Pest management second section
Important pest/pathogens

PD/GWSS
Cotton root rot on grapes (Texas)
Powdery Mildew
Downy mildew
Black rot
Nematodes
Viruses/GTA
Euthypa/wood cankers
Bunch rots
Crown gall
Mealy bugs
Light brown apple moth
Mites
Skeltonizer (lepidopterans)
Phyloxera

**FIRST QUESTION: What are the top 3-5 grape related accomplishments of ARS during the past three years.**

PD/GWSS – sharpshooter stimulated by plant odors – olfactory cues for host selection-enhances primary color cue. –

PD/GWSS –Molecular genetic basis of resistance and susceptibility (Hong Lin) – differential gene expression via microarrays. Candidate resistance genes.

PD/GWSS – ramming – development of PD resistance in wide crosses, backcrossing in progress. Screened by molecular markers

GWSS- Jesse de Leon – CA GWSS originated in Texas via molecular markers. Identifies where to look for biocontrol agents

PD/GWSS Kendra Baumgartner –Better understanding of PD epidemiology alternative hosts for PD in and out of riparian environments.

PD/GWSS – characterization via molecular markers of parasitoids – determined multiple species that differ in parasitism. ID of new Argentinean parasitoids.

PMI: Screened 1200 accession for resistance in 2 years. ID'ed race specificity in PMI populations. About half of the resistance sources are race specific. Better understanding of virulence/resistance of PMI

PMI- David Ramming, Joe Smilanick, Lance Cadle-Davidson – PMI resistance breeding – screening seedling populations & understanding mechanisms of resistance. Working with some Eastern Europe material with natural resistance. Finding resistance to PMI IN mutagenized population of Chardonnay seedling progeny.

Nematodes – Cousins – rootstock resistance to root knot nematodes nine new varieties in development.

Nematodes – rootstock resistance to ring nematode –Corvallis.

Nematodes - Davis – cover crops not effective for nematode control.

Downy Mildew – disease resistance in Chardonnay background (Cadle-Davidson).

DM – New mechanism to resistance in wild germplasm – enzymatic-based resistance (Cadle-Davidson)

Early detection via quantitative PCR of Botrytis as a decision of whether or not to spray.

**SECOND QUESTION: What major gaps still exist between ARS research focus and needs of the industry?**

NEED A RESOLUTION FOR METHYL BROMIDE ALTERNATIVE.

GWSS, PMI, DM, mites, nematodes, etc. – sustainable alternatives to existing means of chemical control.

GWSS – biocontrol – habitat improvement for GWSS predators

Identifying "soft" chemicals for PD/GWSS control

Early/rapid detection to assist in control decision making process.

PMI- alternative means of control

Method/means for ARS to work on projects that are deemed important to industry but not amenable to getting pubs. This sounds like extension???)

Downy Mildew-

Nematodes – alternatives to fumigants – Cover crops? Rotation between replants? Pyramiding resistance to multiple nematodes.

Cankers- how to avoid creating infection courts (WOUNDS). Molecular diagnostics to separate out the wood canker pathogens in the complex. Molecular markers from plant to id diseased state-onset of decline. Mechanism of infection/pathogenesis. Trunk renewal?

Third question **WHAT ARE THE FUTURE RESEARCH PROJECTS identified by THESE GAPS?**

**GWSS predator environment enhancement**
**PMI disease resistance**
**Canker research -**
**Nematode – integrated resistance breeding**
**Cotton root rot on grapes (regional problem)-** Water management/soil treatments to control cotton root rot

**Fourth question WHICH ARS TEAMS OF SCIENTISTS THAT EXIST or could be CREATED are in best positions to address**

GWSS predator enhancement – Kent Daane, Joe Patt, James Hagler, Jessie Deleone

PMI-Wilcox, smilanick, Pscheidt, gubler
Canker team – gubler epstein Baumgartner  Trinchero Phillip at UCONN

Nematode team, cousins, ramming, walker, henry
PD/GWSS – cadle, Hagler, daane, delonge, patt

Cotton root rot – team unidentified but need plant pathologist

**Fifth question: How can the progress and impact of ARS research on grapes be increased with existing resources?**

Redirect a cotton root rot researcher to look at the problem in grape

6. **How will research results be extended to end users through an outreach plan –**

Form alliances with industry members for trials.
Partner with industry stakeholders.
Can ARS people serve more min an extension role?
More publication in industry press/ non-peer reviewed publications