

OliveCare® Best Practice

Webinar 3: Table Olives and Olive Paste Production Best Practice

Peter McFarlane

July 13, 2021

This webinar series is part of the Olive levy project OL17006: Extending OliveCare® to foster excellence in production of Australian olives project, funded by Hort Innovation, using the Hort Innovation olive research and development levy, co-investment from the Australian Olive Association and contributions from the Australian Government.



Webinar Overview

- Welcome!
 - ✓ Mute on
 - ✓ Video off
- Table Olives and Olive Paste Production Best Practice with Peter McFarlane
- Use Chat function for questions during the presentation
- A recording of this webinar will be available on the OliveBiz website – password (sent by email) access required
- Feedback on this webinar will be requested by email



Webinar Format

- Format
 - ~30-40 mins presentation
 - Chat questions at the end of the presentation
- Today's topics include:
 - Food safety regulations and table olive production in Australia
 - The Voluntary *Standard for table olives in Australia (12-111)*
 - OliveCare® Product Certification – table olives and olive paste
 - OliveCare® Food Quality Plans – The major risks to product quality
 - OliveCare® Table olive production best practice checklists

Peter McFarlane

- Peter McFarlane - BAgrSc.(Hons), DipEd
 - Australian Olive Association's *OliveCare*® Code of Best Practice Administrator
 - National table Olive Committee Convener
 - National Biosecurity Representative
 - National Agri-Chemical Permits Co-ordinator
 - Consulting to the Australian olive industry since 2008.



Table Olive Production Best Practice



Presented by Peter McFarlane, AOA OliveCare® Administrator

OliveCare® Best Practice Webinar Series: #3 Table Olives / Olive Paste Production Best Practice

OliveCare® Best Practice Webinars

Welcome - this is the third in a series of 3 webinars on the *OliveCare*® Best Practice Program:

- Webinar 1: Grove Management Best Practice
Tuesday 15 June 2021 - 12.00 noon (Adelaide time)
- Webinar 2: EVOO & Flavoured Olive Oil Production Best Practice
Tuesday 29 June 2021 - 12.00 noon (Adelaide time)
- **Webinar 3: Table Olives / Olive Paste Production Best Practice**
Tuesday 13 July 2021 - 12.00 noon (Adelaide time)

Each webinar will guide participants through a selection of the now 180 *OliveCare*® Best Practice Checklist items (Conversations) and introduce other resources that aim to lift grove productivity, achieve product excellence and develop sustainable business practices.



OliveCare® Best Practice Webinars

Through these webinars participants will gain an appreciation of:

- Benefits of membership of the *OliveCare*® Best Practice Program;
- Principles of risk management, and identification of major risks to olive product quality;
- Benefits of having a Hazard Analysis Critical Control Points (HACCP) style food quality plan;
- Application of *OliveCare*® Best Practice Checklists;
- Requirements of Australian Consumer Law, the FSANZ Food Standards Code, and AOA's olive product labelling guidelines for olive oil, flavoured olive oil and table olives;
- Application of the *Australian Standard for olive oil (AS5264-2011)*, & *Voluntary Standard for table olives in Australia (12-111)*;
- Product testing & other compliance requirements for *OliveCare*® certification of olive products.



OliveCare® Regulatory Compliance

AOA product labelling guidelines:

To assist olive producers in meeting labelling regulations, the following AOA product labelling guides for EVOO, Flavoured Olive Oil and Table Olive products are available for download from the AOA Members Lounge:

australianolives.com.au/labelling-information

- *'Australian Product Label Guide: EVOO'* (AOA August 2020).
- *'Australian Product Label Guide: Flavoured Olive Oil'* (AOA August 2020).
- ***'Australian Product Label Guide: Table Olives'* (AOA September 2020).**

OliveCare® strongly encourages olive producers to download these guides and amend their labels where necessary to ensure compliance with Industry Standards, the Food Standards Code and Australian Consumer Law.

OliveCare® Regulatory Compliance

The Australian New Zealand Food Standards Code:

Any business that **processes or packs** olive products in Australia is deemed to be a 'food business'.

