

**TORO**

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# Irrigation Solutions

## Micro-Sprinklers for Integrated Pest Management

### Benefits of a Micro-Sprinkler IPM System:

- Suppresses dust and detrimental insects
- Increases humidity and encourages beneficial insects
- Can apply as little as 1/10th the water at 1/5th the pressure vs. conventional sprinklers - reducing runoff, energy, labor and risk.
- Minimizes the use of expensive and/or undesirable pesticides
- Works for organic or conventional crops



**M**icro-sprinklers have long been used to provide climate control and irrigate fruit, nut and cover crops. Now, micro-sprinklers can be used as part of an integrated pest management (IPM) plan in row crops, as well. By placing a grid of micro-sprinklers above the crop and operating it a few times a week, dust is washed off the leaves and humidity is increased – suppressing harmful pests and encouraging beneficial insects. For example, mites and spider mites favor hot, dusty environments, whereas beneficial predatory insects, such as persimilis, thrive best where humidity levels are between 60 to 90 percent. By applying a light application of water to the crop several times a week, dust, mites and webbing are washed off while the resulting increased humidity encourages beneficial predator species.

In addition, using micro-sprinklers reduces runoff, energy, labor and risk, and eliminates the need for high

pressure, high flow rate, conventional sprinkler systems to wash off the leaves. Plus, micro-sprinklers reduce or eliminate expensive pesticide costs – which is important for both conventional and organic growers.

Micro-sprinkler IPM systems are easy to install, operate and maintain. Although field layouts will vary, a typical application includes either Toro Micro-Sprinkler VI Classic or Toro Micro Sprinkler PC and arranges them on a 20-foot by 20-foot grid above the plants, plastic mulch and buried drip tubing. The micro-sprinklers are threaded into a stake which is inserted into the bed, and then connected via a micro-tubing assembly to drip laterals, such as Toro Blue Stripe® polyethylene round tubing.

System pressure and flows are low, similar to drip tape irrigation systems, and tripping hazards caused by sprinkler pipe are virtually eliminated. Normal drip irrigation maintenance practices apply, including filtration and periodic line flushing.



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Micro-Sprinklers for Integrated Pest Management (IPM)



Toro Micro-Sprinkler VI Classic Specifications, Precipitation Rate and Application Rate								
Model No	Nozzle Color	Orifice Diameter (Inches)	Pressure, PSI	Flow Rate, GPH	Diameter, Feet	Wetted Area, Sq. Ft. ( $\pi D^2/4$ )	Precipitation Rate Within Wetted Area, Inches/Hour	Application Rate on a 20' x 20' grid (109 units/acre), Inches/Hour
SAM610	Black	0.034	15	7.90	16.40	211.13	0.06	0.03
			20	9.10	17.70	245.93	0.06	0.04
			25	10.20	19.00	283.39	0.06	0.04
SAM613	White	0.041	15	11.80	20.50	329.90	0.06	0.05
			20	13.70	22.40	393.88	0.06	0.05
			25	15.30	24.00	452.16	0.05	0.06
SAM614	Maroon	0.049	15	16.50	23.00	415.27	0.06	0.07
			20	19.00	25.00	490.63	0.06	0.08
			25	21.20	27.50	593.66	0.06	0.09
SAM616	Green	0.055	15	21.50	27.00	572.27	0.06	0.09
			20	24.80	30.00	706.50	0.06	0.10
			25	27.80	31.60	783.87	0.06	0.11
SAM620	Blue	0.065	15	29.20	30.00	706.50	0.07	0.12
			20	33.70	32.20	813.92	0.07	0.14
			25	37.70	34.60	939.77	0.06	0.15
SAM622	Gray	0.071	15	33.80	32.00	803.84	0.07	0.14
			20	39.00	34.00	907.46	0.07	0.16
			25	43.60	35.60	994.88	0.07	0.18
SAM624	Yellow	0.079	15	41.70	32.50	829.16	0.08	0.17
			20	48.10	35.00	961.63	0.08	0.19
			25	53.80	36.80	1,063.08	0.08	0.22
SAM628	Red	0.091	15	56.40	32.00	803.84	0.11	0.23
			20	65.10	34.10	912.81	0.11	0.26
			25	72.80	36.80	1,063.08	0.11	0.29

Micro-Sprinkler IPM system application rates are very low, ranging between .03 to .29 inches per hour on a 20' by 20' grid. This helps ensure maximum crop washing time with minimal run-off. In addition, system pressures between 15 and 25 psi are low, which saves energy.

In contrast, a typical conventional sprinkler system applies .20 to .35 inches per hour\*, and system pressures are relatively high, ranging from 50 to 80 psi.

**As a result, Toro Micro-Sprinkler IPM systems can apply as little as 1/10th the water at 1/5th the pressure to achieve superior results!**

\*Assuming 30' x 40' spacing with 7/64" nozzle or 30' x 30' spacing with 1/8" nozzle at 50 psi.

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