

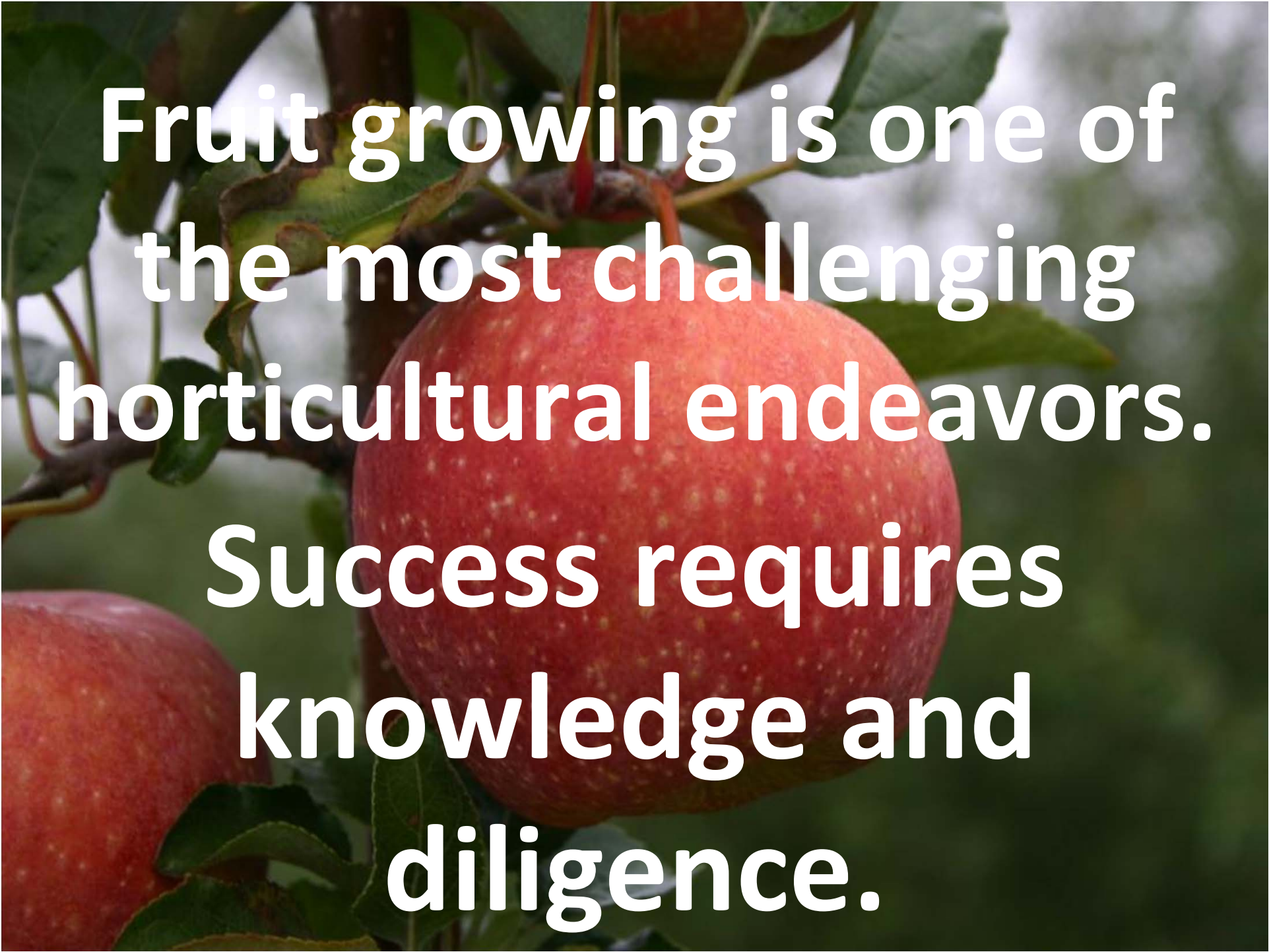
FRUIT TREES: AN INTEGRAL PART OF TODAY'S EDIBLE LANDSCAPE

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UMASS
AMHERST

A close-up photograph of a ripe red apple hanging from a tree branch. The apple is the central focus, showing its vibrant red color and slight texture. It is surrounded by green leaves, some of which are slightly out of focus. The background is a soft, blurred green, suggesting a garden or orchard setting. Overlaid on the image is white text in a bold, sans-serif font.

**Fruit growing is one of
the most challenging
horticultural endeavors.
Success requires
knowledge and
diligence.**

Location, Location, Location!

