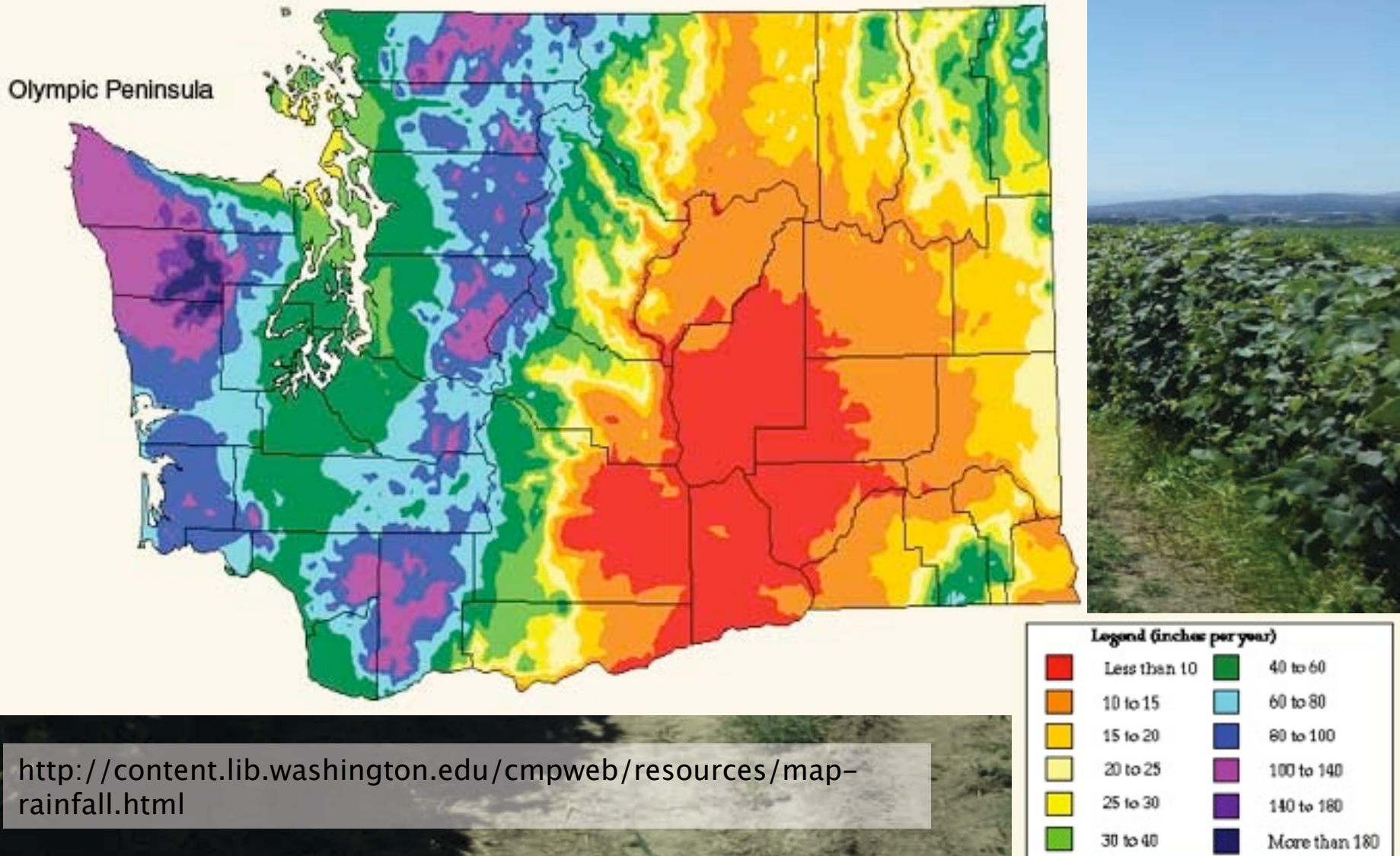


# Concord Water Use

**Joan Davenport**

**Jason Stout**

# Background





# Background

Approximately 4.5km between field plots and weather station



**Growing Degree Days  
Snipes, Yakima county  
Apr 01 - Jul 11; Temperature Base: 50 °F**



Year	GDD(>50°F)
2013	1351
2012	1143
2011	911
Long-term Average*	1163

\*Includes data from 2009-2013



**Growing Degree Days  
Snipes, Yakima county  
Apr 01 - Oct 31; Temperature Base: 50 °F**



Source: WSU AgWeatherNet (weather.wsu.edu)  
Fri Jul 12, 2013 at 1:22 pm

Source: WSU AgWeatherNet (weather.wsu.edu)  
Fri Jul 12, 2013 at 1:15 pm

Year	GDD(>50°F)
2012	3100
2011	2748
2010	2917
2009	3332
Averag	3024

S N O W - P R E C I P I T A T I O N U P D A T E

Based on Mountain Data from NRCS SNOTEL Sites  
As of TUESDAY: MARCH 11 , 2014

BASIN Data Site Name	ELEV. (Ft)	SNOW	WATER	EQUIVALENT %	TOTAL PRECIPITATION %	Average	Avg
		Current	Median	Median	Current		
WASHINGTON							
UPPER YAKIMA							
GROUSE CAMP	5390	18.4	-M	*	19.5	22.9	85
SASSE RIDGE	4340	30.3	28.9	105	41.9	43.9	95
OLALLIE MEADOWS	4030	51.3	44.2	116	79.3	84.5	94
STAMPEDE PASS	3850	-M	37.5	*	-M	62.1	*
FISH LAKE	3430	26.7	28.5	94	45.5	47.2	96
				-----			-----
	Basin Index (%)			107			94
LOWER YAKIMA							
GREEN LAKE	5920	22.2	20.1	110	25.8	26.0	99
PIGTAIL PEAK	5800	56.9	44.8	127	54.9	55.2	99
MORSE LAKE	5410	41.7	47.3	88	46.9	57.9	81
INDIAN ROCK	5360	18.5	-M	*	32.2	-M	*
CAYUSE PASS	5240	44.1	-M	*	36.2	-M	*
LOST HORSE	5120	10.3	17.9	58	17.2	24.6	70
BUMPING RIDGE	4610	25.3	24.6	103	40.0	44.2	90
POTATO HILL	4510	28.2	22.3	126	42.4	45.0	94
WHITE PASS E.S.	4440	21.8	20.9	104	33.5	32.0	105

OPERATIONAL COMMENTS: Storage is 116.8% of average (1981-2010).

-----  
