



2016 Annual Member Meeting

Irrigation Trials and Research

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Resource Conservation District



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Irrigation System Evaluation

Why a good DU
is important

Brian Hockett District Manager

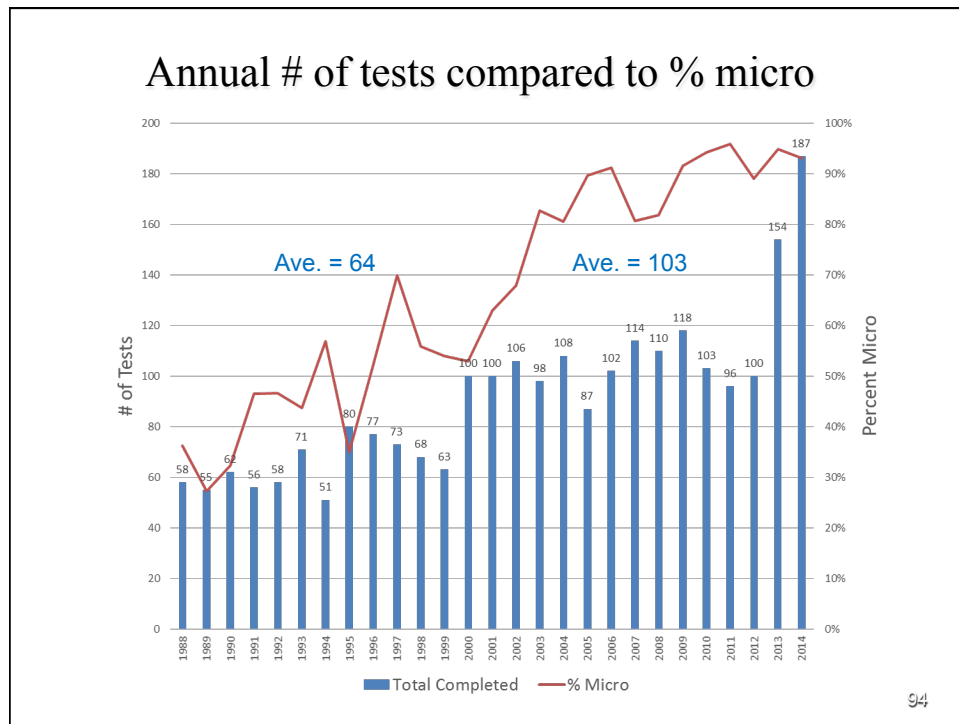
North West Kern
Resource Conservation District
Irrigation Mobile Laboratory

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Irrigation Systems

- Furrows – cotton, corn, tomatoes...
- Border Strip (flood) – alfalfa, almonds...
- Solid Set Sprinkler – carrots, onions...
- Hand Move Sprinkler – alfalfa, cotton...
- Linear Move Sprinkler – alfalfa, carrots...
- Center Pivot – carrots, turf...
- Micro Drip – almonds, pistachios, vines...
- Micro Sprinkler – trees & vines
- Landscape Water Audit – parks/golf courses