All food businesses in Australia are required to comply with the *Australia New Zealand Food Standards Code*, including:

- *Food Safety Standard 3.1.1: Interpretation and Application,*
- *Food Safety Standard 3.2.2: Food Safety Practices and General Requirements, and*
- *Food Safety Standard 3.2.3: Food Premises and Equipment.*

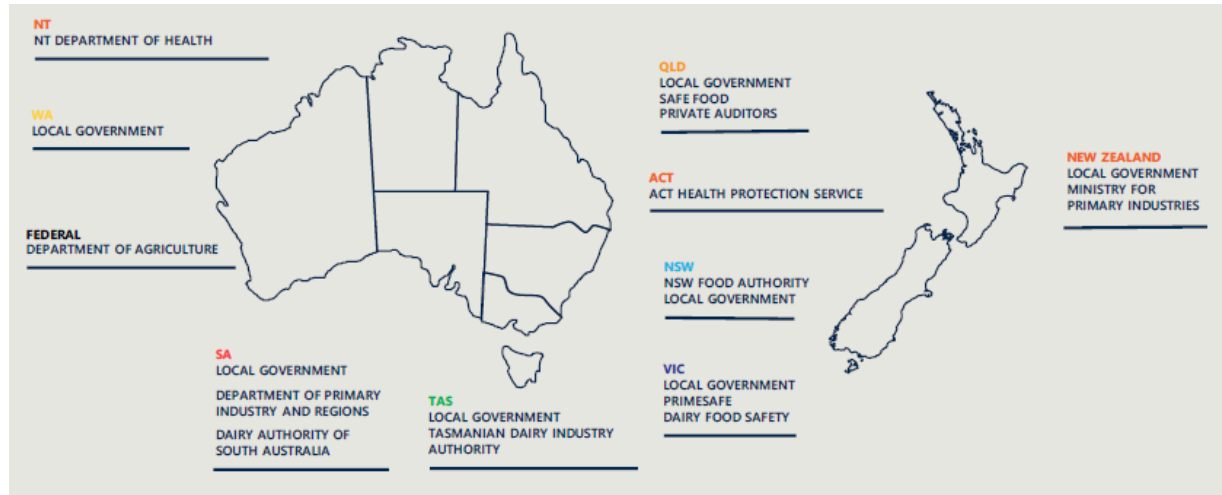
Certain designated high risk industry sectors servicing vulnerable populations, and others in some state jurisdictions may need to comply with:

- *Food Safety Standard 3.2.1: Food Safety Programs.*

OliveCare® Regulatory Compliance

Compliance and Enforcement:

- Food Standards Australia New Zealand (FSANZ) is a statutory authority in the Australian Government Health portfolio. FSANZ develops food standards for Australia and New Zealand.
- The Food Standards Code is enforced by state and territory departments, agencies and local councils in Australia; the Ministry for Primary Industries in New Zealand and the Australian Department of Agriculture and Water Resources for food imported into Australia.



OliveCare® Regulatory Compliance

Compliance and Enforcement (continued):

- This diversity of enforcement agencies inevitably means there are some differences in interpretation, implementation and enforcement of the Food Standards Code in the various state jurisdictions.
- In some state jurisdictions such as **Victoria, NSW and TAS**, all 'food businesses' (including olive processors) are required to have a **food safety program** (except for retail businesses selling low-risk pre-packaged food).
- Other jurisdictions may also require businesses to have HACCP based food safety systems in place.
- **Therefore, all food businesses need to check with their local authority for the food business classification and compliance requirements that apply in the state or territory jurisdiction where the business is located.**

Health Victoria: Food Safety Programs Case Study:

All businesses, organisations, individuals and community groups selling food or drink in Victoria must be classified according to the highest level of risk their food handling activities pose.

The classification system is risk based, so that regulation is matched to the food safety risk that different food business activities pose to public health.

There are 4 classification levels: Class 4 (lowest risk) to Class 1 (highest risk):

- **Class 4:** Including community groups, stallholders, retailers selling only pre-packaged low risk foods
- **Class 3:** Including *oil and fat manufacturers.*
- **Class 2:** Including food businesses *preparing and selling potentially hazardous food containing raw ingredients that has not been involved in a 'kill step'.*
- **Class 1:** Including food business that provide food to vulnerable people such as in hospitals, residential aged care and child care centres.