Inflow to the five reservoirs is 577% and releases from the five are 103% of average. Unregulated flow for the Yakima River nr. Parker is 369% and observed flow is 333% of average.

Inflow to the five reservoirs for the water year to date is 548KAF, or 97% of average and releases from the five is 229KAF, or 87% of average.

Unregulated flow for the Yakima River nr. Parker for the same period is 1056KAF, or 90% of average and observed flow is 660KAF, or 83% of average.

Precipitation at the five reservoirs for the month of March to date is 31.66 inches, or 152.2% of the month's average.

Precipitation for the period October 1st - March 9th is 173.55 inches, or 103.6% of average.

NRCS Snotel sites for the upper Yakima basin are reporting 100% and lower basin sites are reporting 105% of average. Click on the link below for the Washington State daily report.

Rain and snow showers in the mountain passes today with snow level around 3000 feet with afternoon pass temperatures in the mid to upper 30's. Tuesday, sunny with highs around 40. Mostly cloudy skies in the valley today with highs in the mid to upper 50's with a Northwest wind at 15 to 20 mph. Tonight, clear, windy and 30. Tuesday, sunny and 55.

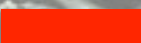
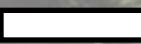
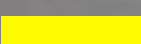
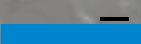
**As of March 6<sup>th</sup>, the Bureau of Reclamation's March 2014 forecast for the total water supply for the Yakima Basin indicates there will be a full water supply for both senior and junior water rights holders this coming irrigation season! PTL!**

# Materials and Methods

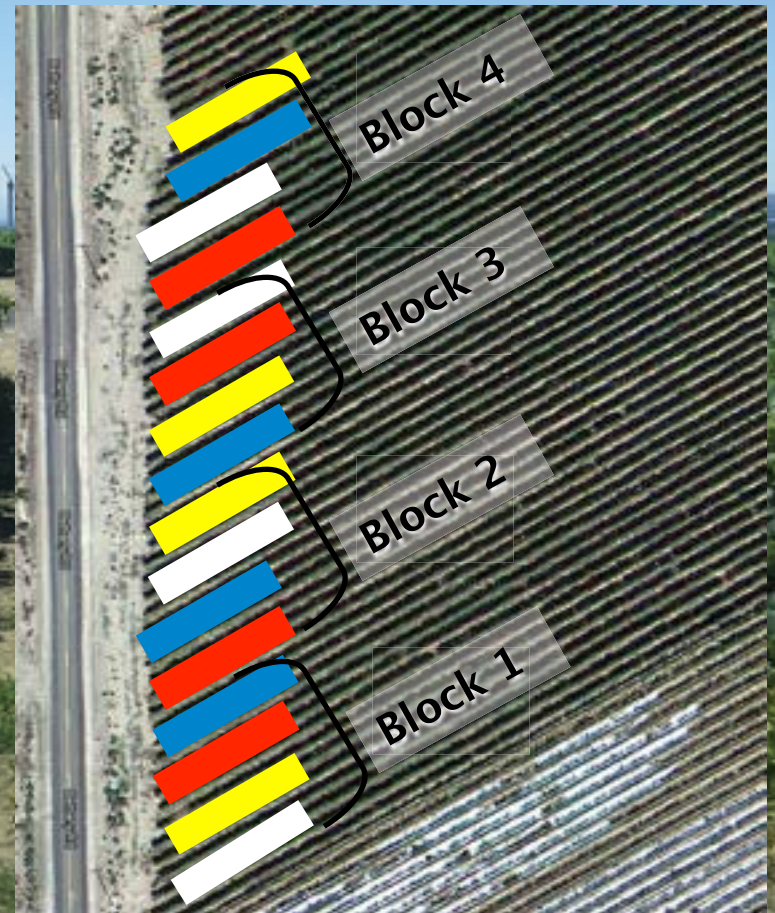
- Concord

- Quantity of water applied

- Treatments

-  Treatment 1 – Control (24 hours/week)
-  Treatment 2 – 100% ET
-  Treatment 3 – 85% ET
-  Treatment 4 – 70% ET