- Fruit trees are adaptable
- Deep well-drained soil ideal
- Good water-holding capacity
- Full sun for 6-8 hours



Apples

Suggested Varieties



- **Redfree**
(mid August)
- **Sansa**
(mid/late August)
- **Initial**
(early September)
- **CrimsonCrisp**
(mid September)



Suggested Varieties



- **Crimson Topaz**
(late September)



- **Liberty**
(late September)



- **Galarina**
(early October)

- **NovaSpy**
(mid October)



Suggested Varieties



- **Enterprise**
(mid October)
- **GoldRush**
(late October)



Apples require cross pollination

- **Each tree should be within 50 feet of a pollinizer**
- **Crab apples can pollinate apples**
- **Bloom times must overlap**
- **Pollen must be viable**

Good Apple Pollen Sources

Early Season

Idared
Jersey Mac
Liberty
Lodi
McIntosh
Paulared
Spartan
Vista Bella
Wealthy

Mid Season

Cortland
Delicious
Empire
Enterprise
Gala
Golden Delicious
Jonathan
Pristine
Redfree
Sansa

Late Season

CrimsonCrisp
GoldRush
Macoun
Northern Spy
Rome

Poor Apple Pollen Sources

Early Season

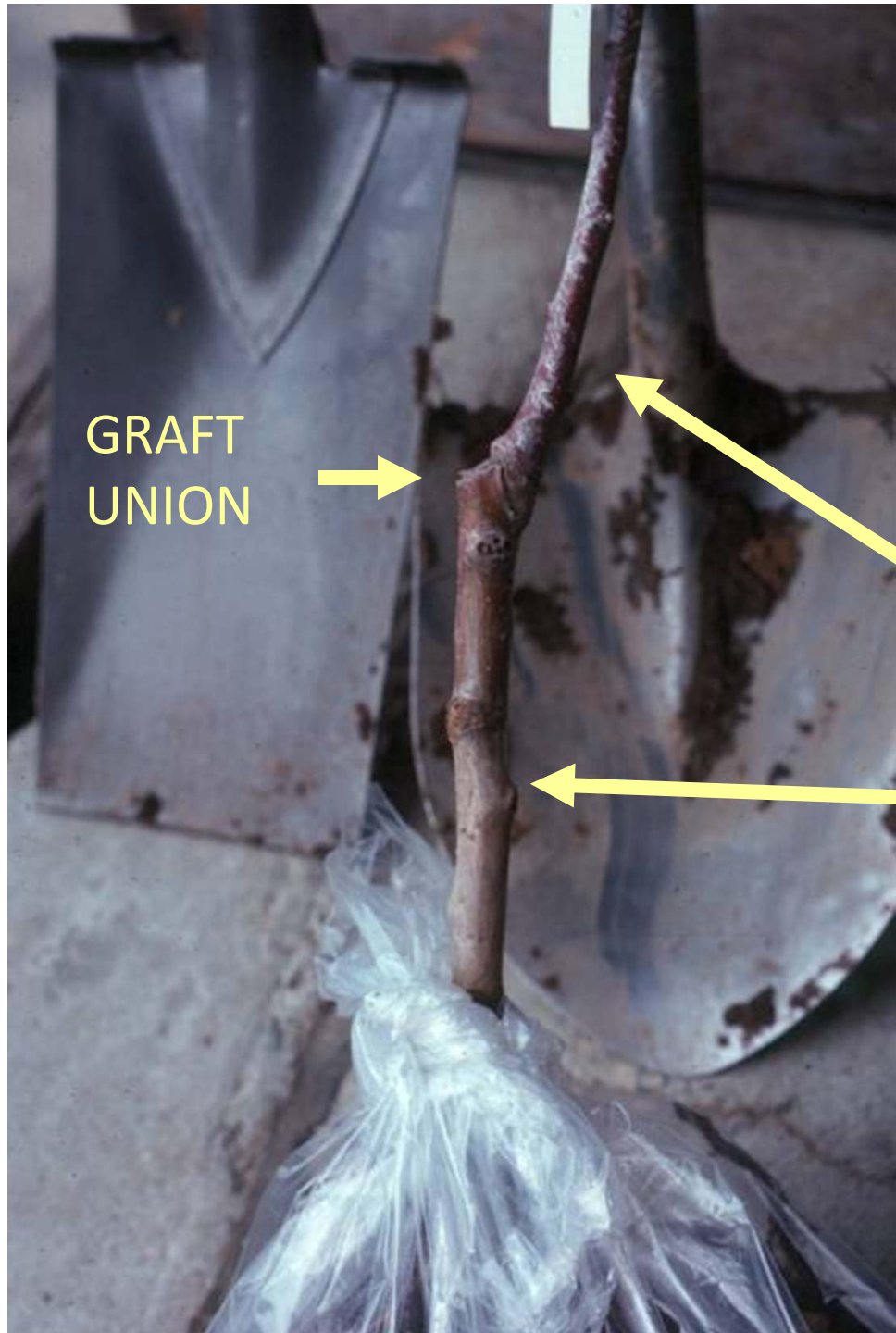
**Gravenstein
Stayman**

Mid Season

**Baldwin
Initial
Jonagold
Mutsu
R.I. Greening
Shizuka
Star Gala**

Late Season

**Spigold
Winesap**



**All modern
apple trees are
comprised of
two parts:**

SCION

ROOTSTOCK



M.9

Seedling

Apple Tree Spacing

- Seedling – 20-30 ft
- MM.111 – 15-20 ft
- MM.106 – 15-20 ft
- M.7, G.30 – 12-20 ft
- M.26 – 6-12 ft
- M.9, B.9, G.16, G.41 – 2-8 ft



PRIOR TO PLANTING

- Take soil sample, submit it for testing
- Correct fertility and pH (6-6.5)
- Add organic matter
- Create a weed-free planting area



**Planting
time =
early April
to early
May**



Graft union must be
2-4 inches above soil

2' deep

2' wide

Fill with good topsoil, possibly
amended with organic matter.