Health Victoria: Food Safety Programs Case Study (continued):

In Victoria producers and marketers of olive products are classified as either Class 3 (olive oil) or Class 2 (table olives).

Victorian food business compliance checks:

- *Class 1 and 2 food premises must comply with food safety program requirements.*
- *Class 1 and 2 businesses using an independent food safety program must be audited each year.*
- *Class 2 businesses using a department-registered food safety program undergo an assessment of compliance by local council.*
- *Premises that are issued with noncompliance notices may be charged for follow-up checks by local council.*
- *Class 3 and 4 premises are inspected by local environmental health officers.*

The Voluntary Standard for Table Olives in Australia



The Voluntary
Industry Standard
for Table Olives
in Australia



Signatories to the *OliveCare® Code of Best Practice* for Table Olives are required to undertake specified physico-chemical, microbiological testing, and sensory assessment for each product label to establish eligibility to apply the *Certified Australian Table Olives™* Certification Trademark, in accordance with *The Voluntary Industry Standard for Table Olives in Australia (RIRDC 12-111)*, and *OliveCare®* certification requirements.

Download Revised Table Olive Standard at:
<https://australianolives.com.au/table-olive-standard/>



OliveCare® olive product certification

There are more than 140
OliveCare® certified EVOO
brands, 30 flavoured olive oil
and **20 table olive brands**
listed by state of origin on the
'Australian Extra Virgin
Everyday' website

<https://australianextravirgin.com.au/brands/>



Australian Extra Virgin Olive Oil

Producers of Certified Australian EVOO



Elisi Grove

Contact: Imogen Bettio

Phone: 0447 365 876



Producers of Certified Australian EVOO and Table Olives



Esposito Kangaroo Island

Contact: Michael Esposito

Mobile: 0431 018 252

Producers of Certified Australian EVOO and Table Olives

OliveCare® Certified "Freshness Tested"



OliveCare® Certified Table Olives

OliveCare® certification of table olives and olive paste:

The following *Australian Certified Table Olives™* logo is for the exclusive use of *OliveCare®* Signatories, and certifies that a product bearing this logo is compliant with the AOA Labelling Guidelines for table olives and the *Voluntary Standard for table olives in Australia (RIRDC 2012 – Revised January 2020)*.



Ref: Australian Product Label Guide: Table Olives (AOA September 2020):

australianolives.com.au/labelling-information

***OliveCare*® Certified Table Olives**

In addition to product testing, producers of Certified Australian Table Olive brands must complete the following *OliveCare*® best practice declarations:

- [#Declaration of food quality & food safety systems](#)
- [#Declaration of table olive storage conditions](#)
- [#Declaration of product labelling](#)

Additional declarations for brand owners who are also olive producers:

- [#Declaration of agri-chemical use](#)
- [#Declaration of on-farm biosecurity preparedness](#)

OliveCare® Certified Table Olives

Brand owners must meet the following Physico-chemical and microbiological test parameters to be issued with an *OliveCare*® Certified Table Olive compliance certificate:

Table Olives in brine - natural (unpasteurised): Brine tested

- Minimum sodium chloride (NaCl): 6% ($a_w < 0.975$) – For bulk unpasteurised olives / food service recommended NaCl: 8% ($a_w < 0.95$) to 10% ($a_w < 0.94$)
- Maximum pH: 4.3
- Microbiological Criteria - *Escherichia coli*: Not detectable (<3 cfu/g)
- Microbiological Criteria – *Clostridium perfringens*: Not detectable (<10 cfu/g)

Table Olives in brine - treated with sodium hydroxide (NaOH) (unpasteurised): Brine tested

- Minimum sodium chloride (NaCl): 5% ($a_w < 0.97$)
- Maximum pH: 4.0
- Microbiological Criteria - *Escherichia coli*: Not detectable (<3 cfu/g)
- Microbiological Criteria – *Clostridium perfringens*: Not detectable (<10 cfu/g)

Table Olives in brine (Pasteurised): Brine tested

- Maximum pH: 4.3
- Microbiological Criteria - *Escherichia coli*: Not detectable (<3 cfu/g)
- Microbiological Criteria – *Clostridium perfringens*: Not detectable (<10 cfu/g)
- Microbiological Criteria - *Lactobacillus*: Not detectable (<10 cfu/g)

