Regional Considerations for Pistachio Production

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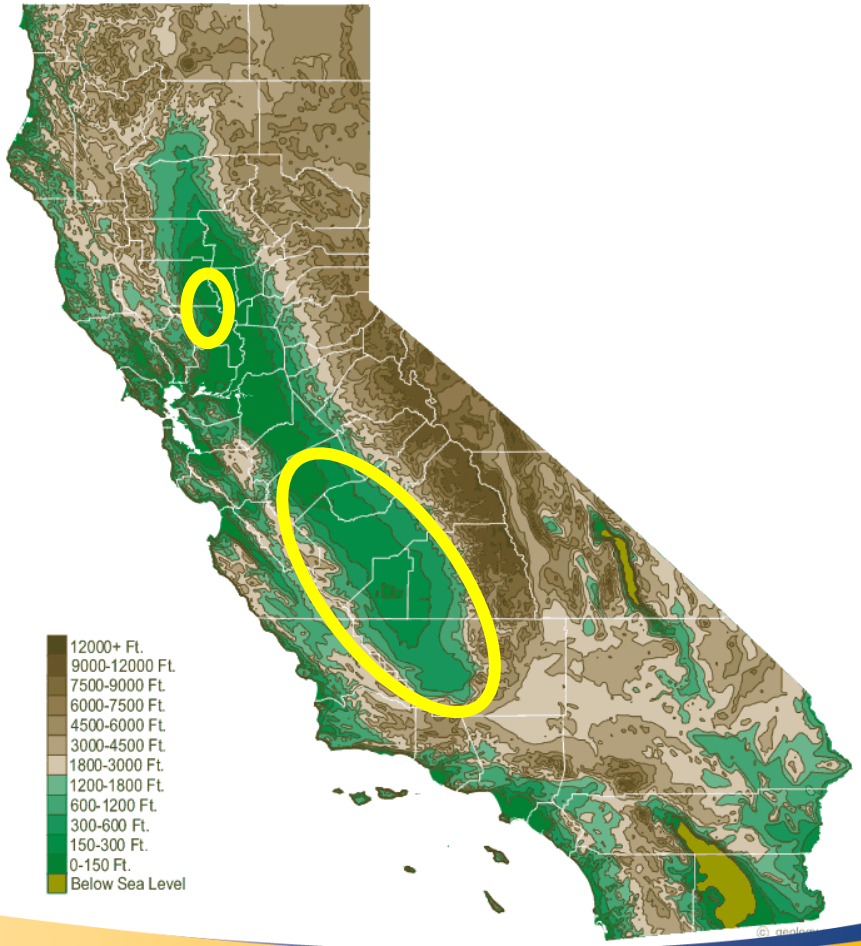
Regional Considerations for Pistachio Production

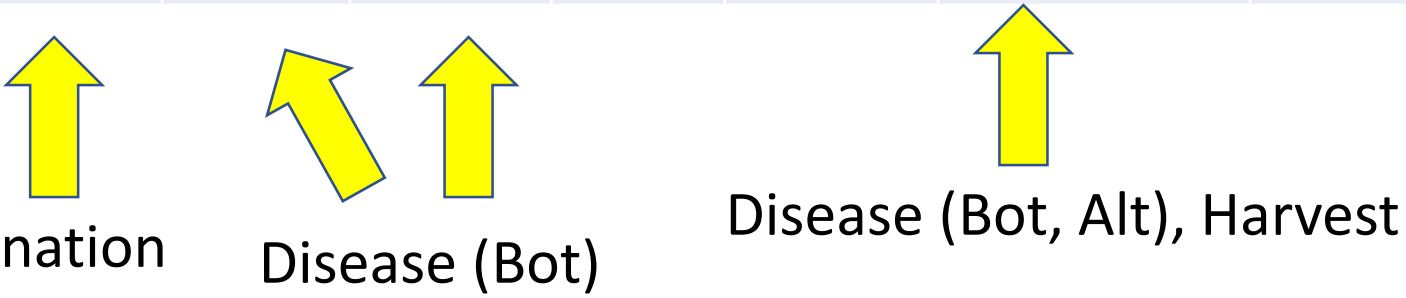
- Current Production Areas
- Orchard Life – several decades
- Limitations:
  - <2500’ for frost
  - Climate(heat, chill, rain)
  - Water Availability
  - Ground Quality