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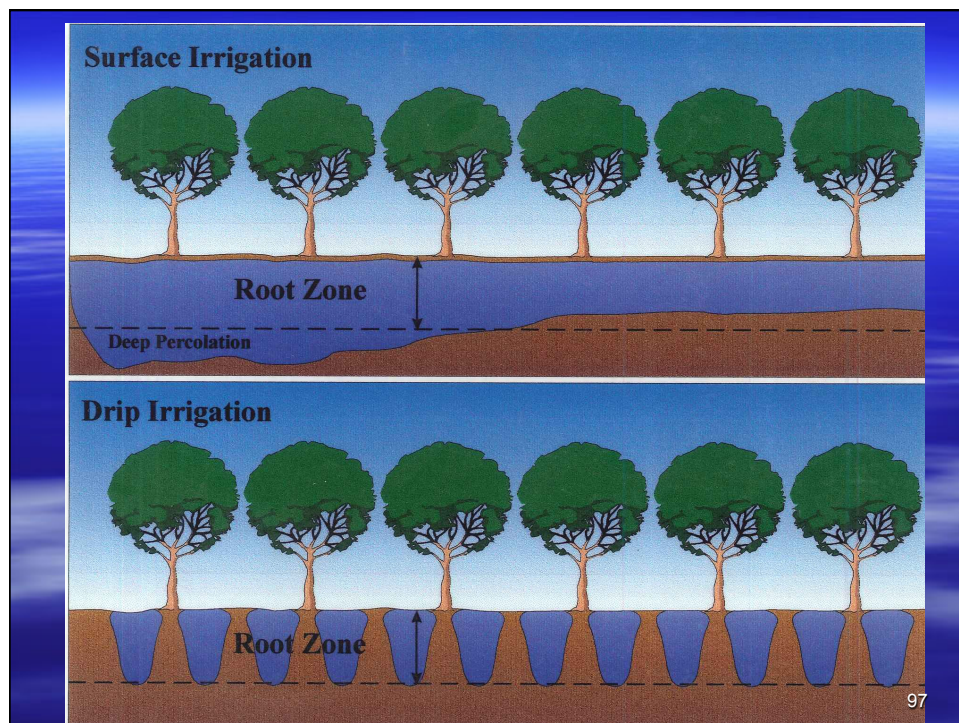
Irrigation system evaluations conducted by the Kern County Mobile Lab (1988 – 2014)

Drip	864
Micro sprinkler	742
Other	859
<hr/>	
Total	2,465

Advantages of Micro Systems

Drip & Micro Sprinkler

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Advantages of micro-irrigation

- Water savings. Conveyance loss is minimal. Evaporation, runoff and deep percolation are reduced as compared to other traditional irrigation systems. A water supply source with limited flow rates such as small water wells or city/rural water can be used.

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Advantages of micro-irrigation (con't)

- Energy savings. A smaller power unit is required compared to sprinkler irrigation systems.
- Weed and disease reduction. Because of limited wetted area from non-spray type of micro-irrigation, weed growth is inhibited and disease incidences reduced

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Advantages of micro-irrigation (con't)

- Can be automated. Fertilizers and chemicals can be applied with water through the irrigation system. Micro-irrigation systems can be automated which reduces labor requirements.
- Improved production on marginal land. On hilly terrain, micro-irrigation systems can operate with no runoff and without interference from the wind. The fields need not be leveled.

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Distribution Uniformity (DU)

What does that mean?

