

# SPRAY STAKE IRRIGATION



## NURSERY/GREENHOUSE

Application guide for container stock



# Spray Stake Design a System



Three Models Available!  
(With varying trajectories)



## Senninger Spray Stake Advantages

- Directional indicator for easy positioning
- Easy to remove for cleaning and maintenance
- Shut-off feature for non-use
- Large flutes for increased stability in soil
- Three color-coded flow rates to match application requirements
- Deflection surface provides a good application pattern

Follow these 4 Steps to create the best system for your irrigation needs.

# 1

**Select an Emitter-** Select the spray stake based on the container size or area of coverage required.

	Black	Brown	Green
<b>Container Size</b>			
	10 gal (37.85 L)	15 gal (56.78 L)	30 gal (113.6 L)
<b>Flows</b>			
20 psi (1.38 bar)	4 gph (15.14 L/hr)	8 gph (30.28 L/hr)	12 gph (45.42 L/hr)
<b>Radius of Coverage</b>			
inches (mm)	12 inches (304.8 mm)	18 inches (457.2 mm)	20 inches (508 mm)
<b>Distribution Pattern</b>			
degrees	90°	120°	160°



# 2

## Determine Length of Lateral-

Based on the selected emitter from Table 1 and the required emitter spacing for plants, use Table 2A or 2B to determine the maximum length of 3/4 inch or 1 inch Poly lateral based on 20 psi (1.38 bar) lateral pressure.

Plant Spacing	Black	Brown	Green
<b>24 inch (609.6 mm)</b>	220 ft (67.1 m)	140 ft (42.7 m)	110 ft (33.5 m)
# of Spray Stakes	110 units	70 units	55 units
<b>36 inch (914.4 mm)</b>	290 ft (88.4 m)	190 ft (57.9 m)	140 ft (42.7 m)
# of Spray Stakes	96 units	63 units	46 units
<b>48 inch (1219.2 mm)</b>	350 ft (106.7 m)	220 ft (67.1 m)	170 ft (51.8 m)
# of Spray Stakes	87 units	55 units	42 units
<b>72 inch (1828.8 mm)</b>	460 ft (140.2 m)	290 ft (88.4 m)	220 ft (67.1 m)
# of Spray Stakes	76 units	48 units	36 units

Data based on 4 psi (0.276 bar) lateral friction loss.



**TABLE 2B**Maximum length  
1 inch Poly pipe

	Black	Brown	Green
<b>Plant Spacing</b>			
<b>24 inch (609.6 mm)</b>	340 ft (103.6 m)	220 ft (67.1 m)	160 ft (48.8 m)
# of Spray Stakes	170 units	110 units	80 units
<b>36 inch (914.4 mm)</b>	450 ft (137.2 m)	280 ft (85.3 m)	220 ft (67.1 m)
# of Spray Stakes	150 units	93 units	73 units
<b>48 inch (1219.2 mm)</b>	540 ft (164.6 m)	340 ft (103.6 m)	260 ft (79.2 m)
# of Spray Stakes	135 units	85 units	65 units
<b>72 inch (1828.8 mm)</b>	700 ft (213.4 m)	440 ft (134.1 m)	340 ft (103.6 m)
# of Spray Stakes	116 units	73 units	56 units

Data based on 4 psi (0.276 bar) lateral friction loss.

**Example-** 4 rows of 15 gallon container trees on 48 inch (1219.2 mm) spacing. Pump capacity is 40 gpm (151.4 L/m).

1. **Table 1:** Select brown spray stake, 8 gph @ 20 psi (30.28 L/hr @ 1.38 bar) for a 15 gallon (56.78 liter) container.

2. **Table 2B:** Based on the brown spray stake, the maximum length of 1 inch Poly laterals is 340 ft. (103.6 m) with emitter spacing of 48 inches (1219.2 mm).

3. **Table 3:** Based on a system flow rate of 40 gpm (151.4 L/m), the system will operate 300 brown spray stakes or 4 laterals with 75 spray stakes per lateral (from step 2 above).

4. **Table 4:** With a total zone flow of 40 gpm (151.4 L/m), the main line should be 2.0 inches (50.8 mm) for optimum flow.

