



Hank Giclas and Sonia Salas
Western Growers
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Dear Hank and Sonia:

In the accompanying document, you will find suggested changes to be made to the LGMA-accepted food safety practices in the area of agricultural water (specifically related to drip and furrow irrigation and application of chemicals). The document includes not only the suggestions, but the reasoning and, where necessary, the scientific background for the changes.

As you know, the LGMA has appointed several subcommittees, including a water subcommittee, to address specific issues related to different sections of the food safety practices. Our goal has been to have these subcommittees consider not only the current standards, but also any relevant research and input from other stakeholders. The water subcommittee has met several times since August of 2019, and has looked at the practices related to water standards required of our members and their growers.

The document that accompanies this letter lays out the work of our water subcommittee. A second page of the spreadsheet includes suggestions for changes to the glossary as well. The specific suggestions have been presented to the full CA LGMA Technical committee, and to the LGMA Board of Directors and provided to the AZ LGMA. While there are many suggestions, the following summarizes the main changes we are suggesting:

New Best Practice Language

- New section for furrow irrigation best practices
- New section for drip irrigation best practices

Enhancements to Sampling Requirements for Systems-Based Water Use

- Added language to allow for sampling at the next irrigation event if an irrigation event doesn't occur within the monthly timeframe. (Excessive rain could cause this.)

Enhancements to Post Harvest Water Section

- Changed title of section so focus is toward on farm water activities. Not cooler or facility water use.
- Simplified requirements language
- Changed language to be similar with other parts of the water section

New Section for Chemical Application Water

- Similar language and requirements as for irrigation water



We are pleased to provide these suggestions, and look forward to discussing them with you as the process proceeds.

Sincerely,

Sharan Lanini
Chair, CA LGMA Technical Committee

Colby Pereira
Vice Chair, CA LGMA Technical Committee

E. Scott Horsfall
CEO

Greg Komar
Technical Director

Subcommittee review and discuss

Line or Section of Matrix	Issue addressed	Previous Language	Rationale	New Proposed Language
474-476	Clarification of sample process	Collect three (3) 100 mL samples no closer than 20 minutes apart. Acceptance Criteria and Data Monitoring Criteria as outlined in Table 2D - Routine Monitoring	Previous Language is too prescriptive	Collect three (3) 100 ml samples from 3 different sprinkler heads. Acceptance Criteria and Data Monitoring Criteria as outlined in Table 2D - Routine Monitoring of Microbial Water Quality must be met.
495	Best Practice Language	No previous language	To add clarity and awareness to emphasize caution with Type B water	Efforts should always be made, when using Type B water, to avoid contact with the edible portion of the crop within 21 days of a scheduled harvest.
497-505		No previous language		Furrow Irrigation Best Management Practices:
	Best Practice Language	No previous language	To add clarity and awareness to emphasize caution with Type B water	1. Agricultural practices, such as irrigation methods, bed configuration, etc., should be implemented in a manner to avoid water from breaching the top of the bed.
	Best Practice Language	No previous language	To add clarity and awareness to emphasize caution with Type B water	2. Agricultural practices, such as equipment movement, irrigation practices, etc., should be monitored at headland and tail ditch locations for damaged beds which may allow water to contact the edible portion of the crop.
	Best Practice Language	No previous language	To add clarity and awareness to emphasize caution with Type B water	3. Coordinate irrigation events with harvest, to the degree possible, to avoid saturation of the field soil to prevent excessive dirt and mud from getting on the edible portion of the crop, harvest tools (i.e. knives, gloves etc.) , and harvest equipment (i.e. machines, belts, trailers etc.) .
507-511		No previous language		Drip Tape Irrigation:
	Best Practice Language	No previous language	To add clarity and awareness to emphasize caution with Type B water	1. Drip tape should be handled, stored, used, and re-used in a manner that prevents damage and contamination to the drip tape.
	Best Practice Language	No previous language	To add clarity and awareness to emphasize caution with Type B water	2. While in use, repairs to drip tape should be completed in a timely manner to prevent water contact with the edible portion of the crop.
Table 2A	Clarification of 35 day sampling requirement	After the first sample is shown to be within acceptance criteria, subsequent samples shall be collected no less frequently than monthly at points of use	To create sampling language based on system approach and allow more flexibility in sampling	After the first sample is shown to be within acceptance criteria, subsequent samples shall be collected no less frequently than monthly (or at the next irrigation event if longer than monthly) at points of use within the distribution system.
Table 2A		Sampling Frequency:		Sampling Frequency:

Table 2A	Clarification of sampling requirement	One sample per agricultural water source shall be collected and tested prior to use if >60 days since last test of the water source. Additional samples shall be collected during use no less than 18 hrs apart and at least monthly during use	To create sampling language based on system approach and allow more flexibility in sampling	One sample, per agricultural water source, shall be collected and tested prior to use if >60 days since last test of the water source. Additional samples shall be collected during use no less than 18 hrs apart and at least monthly (or at the next irrigation event if longer than monthly) during use from points within the delivery system.
Figure 1		Sampling Frequency:		Sampling frequency:
	Clarification of sampling requirement	Sampling Frequency: One sample per water source shall be collected and tested prior to use if >60 days since last test of the water source. Additional samples shall be collected no less than 18 hours apart	To create sampling language based on system approach and allow more flexibility in sampling	Sampling Frequency: For Type B water, one sample per water source shall be collected and tested prior to use if >60 days since last test of the water source. Additional samples shall be collected during use, no less than 18 hours apart and at least monthly (or at the next irrigation event if greater than monthly) during use.
Figure 4	Clarification of sampling requirement	Sample monthly during use and test for generic E. coli and total coliform using a FDA-allowed method.	To create sampling language based on system approach and allow more flexibility in	Sample monthly (or at the next irrigation event if greater than monthly) during use and test for generic E. coli and total coliform using a FDA-allowed method.
Table 2E		Routine Verification of Microbial Water Quality :		Routine Verification of Microbial Water Quality:
Right Column	Clarification of sampling requirement	No less than one (1) sample per month per water distribution system is required under these metrics. If there are multiple potential point-of-use sampling points in a water distribution system, then samples shall be taken from different point-of-use locations each subsequent month	To create sampling language based on system approach and allow more flexibility in sampling	No less than one (1) sample per month (or at the next irrigation event) per water distribution system is required under these metrics. If there are multiple potential point-of-use sampling points in a water distribution system, then samples shall be taken from different point-of-use locations each subsequent sampling event (randomize or rotate sample locations).
Table 2E		Routine Verification Sampling Frequency:		Routine Verification Sampling Frequency:
left column	Clarification of sampling requirement	Additional samples shall be collected no less than 18 hrs. apart and at least monthly during use from points within the	To create sampling language based on system approach and allow more flexibility in	Additional samples shall be collected during use no less than 18 hrs. apart and at least monthly (or at the next irrigation event if greater than monthly) during use from points within the water distribution system.
Table 2G	Table Title is Confusing with Post Harvest off Farm Use	Post-Harvest Direct Product Contact and Food-Contact Surfaces	Clarification that standard relates to on farm water use	Post-Harvest Direct Product Contact and Harvest Food-Contact Surfaces <i>On Farm Practices Only</i>
		Sampling procedure:		Sampling procedure:
Left column of Table 2G	Clarification	100 mL sample collected aseptically at the point of use	To create sampling language based on system approach and allow more flexibility in	Follow Type A Baseline Language and sampling requirements.
		Sampling Frequency:		Sampling Frequency:
Left column of Table 2G	Clarification	One sample per water source shall be collected and tested prior to use if >60 days since last test of the water source.	To create sampling language based on system approach and allow more flexibility in	Follow Type A Baseline Language and sampling requirements.

Left column of Table 2G		Physical/Chemical Testing :		Physical/Chemical Testing :
Left column of Table 2G	Complicated Testing procedures, ORP no longer in use	Target Variable: Water disinfectant (e.g., chlorine or other disinfectant compound, ORP). Multi Pass Water Acceptance Criteria: Chlorine > 1 ppm free chlorine after application and pH 5.5 – 7.5 OR ORP > 650 mV and pH 5.5 – 7.5 Other approved treatments per product	Simplify and create consistency in language and procedures	Follow B to A irrigation water treatment monitoring requirements.
Right column of Table 2G		Single Pass vs. Multiple Pass Systems		Single Pass vs. Multiple Pass Systems
right hand column	Either/or option of testing	Multi-pass use – Water must have non-detectable levels of <i>E. coli</i> and/or sufficient disinfectant to ensure returned water has no detectable <i>E. coli</i> (minimally 1 ppm chlorine).	Both <i>E.coli</i> and breakpoint disinfectant need to be monitored	Multi-pass use – Water must have non-detectable levels of <i>E. coli</i> or sufficient disinfectant to ensure returned water has no detectable <i>E. coli</i>
Right hand Column		Remedial Actions:		Remedial Actions:
	Remedial Actions Requirements	No previous language	Provide language to cover out of compliance water	Develop an SOP that determines what corrective actions will be required when post harvest water does not meet acceptance criteria.
Figure 6		Acceptance Criteria		Acceptance Criteria
	Clarification	Negative or below DL / 100 mL generic <i>E. coli</i> or >1 PPM free chlorine (pH 5.5 - 7.5) or >650 mV ORP (pH 5.5-7.5) after contact. REMOVE--change to no detect for generic	Language Simplification	Non-detect for generic <i>E. coli</i> / 100 mL
		Action Level		Action Level
	Clarification	If water exceeding the acceptance criteria has been used postharvest, it is not appropriate microbial quality for this use. Sample and test product for STEC (including <i>E. coli</i> O157:H7) and Salmonella		If water exceeding the acceptance criteria has been used postharvest, notify the handler of the water issue and determine an appropriate sampling and testing strategy for STEC (including <i>E. coli</i> O157:H7) and Salmonella as described in Appendix C or discard the product affected.
New		No previous language		Water used for aerial chemical applications within 21 days of a scheduled harvest