How evenly water is
applied over a given area

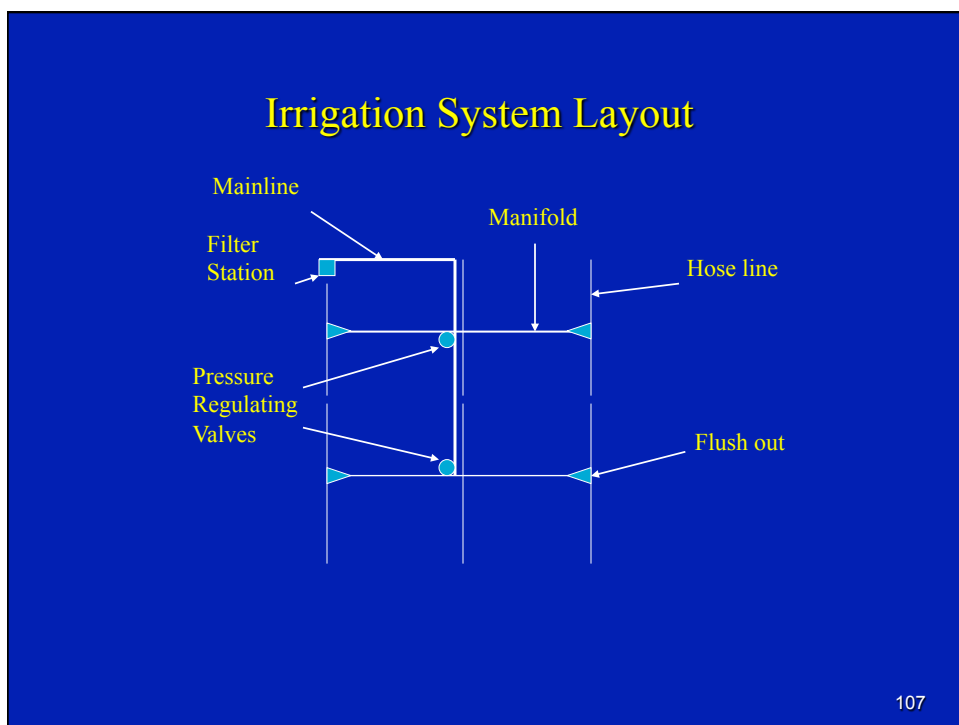
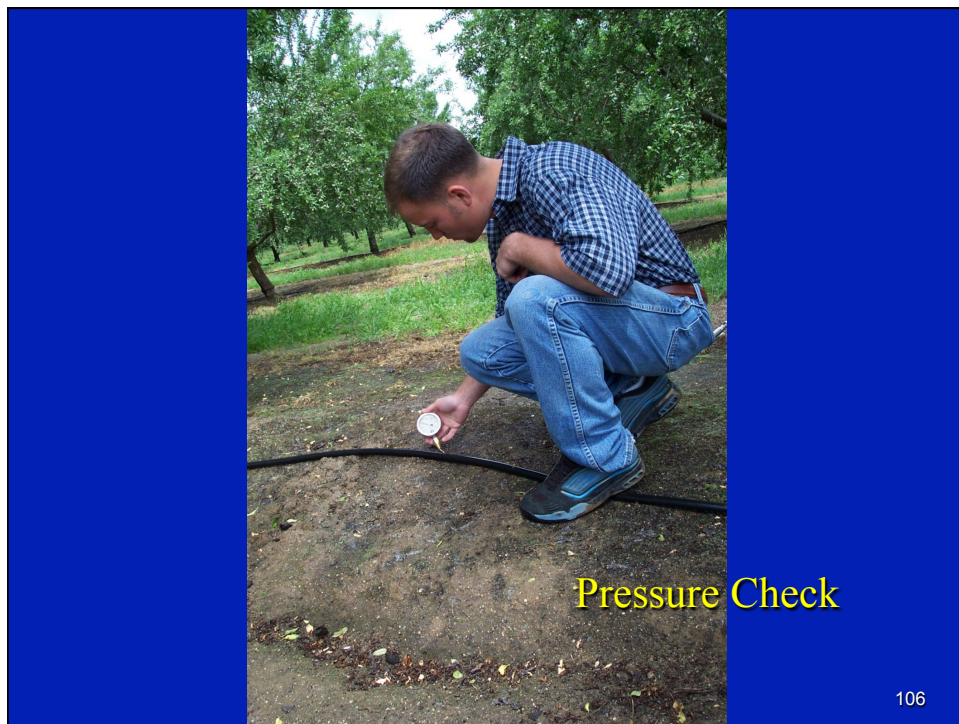
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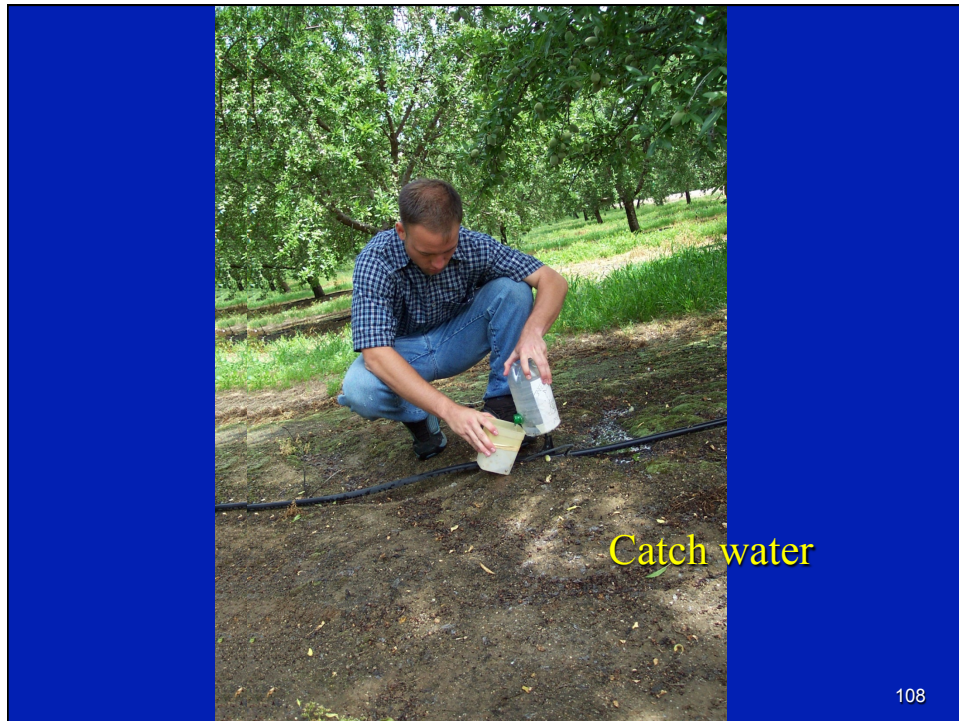
$$DU = \frac{\text{Ave. low } \frac{1}{4}}{\text{Ave. of the whole}}$$