Table Olives not in brine - Dehydrated / Shrivelled (pasteurised or unpasteurised): Olives tested

- Water activity $a_w < 0.95$ (8% NaCl)
- Microbiological Criteria - *Escherichia coli*: Not detectable (<3 cfu/g)
- Microbiological Criteria – *Clostridium perfringens*: Not detectable (<10 cfu/g)

Note: CFU refers to “colony forming units”

Table olive sensory & visual attributes

Table olive negative attributes:

(In accordance with Section 5.1 IOC Method Sensory Analysis of Table Olives COI/OT/MO No 1/Rev.2, November 2011).

Abnormal fermentation: Olfactory sensation perceived directly or retro nasally, characteristic of abnormal fermentations, such as:

- **Putrid:** sensation reminiscent of the odour of decomposing organic matter;
- **Butyric:** sensation reminiscent of butter or cheese;
- **Zapateria:** sensation caused by the combination of volatile fatty acids reminiscent of rotten leather,

Soapy: Olfactory–gustatory sensation reminiscent of soap; (lye treated)

Musty: Olfactory-gustatory sensation perceived directly or retronasally, characteristic of olives attacked by mould;

Rancid: Olfactory sensation perceived directly or retronasally, characteristic of olives that have undergone a process of oxidation;

Cooking effect: Olfactory sensation perceived directly or retro nasally, characteristic of olives that have undergone excessive heating in terms of temperature and/or duration during pasteurisation or sterilisation;

Metallic: Olfactory–gustatory sensation reminiscent of metals;

Earthy: Olfactory-gustatory sensation reminiscent of soil or dust.

OliveCare® Certified Table Olives

Table Olive Sensory Assessment:

- All table olives must pass sensory and visual assessment undertaken by an approved laboratory (or through participation in a recognised table olive competition);
(In accordance with Section 5.1, IOC Method Sensory Analysis of Table Olives COI/OT/MO No 1/Rev.2, November 2011)
- Only product meeting the above physico-chemical, microbiological and sensory specifications may carry the AOA “Certified Australian Table Olives” logo;
- The above testing requirements also apply to the AOA’s Australian International Olive Awards – Table Olive Competition.

OliveCare® certification of Australian table olives



OliveCare® Managing Risk

Producing high quality award winning table olives involves attention to detail from grove practices, through to timely harvest, control of field heat, sorting, best practice table olive primary and secondary processing, storage conditions and product distribution:



OliveCare® Managing Risk

The ‘big 5’ table olive fermentation defects – are you able to identify and control these?

- **Bloater spoilage.** Formation of cracks on the exterior of the olives and internal holes in the flesh. At times, gas is formed that produces blisters below the skin. This is avoided by adjusting the initial pH value.
- **Butyric acid.** This is due to the development of different species of Clostridium in the first phase of fermentation. The butyric acid produced alters the flavour; its formation may be prevented by maintaining a suitable level of salt (never below 5%) and by following good hygienic manufacturing practices.
- **‘Zapatería’ spoilage.** This is caused by the development of propionic bacteria and Clostridium during bulk storage when pH values are not kept below 4.2. A series of volatile compounds are identified in the brine (Montaño et al., 1992), different from normal olives. This may be prevented by inhibiting the development of the responsible microorganisms and thus stabilising pH values during bulk storage.

OliveCare® Managing Risk

The 'big 5' table olive fermentation defects (continued):

Softening. This is due to the excessive development of pectinolytic microorganisms, Bacilli, yeasts and moulds. Their development should be avoided, particularly during bulk storage, by ensuring anaerobic sealing of the fermenters.

Sediment and gas. These occur when the packed product is unstable either because of the development of various bacteria or yeasts where there remains some fermentable matter, or because of the development of propionic bacteria that consume lactic acid. Sediment and gas are prevented by using a well-fermented product and by adjusting a low pH value in the packaging—below 4.3—or by pasteurisation.