Period of stress was applied between bloom and verasion  
Grower standards of water application was maintained prior to bloom and post verasion

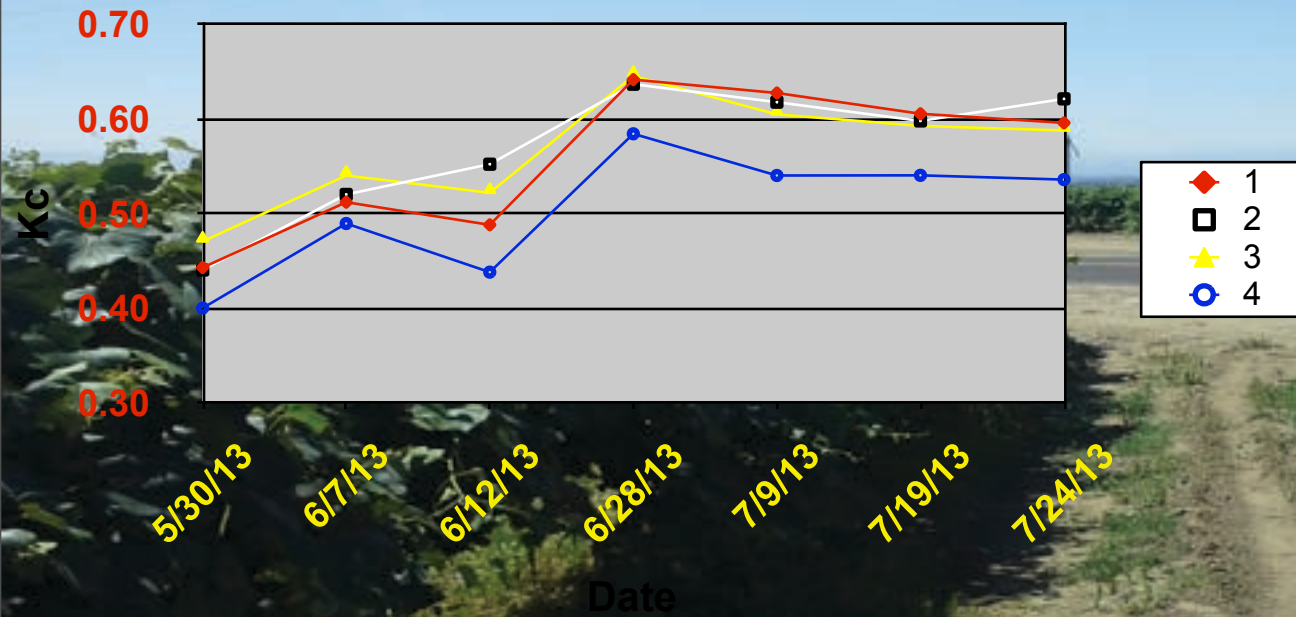


<http://maps.google.com/maps?hl=en&tab=wl>



# ET Calculations

## Crop Coefficient Concord 2013



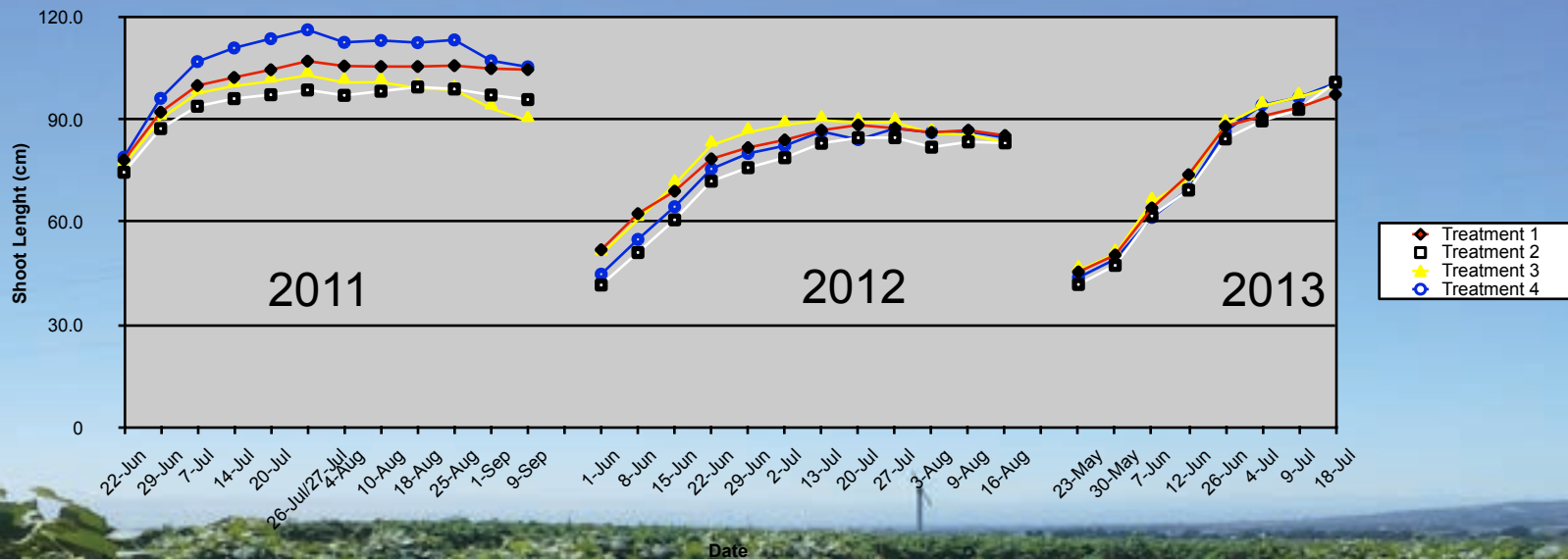
- ET used to calculate treatment amounts in Concord
- K<sub>c</sub> value obtained using Paso panel
- K<sub>c</sub> values remain close between treatments
  - Exception – Treatment 4 (70% ET)