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Problems Encountered

- Excess pump pressure
- Dirty cone screen
- Improperly set regulating valves
- Plugged hose screens
- Plugged emitters
- Leaky valves
- Dirty water
- More than one emitter type

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Maintenance

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Measures Taken

- Trim pump impellers
- Clean cone screen
- Reset regulating valves
- Clean or replace hose screens
- Replace plugged emitters
- Repair leaky valves
- Flush hoses
- Inject acid/chlorine
- One emitter type

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Results

Comparing Drip to Micro/
sprinkler over a
27 year time period

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of Micro Systems Tested (1606 total)

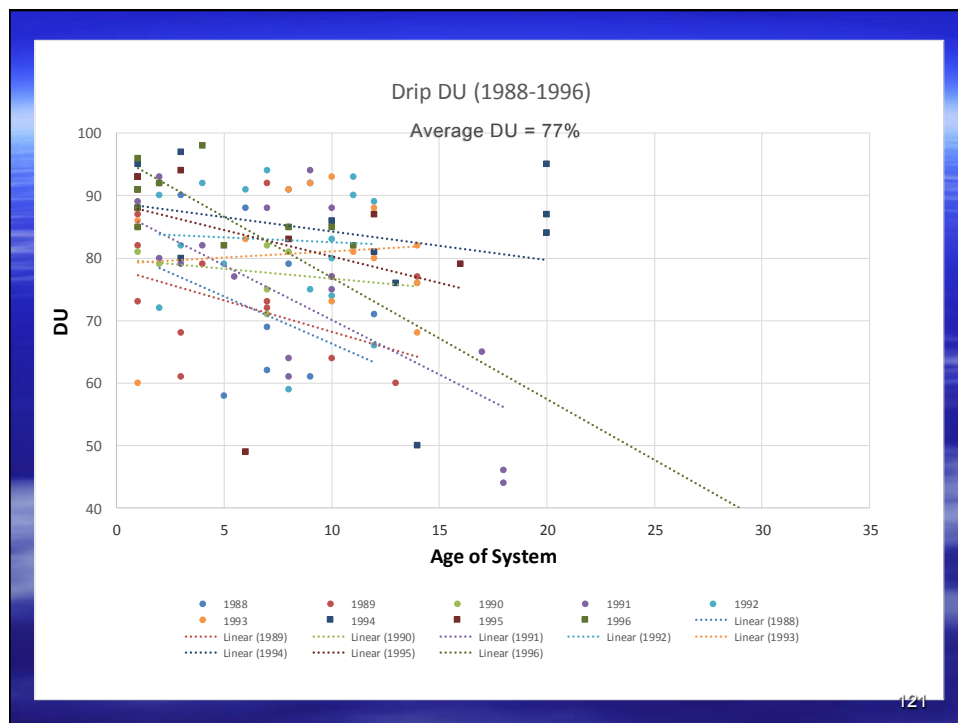
<u>System</u>	<u>Time Span</u>		
	<u>(88-96)</u>	<u>(97-05)</u>	<u>(06-14)</u>
▪ Drip	109	210	545
▪ <u>Micro Sprinkler</u>	<u>128</u>	<u>252</u>	<u>362</u>
▪ Percent Micro	44%	73%	96%