Ref: Producing Table Olives (Landlinks Press 2007), by Professor Stan Kailis and David Harris

OliveCare® Managing Risk

The major risks to table olive safety and quality:

*Slide: Professor Stan Kailis
Australian Mediterranean
Olive Research Institute*

Stage	Physical	Chemical	Microbiological
Preprocessing	yes	<ul style="list-style-type: none"> • Non-potable water • Agricultural Chemicals • Contamination 	<ul style="list-style-type: none"> • Natural Biota + Potential Pathogens & spoilage organisms
Processing	yes	<ul style="list-style-type: none"> • Non-potable water • Non-food grade inputs • Poorly controlled processing • Production of biogenic amines and toxins 	<ul style="list-style-type: none"> • Natural biota + Potential pathogens & spoilage organisms • Contamination • Addition of uncontrolled starter cultures • Spoilage
Packaging	yes	<ul style="list-style-type: none"> • Poor cleaning of containers • Inappropriate packaging solutions and methods 	<ul style="list-style-type: none"> • Cloudy brines • Contamination • Unfiltered fermentation brine • Inadequate preservation
Preservation			<ul style="list-style-type: none"> • Inappropriate methods
Storage		Poor storage eg Temp	<ul style="list-style-type: none"> • Overgrowth of microbes

OliveCare® Managing Risk

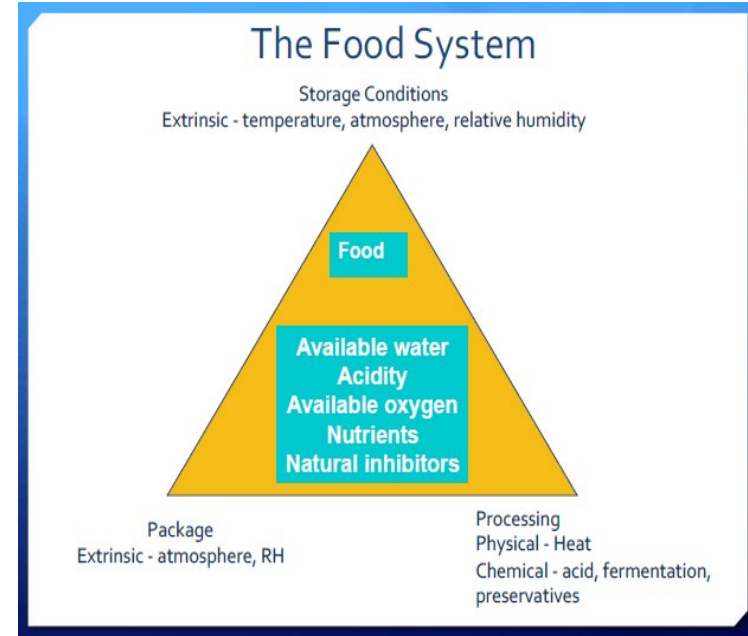
Professor Stan Kailis in his 2018 AOA conference presentation “*Food safety for table olives*”, noted that for production of safe table olives, producers need to diligently attend to the following requirements for **Good Hygiene Practice (GHP)**:

- Ensure good personnel hygiene
- Report – vomiting, diarrhoea, fever, open sores
- Avoid direct contact with olives
- Ensure easily accessible hand washing facilities are available
- Prevent cross contamination
- Use potable water for all cleaning, processing & packaging
- Treat non-potable water – filtration, UV radiation, heat
- Implement a cleaning and sanitizing program - use soaps and detergents for cleaning - use sanitizers and disinfectants for antimicrobial control.

OliveCare® Managing Risk

The key food preservation methods used to control microbial spoilage are:

- high acid (low pH);
- low water activity (a_w) - high salt or sugar, dehydration;
- low temperature (refrigeration);
- modified atmosphere (CO_2 , N_2 , Ar);
- heat and pressure – Pasteurisation / sterilisation;
- preservatives (FSANZ approved);
- reduce contamination risk (GMP).



