AN INTRODUCTION TO OUR CALAVERAS WEED STUDY:
AN AGROECOSYSTEM APPROACH TO WEED MANAGEMENT IN VINEYARDS

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AGENDA

• Introduction: goals and location
• Methods: on the ground, in the air
• Observations: survey March- April 2014
• Preliminary data: trends, a species of concern and drought
GOALS

Practical outcomes

Research: 1-5 years

How can we adjust the environment to suppress targeted weeds?

Soil chemistry, microbiology

Vineyard expansion: what weeds are expected based on location and soil?

Adjacent land, field margins

What is the impact of weed infestations in vineyards?

Canopy stress, nutrient availability, soil moisture, juice composition
METHODS: ON THE GROUND AND IN THE AIR
WEED EMERGENCE TRENDS ACROSS SITES
DATA COLLECTED MARCH-APRIL 2014

- Yellow starthistle: 57%
- Italian thistle: 17%
- Dock: 11%
- Wild radish: 5%
- Milk thistle: 4%
- Sowthistle: 1%
- Blackberry: 1%
- Mare's tail: 1%
- Bull thistle: <1%
- Hairy fleabane: 3%

(Data collected March-April 2014)
INTRODUCING OUR MOST DOMINANT NOXIOUS WEEDS
BASED ON DATA COLLECTED MARCH-APRIL 2014

yellow starthistle (57%)
Italian thistle (17%)
dock (11%)
wild radish (5%)
milk thistle (4%)
sowthistle (3%)
INVASION HISTORY OF YELLOW STARThISTLE (YEST) IN CA

Pitcairn et al. 2002
CURRENT YEST IN THE CENTRAL SIERRA

USING CALWEED MAPPER.ORG

[Map showing current yest distribution in the Central Sierra, with areas marked by Abundance and Trend indicators.]

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YEST AND DROUGHT: MAIN POINTS FROM RECENT SCIENTIFIC RESEARCH

- YEST significantly depletes soil moisture reserves in grasslands and foothill ecosystems.
- Soil moisture depletion by YEST can result in a loss of 15-25% of the mean annual precipitation.
- Infestations use deep soil moisture reserves earlier than native plants.
YEST AND DROUGHT: MAIN POINTS FROM RECENT SCIENTIFIC RESEARCH

- YEST allocates resources initially to root growth, then leaf expansion and stem/flower production.
- Roots may extend beyond 3 ft. deep which lengthens the period of resource availability into late summer.
- In large infestations different age classes can deplete all layers of soil from its stored moisture.
SOME GOOD NEWS…

- Seeds are dispersed only short distances by wind (~2 ft.)
- Findings suggest that few seeds survive beyond 2-3 years in the seedbank
- The cover crop looked hopeful
Thank you!

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Aerial Zeus team: Fabian Dias, Jaime Robles, Jenny Zhao, Jesus Villanueva, Lorena Robles, Luis Robles, Maria Herrera, Steve Guerrero, Stuart Smits, Wayne Dias
Content

- www.ipm.ucdavis.edu
- calweedmapper.cal-ipc.org

Photos

- Vineyard location map: Google earth
- Italian thistle: UCANR web [ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=9412](ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=9412)
- Curly dock: Eat the invaders.org
- UAV over vineyard: [http://www.huffingtonpost.com/2013/05/20/drones-agriculture-unmanned-aircraft-farming_n_3308164.html](http://www.huffingtonpost.com/2013/05/20/drones-agriculture-unmanned-aircraft-farming_n_3308164.html)
- UAV landed: Aerial Zeus