# Paso Panel

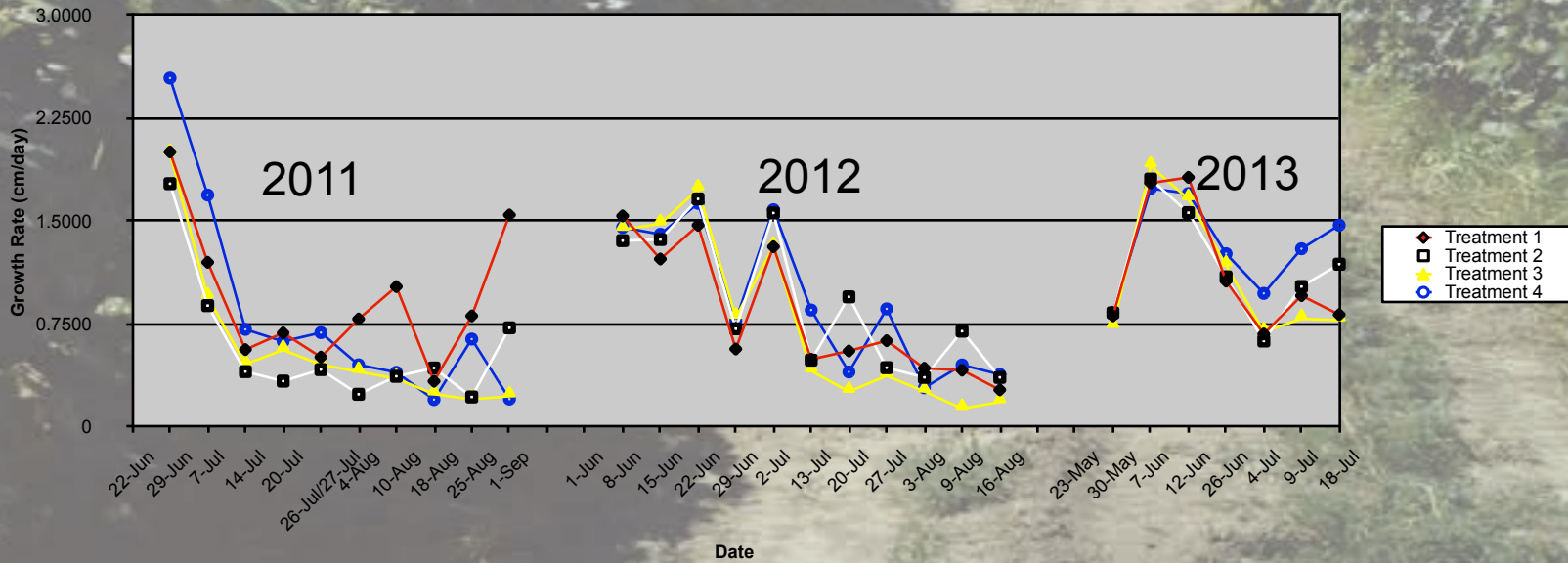
(Shaded Area Under the Canopy)



