Testing Well Water

This fact sheet is part of a series on food safety on the farm for fruit and vegetable growers. Developed by the University of Minnesota On-Farm GAPs Food Safety Team, Annalisa Hultberg and Michele Schermann. Reviewed by Dr. Cindy Tong.

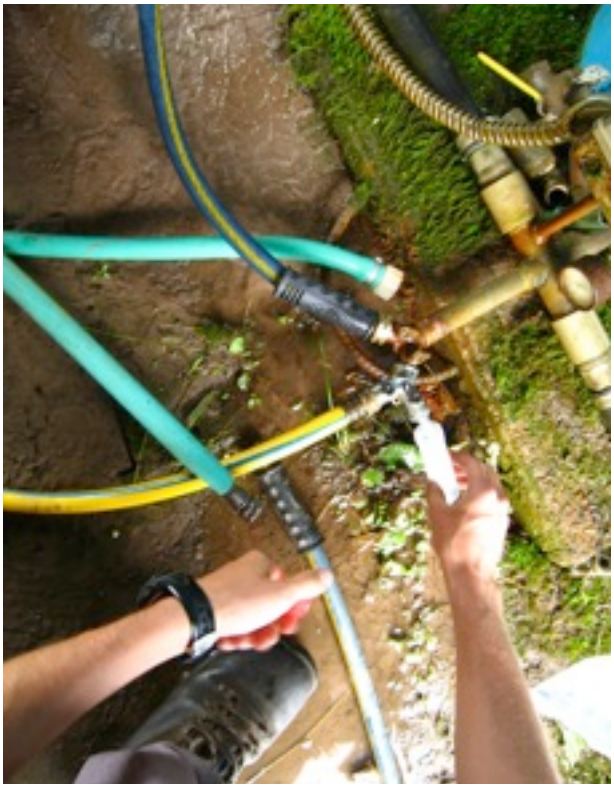
Testing your farm's water for the presence of pathogenic bacteria, nitrate and nitrite is an important part of you farm's Food Safety Plan. Water tests also help you determine a baseline so you know if something has changed in your water. and

Salmonella and *E. coli* are examples of harmful pathogens that can be present in water and cause foodborne illness, making people sick. Water used for handwashing, produce washing and rinsing, frost protection, irrigation, drinking and other uses on the farm should be tested. The frequency of water testing is determined by the source of the water.

Well water should be tested at least 1 time per year by a certified laboratory at the beginning of the season. (For a list of certified labs, go to the MDA web address shown on the reverse side.)

Municipal water does not need to be tested, but a water bill proving that water comes from a municipal source will be needed if your farm is seeking a GAP audit inspection

Surface water should be tested at least 3 times per season. It should be tested at the start of the season, during peak use, and prior to harvest. Regardless of testing, surface water should be used only with great caution, and applied only with drip irrigation.



Let the water run for 3 minutes before taking a sample to ensure you are testing the water from the well.

There are three things that you will need your water tested for: **total coliform bacteria**, **nitrites and nitrates.**

For more information on Water Testing on the Farm

- Bacterial Safety of Well Water, Minnesota Department of Health
- Nitrate in Well Water, Minnesota Department of Health
- Water Quality Testing, University of Vermont Cooperative Extension
- Water Testing for Growers, North Carolina State University Cooperative Extension
- Code of Federal Regulations: Coliform Sampling, Environmental Protection Agency

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How to Collect Water for Testing

- Irrigation water should be collected as close to the source as possible (from the pump or hydrant).
- Water used for handwashing, washing and rinsing produce and drinking should be collected from the tap.
- Call ahead to the lab you will use for the testing. The lab will send you collection bottles or whirly bags (separate ones for coliform bacteria and nitrates/nitrites).
- Follow the directions included with the sample containers.
- Keep the sample cool and return it within 30 hours of taking the sample.
- Labs can be private or county-operated. A complete list of certified laboratories is available from the Minnesota Department of Health http://www.health.state.mn.us/divs/eh/wells/

How to Interpret the Results

Coliform bacteria are everywhere. Water is tested for total generic *E. coli* as an "indicator bacteria" group. Presence of coliforms in well or municipal water typically indicates that the well or distribution system is compromised in some way, and that surface contamination is present in the water. There may be pathogens in the water that can make people sick and it could be a contamination risk when used to irrigate or wash produce. You want your report to show 0 total coliforms, which are often reported as "less than one."

Water containing total coliforms should not be used for drinking or washing or rinsing produce.

Depending on the levels, source and how the water is used, corrective action may be needed, including a disinfection procedure for the well. Retest the water after treatment to ensure that water returns to safe levels.

Nitrites and nitrates are dangerous for infants and pregnant women. The state Health Risk Limit for nitrate is 10 mg/L (10 ppm) of nitrate-nitrogen. Water with greater levels should not be used for drinking, but can be used for washing and rinsing produce. Repairing your well or constructing a new, deeper well often result in a significant reduction in the nitrate level. The lab results are often combined and will say Nitrite+Nitrate. You are looking for results less than 10.

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