Climate: In-Season Rains

Bottom Line: The Less, The Better

City	April	May	June	July	August	September	October
Red Bluff	1.63	1.05	0.46	0.07	0.14	0.46	1.37
Arbuckle	0.97	0.75	0.29	0.01	0.05	0.30	0.97
Sacramento	1.15	0.68	0.21	Trace	0.05	0.29	0.95
Modesto	0.97	0.63	0.12	Trace	0.02	0.26	0.68
Fresno	0.95	0.43	0.21	Trace	0.02	0.17	0.63
Bakersfield	0.52	0.18	0.08	Trace	0.04	0.08	0.30



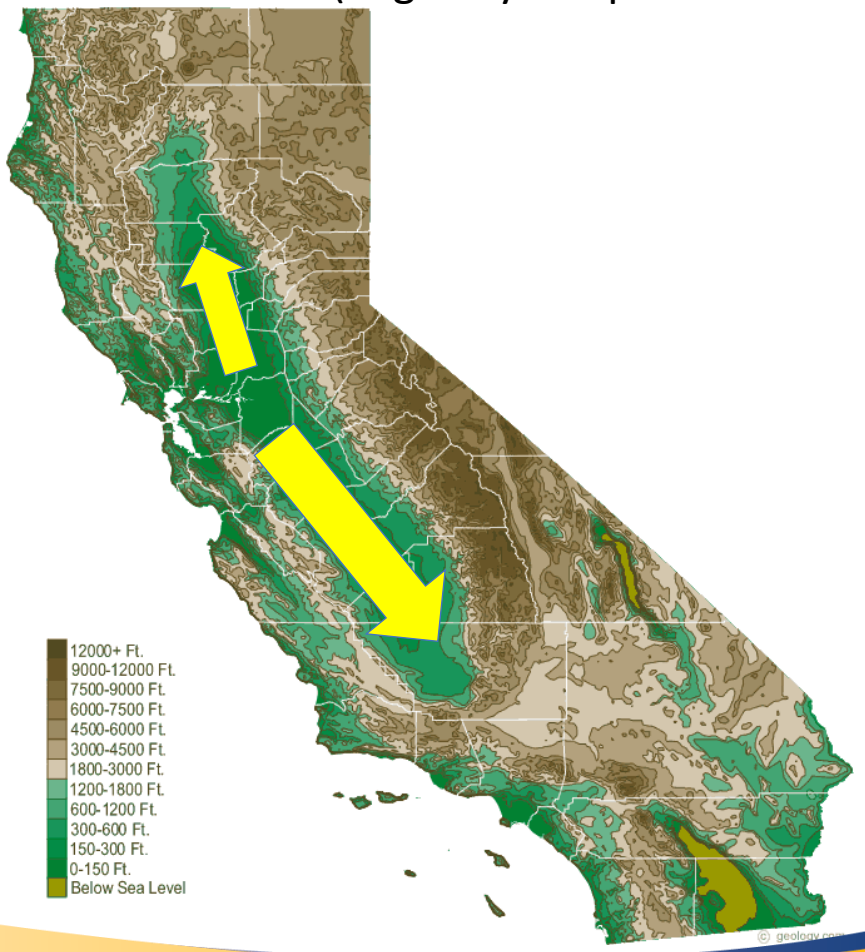
Climate: Heat Units

- Nut Maturation
  - Delayed Development, Poor Split %
  - ~2400 Thermal Units/year for maximum kernel weight

City	Total Heat Units (April-Oct)
Sacramento	2008
Los Banos	2359
Fresno	2758
Hanford	2466
Bakersfield	3174

Bottom Line: Expect Lower % of Splits, Lighter kernels if cooler area

Thermal unit=
(Avg daily temperature – 7°C)