### Total Shoot Length Concord

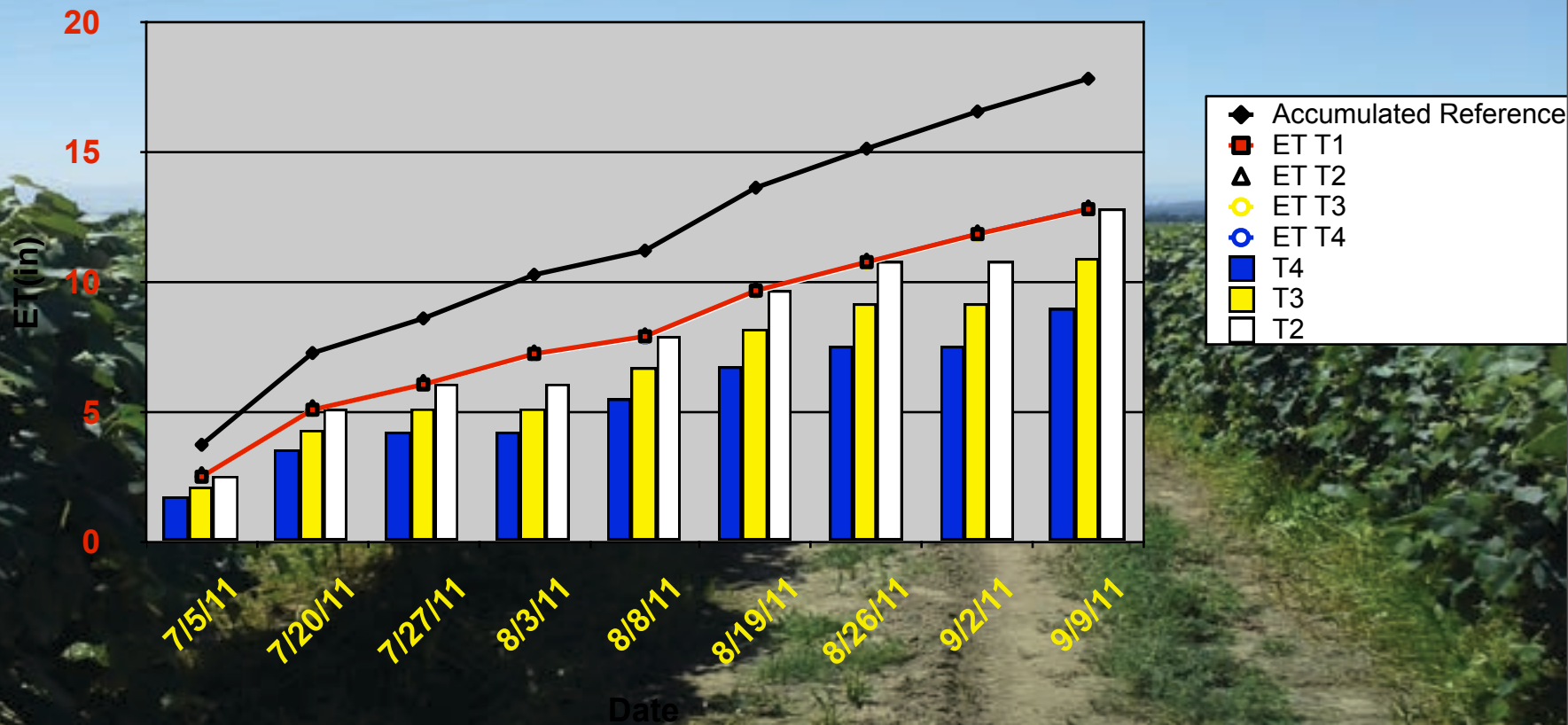


### Growth Rate Concord



# ET vs. Water Applied

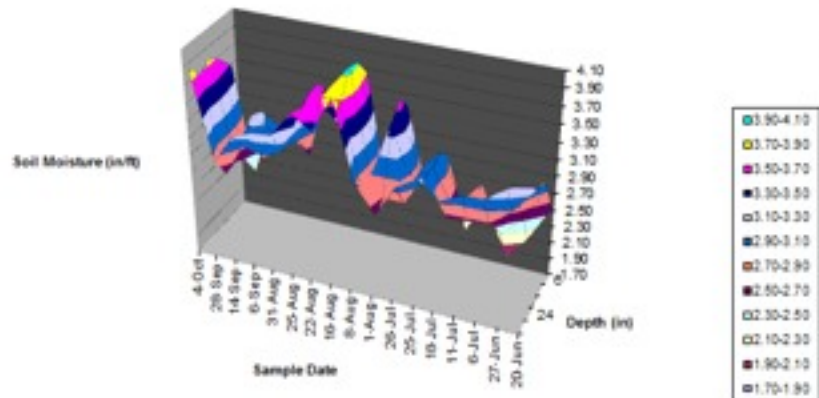
2011 ET vs. Water applied Concords



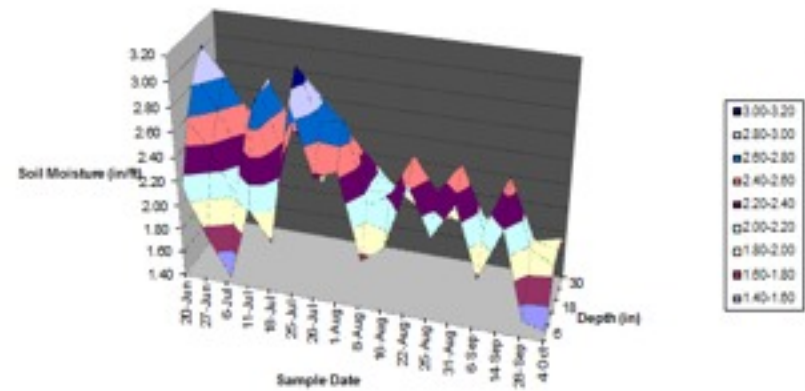
Water applied for T1 not tracked in 2011

# Soil Moisture 2011

Average Moisture by Depth (Treatment 1)



Average Moisture by Depth (Treatment 3)



Average Moisture by Depth (Treatment 2)

