th>
<th>Total 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,928.48</td>
<td>8,997.38</td>
</tr>
</tbody>
</table>
# Vineyard Labor Log

**Upper Marlboro REC**

## LABOR BURDEN 2001 & 2002

**MCE Investigators, CMREC Facility Labor and Volunteers**

<table>
<thead>
<tr>
<th>Task</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layout of Vineyard Site</td>
<td>9</td>
</tr>
<tr>
<td>Layout Posts and Brace Anchors</td>
<td>6</td>
</tr>
<tr>
<td>Auger Holes</td>
<td>10</td>
</tr>
<tr>
<td>Apply Fertilizer, Lime – At Planting</td>
<td>3</td>
</tr>
<tr>
<td>Vine Planting</td>
<td>57</td>
</tr>
<tr>
<td>Drive Posts</td>
<td>19</td>
</tr>
<tr>
<td>Auger in Anchors</td>
<td>15</td>
</tr>
<tr>
<td>Brace Wire</td>
<td>18</td>
</tr>
<tr>
<td>Cordon Wire</td>
<td>20</td>
</tr>
<tr>
<td>Trickle Irrigation Lines</td>
<td>14</td>
</tr>
<tr>
<td>Bamboo Training Stakes</td>
<td>7</td>
</tr>
<tr>
<td>Herbicide Applications 2001</td>
<td>19</td>
</tr>
<tr>
<td>Fungicides/Insecticides 2001</td>
<td>10</td>
</tr>
<tr>
<td>Vine Training/Pruning 2001</td>
<td>85</td>
</tr>
<tr>
<td>Nematicide</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Labor Value - 634 hrs @ $15.00/hr = $9,510.00
Seeding Tall Fescue
Crops Twilight Tour
Barbecue & Ice Cream Social
CMREC Upper Marlboro Farm
August 7, 2008

Maryland Cooperative Extension welcomes you to the Crops Twilight Tour. The following research projects will be highlighted as part of the evening program:

1. Sustainable Vegetable & Crop Research

   - Native Ornamental Ecology – Eillay Vodovets & Paula Shrewsbury
   - Nutrient Management for Ethnic Vegetables – Jerry Brust
   - Pumpkin Disease & Insect IPM – Jerry Brust
   - Chili Mix Specialty Vegetable High Tunnel – Brian Clark & Dave Myers
   - Reducing High P Soils with Forages Vs. Grain Crops – Bob Kustodivil
   - Fall N Wheat Application Strategies – Patrick Forresti
   - Cover Crop Sun Hemp in Double-Cropping Systems – Derck Hooks

   Time Reminder
   Start: 6:00   End: 7:30

2. Vineyard & Fruit Research

   - Slender Spindle Apple Fireblight Trial – Dave Myers & Anne DeMarsay
   - Beach Plum Production Update – Joe Fols & Don Beale
   - Blueberry Variety Trial Update – Ben Beale, Joe Fols & Herb Reed
   - Fruit Disease Update – Anne DeMarsay
   - Vineyard Canopy Management – Joe Fols, Ben Beale & Herb Reed

   Time Reminder
   Start: 7:40   End: 8:15

Barbecue Begins at 4:30
Ice Cream Served at 5:30
### Southern Maryland Research Vineyard