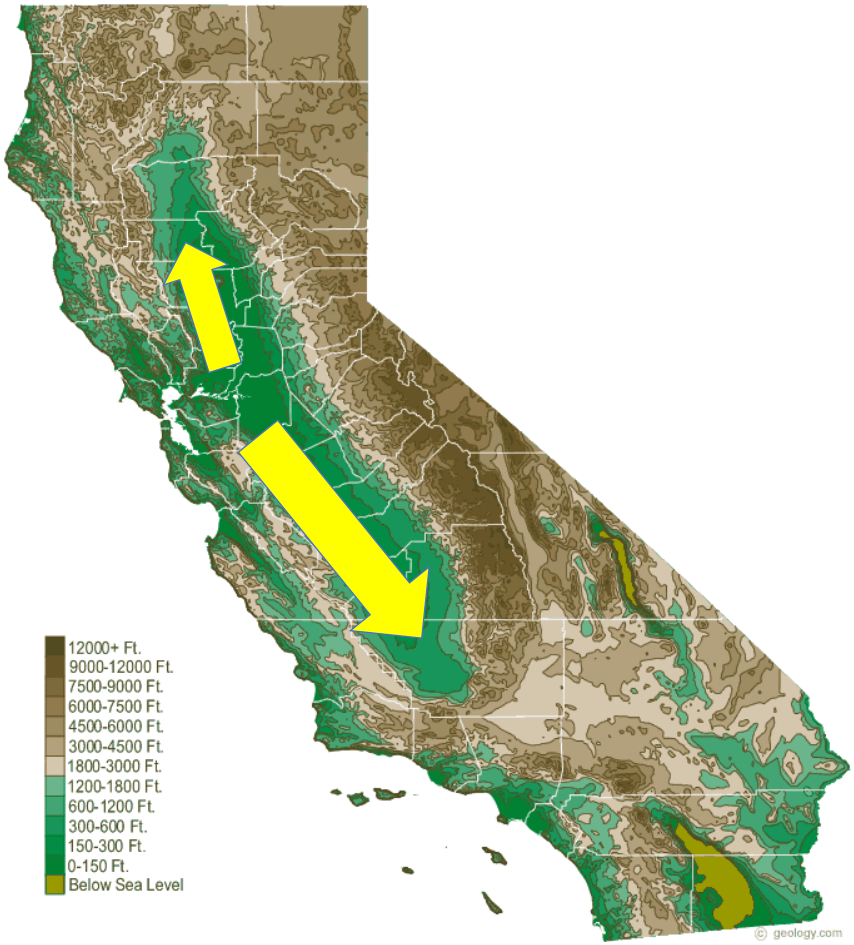


Climate: Navel Orange Worm

- Earlier Biofix
- Degree Day Accumulation
- Ease of Sanitation

City	2014 NOW Degree Days	2017 NOW Degree Days
Woodland	3078	2980
Colusa	3200	3120
Merced	3434	3101
Los Banos	3253	3235
Fresno	3646	3667
Hanford	3473	3472
Bakersfield	3426	3632

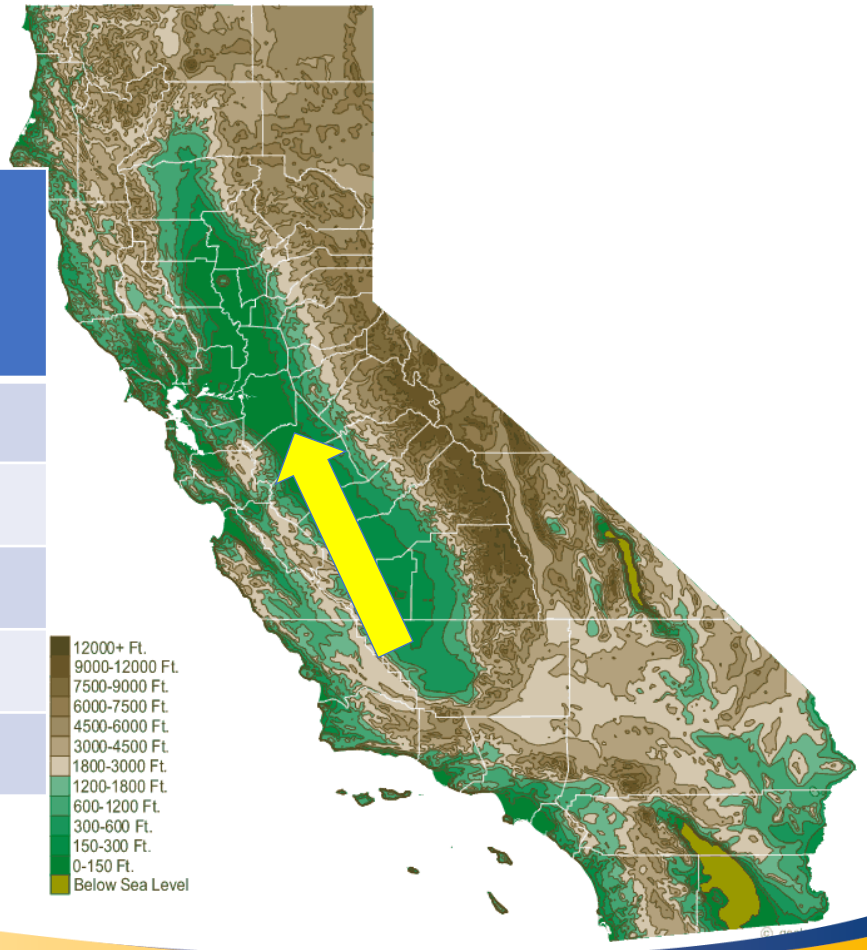
March 15th – Sept 30th DD accumulation



Climate: Chill Units

- Limiting factor
- Best if over 900 Units, 60 portions
- Fog increases accumulated units, sunny conditions will reduce

