I THOUGHT I KNEW EVERYTHING ABOUT GRAPE GROWING UNTIL THE NEXT GROWING SEASON CAME: WHAT THE VINES CAN TELL YOU

UNIVERSITY OF NEBRASKA
VITICULTURE PROGRAM WORKSHOP
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When I Visit:

- What you share is held in confidence. I am not there to judge you!
- Many times you hold the information from the past that can solve the problem
- If you don’t wear shirts with pockets … start now
- Working together we can find solutions

PATIENT CLIENT PRIVILEGE
CONUNDRUM
What brings you in today? (Something is wrong with my grape plants)
What hurts? (My livelihood if this can’t be remedied)
What are your symptoms? (Spots on leaves)
How long has this been going on? (About a week)
Has the pain been getting worse? (The spots are increasing)
Do you smoke? Do you take any recreational drugs? Do you drink alcohol and how often? (I will not ask these questions)

QUESTIONS TYPICALLY ASKED BY MD
Do you have a family history of this? (Have you had these symptoms other years?)

Do you take any medicines or supplements? (What have you sprayed, when, how much. What fertilizers have you applied, when, how much)

Are you sexually active? (The grapevines are hermaphroditic)

Have you had any previous surgeries? (What other problems have you dealt with in the past)

Does it hurt when I push here? (Fortunately grapes wine when pressed)

Are you allergic to any medicines? (Did you spray something your vines don’t like?)

QUESTIONS TYPICALLY ASKED BY MD
"More and more patients are going to the Internet for medical advice. To keep my practice going, I changed my name to Dr. Google."
Plant Chart

- Cultivar
- Age
- Site history
  - Previous crops
  - Management history
  - Current management practices
- Spray application records
- Management of surrounding fields
- Weather information

ASKING THE RIGHT QUESTIONS?
- **Mechanical**
  - Abrasions and breakage

- **Environmental**
  - Temperature, light, moisture, wind

- **Chemical**
  - Fertilizer, pesticides, Ozone

**ABIOTIC PLANT DAMAGE**
Pests
- Insects, mites, rodents, deer, and humans

Pathogens
- Fungi, bacteria, viruses

BIOTIC PLANT DAMAGE
Look for patterns

Location of damage: young leaves, older leaves, shoot, canes, petioles, penduncle, rachis, berries

Radiation/spread of problem – confined to a block a cultivar

SYSTEMATIC APPROACH TO ID
- Leaf spots – not consistent pattern on leaves
  - Chlorotic – yellowing
  - Necrotic - browning
- Shoot spots
- Fruiting bodies

FUNGAL ID CHARACTERISTICS
Sometimes form leaf spots, mosaic patterns, or pustules on leaves and fruits

- Fruit rots – Acetobacter
- Galls – crown gall

BACTERIAL ID CHARACTERISTICS
Often inhibit chlorophyll formation resulting in mottling, stunting, distortion, yellowing and vine dieback

- Grapevine vein clearing virus (GVCV)
- Grapevine fanleaf virus (GFLV)
- Over 70 virus or virus-like agents

VIRAL ID CHARACTERISTICS
Often see symptoms and not pest itself!

- Ragged or chewed leaves
- Rolled leaves
- Tunnels in leaves
- Holes in shoots, trunks, and berries

INSECT ID CHARACTERISTICS
- Mechanical – weed trimmers
- Physical – environmental extremes
- Drought/Flooding
- Chemicals
- Nutrient deficiencies

ABIOTIC ID CHARACTERISTICS
• Often observe damage and not rodent itself

• Voles – trunk damage
• Birds – berry damage
• Raccoons – berry and vine damage
• Management – exclusion

RODENT ID CHARACTERISTICS
Symptoms

- Cracked/split fruit
- Necrotic fruit
- Leaf tatters
- Disease absent on leaves and shoots

CASE EXAMPLE 1
Symptoms

- Necrotic leaves and shoots near ground
- Above ground shoots no showing symptoms
- Early season
- Herbicides not applied

CASE EXAMPLE 2
Symptoms

- Chlorotic spots
- Newly established vines
- Symptoms absent on new growth
- Weeds appear controlled

CASE EXAMPLE 3
Symptoms

- Necrotic leaf lesions
- Bronzing from leaf lesions

CASE EXAMPLE 4
Symptoms

- Necrotic leaf lesions
- Bronzing from leaf lesions

CASE EXAMPLE 4 CONT.
Symptoms

- Necrotic leaf lesions
- Bronzing from leaf lesions

CASE EXAMPLE 4 CONT.
Symptoms

- Necrotic pith and vascular system
- Damage confined to area in a vineyard block

CASE EXAMPLE 4 CONT.
Symptoms

What is most striking to you in this vineyard?