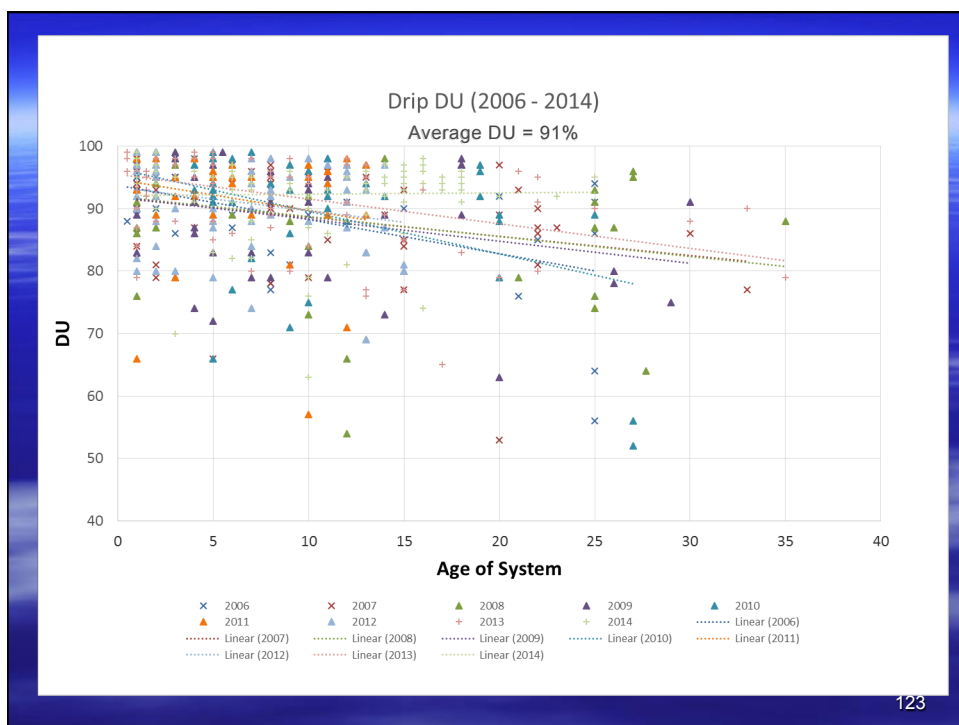
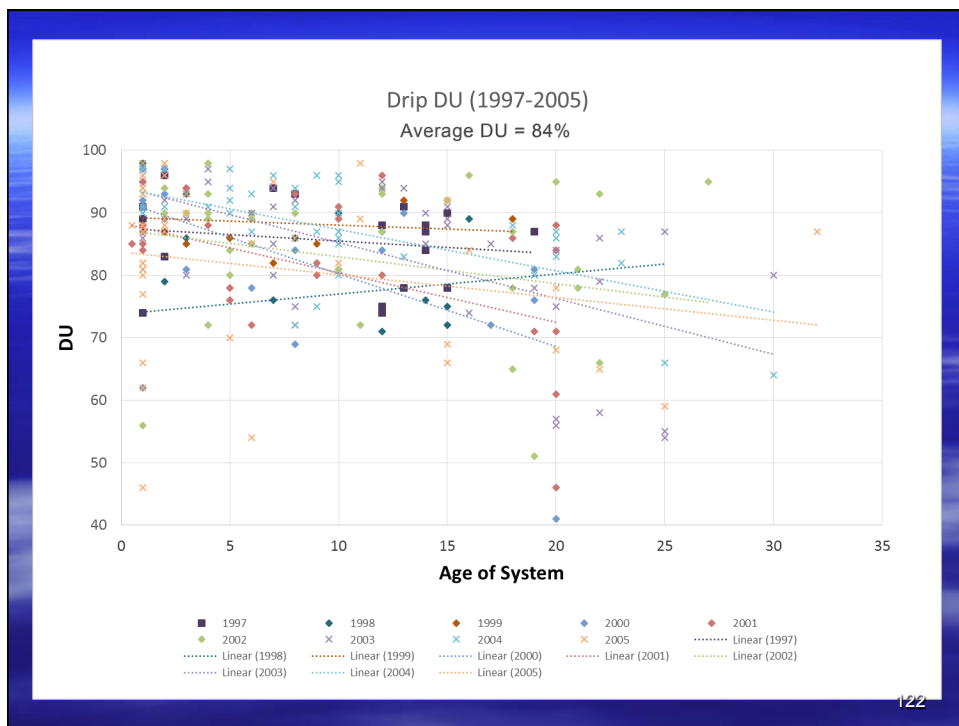
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