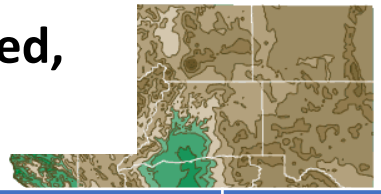
City	Total Chill Units (2016-17)	Total Chill Portions (2016-17)
Colusa	889	80
Woodland	908	78
Modesto	900	74
Fresno	925	74
Belridge	752	64



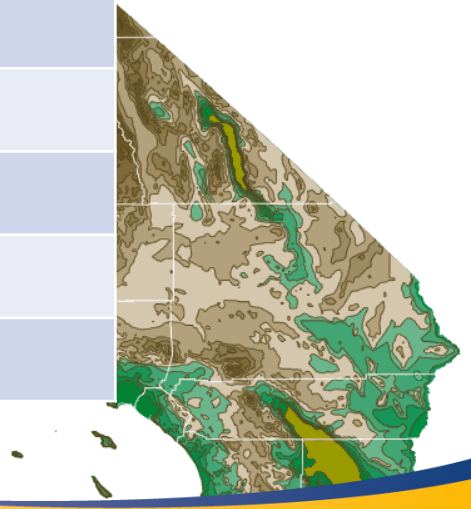
Bottom Line: Lower yields in low chill areas.

Climate: Chill Units

'Kerman' – 59-60ish Portions
'Peters' – 67 portions (?)
'Sirora' (Australian Variety)- 59 Portions
Australian Males – More than one planted, lower than 'Peters'



City	Total Chill Units (2016-17)	Total Chill Portions (2016-17)	Total Chill Units (2014-15)	Total Chill Portions (2014-15)
Colusa	889	80	503	65
Woodland	908	78	505	66
Modesto	900	74	802	74
Fresno	925	74	666	64
Belridge	752	64	623	56



Bottom Line: Lower yields in low chill areas.

Climate: Chill Units

- Impacts of Chill
  - Delayed bloom
  - Poor male overlap, increased blanks
  - Multiple shakes
- Some Mitigation
  - Applications of oil
  - Multiple Pollinators
  - Breeding for lower chill varieties

