


Managing Crop Irrigations Based on Crops, Soil Properties, and Distribution Uniformity (DU%)

Presented by Alec Mayall

Mission Resource Conservation District
Agriculture Water Management Program

- For a **Free** Agriculture Irrigation Evaluation Call 760-728-1332 Today -



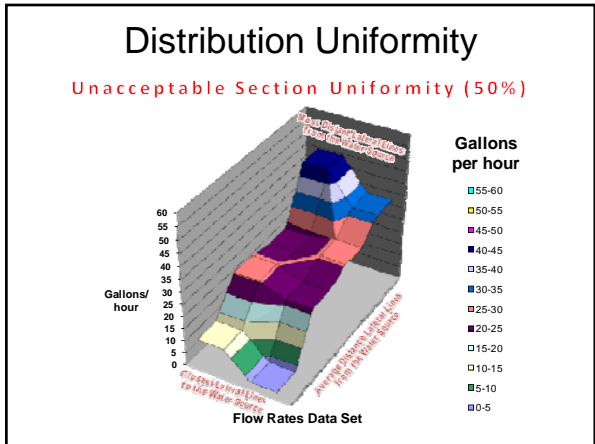
- ### - Crop Water Applications -
- Most vital and effective input for plant growth!
 - Plants requires water to perform photosynthesis
 - Expensive! – Challenging operating cost in SD county
 - Water needs to be used wisely (uniformity & efficiency)
 - Irrigation System Uniformity – System Design & Maintenance
 - Is water being applied evenly to each plant?
 - Irrigation System Efficiency – Irrigation Durations & Frequencies
 - Is the overall crop receiving too much or too little water?
 - Crop Irrigation Scheduling – Site specific due to many variables!
 - Incorporates system uniformity, crops being grown, soil types, depths, etc

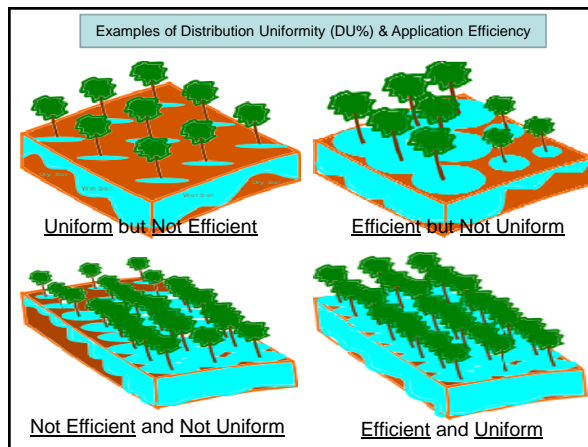
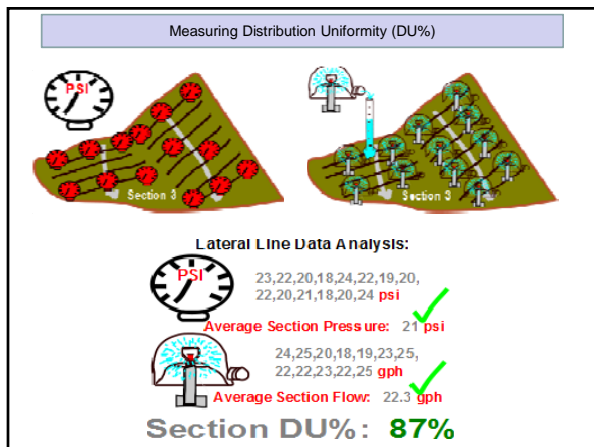
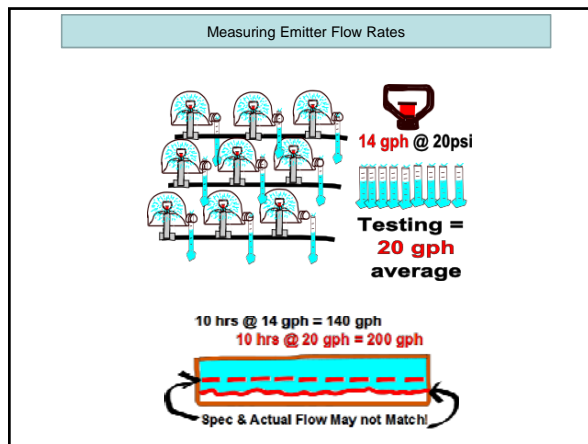
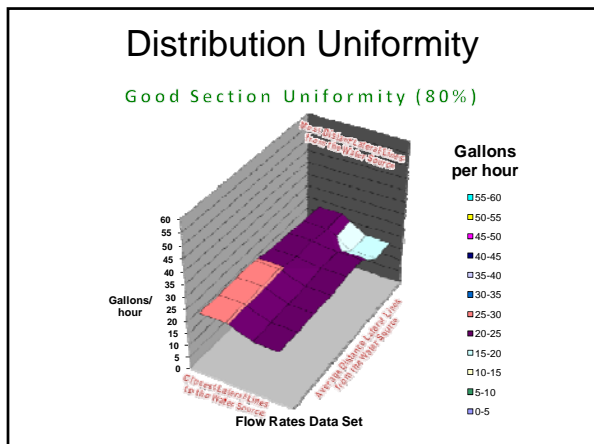
- ### - MRCD Free Ag Program Assistance -
- Free Irrigation System Evaluation (1+ Irrigated Acres in SD County)
 - Free Irrigation Checkup!
 - Learn & Understand Your Site Parameters
 - Distribution Uniformity (DU%), Emitter Flow Rates, Soil Types, Rooting Depths
 - Crop Water Budgets, Water Use Analysis, Schedules, etc
 - Evaluation Process Takes Around 3-4 Hours on Average
 - Report Finished on Site for Smaller Properties
 - Report Finished and Returned Within a Week for Larger Properties

