

Scouring Velocity (recommended 1 ft/sec for drip-tubing)

Velocity x Area = Quantity (flow rate)

$$\text{ft/sec} \times \text{ft}^2 = \text{ft}^3/\text{sec}$$

$$\text{ft/sec} \times \text{ft}^2 \times 7.48 \text{ gal/ft}^3 \times 60\text{sec/min} = \text{gal/min}$$

$$\text{ft/sec} \times r^2\pi \times (1\text{ft}^2/144\text{in}^2 \times 7.48 \text{ gal/ft}^3 \times 60\text{sec/min}) = \text{gal/min}$$

$$\text{ft/sec} \times r^2\pi \times (3.1167) = \text{gal/min}$$

Example for drip-tubing:

$$1\text{ft/sec} \times (0.5)^2 \times 3.14 \times 3.1167 = 2.5 \text{ gal/min per lateral}$$

(1" lateral = 9.79 gal/min per lateral)

(1.25" lateral = 15.29 gal./min per lateral)

Scouring velocity can easily exceed pump capacity for larger lateral sizes!

Scouring Cycle Length

Length x Velocity = Time

$$98 \text{ ft} \times 1\text{sec/ft} = 98 \text{ sec}$$

good idea to double or triple the time for a complete scouring!

1. EXAMPLE: many short lines

490 ft of drip-tubing = 10 lines of 40 ft each

Pump would need to produce: 10 x 2.5 gal/min or 25 gal/min to achieve scouring velocity.

Pump would need to run for 49 x 1 sec/ft or 49 seconds minimum.

2. EXAMPLE: several long lines

490 ft of drip-tubing = 5 lines of 98 ft each

Pump would need to produce: 5 x 2.45 gal/min or 12.25 gal/min to achieve scouring velocity.

Pump would need to run for 98 ft x 1 sec/ft or 98 seconds minimum