**Vinifera Variety Performance**

**CMREC, Upper Marlboro Facility**  
**By The Southern Maryland Vineyard Team**

#### 3-Year Vine Survival & Cordon Establishment 2001-2003

<table>
<thead>
<tr>
<th>Variety</th>
<th>Total Live Vines</th>
<th>Cordon Establishment</th>
<th>% Vine Survival</th>
<th>% Cordon Establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merlot 6C</td>
<td>32</td>
<td>64</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Nebbiolo 1C</td>
<td>32</td>
<td>53</td>
<td>100</td>
<td>82.8</td>
</tr>
<tr>
<td>Chardonnay 76C</td>
<td>31</td>
<td>62</td>
<td>96.9</td>
<td>96.9</td>
</tr>
<tr>
<td>Chardonnay 95C</td>
<td>31</td>
<td>61</td>
<td>96.9</td>
<td>95.3</td>
</tr>
<tr>
<td>Pinot Noir 19C</td>
<td>30</td>
<td>58</td>
<td>93.8</td>
<td>90.6</td>
</tr>
<tr>
<td>Cabernet Franc 3C</td>
<td>30</td>
<td>56</td>
<td>93.8</td>
<td>87.5</td>
</tr>
<tr>
<td>Merlot 1C</td>
<td>29</td>
<td>56</td>
<td>90.6</td>
<td>87.5</td>
</tr>
<tr>
<td>Pinot Noir 15C</td>
<td>29</td>
<td>52</td>
<td>90.6</td>
<td>81.3</td>
</tr>
<tr>
<td>Chardonnay 96C</td>
<td>28</td>
<td>52</td>
<td>87.5</td>
<td>81.3</td>
</tr>
<tr>
<td>Pinot Gris 146C</td>
<td>28</td>
<td>52</td>
<td>87.5</td>
<td>81.3</td>
</tr>
<tr>
<td>Petit Verdot 2C</td>
<td>27</td>
<td>48</td>
<td>84.4</td>
<td>75.0</td>
</tr>
<tr>
<td>Shiraz/Syrah 7C</td>
<td>27</td>
<td>47</td>
<td>84.4</td>
<td>73.4</td>
</tr>
<tr>
<td>Traminette 1C</td>
<td>26</td>
<td>52</td>
<td>81.3</td>
<td>81.3</td>
</tr>
<tr>
<td>Pinot Noir 13C</td>
<td>26</td>
<td>51</td>
<td>81.3</td>
<td>79.7</td>
</tr>
<tr>
<td>Chardonnay Colmar</td>
<td>24</td>
<td>45</td>
<td>75.0</td>
<td>70.3</td>
</tr>
<tr>
<td>Vidal 1C</td>
<td>24</td>
<td>45</td>
<td>75.0</td>
<td>70.3</td>
</tr>
<tr>
<td>Merlot 3C</td>
<td>24</td>
<td>43</td>
<td>75.0</td>
<td>67.2</td>
</tr>
<tr>
<td>Cabernet Franc 1C</td>
<td>20</td>
<td>33</td>
<td>62.5</td>
<td>51.6</td>
</tr>
<tr>
<td>Shiraz/Syrah 1C</td>
<td>20</td>
<td>30</td>
<td>62.5</td>
<td>46.9</td>
</tr>
<tr>
<td>Viognier 1C</td>
<td>20</td>
<td>22</td>
<td>62.5</td>
<td>34.4</td>
</tr>
<tr>
<td>Sangiovese 2C</td>
<td>19</td>
<td>15</td>
<td>59.4</td>
<td>23.4</td>
</tr>
<tr>
<td>Sangiovese 4C</td>
<td>11</td>
<td>11</td>
<td>34.4</td>
<td>17.2</td>
</tr>
<tr>
<td>Sangiovese 1C</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Cabernet Sauv 1C</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Cabernet Sauv 5C</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Cabernet Sauv 337C</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Tannat 1C</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Little Berry - Blueberry

Recommended Varieties For Reduced Sprays

♦ Bluecrop, Blueray, Duke, Jersey, Patriot, Elliot, Spartan - Northern Highbush
♦ O'Neil, Legacy - Southern Highbush
♦ Premiere, Brightwell, Climax, Tiftblue - Rabbiteye Varieties

Recommended Rootstocks

♦ Propagated Cuttings - Certified Virus Free

Ripening Dates

♦ June 25 - August 5

Training Systems

♦ Spreading High Bush

Pruning

♦ No Pruning For 3 Years Except Of Dead Wood
♦ Prune Out 6 Year Wood Annually
Little Berry - Blueberry

Planting Instructions & Densities

♦ Plant All Roots Shallow – Within The Top 6” Plow Layer

♦ Amend pH To 4.5-5.0 Range

♦ Space 5’ By 10’
Blueberry Pest Problems

Diseases: Botrytis
   Twig & Blossom Blight, Mummy Berry

Insects: Fruit Worms, Blueberry Maggot, Plum Curculio, Japanese Beetle, Scale, Yellow Necked Caterpillars
Little Berries - Blackberry, Raspberry

