TABLE 1. KEY BIOLOGICAL WATER QUALITY MEASUREMENTS FOR HORTICULTURE

Biological measurement	Analysis	Significance	Cost	Example sources	Units and target range
Culture plating of plant pathogens	Laboratory	Identifies living pathogens, usually to the genus level.	$50-$100	Various laboratories. For example, *Pythium* and *Phytophthora* at University of Massachusetts, (413)-545-3209; http://extension.umass.edu/agriculture/index.php/services/plant-problem-diagnostics University of Florida Extension Plant Disease Clinic, http://plantpath.ifas.ufl.edu/pdc	Lab-specific. May be presence/absence or quantitative Some plant pathogens are quarantine issues or under regulatory control
Pathogen DNA analysis	Laboratory	DNA scan. Highly specific, but won't differentiate between live and dead organisms	$125-$195	Various labs. University of Guelph Laboratory Services (519) 767-6227; www.guelphlabservices.com	Presence/absence or semi-quantitative
ELISA-based test kits for Pythium and Phytophthora	Onsite	Not species-specific. Some cross-reactivity between Phytophthora species and Pythium species. Does not differentiate between live and dead organisms.	$7-$13 per test	Various suppliers. For example, Immunostrip at www.agdia.com. ALERT-LF at http://plant.neogeneurope.com. Pocket Diagnostic at www.pocketdiagnostic.com.	Presence/absence.
Total density of bacteria and fungi	Laboratory Onsite: Protocols being developed to use 3M Petrifilms for heterotrophic bacteria and yeasts and molds.	Indicator of biological load. May be useful to test biofilm risk, and pre- and post-treatment. Majority of micro-organisms likely to be benign or beneficial.	3M Petrifilms $1-$2 per sample in packs of 25 and up.	Microbiology laboratories 3M Petrifilms: Find online (e.g. www.sciencekit.com) or contact 3M, (800) 515-8114.	More than 10,000 heterotrophic bacteria colony forming units/ml is recommended to avoid clogging of emitters.
Algae	Laboratory (preferred) Onsite: Lamotte Algae kit AWL # 6662.	Clogging, wetting of growing substrate, aesthetic, safety, shore flies	Lamotte kit, about $140	Water testing labs specializing in algae. For example, www.greenwaterlab.com Test kit: www.lamotte.com	Lab-specific. Chlorophyll, or identification and quantification.
Human pathogens (culturing or nucleic acid analysis)	Laboratory (preferred) Onsite: 3M Petrifilm exist for some human pathogens (use as an indicator, not regulatory).	Contamination of water with fecal wastes or other sources of pathogens is health risk with edible crops and drinking water supplies.		Microbiology labs and public health department labs.	Check state health regulations for different water uses.

Bacterial count recommendation from D.H. Rogers, F.R. Lamm and M. Alam. 2003. Subsurface Drip Irrigation Systems Water Quality Assessment Guidelines. Kansas State University Agricultural Experiment Station and Cooperative Extension Service, MF-2575.