**Newly Planted
Tree:**

**Support trunk if
dwarf**

WATER

WATER

WATER!

Apple Fertilization

- After planting
1/3 lb 10-10-10 per tree
- Subsequent years
1/2 lb 10-10-10 per year of
tree age (up to 6-8 lbs/tree)



Nonbearing years

- 1.5-2 ft of growth optimal
- Reduce N if growth excessive

Bearing years

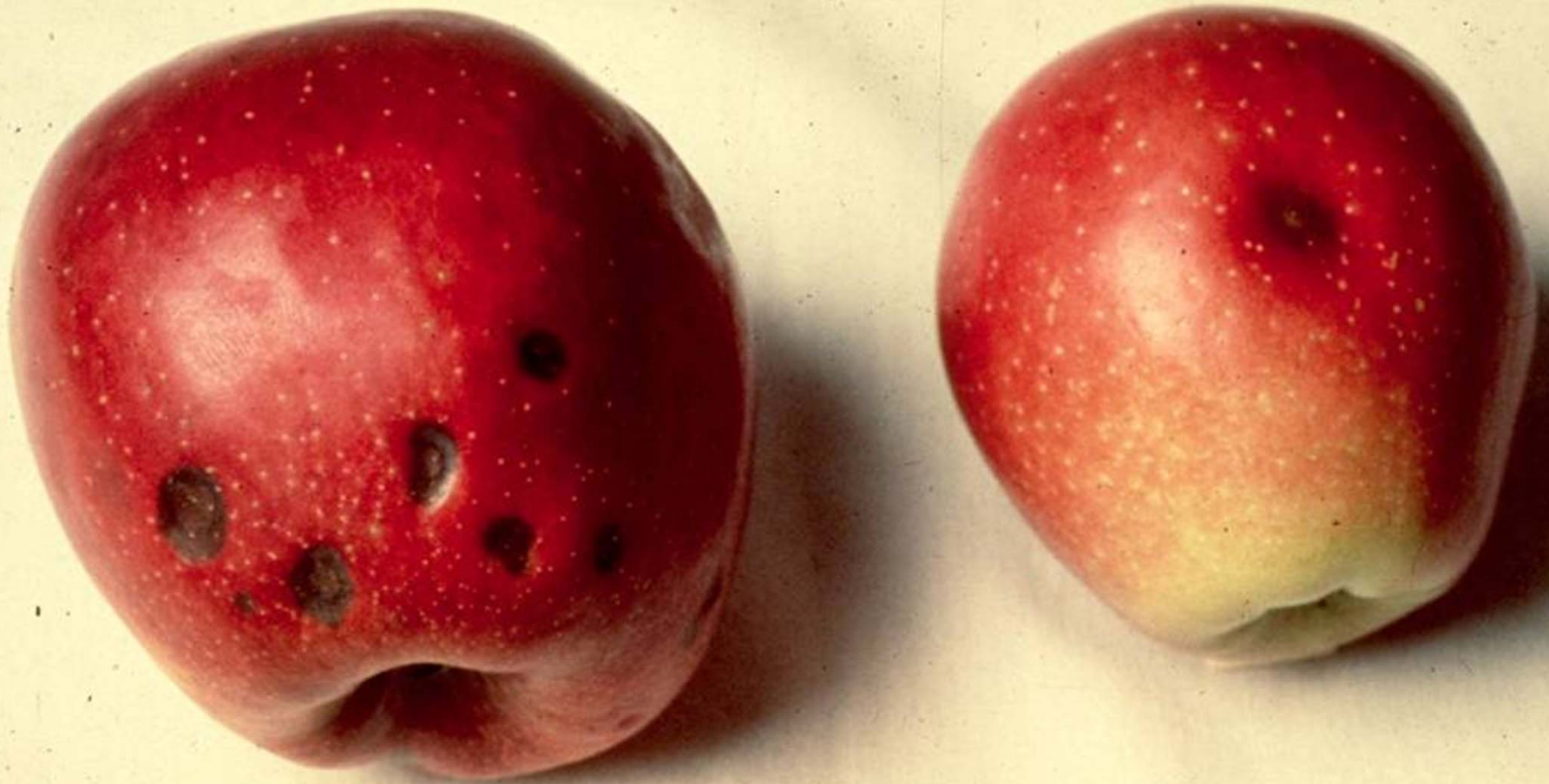
- 8-18 in of growth optimal
- Often, N fertilization can be reduced
- Leaf analysis could be used

