



## General Strategies

- Early (vs Late) and More Severe Deficits
- Continual Deficits
- Severity of Deficit
- “Dry Farm”

## Summary

- Goals
  - Vine Balance; Yield vs Quality
- Constraints
  - Vineyard Design
  - Site Soil
  - System Design
  - Viticultural Practices
  - Year
- Costs versus Returns
- Implementation Strategy
  - When to Start                      Visual; Soil; Plant; Remote
  - How Much to Apply              ETc; Historic vs Current
  - Frequency of Applications      Soil & System

### Distribution Uniformity (Emission Efficiency) vs Irrigation Efficiency

D.U. = Output of Low Quarter (25%) of sampled emitters / Avg. Output of All Sampled Emitters

### Run Time

Hours Irrigation =  $\frac{\text{ETc inches} \times \text{Emitter Spacing inches}}{\text{Gallons per hour} \times 1.6}$

### Acre Inches Applied Water

Acre Inches =  $\frac{\text{Hours Irrigation} \times (\text{gals per hr}) \times 1.6}{\text{Emitter Spacing Inches}}$

### Gallons per Vine

Gallons = 0.623 x Inches of Applied Water x Vine Spacing inches

### Crop Coefficient Kc

Kc = 0.002 + 0.017 x Percent shaded area between rows at Solar Noon

Or Kc = 1.7 x % Shaded Area

Acre Inch = 27,154 gals per acre

Acre Foot = 325,928 gals per acre

### **Plant-available water holding capacities of various textured soil.**

<u>Soil Texture</u>	<b>Plant-Available Water Holding Capacity</b> (inches of water per foot of soil)
Very coarse sands	0.4 - 0.75
Coarse sands, fine sands, loamy sands	0.75 - 1.25
Sandy loams, fine sandy loams	1.25 - 1.75
Very fine sandy loams, loams, silt loams	1.50 - 2.30
Clay loams, silty clay loams, sandy clay loams	1.75 - 2.50
Sandy clays, silty clays, clays	1.60 - 2.50

Schwankl, L. and T. Prichard. 2009. UC Drought Management Web Site

## Historic ET winegrapes Lodi

Weekly Start Date Monday	Weekly Rain (in)	Current ETo (in)	Historic ETo (in)	Crop Coefficient Kc	Weekly ETc (in)
3/22			0.89	0.04	0.03
3/29			0.98	0.08	0.07
4/5			1.07	0.12	0.13
4/12			1.17	0.16	0.18
4/19			1.25	0.19	0.24
4/26			1.34	0.23	0.30
5/3			1.42	0.26	0.37
5/10			1.49	0.29	0.43
5/17			1.55	0.32	0.49
5/24			1.60	0.34	0.55
5/31			1.65	0.36	0.60
6/7			1.68	0.39	0.65
6/14			1.71	0.40	0.69
6/21			1.72	0.42	0.72
6/28			1.72	0.43	0.75
7/5			1.71	0.45	0.76
7/12			1.69	0.46	0.77
7/19			1.65	0.46	0.77
7/26			1.61	0.47	0.76
8/2			1.56	0.47	0.74
8/9			1.50	0.47	0.71
8/16			1.43	0.47	0.67
8/23			1.35	0.47	0.63
8/30			1.27	0.46	0.58
9/6			1.18	0.45	0.53
9/13			1.09	0.44	0.48
9/20			1.00	0.43	0.43
9/27			0.90	0.41	0.37
10/4			0.81	0.40	0.32
10/11			0.71	0.38	0.27
10/18			0.63	0.36	0.22
10/25			0.54	0.33	0.18
11/1			0.46	0.31	0.14
11/8			0.39	0.28	0.11
11/15			0.33		
11/22			0.27		
11/29			0.23		
12/6			0.19		
12/13			0.17		
12/20			0.15		
Seasonal Totals (in)					15.64