For optimal Spray Stake performance, 120 mesh filtration is recommended. Spray Stake information is based on no elevation changes and 20 psi (1.38 bar) lateral line pressure. For additional design information, please contact Senninger Irrigation at 407-877-5655.



Ideal for pot-in-pot installations

# 3

**TABLE 3**  
Quantity of units-  
based on system flow

	Black	Brown	Green
<b>Flow Rate</b>			
<b>10 gpm (37.85 L/m)</b>	150 units	75 units	50 units
<b>20 gpm (75.71 L/m)</b>	300 units	150 units	100 units
<b>40 gpm (151.4 L/m)</b>	600 units	300 units	200 units
<b>60 gpm (227.1 L/m)</b>	900 units	450 units	300 units
<b>80 gpm (302.8 L/m)</b>	1200 units	600 units	400 units

**Determine Zone Flow-** Table 3 will help determine the number of emitters based on system capacity and emitter selected in Table 1.

# 4

**TABLE 4**  
Mainline pipe size guide

	PVC Class 160	Pipe Size I.D.
<b>Flow Rate</b>		
<b>20 gpm (75.71 L/m)</b>	1.25 inch (31.75 mm)	1.532 inch (38.91 mm)
<b>30 gpm (113.6 L/m)</b>	1.5 inch (38.1 mm)	1.754 inch (44.55 mm)
<b>40 gpm (151.4 L/m)</b>	2.0 inch (50.8 mm)	2.193 inch (55.7 mm)
<b>60 gpm (227.1 L/m)</b>	2.5 inch (63.5 mm)	2.655 inch (67.44 mm)
<b>100 gpm (378.5 L/m)</b>	3.0 inch (76.2 mm)	3.23 inch (82.04 mm)
<b>200 gpm (757.1 L/m)</b>	4.0 inch (101.6 mm)	4.153 inch (105.5 mm)
<b>400 gpm (1514.2 L/m)</b>	6.0 inch (152.4 mm)	6.115 inch (155.3 mm)

Data based on 5 feet per/second (1.524 meters per/second) water velocity.

**Determine Pipe Size-** Table 4 will help determine the size of the mainline that feeds the Poly laterals.

## Importance of Pressure Regulation

Variations in system pressure can result in erratic emitter application rates and lost production. Optimum performance of the spray stake in a well-designed individual container irrigation system can be achieved by using pressure regulators. Senninger Pressure Regulators maintain a constant preset outlet pressure based on the flow/inlet pressure. (Note: with no flow through the regulator, the inlet and outlet pressures will be the same.)

Note: Pressure Regulators can be installed above or below ground.



# Spray Stake Installation Procedure



1. Cut (0.125" I.D.) tubing to desired length (not to exceed 5 feet). Lateral end should be cut at a 45° angle. Spray stake end should be cut at a 90° angle.



2. Use the Senninger punch tool to create holes in the lateral. Be sure to install tubing immediately after punching holes.



3. Insert tubing into lateral. Do not allow tubing to penetrate the lateral more than 1/3 of the lateral diameter to avoid disruption of flow.

## Senninger Products for Spray Stake Irrigation



Pressure Regulators



Punch Tool



0.125" Tubing



4. Press spray stake end of tubing evenly onto the spray stake until tubing fully covers the tip.



5. Install the spray stake into desired location (refer to directional indicator located on the spray stake) to the desired soil depth.



6. Spray stake can be shut-off by inserting bottom tip of the spray stake into the end of the micro tubing.

## Other nursery products:

Mister  
Wire Adapter  
mini-Wobbler  
i-mini-Wobbler  
Wobbler  
Xcel-Wobbler  
Super Spray  
T-Spray  
Impact Sprinklers  
Part-Circle Impact Sprinklers

Contact Senninger Irrigation for more information about these quality products or the name of your nearest Senninger dealer.

**Senninger<sup>®</sup>**  
**Irrigation Inc.**

Made in U.S.A.

16220 E. Highway 50, Clermont, FL 34711  
Phone (407) 877-5655  
Fax (407) 905-8249 • International Fax (407) 905-8239  
Website: [www.senninger.com](http://www.senninger.com)  
E-mail: [info@senninger.com](mailto:info@senninger.com)