- ### - The Evaluation Process -
- **Determine Irrigation System Uniformity**
 - Identify Crops Being Irrigated
 - Determine Soil Types & Depths
 - Generate Evaluation Report

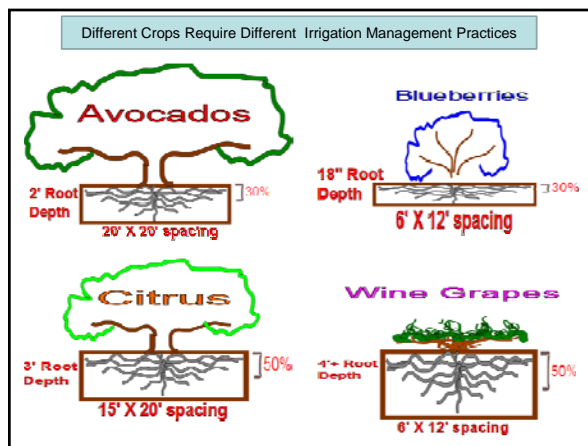
The Irrigation System

Distribution Uniformity Ratings			
DU%:	100-90%	=	Excellent
DU%:	89-80%	=	Good
DU%:	79-70%	=	Fair
DU%:	69-60%	=	Poor
DU%:	≤59%	=	Unacceptable





- ### - The Evaluation Process -
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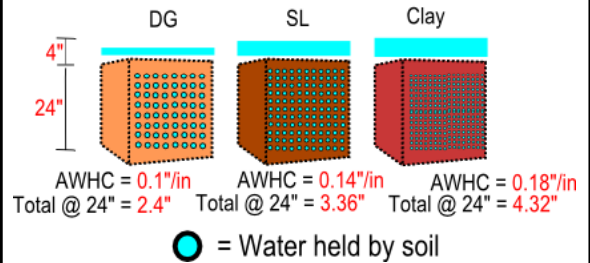


- The Evaluation Process -

- Determine Irrigation System Uniformity
- Identify Crops Being Irrigated
- **Determine Soil Types & Depths**
- Generate Evaluation Report

Be Aware of Soil Available Water Holding Capacity (AWHC)

Different Soil Types Hold Different Amounts of Water



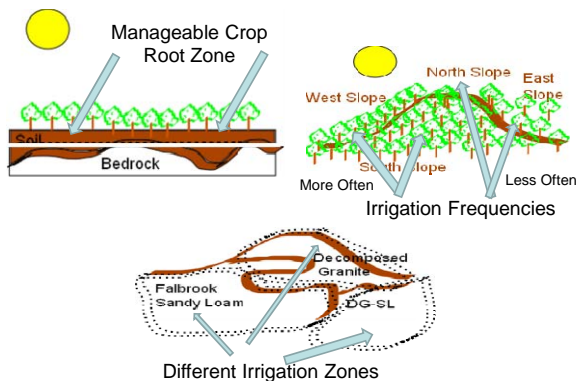
Sandy Loam Soil Type @ 30"