Boron deficiency



1/8 pound Borax per tree per year in spring

Calcium deficiency



5-10 lbs gypsum per tree per year




**BUD FORMATION,
FLOWERING & FRUITING**

- Apples fruit on 2-year-old and older wood
- Wood 3- to 4-years old is most productive
- Older wood less productive, lower fruit quality





CENTRAL LEADER



Head central leader at planting.
32" above graft union – whip
18" above upper branches
Shorten lateral branches by 1/3

Early June

Remove competitors





Early Bending

- Distributes vigor
- Develops good crotch angles
- Timing: early June



Young Apple Trees

- **Almost no pruning is required**
- **Maintain dominance of central trunk**
 - **Remove direct competitors**
 - **Apply 2-to-1 Rule**
- **Remove bad crotch angles**
- **Timing:**
Spring through early summer

Remove competitors





Apply
2-to-1
Rule

Trunk diameter $> 2 \times$ limb diameter





Note that a “bevel cut” is used to encourage renewal branches

Bevel or Dutch cut



Remove
bad crotch
angles



Seven Simple Rules for Apple Pruning

Optimal timing: February-May

- 1. Remove 2-3 of the largest limbs in the top 2/3's**
- 2. Use the 2-to-1 rule**
- 3. Avoid stubbing (or heading) cuts**
- 4. Simplify branches**
- 5. Remove drooping branches**
- 6. Remove branches growing straight up**
- 7. Maintain central leader**

Slender Spindle and Tall Spindle



Pruning

Very limited

Cut top sparingly

Remove large branches

Use “2-to-1 rule”





Apple Fruitlet Removal

- Thinning of young fruit is necessary
- Increased fruit size
- Enhanced bloom next year
- Chemical thinning-10 days post bloom
 - Carbaryl (Sevin) @ 0.08 a.i. ounce/gallon
 - NAA (Fruitone-N, or -L, 2-10 ppm depending on variety)
 - BA (Maxcel, 50-100 ppm depending on variety)
 - Ethephon (300-500 ppm depending on variety)
- Hand thinning – mid to late June – thin to 8"



VOLES!



Pine vole

A photograph of a pine vole, a small brown rodent, positioned above a yellow ruler for scale. The vole is facing left and has a compact, rounded body.