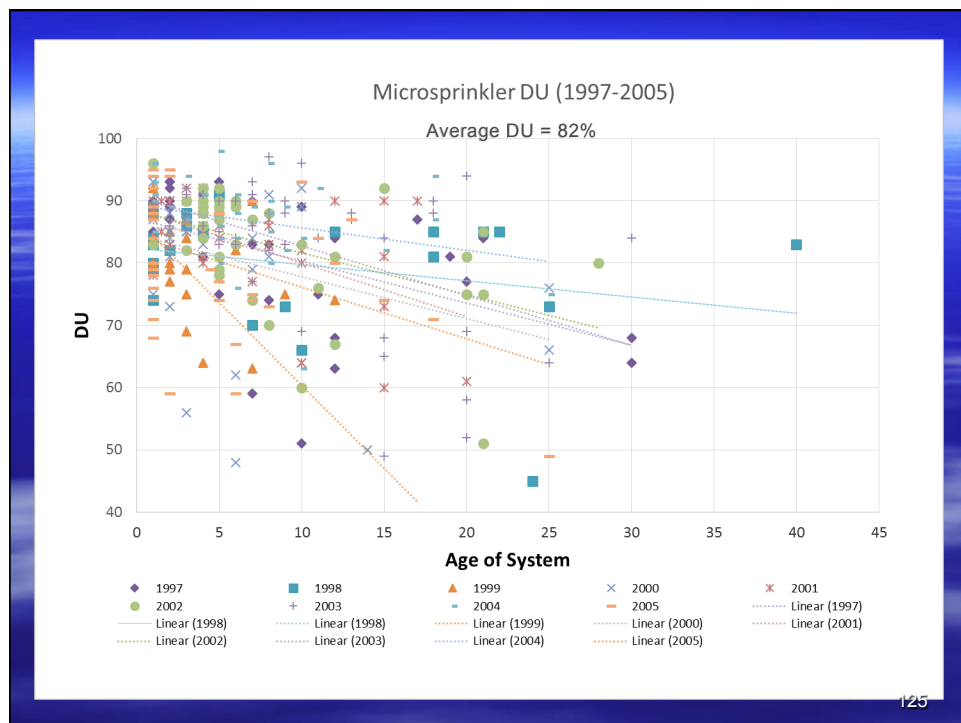
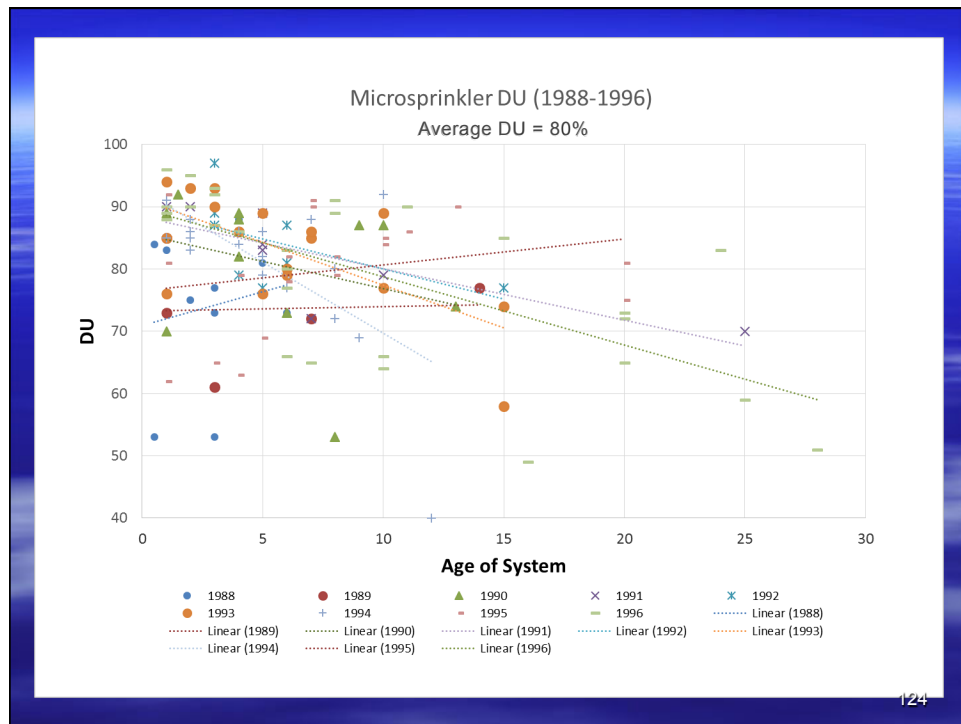
Irrigation System Uniformities

