

Appendix C

Interpretation of Soluble Salt and pH Measurements by Extraction Method

The following information was adapted from “Measuring Soluble Salts and pH with the Pour-Through Method” by John M. Ruter, Nursery Crops Research and Melvin P. Garber, Extension Horticulturist, University of Georgia College of Agricultural and Environmental Sciences Cooperative Extension Service, Horticulture Fact Sheet H-93-015.

The University of Massachusetts Soil and Tissue Testing Laboratory in Amherst uses the saturation media extraction method for soilless growing media. Methods used by growers of container crops on-site are 1:2 dilution method and the Pour-Through method.

Pour-Through Procedure

1. The container to be tested is placed on a pvc ring or other suitable material to elevate the bottom of the container above the collection vessel. The collection vessel should be wide enough to collect all leachate (an 8-inch saucer works well for 1 gallon containers). (See Figure 1.)
2. Distilled water is added to the surface of the container medium such that approximately 50 ml (5 oz) of leachate is accumulated in the collection vessel. Typically, 150 ml (15 oz) of distilled water per 1 gallon container is sufficient for most media. For bedding plants, use 5 to 10 ml per cell. With plug trays, try 200 ml (20 oz) per tray. Five minutes will be sufficient time for leachate to drain from the container medium for collection. Uniform media moisture content is important; therefore, all samples should be collected when the medium is near its maximum water-holding capacity (approximately 2 hours after irrigation). A minimum of three containers from each block of plants should be tested.

Table C-1. Interpretation of soluble salt and pH measurements by extraction method

Method	Soluble salt level	pH	Electrical conductivity (dS/m or mMhos/cm)
Pour-Through	Sensitive crops (liquid feed)	5.2-6.2	0.50-0.75
	Nursery crops (liquid feed)		0.75-1.50
	Nursery crops (controlled-release)		0.20-1.00
Saturated Extract Method* Nursery Crops	Low	5.8-6.8	0.00-0.74
	Acceptable		0.75-1.49
	Optimum		1.50-2.24
	High		2.25-3.49
	Very high		3.50+
Saturated Extract Method* Greenhouse Crops	Low	5.6-5.8	0.00-0.75
	Acceptable		0.75-2.0
	Optimum		2.0-3.5
	High		3.5-5.0
	Very high		5.0+

The ranges of pH and soluble salts levels should be used as guidelines only. Irrigation water should be <0.75 dS/m. The soluble salts level of the water used in the Pour Through procedure should be subtracted from the final leachate value.

*Method used by the University of Massachusetts Soil Testing & Plant Analysis Laboratory.

The ranges of pH and soluble salts levels found in Table C-1 should be used as guidelines only. Factors to be considered include 1) different species have different nutritional requirements, 2) stage of crop growth, 3) time of year, 4) fertilization (liquid feed versus controlled release) and irrigation program, 5) growing medium, and 6) other environmental factors. Media should be

tested at least every two weeks to determine if adequate nutrient levels are being maintained. Since the soluble salt level gives an indication of the concentration of total salts and not individual elements, nursery operators should have individual nutrient concentrations checked every four to six weeks. A growth medium that tests in the low range will generally not have sufficient levels of nutrients to support good growth. Plants on a constant liquid feed program can be grown at levels in the acceptable range for the Pour Thru method. Soluble salt levels of 3.00 dS/m will generally result in decreased plant quality and injury in young plants and seedlings.

Reference:

Ruter J. and M. Garber. *Measuring Soluble Salts and pH with the Pour-Through Method*. University of Georgia College of Agricultural and Environmental Sciences, Cooperative Extension Service Hort Fact Sheet H-93-015.