*Slide: Linda J. Harris,
Department of Food Science and Technology
University of California, C Davis*

OliveCare® Managing Risk

Temperature and Table Olive Processing

- Optimum for fermentation 15 - 30°C
 - use a digital thermometer (not mercury)
- **High temperatures**
 - Can lead to anomalous fermentation
 - Heat drying of olives - 50°C (prolonged high temperatures can cook olives)
 - Pasteurisation (Approx 80°C) - kills most microorganisms
 - Steam sterilization (121°C) – destroys microorganisms and spores

• Low temperatures

- Retards activity of most microorganisms but not *Listeria monocytogenes*.
- Refrigeration increases shelf life.
- Slows olive processing activity.
- Pathogenic and non pathogenic bacteria are mesophilic (prefer moderate temperatures) with a maximum temperature tolerance of 35-50°C.
- Spore forming bacteria from soil and water are thermophilic (tolerate heat) with a maximum temperature tolerance of 70-90°C.

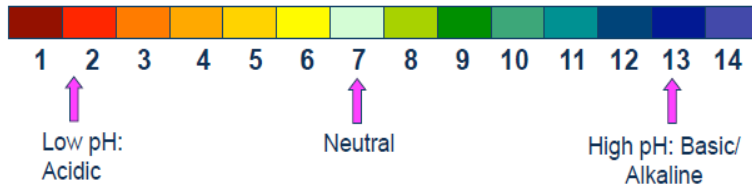
Slide: Professor Stan Kailis

Australian Mediterranean Olive Research Institute

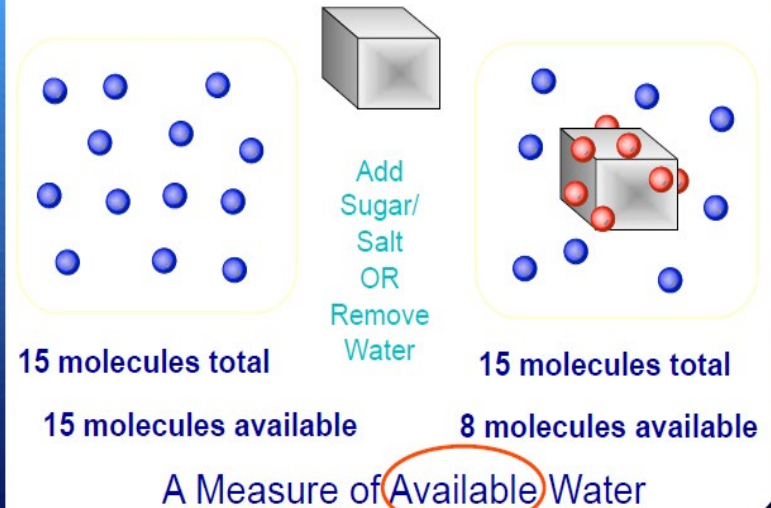
OliveCare® Managing Risk

What is pH?

- pH is a measure of acidity
- $\text{pH} = -\log [\text{H}^+ \text{ ions}]$
- Scale ranges from 0 to 14



Growth Factors - Water Activity (a_w)



Slides: Linda J. Harris, Department of Food Science and Technology, University of California, C Davis

OliveCare® Managing Risk

Water activity (a_w):

- Is a ratio of vapour pressures and thus has no units.
- It ranges from 0.0 a_w (bone dry) to 1.0 a_w (pure water).
- The relationship between %NaCl and water activity (a_w) is set out in the following table (the higher the salt levels, the lower the a_w):

NaCl (g)	Water (g)	% NaCl	Aw
0.9	99.1	0.9	0.995
1.7	98.3	1.7	0.99
3.5	96.5	3.5	0.98
7.0	93.0	7.0	0.96
10.0	90.0	10.0	0.94
13.0	87.0	13.0	0.92
16.0	84.0	16.0	0.90
22.0	78.0	22.0	0.86

OliveCare® Managing Risk

Water Activity (a_w)



- Most foods greater than 0.95 allow microorganisms to grow
- *C. botulinum* prevented from growing
 - ✓ a_w less than 0.93
- All pathogens inhibited
 - ✓ a_w less than or equal to 0.85

Salt and a_w



10% salt is a water activity of about 0.93.

Slides: Linda J. Harris, Department of Food Science and Technology, University of California, C Davis

OliveCare® Managing Risk

It is safe to add olive oil to naturally fermented table olive products?