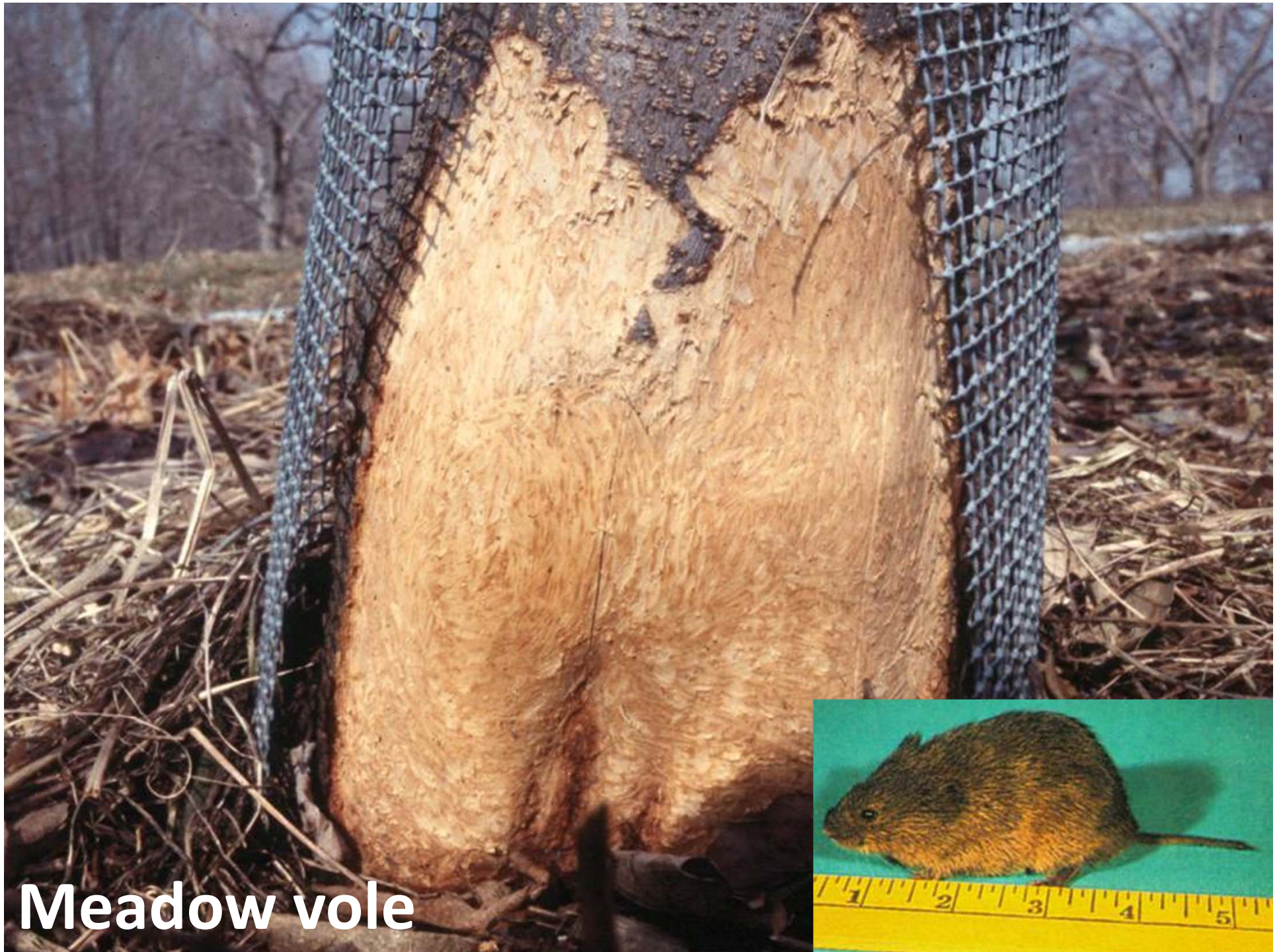


Meadow vole

A photograph of a meadow vole, a small brown rodent, positioned above a yellow ruler for scale. The vole is facing left and has a more elongated body than the pine vole, with a visible tail.



Pine vole



Meadow vole

Vole control

- Weed-free area around trees
- Nearby turf mowed regularly
- Guard if necessary





Orchardist's Nightmare!

APPLE MAGGOT





**Begin
treatment in
early August
for mid-
season and
later
varieties.**

- **Good control:**

- Esfenvalerate (Asana)^{RU}
- Acetamiprid (Assail)
- Cyfluthrin (Baythroid)^{RU}
- Thiacloprid (Calypso)^{RU}
- Azinphosmethyl (Guthion)^{RU}
- Phosmet (Imidan)^{RU}
- Lambdacyhalothrin (Warrior)^{RU}

- **Fair control:**

- Carbaryl (Sevin)
- Malathion
- Kaolin (Surround)⁰
- Spinosad (Entrust)⁰
- Pyrethrin (Pyganic)⁰



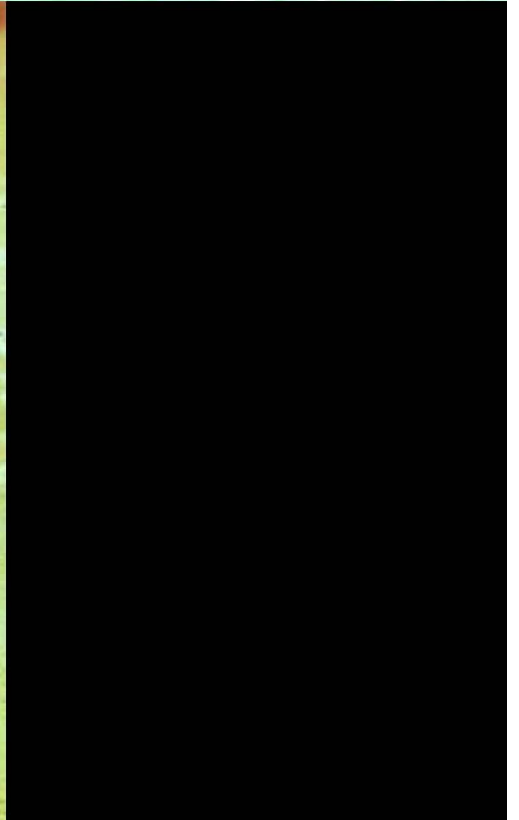
- 4" dark red sphere
- Tangle Trap[®]
- Odor lure
- Placed early July
- Cleaned weekly
- Codling moth may become an issue if alternate hosts are not removed



PLUM CURCULIO







Treatment begins at petal fall.

• Good Control:

- Thiamethoxam (Actara)
- Permethrin (Ambush)^{RU}
- Esfenvalerate (Asana)^{RU}
- Indoxacarb (Avaunt)
- Cyfluthrin (Baythroid)^{RU}
- Thiacloprid (Calypso)^{RU}
- Fenpropathrin (Danitol)^{RU}
- Azinphosmethyl (Guthion)^{RU}
- Phosmet (Imidan)^{RU}
- Lambdacyhalothrin (Warrior)^{RU}

• Fair control:

- Carbaryl (Sevin)
- Malathion
- Kaolin (Surround)^o
- Pyrethrin (Pyganic)^o

SURROUND[®]





MITES

Horticultural oil
green tip to tight cluster



APPLE SCAB







Control begins when there is green tissue showing in the spring.

