

Writing a Water Usage & Quality Risks Policy

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Every GAP certified farm must have a scientifically based policy for water testing that minimizes the risk of causing foodborne illness, yet is cost effective for the grower. In most GAP auditing schemes, however, no guidance is given as to what that scientifically based policy should be.

This guidance document provides a number of scientifically based policies upon which growers can write their water usage policy. It will also give suggested language for each policy that can be included in your GAP manual. Testing the water and interpreting water test results for GAP compliance will be discussed in future episodes.

The main components of a Water Usage and Quality Risks Policy include a list of irrigation water sources and associated water test results, a log of irrigated crops and a quality risk assessment. The first of these, listing irrigation water sources and associated test results, could look something like the clause shown below.

WATER USAGE AND QUALITY RISKS POLICY

The source of irrigation water is documented below and all water sources used in crop production are tested for microbial contamination; see irrigation water reports below.

The major decision growers need to make is what microbial standard they want to use in testing for microbial contamination. Two standards have been validated scientifically and can be cited in the GAP manual. The first of these standards has been proposed in the Leafy Greens Marketing Agreement (LGMA).

LGMA Standard

The LGMA Standard outlines a protocol for testing and analysis as well as a threshold for evaluating water quality. The threshold is equal to or less than 126 Most Probable Number (MPN*) of *E. coli* for one sample or a mean of the previous five samples taken that are less than 235 MPN of *E. coli* with each of the samples not to exceed 576 MPN.

This standard has the advantage of being very flexible in terms of spikes in *E. coli* without a need for radical remediation. If a grower irrigates from surface waters that may fluctuate seasonally with bird migrations or water levels, this standard may be a good choice.

The major obstacle presented with this standard is its complexity. The mean can change with each new sample that is collected, thus the calculated mean over time can fluctuate, sometimes drastically. As well, there are very specific sampling and testing guidelines. In either event, to use this standard for water quality assessment, you will need to specify it in your GAP manual then include a copy of the protocol in

*MPN (most probable number) test is a liquid based test that dilutes the sample down to zero bacteria, repeats the testing many times to obtain a statistical estimate of the number of bacteria in the sample.

your manual's appendix. You can find a copy of the protocol in our show notes, and sample boilerplate language can be found below.

Irrigation water will be tested according to the Leafy Greens Marketing Agreement (LGMA) standard. See the Appendix for a full accounting of the LGMA standard.

State of Vermont Standards

The State of Vermont has outlined a Microbial testing guideline for all agricultural water. The irrigation water standard outlined in the guideline is 77 CFU of generic E. coli per 100 ml.

This standard is straightforward, allowing easy and clear analysis. Unfortunately, the standard set is very low. This choice may not be right to use for those who irrigate with surface water, but might be perfect for municipal and well water users. To use this standard for water quality assessment, you will need to specify it in your GAP manual then include a copy of the guideline in your manual's appendix. You can find a copy of the guideline in our show notes, and sample boilerplate language can be found below.

Irrigation water will be tested according to the State of Vermont guideline. See the Appendix for a full accounting of the State of Vermont Guideline.

As part of your policy, you will need to include a list of crops that get irrigated, the irrigation type used and the acreage of each cropping area. Boilerplate language is below and a sample crop log sheet is included in the show notes.

A log sheet of irrigated crops, irrigation type, and acreage is completed below.

The last part of the Water Usage and Quality Risks Policy is an assessment of the risks. A water quality risks assessment helps you consider all the possible risks to water quality and think about possible changes that may need to be made in the event a risk becomes reality. Your policy needs to contain both a statement that you do an assessment and a checklist of possible risks that you have considered as part of the assessment. These risks are usually unique to the farm operation and thus must be customized for each individual farm. The boilerplate language for the statement can be found below.

If necessary, steps are taken to protect irrigation water from contamination. Each production area has been evaluated in terms of the proximity to surrounding land uses that pose a potential for polluted runoff (livestock production, etc.) and steps have been taken to minimize the risk of contamination of the water source.

The quality risks checklist can be found as a separate document in the show notes. Remember that how or even if a grower irrigates can radically change this section of the GAP manual. Growers need to pay very close attention to keeping this section relevant to their operations.