

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

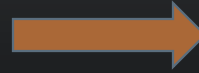


GOALS

Practical outcomes

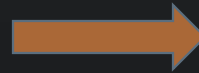
Research: 1-5 years

How can we adjust the environment to suppress targeted weeds?



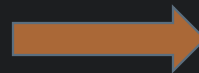
Soil chemistry, microbiology

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



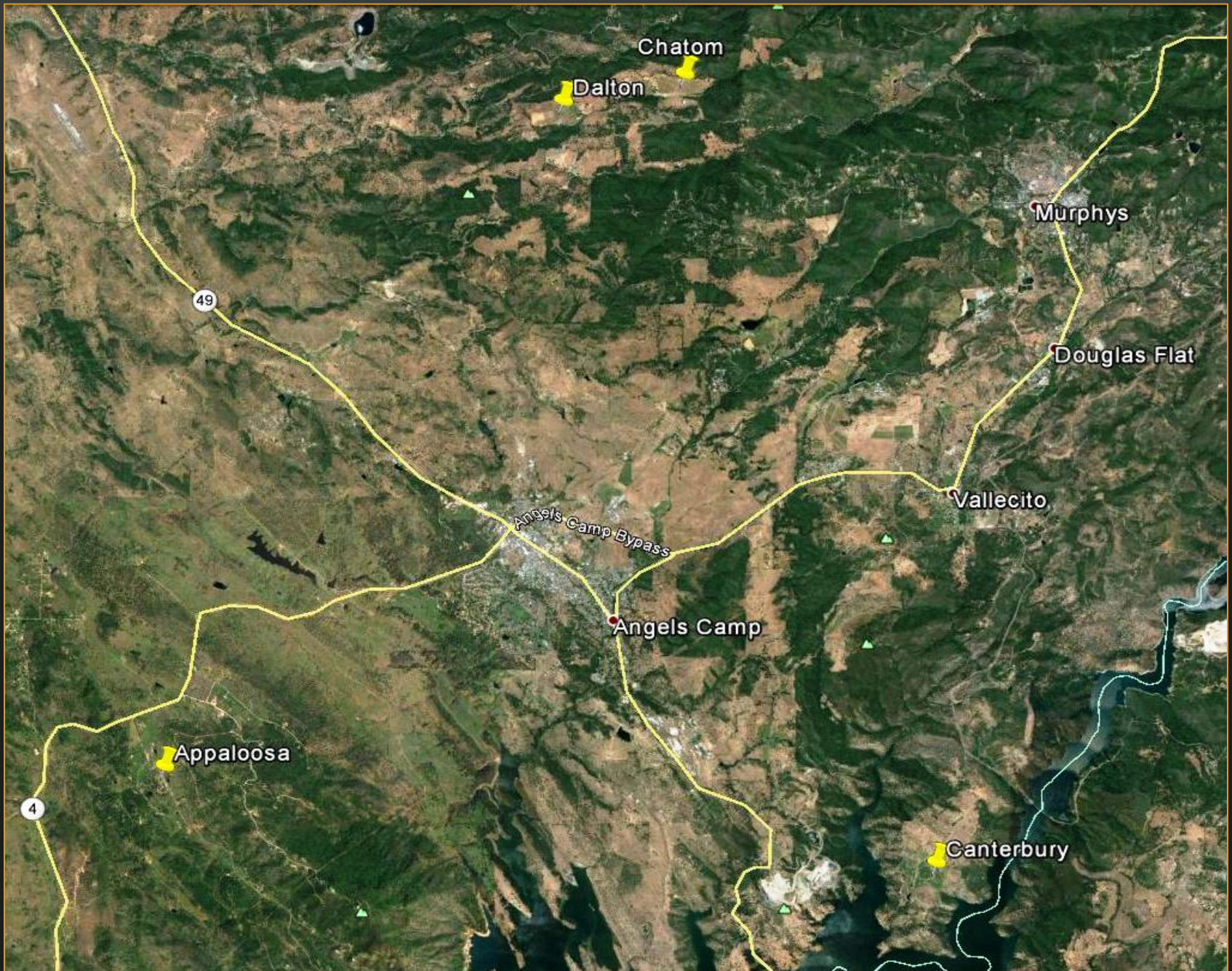
Adjacent land, field margins

What is the impact of weed infestations in vineyards?