Scattered ‘Kerman’ bloom observed in 2014

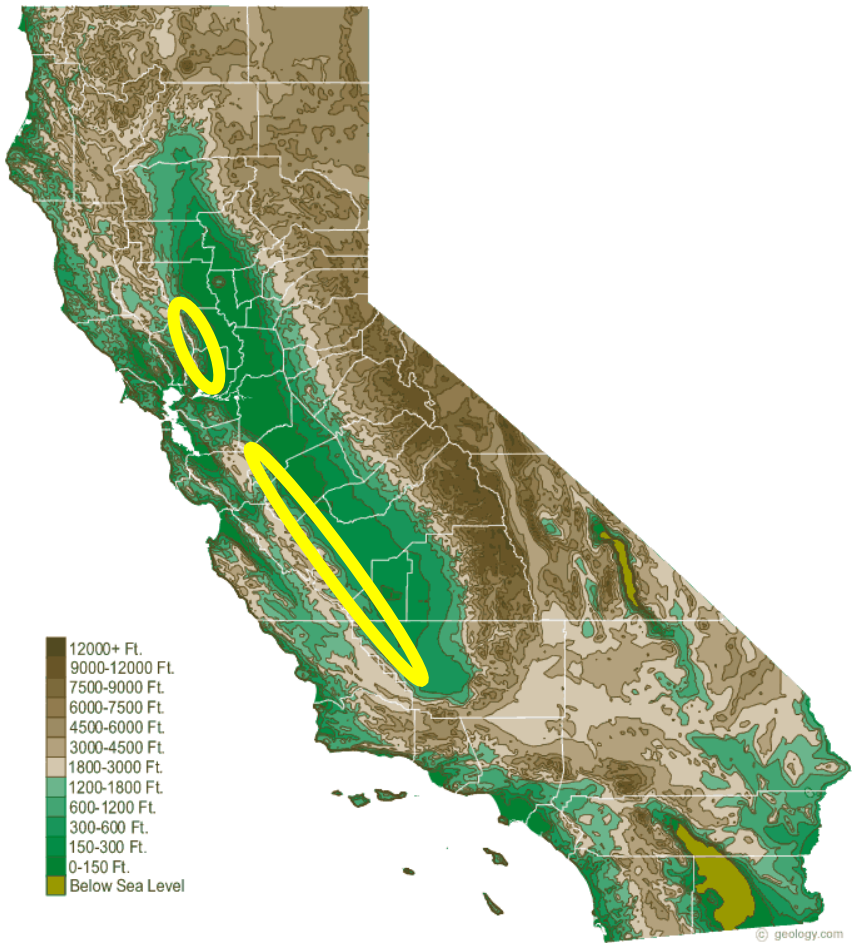
More on this in Dr. Jarvis-Shean’s Talk

Water Quality and Quantity

- Varies across the state
  - 42” of water use for maximum production
  - Can get by on less, but affects yield
  - May need more if poor quality
- Source Issues
  - Groundwater
  - Snow-melt

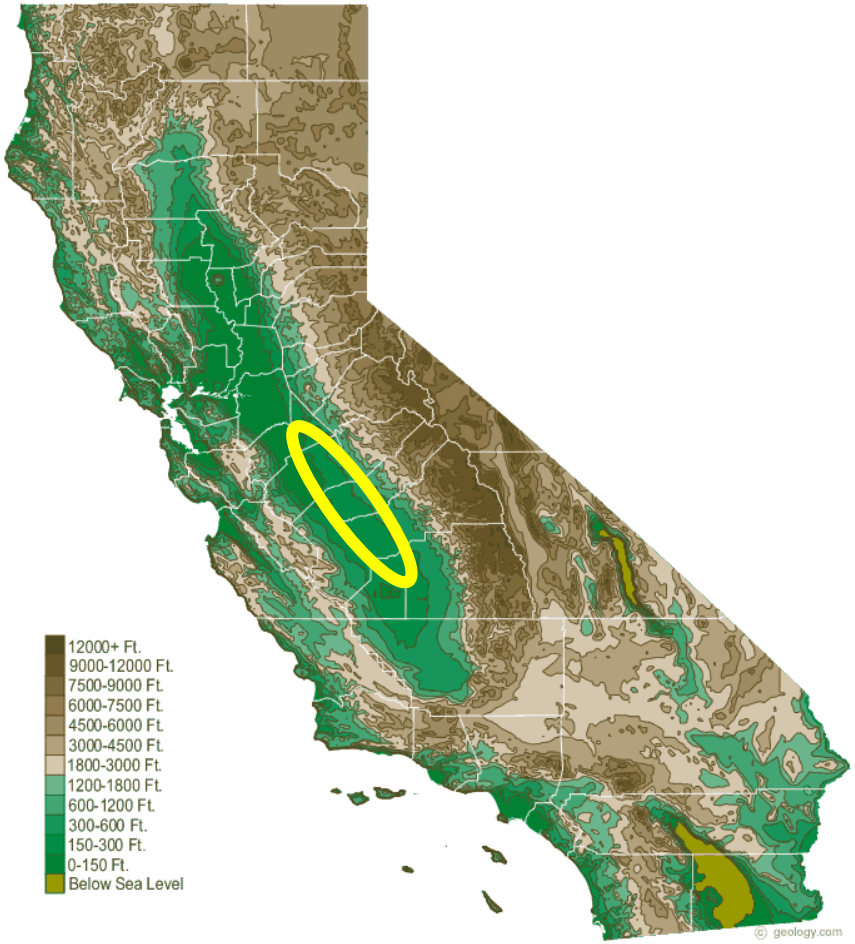
Soil Quality

- Saturated or easily saturated soils
  - River bottoms
  - High water table (quality and quantity)
- Saline, Alkaline soils
  - Toxicity of sodium, chloride, and boron
  - Limits – B. Sanden's talk



Soil Pests: Nematodes

- Unsure of the effect
  - Root-knot, Lesion, Ring
  - Others?
- May require better, more timely management
- Pre-plant fumigation not recommended unless counts are very high



Conclusions

- There is no perfect site
- Decisions must be made on current and future conditions
- Management of many of these issues is possible – except chill and heat units