Evaluation of Microirrigation Components at Low Pressure

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Low Pressure (Gravity) Drip

Isolated Areas with Limited Water and Power

Rainwater Catchment Systems

Conveyance into Garden or Landscapes

Problem

Which emitters, drip tubings or tapes will function satisfactorily at these low pressures?

Objectives

- Evaluate emitter flow characteristics and drip system uniformities at operating pressures much lower than specified?
  - 6 feet of head (2.5 psi) vs. 20 psi
- Identify models of emitters, drip tubing, and drip tape that provide acceptable flow rates and application uniformities at low pressures typical of rainwater catchment systems.

Preliminary Work (2010)

- Measured emitter flow rates at varying distances from main header:
  - 17 models of point source emitters
  - 4 different drip tubings
  - 2 different drip tapes
- Average flow rate of point source emitters at ~2.5 psi ranged from 9.5% to 123% of specified (@ 20 – 30 psi)
- Emitter uniformity (1 - cv) ranged from 0.96 to 0.46

Top Ranked Emitters
(Uniformity > 0.80)

Emitter Model	Uniformity (1-cv)	Flow Rate (gph)	% of specified (FR)
D012	0.957	0.336	33.6 (1 gph)
D006	0.940	0.519	51.9 (1 gph)
D023	0.913	0.991	24.8 (4 gph)
D002	0.894	1.174	58.7 (2 gph)
D013	0.871	0.723	36.1 (2 gph)
Drip Tape (J.D.)	0.958	0.104	39.0 (0.27 gph)
Drip Tubing (0.600”)	0.940	0.315	31.5 (1 gph)