Canopy stress, nutrient availability, soil moisture, juice composition

VINEYARD LOCATIONS

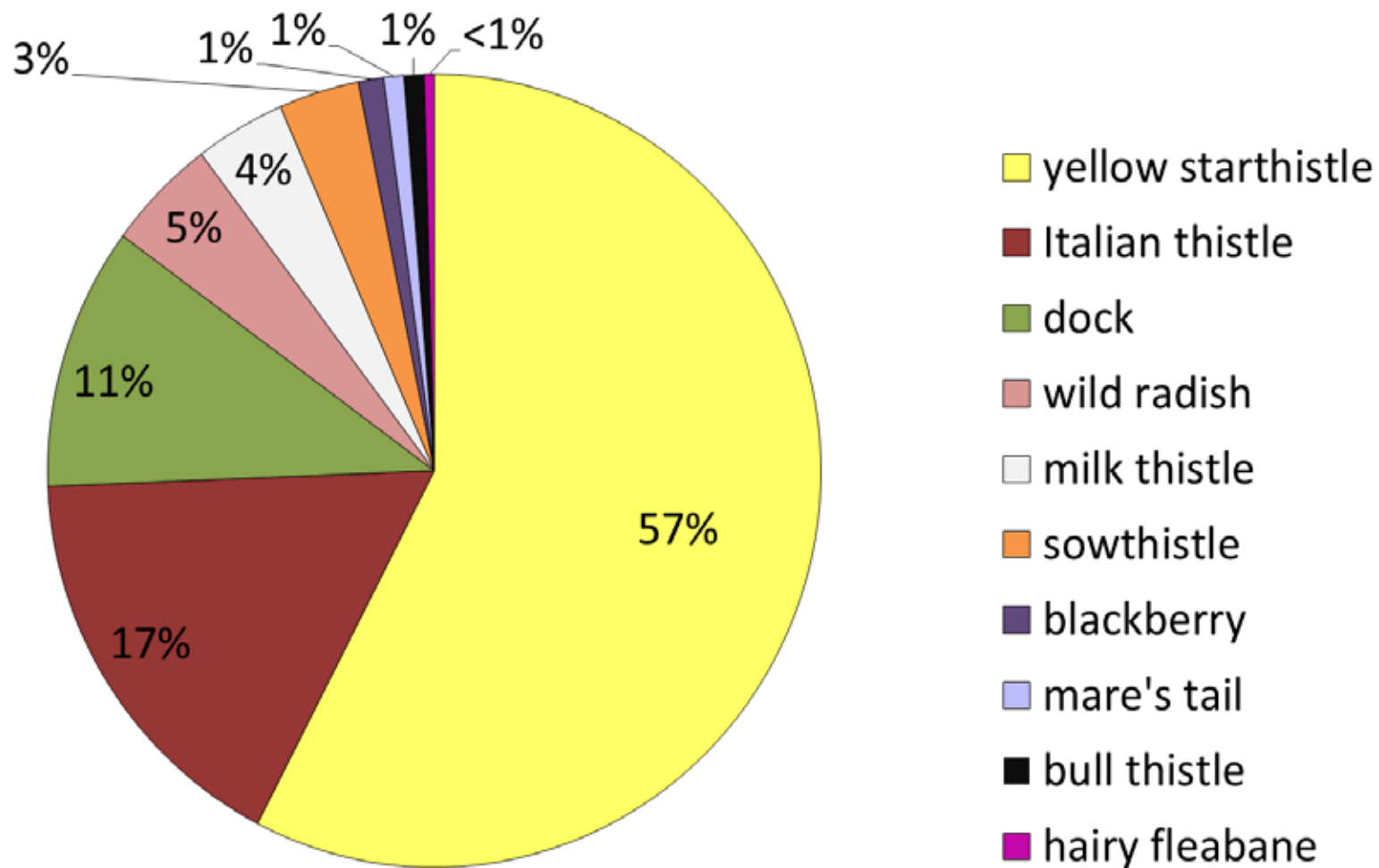


METHODS: ON THE GROUND AND IN THE AIR



WEED EMERGENCE TRENDS ACROSS SITES

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%)