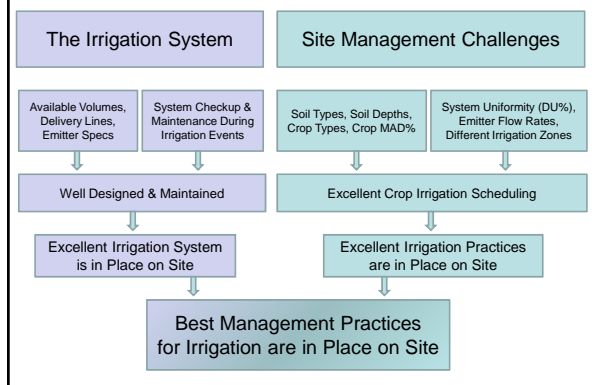
DG Soil Type @ 20"



Be Aware of Site Variability (Micro-Management)



Irrigation BMP Flow Chart



- The Evaluation Process -

- Determine Irrigation System Uniformity
- Identify Crops Being Irrigated
- Determine Soil Types & Depths
- **Generate Evaluation Report**

CIMIS Crop Schedules

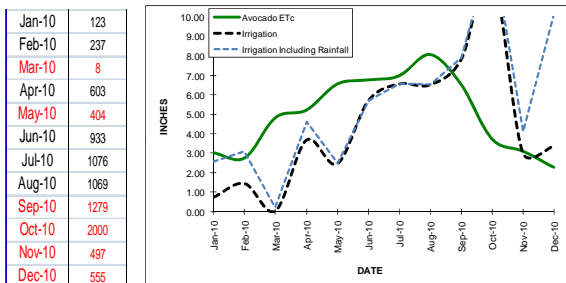
	AVERAGE DAILY VALUES			3" Total AWHC (30% MAD) @ 1" Depletion: Irrigate Emitter Precip: 0.1"/hour	ACTUAL IRRIGATION SCHEDULE				
	DAILY ET, INCHES	AMT. REED. INCHES	GALLONS / TREE / DAY		TOTAL HRS OF EACH IRRIGATION	DAYS BETW. START OF IRRIGATION			
JAN	0.08	0.10	24.6	<div style="background-color: #d3d3d3; padding: 10px; font-size: 24px; color: green; font-weight: bold;">Green Challenger Emitters</div>	10.0	10.0			
FEB	0.12	0.15	36.9		10.0	10.0			
MAR	0.14	0.17	43.1		10.0	7.0			
APR	0.16	0.20	49.3		10.0	5.0			
MAY	0.18	0.22	55.4		10.0	5.0			
JUN	0.16	0.20	49.3		10.0	5.0			
JUL	0.18	0.22	55.4		10.0	4.0			
AUG	0.18	0.22	54.9		10.0	4.0			
SEP	0.16	0.20	49.3		10.0	5.0			
OCT	0.14	0.18	44.9		10.0	6.0			
NOV	0.12	0.14	36.0		10.0	9.0			
DEC	0.10	0.12	24.0		10.0	11.0			
PEAK	0.18	0.22	55.4	Hours/yr	585	ac.ft./yr	36.71	10.0	4.0

Crop Water Budgets

Water Budget Analysis - Avocados					
2010					
System EU	80%		Cost Per Unit	\$2.63	
Trees Per Acre	109		Pump Zone	0	
CIMIS Station	Temecula		Per Unit	0.00	
Water Units	748	Gallons	Meter Size	1.5	
District	RMWD	Stand By Charge/Month		\$92.00	
Date	Water Units	Monthly ETc	Effective Rainfall	Total Cost per Month	Cost per Tree
Jan-10	83	2.23	1.83	\$310.86	\$0.71
Feb-10	79	2.03	1.65	\$298.46	\$0.68
Mar-10	700	3.56	0.18	\$1,933.26	\$4.43
Apr-10	609	3.84	0.90	\$1,693.30	\$3.88
May-10	995	4.83	0.02	\$2,709.81	\$6.22
Jun-10	1032	4.99	0.00	\$2,804.88	\$6.43
Jul-10	1064	5.14	0.00	\$2,889.08	\$6.63
Aug-10	1231	5.95	0.00	\$3,328.75	\$7.63
Sep-10	983	4.82	0.07	\$2,677.94	\$6.14
Oct-10	264	2.75	1.48	\$786.54	\$1.80
Nov-10	372	2.29	0.49	\$1,069.68	\$2.45
Dec-10	204	1.68	0.69	\$628.81	\$1.44
Leaching	10%				
Year Totals	7615	44.1	7.3	\$21,131.38	\$48.47
Acre Feet	17.5				
Gallons	5696074				
			Irrigated Acres does not include roads, outbuildings, landscape, etc.		Irrigated Acres = 4.00

Water Use Analysis

Water Units Applied



Free Evaluation Anyone?

Mission Resource Conservation District

Agriculture Water Management Program

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