The IPM Continuum

Scouting and monitoring

Selective or spot treatments

Biologically-intensive systems

Reduced-risk pesticides

Viticultural controls

Stylet Oil

Chemically-intensive systems

?
Key Pests

Typically have a low economic threshold
Secondary Pests

Often the result of biological disruption
Causes direct damage to marketed product.
Indirect pests

Reduce plant fitness
Several species of cutworms are direct key pest of grapes
The grape leafhopper is an indirect key pest of wine grapes.
The grape mealybug is an indirect secondary pest of grapes--

But it is a documented vector for leafroll virus
No Rain, Cold Winter

THE TERROIR
OF SUCCESSFUL IPM
IN WASHINGTON VINEYARDS

Insect and Mite Management
Pest by Pest
Cutworms

A targeted barrier spray program has become the industry standard for cutworm control.

Bifenthrin and fenpropathrin are the pyrethroids zeta-cypermethrin and beta-cyfluthrin are all registered.

By my own definition the prophylactic sprays are “poor IPM”. No sampling, thresholds. Etc.

Chlorantraniprole (Altacor™) & spinetoram (Delegate™) can provide rescue treatment.
Thrips I think they get a bad rap.

Delegate (spinetoram- super spinosad)
Success (spinosad)
Entrust (organic spinosad)

• Are registered on grapes. Spinosad has never been effective during cool spring conditions. It was effective on thrips on Concoins in summer.

• Pravado, Actara, Venom, Clutch
• These neonicitinoids are variable in the control they provide.

• Please no pyrethroids!!
The Grape Leafhopper
*Erythroneura elegantula*

Virginia Creeper leafhopper
*Erythroneura ziczac*
Insecticides- Leafhoppers

- **Broadcast sprays**
  - SPIROTETRAMAT Movento™
  - ACETAMIPRID Assail™
  - DINOTEFURAN Venom™
  - THIAMETHOXAM Actara™
  - CLOTHIANIDIN Clutch™
  - IMIDACLOPRID Pravado™
  - All 5 are effective neonicotinyl sprays

- **Pyrethroids- Don’t use ‘em!**
  - BIFENTHRIN Capture
  - FENPROPATHRIN Danitol™
  - CYFLUTHRIN Baythroid™
  - CYPERMETHRIN Mustang™

- **Chemigation**
  - Time against early nymphs

- **Water solubility make a huge difference in product performance**
  - DINOTEFURAN- Venom™ (very water soluble)
  - THIAMETHOXAM- Platinum™ Intermediate solubility
  - IMIDACLOPRID- Admire™ among many generics Not especially water soluble

- Consideration has to be made for soil moisture content and how much irrigation water you want to apply
Scales

European Fruit Lecanium Scale

Cottony maple scale
Cottony Maple Scale

- **Control.** A dormant or delayed dormant application of a superior-type oil is the most effective treatment for scale.

- Scales are likely susceptible to most of the insecticides that are effective on mealybugs? Maybe require higher doses?
Grape mealy bug

obscure mealybug.

obscure mealybug.

Long tailed mealybug
Grape Mealybug

We have effective pheromones for monitoring mealybug populations.
CHEMIGATION

About as convenient a way to deliver a pesticide as possible.

DINOTEFURAN- Venom™ (very water soluble)

THIAMETHOXAM- Platinum™
Intermediate solubility

IMIDACLOPRID- Admire™ among many generics
Not especially water soluble

Thiamethoxam and dinotefuron have provided superior control compared to imidacloprid under deficient irrigation conditions
Broadcast mealybug sprays

- SPIROTETRAMAT Movento™
- ACETAMIPRID Assail™
- DINOTEFURAN Venom™
- THIAMETHOXAM Actara™
- CLOTHIANIDIN Clutch™

All 4 are effective neonicotinyl sprays

- IMIDACLOPRID Pravado™
  Has never worked very well in my trials

- BUPROFEZIN Applaud™
  Time against early instar crawlers

- CHLORPYRIFOS Lorsban™
- DIMETHOATE
- PHOSMET
  *Oragonophosphate*

- AZADIRACHTIN

- PETROLEUM SPRAY OIL
  Questionable efficacy as stand alone products but will boost effectiveness of products named above
Grape Flea Beetle

- Any of the neonics; imidacloprid, thiamethoxam, etc.
- Spinetoram (Delegate™)
- Chlorantraniprole (Altacor™)
Spider mites- Willamette, McDaniel, & Two-spot

- Bifenazate (Acramite™)
- Agri-Mek (Abamectin)
- Etoxazole (Zeal™)
- Hexythiozox (Onanger™)
Rust and bud mites

- Properly timed sulfur applications.
- Check PNW & Washington spray guides for monitoring, rates and timings.