	Water requirements for overhead chemical applications		Best Practices for overhead chemical applications, clarify requirements	<p>Develop a SOP for all of the overhead chemical application components. The SOP must address items such as:</p> <ul style="list-style-type: none"> • Water used in overhead applications (e.g., pesticide and fertilizer, etc.) within the 21-days-to-harvest window must meet Type A and/or B→A water quality requirements • Holding tanks and equipment-mounted application tanks, manifold and boom lines, and nozzles MUST be regularly inspected and properly maintained and cleaned so they do not pose a contamination risk. • Water treatment chemistry shall be compatible with the agricultural chemicals being applied. • Procedures to control pest access to the equipment (examples may include: avian deterrents, fencing, and rodent monitoring) must be in place. (validation can include: PCA records, label requirements, letter of guarantee) • Procedures to ensure storage of equipment does not pose a contamination risk must be in place. • Establish corrective action procedures for non-compliance scenarios, including: a) treatment failure; b) contaminated source water; c) Pest concerns; d) Chemical incompatibility; e) Equipment sanitation concerns • Document all corrective measures, cleaning activities, and maintenance
				Type A Water:
	Record Keeping clarification		Clarify need for records	Have records that demonstrate the water used for chemical applications meets Type A source water requirements. See Tables 2B and 2C for historical and/or baseline water quality requirements for source water that will be used for overhead applications.
				Type B to A Agricultural Water Treatment
	Clarification		Clarify need for records	<p>Type B water, used for overhead applications within 21 days of scheduled harvest, must be treated. With the start-up of any new treatment process it is important to evaluate all conditions that may affect water treatment efficacy and performance. Examples of parameters that provide valuable information about treatment efficacy in relationship to water quality are:</p> <ul style="list-style-type: none"> o Turbidity o Total suspended solids o pH o Antimicrobial dose o Historical microbial monitoring data
	Clarification		Clarify need for records	<p>Develop a written Standard Operating Procedure (SOP) for each unique application process to treat water that will be used within 21 days of a scheduled harvest. Prior to 21 days-to-scheduled harvest conduct an initial water treatment assessment to establish treatment process parameters that will be monitored to ensure consistent treatment delivery and to demonstrate effectiveness. Repeat this assessment if a material change to your system occurs. Incorporate this assessment's findings into your water treatment SOP.</p> <p>A water treatment SOP should include :</p> <ul style="list-style-type: none"> • Step-by-step instructions to ensure the water treatment is correctly implemented • Location of water sources • Name, and suggested supplies needed • Sanitizer used and quantity used • Critical limits and operational limits • Water sampling location • Corrective actions if critical limits are not met • Required records
	Header			Develop a Baseline for Water Treatment
				Sample Size:

	Clarification		The intent is to show treatment is effective over multiple treatment events and all three (3) samples are not from the same treatment	A minimum of three (3), 100 mL, samples must be taken for each overhead application process (distinct water source, different sanitizer, different size water holding tank, etc) The three (3) samples must be taken from different treated water batches.
				Acceptance criteria (generic E. coli):
	Clarification		clarificaiton	All three (3) samples must be non-detect for generic E. coli
				Ongoing Monitoring:
	Clarification		Clarification	Between microbiological routine testing events records must be kept that verifies that each application event is conducted following the parameters established during the initial setup.
				Routine Testing :
	Clarification		Clarification	A minimum of ONE (1) microbiological sample must be taken each month or at the next application event if no applications occur within the monthly time period.
				Acceptance Criteria :
	Clarification		Clarification	Non-detect for generic E. coli / 100 mL sample
				Corrective Actions:
				Acceptance Criteria
New		No previous language	New language for corrective actions whe chemical application water does not meet requirements.	If microbiological testing shows that the water did not meet generic E. coli acceptance criteria, within 21 days of a scheduled harvest, perform a root cause analysis and correct the concern. The product must be tested for pathogens before harvest if this water was used in aerial application. Follow the product testing requirements outlined in Table 2F
				Monitoring Event
New		No previous language	New language for corrective actions whe chemical application water does not meet requirements.	<p>If monitoring shows that the water treatment parameters are not being met, <i>do not use the water</i> .</p> <ul style="list-style-type: none"> •Perform a corrective action to assure the water treatment is effective before using the water. •Take a microbiological sample to verify that the treatment was effective and have that result as part of the corrective action documentation. •If the verification microbiological sample does not meet acceptance criteria perform a root cause analysis and correct the treatment process. Product must be tested for pathogens before harvesting. •Follow Table 2F for product testing requirements.