- Good control:

- Captan – 18-24
- Dodine (Syllit) – 18-24
- Fenarimol (Rubigan) – 72-96
- Ferbam – 15-20
- Fenbuconazole (Indar) – 72-96
- Kresoxim-methyl (Sovran) – 48-72
- Mancozeb (Dithane, Manzate, Pencozeb) – 18-24
- Metiram (Polyram) – 18-24
- Myclobutanil (Rally) – 72-96
- Pyraclostrobin & boscalid (Pristine) – 72-96
- Trifloxystrobin (Flint) – 48-72
- Triflumizole (Procure)^{RU} – 72-96

- Fair control:

- Sulfur^O – 0
- Lime sulfur^O – 72-96

FIREBLIGHT

Remove branch at least 8-12" below obvious diseased tissue.

Disinfect pruning tools with a 10% bleach solution.



Pears

- Self unfruitful
- Seedling rootstock – spacing 15-25 ft
Quince rootstock – spacing 8-12 ft
- Fruit on spurs
- Fertilization – $\frac{1}{4}$ lb 10-10-10 per year of age up to 5 lbs per tree
- Thin fruit to 8 inches
- Pruning similar to apples



Peaches

(including nectarines)

- Self fruitful
- Seedling rootstocks – spacing 15-20 ft
- Plant at nursery level
- 1 lb 10-10-10 per year of tree age
 - Up to 10 lbs per tree
 - Split application
 - ½ in early April
 - ½ in mid/late May

Peach Varieties



- Many are available
- Ripening from July through September
- Select varieties which have:
 - Adequate cold hardiness
 - Bacterial spot resistance
 - Brown rot resistance

**Flowers & fruit on
1-year-old wood**





Open-center Training System

Peach Pruning

- Prune near bloom time (late April) and only on dry days
 - Possibly near a fungicide application
 - Quicker healing than earlier in the season
 - Reduced incidence of cytospora canker
 - Primary reason for peach-tree death
- Strong upright shoots (“suckers”) should be removed in late June – early July
- Remove broken or dead wood when noticed



Gummosis from cytospora

**Cut branches at least 6" below canker
Remove all diseased tissue from the trunk
in June, and disinfect with 70% alcohol**

Young Peach Trees

- **Top the young tree to 3'**
- **In the next year or two begin to select the major scaffolds to form the vase**



Head the young tree





**Select 4 main scaffold
branches – arms of the
open center**



**Remove fruitlets in
early June, leaving
1 every 8-10 inches**







Peachtree Borers

- At the beginning of shuck split against adults
 - Esfenvalerate (Asana)^{RU}
 - Acetamiprid (Assail)
- June 1-10, July 7-15, and August 1-10
 - Permethrin (Ambush or Pounce)^{RU}
 - Esfenvalerate (Asana)^{RU}
 - Cyfluthrin (Baythroid)^{RU}

Cultural control of peach borers

- Maintain tree health, nutrition
- Paint trunks and lower scaffolds white
- Don't use plastic tree guards!
- Keep base of tree weed- and debris-free
- Use a wire to kill larvae?



Brown rot



- Blossom blight
 - Treat at pink
 - Bravo, Captan, Echo, Elevate, Elite, Indar, Orbit, Rally, Rovral, Sulfur⁰
- Fruit rot
 - Shuck split and 7-10 days later
 - Bravo, Captan, Indar, Echo, Orbit, Pristine, Quash, Rally, Thiram, Sulfur⁰
 - Within 3 weeks of harvest
 - Captan, Elite, Indar, Orbit, Pristine, Quash, Rally Thiram, Sulfur⁰
 - Note that Sulfur has limited effectiveness, so sanitation is particularly important.