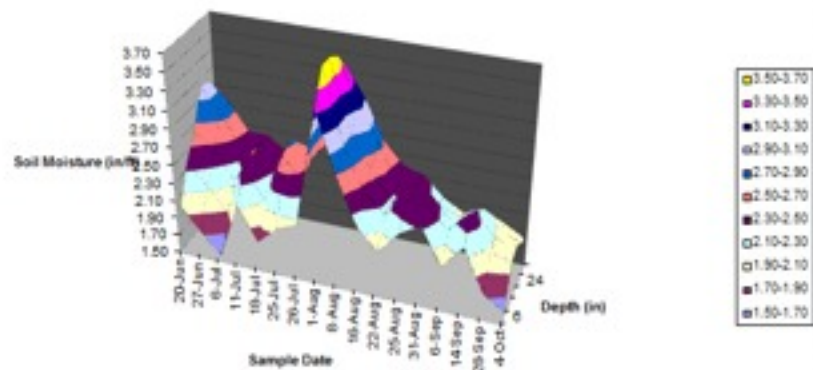
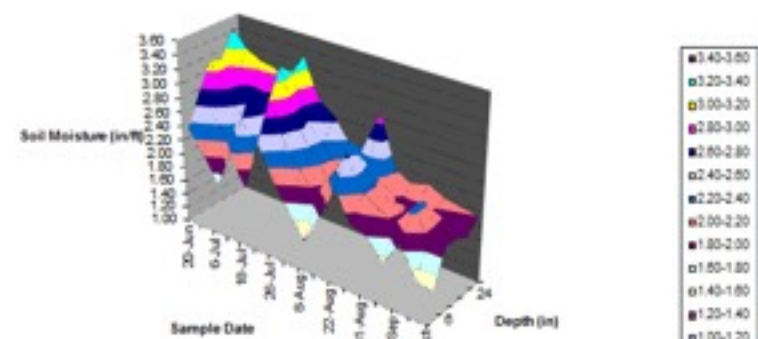


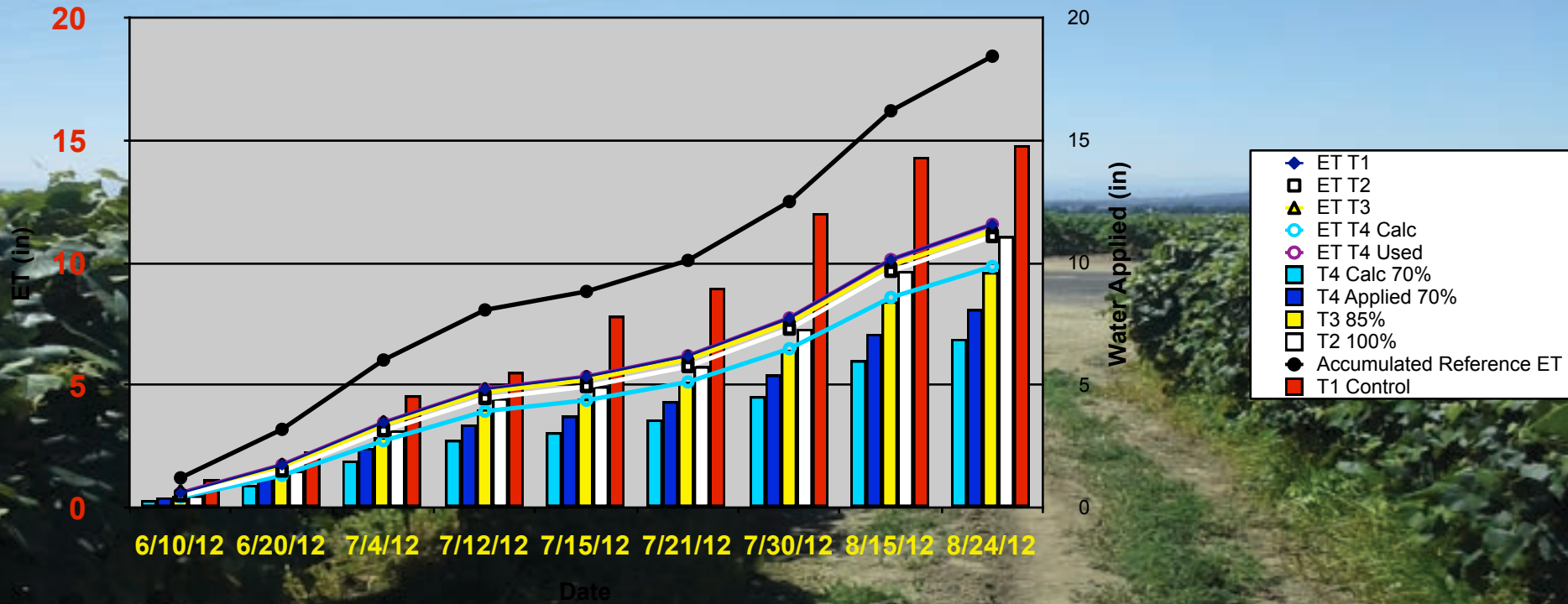
Chart Area

Average Moisture by Depth (Treatment 4)



