

Sensor Network Configurations.

There are many factors that determine the cost of a wireless system for your operation. The type and number of sensors and nodes you purchase, the layout of your farm, and the number of species and or areas you choose to sense will impact the number and type of sensors and nodes you purchase. Some example starter configurations are listed below. We will cover the potential returns on investment in the next module.

Tables 1 and 2 illustrate some of the possible sensor configurations for different scenarios. Table 1 shows some potential configurations for a “typical” weather station and a propagation house. These are the different sensors and nodes that can be used, along with the information that the sensors would provide. Table 2 shows a number of different sensor configurations that could be used in a variety of ornamental production settings. These tables are meant to give you an idea of what an installation might look like in these different types of settings, and would vary depending on your particular operation.

Table 1. Potential sensor and node configurations for propagation houses and weather stations.









<div>  <div> Common Wireless Sensor Network Configurations By Operation Type </div> </div>							
Operation Type	Monitoring Concentration	Irrigation Automation	Node Model	Sensor Model	Sensor Attributes	Sensors Per Monitored Zone	Nodes Per Monitored Zone
Propagation Houses	Temperature		EM50R Or EM50R (3G)	EC5	Smaller Sensing Area & Reduced Cost (Soil Moisture)	4	2
	Relative Humidity			Or GS1	Increased Durability (soil moisture)		
	Vapor Pressure Deficit			LWS	Leaf Wetness	4	
	Soil Moisture			VP3	Air Temp., Relative Humidity, Vapor Pressure Deficit	2	
Weather Station	Leaf Wetness		EM50R Or EM50R (3G)				1
	Temperature			VP3	Air Temp., Relative Humidity, Vapor Pressure Deficit	1	
	Relative humidity						
	Vapor pressure deficit			PAR	Photosynthetically active radiation	1	
	Photosynthetically active radiation			LWS	Leaf Wetness	1	
	Leaf wetness			Sonic Anemometer	Wind speed & direction	1	
	Wind speed & direction			Rain Gauge	Rain Quantity	1	
	Rain Quantity						
	Grower degree days						

Table 2. Potential sensor and node configurations for a variety of operation types. Configurations are meant to illustrate potential sensor and node combinations, and the information that would be provided.



Common Wireless Sensor Network Configurations By Operation Type

Operation Type	Monitoring Concentration	Irrigation Automation	Node Model	Sensor Model	Sensor Attributes	Sensors Per Monitored Zone	Nodes Per Monitored Zone	
Field Production	Soil Moisture		nM50 Or EM50G	10HS	Large Sensing Volume	5	1	
Nursery (Soil)				GS1	Increased Durability			
Nursery (Pot-In-Pot)				EC5	Smaller Sensing Area & Reduced Cost			
Agronomic								
Orchard								
Field Production	Soil Moisture		Or EM50G	10HS	Large Sensing Volume	5	1	
Nursery (Soil)				GS1	Increased Durability			
Nursery (Pot-In-Pot)			nC24	EC5	Smaller Sensing Area & Reduced Cost		1	
Agronomic								
Orchard								
Container Production	Soil Moisture		nM50 Or EM50G	10HS	Large Sensing Volume	6	2	
Greenhouse	Electrical Conductivity			GS1	Increased Durability			
	Temperature			EC5	Smaller Sensing Area & Reduced Cost			
High Tunnel	Relative Humidity			GS3	Electrical Conductivity, Substrate Temp., Substrate Moisture	2		
	Vapor Pressure Deficit			VP3	Air Temp., Relative Humidity, Vapor Pressure Deficit	2		
Container Production	Soil Moisture		nM50 Or EM50G	10HS	Large Sensing Volume	5	2	
Greenhouse	Electrical Conductivity			GS1	Increased Durability			
	Temperature			EC5	Smaller Sensing Area & Reduced Cost			
High Tunnel	Relative Humidity		nC24	GS3	Electrical Conductivity, Substrate Temp., Substrate Moisture	2	1	
	Vapor Pressure Deficit			VP3	Air Temp., Relative Humidity, Vapor Pressure Deficit	2		
	Irrigation Quantity			Flow Meter	Irrigation Quantity	1		