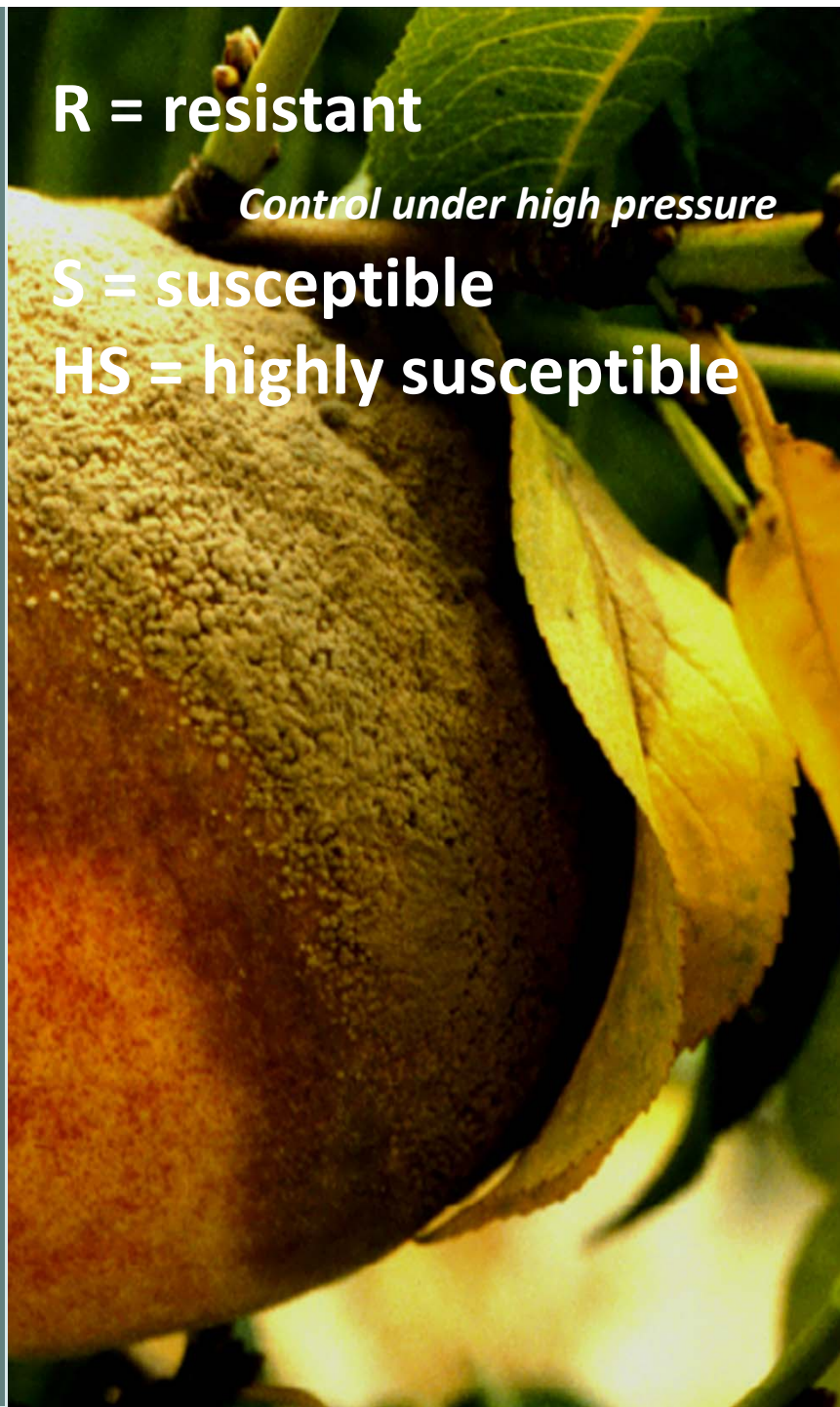
<u>Babygold No. 5</u>	R	Redskin	S
<u>Elberta</u>	R	Richaven	S
<u>Glohaven</u>	R	Rio Oso Gem	S
Ambergem	S	Shippers Late Red	S
Blake	S	Southland	S
Cardinal	S	Springold	S
Cresthaven	S	Sullivan Elberta	S
Dixired	S	Sunhaven	S
Earlired	S	Sunhigh	S
Early Red Free	S	Triogem	S
Early Sunhaven	S	Washington	S
Gemmers Elberta	S	Belle of Georgia	HS
Golden Jubilee	S	Coronet	HS
J H Hale	S	Early East	HS
Jefferson	S	Hale Harrison Brilliant	HS
Jerseyland	S	Halehaven	HS
Keystone	S	Maybelle	HS
Late Sunhaven	S	Mayflower	HS
Loring	S	Raritan Rose	HS
Madison	S	Redbird	HS
Monroe	S	Southhaven	HS
Redhaven	S	Summercrest	HS