# ET vs. Water Applied

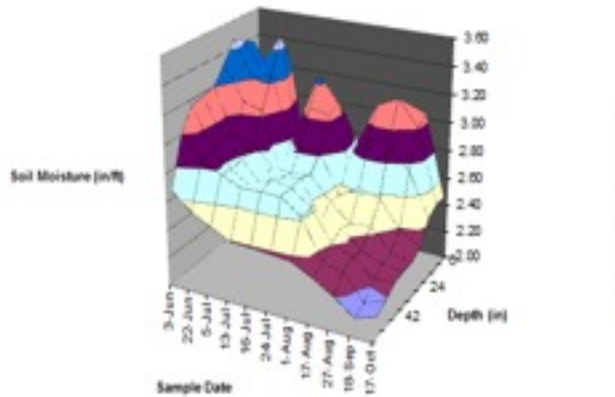
2012 ET vs. Water applied Concords



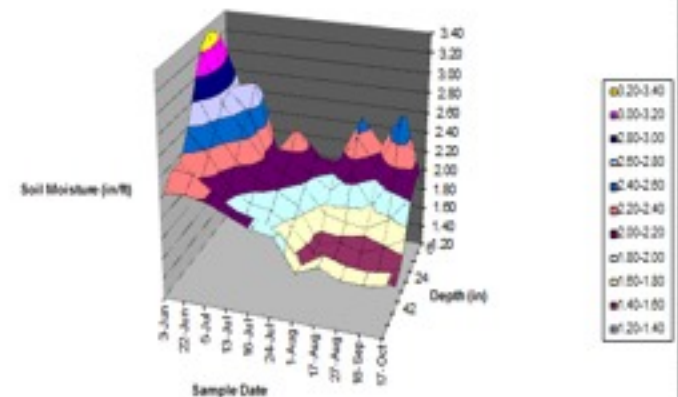
Average % of ET applied for Treatment 1 (Control) - 156% of ET

# Soil Moisture 2012

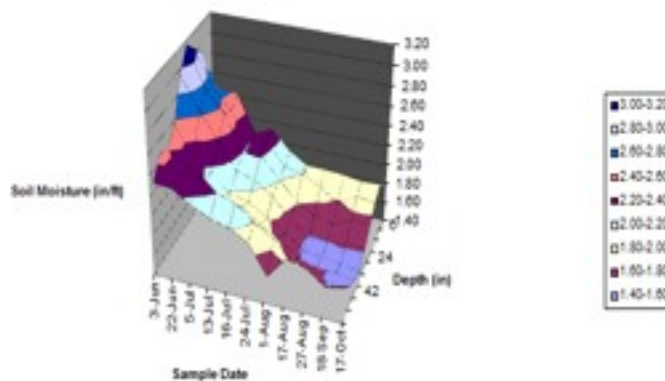
Average Moisture by Depth (Treatment 1)



Average Moisture by Depth (Treatment 3)



Average Moisture by Depth (Treatment 2)



Average Moisture by Depth (Treatment 4)

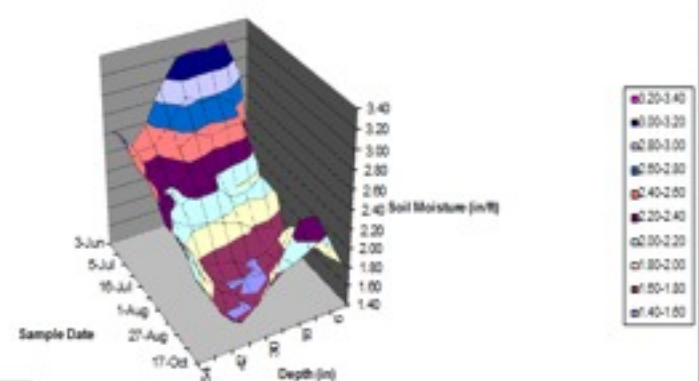
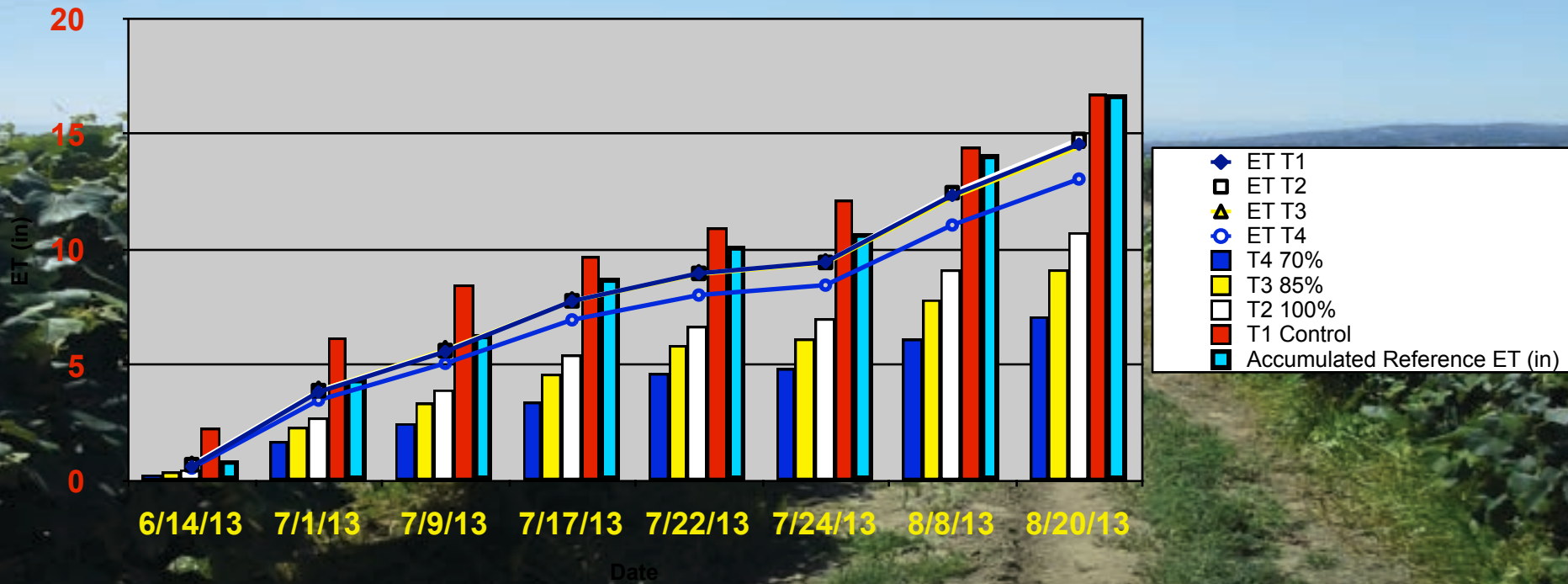


