

ARKANSAS PRODUCE SAFETY



Microbial Water Quality Profile (MWQP): Alternative Laboratory Methods

The quality of agricultural water is important for all farm activities from planting to postharvest. Water from any source has the potential to contain pathogens that can be easily spread during any stage of these activities, so understanding and managing water quality is a critical step in keeping your produce safe. One pathogen in particular, **generic *E. coli***, is an **established indicator of possible fecal-matter contamination of a water source**.



To comply with the Food Safety Modernization Act Produce Safety Rule (PSR), growers must have their water samples analyzed at labs that use methods approved by the rule. **Water testing laboratories use different methods to test for the presence of generic *E. coli* in water.**

Lab results will be reported as either presence/absence or as a numerical value of generic *E. coli* present in the water sample. **Results reported as presence/absence are only acceptable for water used in harvest and postharvest activities. Results reported as a numerical value are acceptable for these two activities and also for production activities.** If you request a numerical value test, be sure to obtain results as a numerical value rather than a result containing a greater

than sign (>). There are **seven presence/absence methods and nine numerical value methods** that are approved by the PSR which are listed in the following table and found in the [FDA's Equivalent Testing Methodology For Agricultural Water](#).

U of A DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System



**LOCAL, REGIONAL
& SAFE FOODS**



The University of Arkansas System Division of Agriculture offers all its Extension and Research programs and services without regard to race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer. Funding for this publication was made possible, in part, by the Food and Drug Administration through grant PAR-16-137. The views expressed in written materials or publications do not necessarily reflect the official policies of the Department of Health and Human Services; nor does any mention of trade names, commercial practices, or organization imply endorsement by the United States Government.

PRESENCE/ABSENCE METHODS

Testing methods for only harvest and postharvest water

TECTATM EC/TC medium and the TECTATM Instrument: A Presence/Absence Method for the Simultaneous Detection of Total Coliforms and *Escherichia coli* (*E. coli*) in Drinking Water. (2014).

Modified ColitagTM Test Method for the Simultaneous Detection of *E. coli* and other Total Coliforms in Water. ATP D05-0035. (2009).

IDEXX Colilert Test Kit.

IDEXX Colilert-18 Test Kit.

IDEXX Colisure Test Kit.

E*Colite Bag or Vial Test for Total Coliforms and *E. coli* in Potable Water. Charm Sciences, Inc.

101298 ReadyCult Coliforms 100. EMD Millipore (division of Merck KGaA, Darmstadt, Germany).

NUMERICAL VALUE METHODS

Testing methods for production water and harvest and postharvest water

EPA Method 1603: *Escherichia coli* (*E. coli*) in Water by Membrane Filtration Using Modified membrane Thermotolerant *Escherichia coli* Agar (Modified mTEC) (September 2014). U.S. Environmental Protection Agency. EPA-821-R-14-010.

EPA Method 1103.1: *Escherichia coli* (*E. coli*) in Water by Membrane Filtration Using membrane Thermotolerant *Escherichia coli* Agar (mTEC) (March 2010). U.S. Environmental Protection Agency. EPA-821-R-10-002.

EPA Method 1604: Total Coliforms and *Escherichia coli* in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium) (September 2002). U.S. Environmental Protection Agency. EPA-821-R02-024.

Standard Methods 9213 D – Natural Bathing Beaches (2007). In: Standard Methods for the Examination of Water and Wastewater, 22nd Edition (Rice E.W., et al., Ed.), 9-46 – 9-48. Washington, DC: American Public Health Association. (2012).

Standard Methods 9222 B – Standard Total Coliform Membrane Filter Procedure (1997), **followed by 9222 G** – MF Partition Procedures (1997) using NA-MUG media. In: Standard Methods for the Examination of Water and Wastewater, 21st Edition (Eaton A.D., et al., Ed.), 9-60 – 9-65, and 9-70 – 9-71, respectively. Washington, DC: American Public Health Association. (2005).

ASTM D 5392-93 – Standard Test Method for Isolation and Enumeration of *Escherichia coli* in Water by the Two-Step Membrane Filter Procedure. In: Annual Book of ASTM Standards, Volume 11.02. ASTM International. (1996, 1999, 2000).

Hach Method 10029 for Coliforms – Total and *E. coli*, using m-ColiBlue 24 Broth PourRite Ampules.

Standard Methods 9223 B IDEXX Colilert Test Kit with IDEXX Quanti-Tray/2000.

Standard Methods 9223 B IDEXX Colilert-18 Test Kit with IDEXX Quanti-Tray/2000.