Recommended Varieties For Reduced Sprays

♦ Blackberry:
   - Dirksen, Hull - Thornless Varieties, Early

♦ Raspberry: June Bearing (Floracanes):
   - Bristol, Haut, Jewel, Allen - (Black Varieties);
   - Royalty, Brandywine - (Purple Varieties);
   - Latham, Nova, Hilton, Titan, Amos-H, Citadel,
   - Lauren, Gel-20 - (Red Varieties)

♦ Raspberry Fall Bearing (Primocanes):
   - Heritage, Autumn Bliss, Caroline, Josephine -
     (Red Varieties);
   - Fall Gold, Anne - (Yellow Varieties)
Little Berries - Blackberry, Raspberry

Recommended Rootstocks

♦ Propagated Cuttings – Certified Virus Free

Ripening Dates

♦ June 15 - July 15 (Spring)
♦ September - October (Fall)

Training Systems

♦ Wire Trellis, Or Cross-Arm
Little Berries - Blackberry, Raspberry

Pruning

♦ Remove All Fruited Canes To The Crown After Harvest

♦ Cut Renewal Canes to 3-4'

Planting Instructions & Densities

♦ Space Plants 4-6' In Row By 8-10' Between Row
Bramble Pest Problems

Diseases: Anthracnose, *Cane Blight*, Spur Blight, Gray Mold, Orange Rust

Insects: Blackberry Psyllids, Japanese Beetle, Plant Bugs, Cane Borers, Scale & Spider Mites
Little Berry - Strawberry

Recommended Varieties For Reduced Sprays

♦ Matted Row: Earliglow -- Early
  Allstar, Honeoye – Midseason
♦ Tristar, Tribute – Everbearing; Day-Neutral (not heat tolerant)
♦ Plasticulture: Sweet Charlie, Allstar, Camarosa, Chandler (Most Susceptible To Anthracnose)

Recommended Rootstocks

♦ Propagated From Certified Virus-Free Runners Or Plugs

Ripening Dates

♦ Mid-May To Mid-June (Matted Row)
♦ May – July (Plasticulture)
Little Berry - Strawberry

Planting Systems

♦ Matted Row: 5400 Plants/A At 24” In Row By 4’ Between Row Spacing
♦ Plasticulture: 12,000–18,000 Plants /A In A 12”X18” Or 18’X 18”Double-Row; Raised-Bed 36” Wide, With Trickle-Tape, And Row-Cover

Pruning

♦ Annual Renovation Following Harvest – Mowing, Cultivating, And Crown Thinning
Strawberry Pest Problems

Diseases: Botrytis Rot, Black Rot, Anthracnose, Powdery Mildew, Leaf Spot, Leaf Scorch, Leaf Blight, Red Stele

Insects: Strawberry Clipper Beetle, Spittlebug, Tarnished Plant Bug, Aphids, Spider Mites
New Maryland Pesticide Applicator Core Manual
Maryland Cooperative Extension
Anne Arundel County

Visit us in Cyberspace!!!

Anne Arundel County Extension website: http://annearundel.umd.edu/
The current and past agricultural newsletter additions are available for viewing or copy at: http://annearundel.umd.edu/AGNR/agnews.cfm
An agricultural bulletin page is also available for viewing or copy under our hot topics section at: http://annearundel.umd.edu/AGNR/agbulletins.cfm
New on the website in Fall 2008: Anne Arundel County Agricultural Program Teaching Modules - Streaming Video: http://annearundel.umd.edu/AGNR/agmedia.cfm
Also relive the history of Extension and University of Maryland College of Agriculture Land Grant Mission by viewing the 150 Years Anniversary PowerPoint: http://annearundel.umd.edu/files/University%20of%20Maryland%20150%20Year%20Anniversary.pps

An Equal Opportunity Employer
Thank You!
Any Questions?