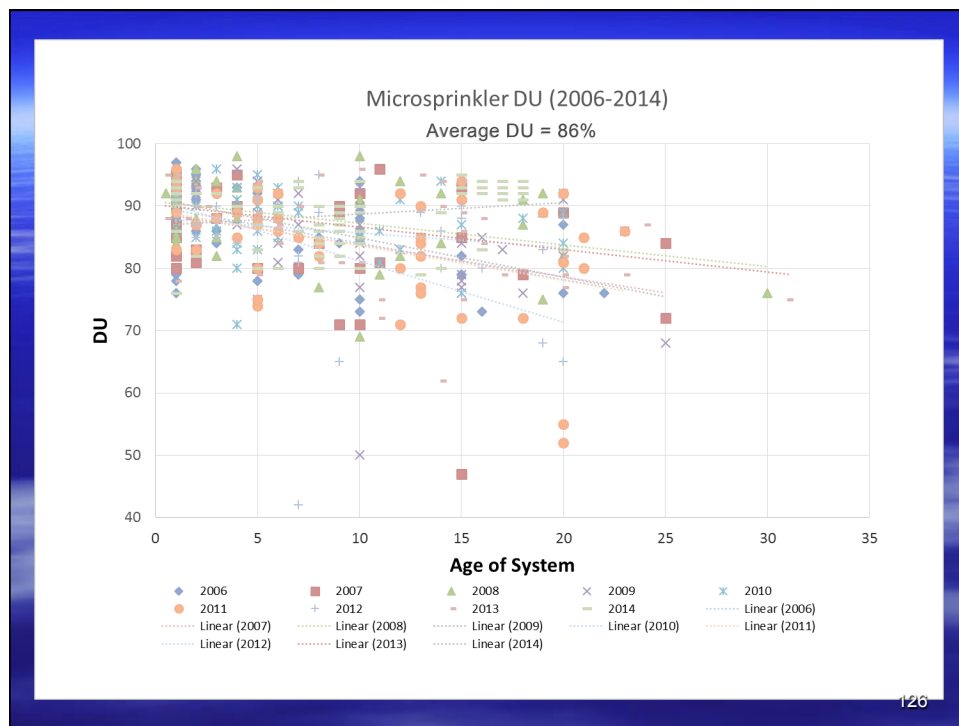
<u>System</u>	<u>County Average</u>		
	(88-96)	(97-05)	(06-14)
■ Drip	77	84	91
■ Micro Sprinkler	80	82	86

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Thank you!

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