R = resistant

Control under high pressure

S = susceptible

HS = highly susceptible



Peach leaf curl

- Dormant application
- Copper fungicides





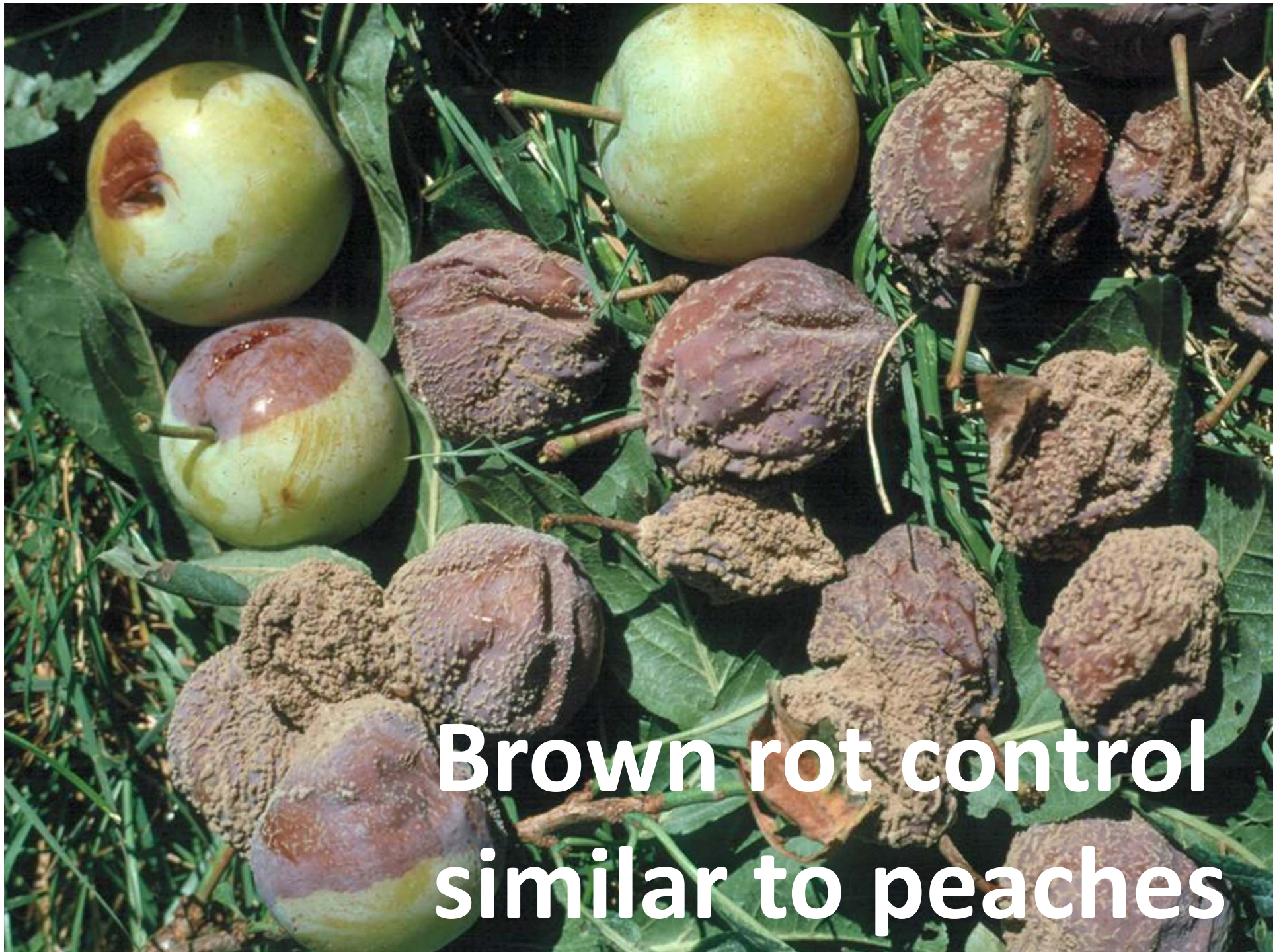
Plums

European and Japanese

- Self unfruitful

Must cross pollinate within class

- Seedling rootstocks – spacing 20 ft
- Fruit on spurs (and 1-yr-old wood)
- Train to a central leader or open center, similar to apples
- Fertilize similar to apples
- Thin fruit to 4 inches



**Brown rot control
similar to peaches**



Black Knot Control

- Remove branch 6 inches below
- Remove wild hosts
- Plant resistant varieties



President	VR
Santa Rosa	R
Shiro	R
Formosa	R
Fellenburg	S
Methley	S
Early Italian	S
Bradshaw	S
Bluefree	HS
Damson	HS
Shropshire	HS
Stanley	HS

VR = very resistant

No control needed

R = resistant

Control under high pressure

S = susceptible

HS = highly susceptible

Sweet Cherries

- Self unfruitful (most)
- Seedling rootstocks – spacing 20 ft
Dwarfing roots (G.5, G.6) – 8-10 ft
- Fruit on spurs
- Fertilize similar to apples
- Prune similar to apples but only in summer and on dry days

Sweet Cherry Varieties



- Several varieties available
- Some do not require cross pollination
- Some may have some degree of bacterial canker tolerance



**Brown rot control
similar to peaches**



**Cracking occurs with wet
weather near ripening**



#@%& Birds!!!



Sour Cherries

- Self fruitful
- Seedling roots – spacing 8-15 ft
- Fruit on spurs and 1-yr-old wood
- Fertilize similar to apples
- Fewer insect and disease problems than sweet cherries



SUCCESS!

For more information:

- UMass Fruit Advisor: UMassFruit.com
- Search “UMass Fruit Advisor” on YouTube.com
- Mass Aggie Seminars: UMassGarden.com
 - Growing Apples – Topsfield – March 5 (\$50)
 - Pruning Apple Trees – Peabody – March 5 (\$25)
 - Grafting Apple Trees – Boylston – April 2 (\$75)
 - Apple Fruiting Wall! – Northboro – April 16 (\$75)
 - Apple Fruiting Wall! – Deerfield – April 30 (\$75)
- Contact me: autoio@pssci.umass.edu