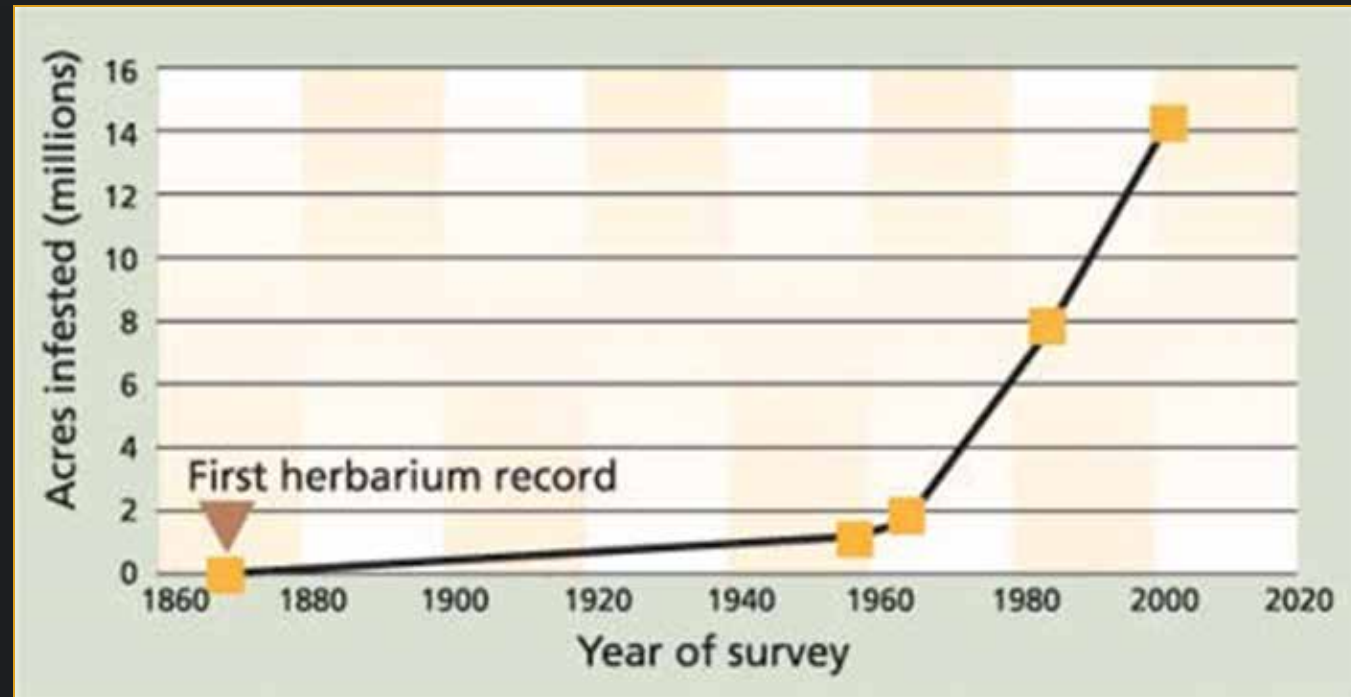
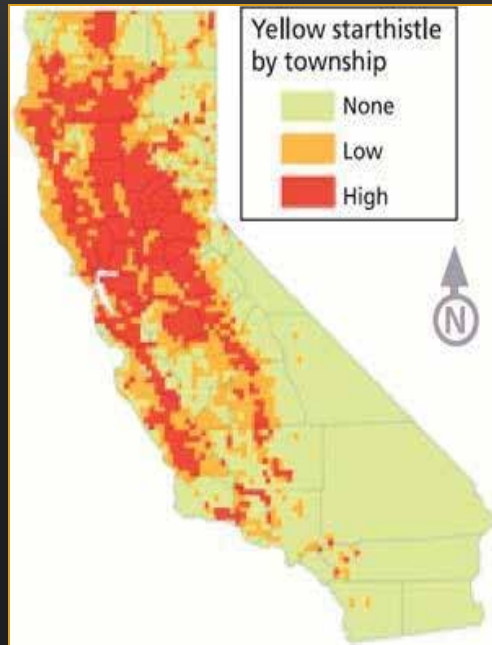


milk thistle (4%)