CASE EXAMPLE 5
Symptoms

- Berry/Flower abortion
- Fingering on leaves

CASE EXAMPLE 5 CONT.
CASE EXAMPLE 6

Symptoms
- Vines chlorotic
- Confined to an area in vineyard block
### Results from Leaf Samples

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Result</th>
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</thead>
<tbody>
<tr>
<td>2,4-D</td>
<td>0.010 PPM</td>
</tr>
<tr>
<td>Clopyralid</td>
<td>ND</td>
</tr>
<tr>
<td>Dicamba</td>
<td>ND</td>
</tr>
<tr>
<td>MCPA</td>
<td>ND</td>
</tr>
<tr>
<td>Picloram</td>
<td>ND</td>
</tr>
<tr>
<td>Mesotrione</td>
<td>0.70 PPB</td>
</tr>
</tbody>
</table>

1SGS North America, Brookings SD.
2ND represents not detected.
Symptoms

- Cultivar – Norton
- Defoliated quickly around mid to late June
- Leaves had botrytis and phomopsis
- Bleached spur covered with pycnidia

CASE 7
Symptoms

- Cultivar – Norton
- Defoliated quickly around mid to late June
- Leaves had botrytis and phomopsis
- Bleached spur covered with pycnidia

CASE 7 CONT.
CASE 9
CASE 10
CASE 12
Every growing season presents a different challenge
These seldom are predictable
Better not to worry instead focus first on what you know

“JUST ONE MORE THING”
-COLUMBO
► Downy mildew
► Black rot
► Grape Berry Moth
► Foliar phylloxera

FOR MORE THAN 150 YEARS
Diseases

- Phomopsis
- Black Rot
- Downy mildew
- Powdery mildew
- Anthracnose
- Late Season Rots

Insect Pests

- Japanese beetles
- Grape berry moth

Trunk Diseases

Other Pests

- Birds
- Deer
- Rodents

THE BASIC PESTS
- Needs moist plant tissue for infection
- Susceptible period; bud break to bloom
- Infections at bloom become latent
- Prune out infected canes
- ½ to 1” tissue at budbreak needs protection

PHOMOPSIS
- Needs moist plant tissue for infection
- Berries highly susceptible to infection first two weeks after bloom
- Berries develop resistance 5 to 6 weeks after bloom
- Prune out mummy berries
- Immediate pre-bloom and post bloom cover sprays are important

BLACK ROT
Needs moist plant tissue for infection
All green tissue susceptible
Berries become resistant 4 to 5 weeks after bloom
Overwinters on infected leaves

DOWNY MILDEW
Plant tissue moisture not needed for infection

Infections develop within shaded canopy

Inflorescence susceptible immediate pre-bloom then berries susceptible after fruit set

Berries become resistant 2 to 4 weeks after bloom

Overwinters as cleistothecia on trunks, cordons and spurs

POWDERY MILDEW
- Needs moist plant tissue for infection (prolonged wet and 70 to 80 °F)
- Highly susceptible cultivars include; Vidal blanc, Marquette, Frontenac, La Crescent and Swenson cultivars – Edelweiss, Espirit, Brianna, St. Pepin and Swenson white
- Mancozeb, captan, ziram

ANTHRACNOSE
Needs moist tissue for infection (6 - 12 hours), 72 to 77° F

- Infection period from bloom to harvest
- Early infections latent until veraison
- Often misdiagnosed as black rot
- Anecdotally bitter rot increasing

**BITTER ROT**
- Needs moist tissue for infection (6 - 12 hours), 72 to 77° F
- Infection period from bloom to harvest
- Early infections latent until veraison
- Often misdiagnosed as black rot
- Anecdotally bitter rot increasing

BITTER ROT