Chart Area

# ET vs. Water Applied

2013 ET vs. Water applied Concord

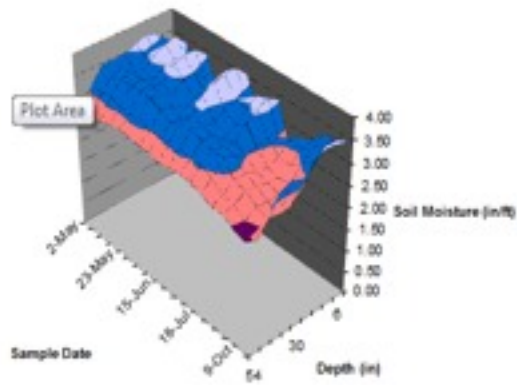


YTD – Grower 270%ET

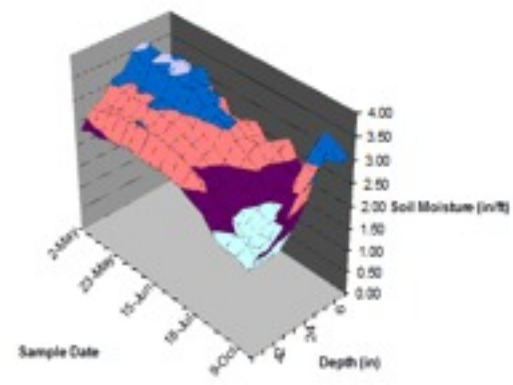


# Soil Moisture 2013

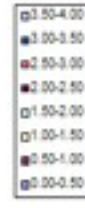
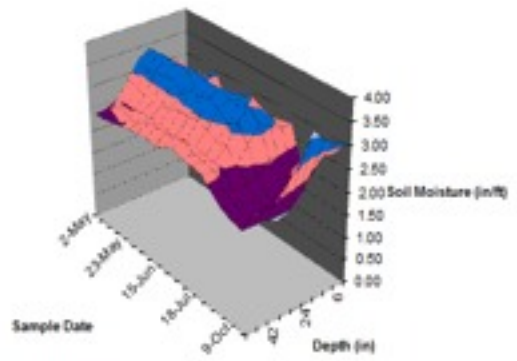
Average Moisture by Depth (Treatment 1)



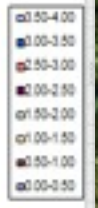
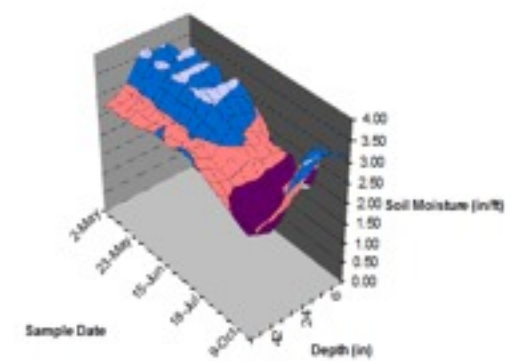
Average Moisture by Depth (Treatment 3)



Average Moisture by Depth (Treatment 2)



Average Moisture by Depth (Treatment 4)





# Productivity



Concord			
Difference from Control Ton/acre			
	2011	2012	2013
Avg. Yield of Control	6.88	8.59	12.51
100% ET	2.37	-3.01	0.10
85 % ET	2.62	-2.07	-2.50
70 % ET	3.20	-5.23	-4.35

- Treatments 2, 3, and 4 resulted in losses in yield as compared to the control
- 100% ET is minimum for Concord production
- No benefits for lower ET treatments

# Questions?