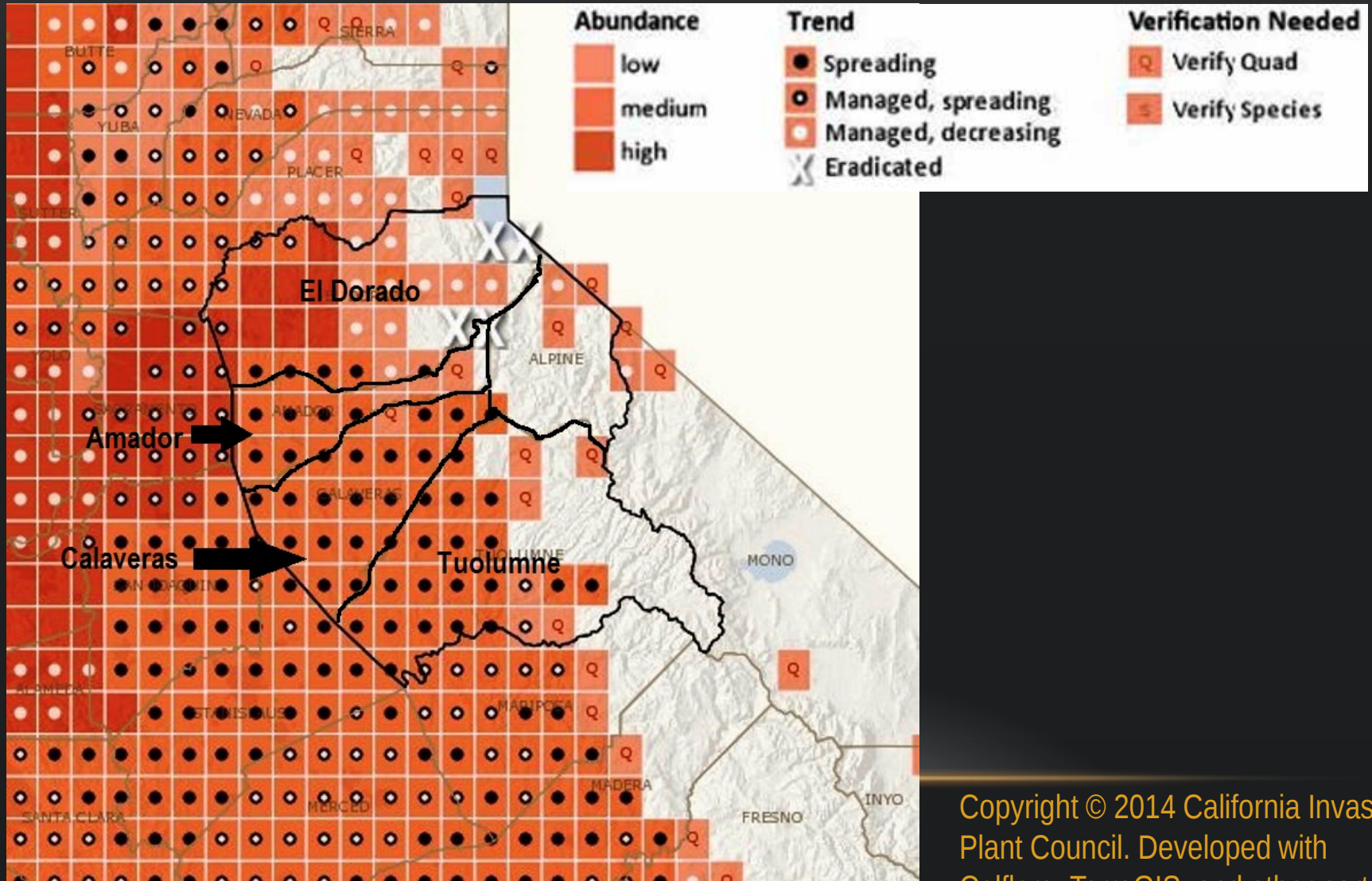
sowthistle (3%)

INVASION HISTORY OF YELLOW STARHISTLE (YEST) IN CA



CURRENT YEST IN THE CENTRAL SIERRA

USING CALWEED MAPPER.ORG



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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

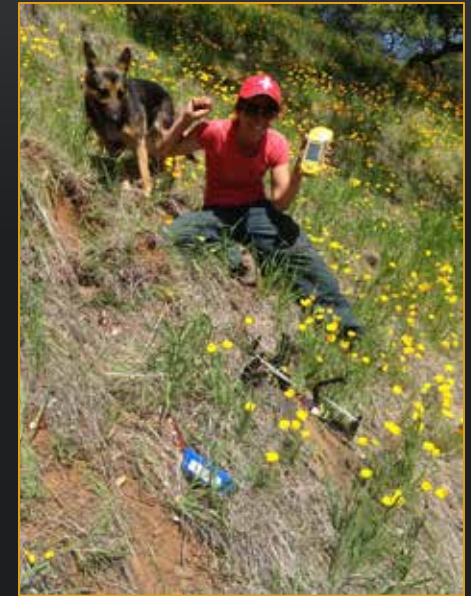
YEST AND DROUGHT: MAIN POINTS FROM RECENT SCIENTIFIC RESEARCH



- 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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REFERENCES

Content

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- Di Tomaso, J.M, G.B. Kyser, and M.J. Pitcairn. 2006. Yellow starthistle management guide. Cal-IPC publication 2006-03. California Invasive Plant Council: Berkeley, CA. 78 pp.
- Pitcairn M, Schoenig S, Yacoub R, Gendron J. 2006. Yellow starthistle continues its spread in California. Calif Agr 60(2):83-90. DOI: 10.3733/ca.v060n02p83
- Roche, B.F., Jr. 1992. Achene dispersal in yellow starthistle (*Centaurea solstitialis* L.) Northwest Science 66: 62-65
- 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
- Curly dock: Eat the invaders.org
- UAV over vineyard: http://www.huffingtonpost.com/2013/05/20/drones-agriculture-unmanned-aircraft-farming_n_3308164.html
- UAV landed: Aerial Zeus