- ***Clostridium botulinum*** is an anaerobic bacterium that exists as a vegetative cell or as dormant spores. Whereas the vegetative form is readily killed by heat >60 degrees C, the spores require temperatures >100 degrees C and a longer duration of heating to destroy.
- The vegetative form of the bacterium produces a neurotoxin that causes botulism a life threatening disease.
- Botulism is implicated with poorly processed foods with contamination by soil (or seafood) plus low acid (high pH), low salt and anaerobic (low oxygen) storage conditions.
- AOA now includes testing for *Clostridium perfringens*, as anaerobic indicator microbe, and to collect data to demonstrate the food safety of Australian table olives.

OliveCare® Managing Risk

- Industry advice is that providing table olive brine is stabilised at maximum pH of 4.3 and minimum Sodium Chloride of 6.0%, the olives will be safe irrespective of whether they are subsequently packaged in an aerobic or anaerobic environment (eg pickled olives in brine with a covering of olive oil).
- According to Australian table olive industry expert Professor Stan Kailis:
“Kalamata Style olives have been traditionally packed with a small amount of olive oil and I have not come across any reports on botulism. Considering the volume of Kalamata olives sold around the world any problems would have been identified.”
- The NSW Food Authority previously raised concerns about the food safety of table olives packaged under oil. Based on the following advice the authority has undertaken to prepare an internal guidance document for NSWFA inspectors and local government health officers to clarify the matter in accordance with the above understanding.

OliveCare® 180 Best Practice Checklists

Grove Establishment (8 items) - for those establishing a new grove or replanting.

Biosecurity (20 items) - it pays to be prepared;

Enterprise Sustainability (12 items) - including managing enterprise risk and benchmarking grove productivity to improve enterprise profitability;

Regulatory Compliance (19 items) - be a responsible business;

Environmental & Community Responsibility (13 items) - build a sustainable future;

Grove Management (30 items) - how to be a leading olive producer;

Integrated Pest and Disease Management (IPDM) (23 items) – achieve effective and responsible use of agri-chemicals;

Processing (26 items) – including EVOO and table olive production - understanding essential elements of olive processing;

Product Quality and Storage (13 items) - including EVOO, flavoured olive oil and table olives;

Product Packaging, Labelling & Distribution (16 items) – develop standard operating procedures (SOPs) for finished product packaging and distribution.

OliveCare® Best Practice Checklists

Processing - Table Olive Production

- ☐ Undertake AOA best practice table olive processing training – Linda Costa workshops
- ☐ Manage ‘field heat’ - take care with storage of olive fruit in bins from harvest to processing
- ☐ Compliance with FSANZ and Local Government requirements for processing facilities
- ☐ Compliance with the Voluntary Standard for Table Olives in Australia (RIRDC 2012)
- ☐ Purchasing olive fruit for processing – questions to ask your supplier
- ☐ Only process sound fruit, and recognise table olive defects and their causes
- ☐ Understand table olive processing methods and inherent risks to food safety and quality
- ☐ Document table olive primary and secondary processing methods
- ☐ Implement Good Manufacturing Practice (GMP)
- ☐ Use only food grade equipment and materials
- ☐ Implement Good Hygiene Practice (GHP) and understand food safety considerations

***OliveCare*® Food Quality/Safety Plan**

In order to comply with *Olivecare*® Code of Best Practice certification, it is a requirement that each Signatory have a 'Food Quality Plan' for their enterprise, which may be adapted from the templates provided.

To make things simpler for olive producers, *OliveCare*® has prepared comprehensive **HACCP (Hazard Analysis Critical Control Points)** Style Food Quality Plan templates for Australian olive products.

These templates are available for download from the *OliveCare*® Members Page on the AOA website:

- [Extra Virgin Olive Oil \(EVOO\) & flavoured olive oil](#)
- [Table olives and olive paste](#)

Both templates cover the complete supply chain and have a focus on product quality, meeting the needs of olive growers / processors / bottlers / distributors, whilst remaining consistent with HACCP food safety system requirements.

OliveCare® Food Quality/Safety Plan

The **OliveCare® Food Quality Plan** template is based on the 12 step methodology of HACCP, with one crucial difference - whilst HACCP only concerns itself with food safety and makes no mention of food quality; this simplified 8 step *OliveCare®* template is also concerned with product quality and enterprise productivity.

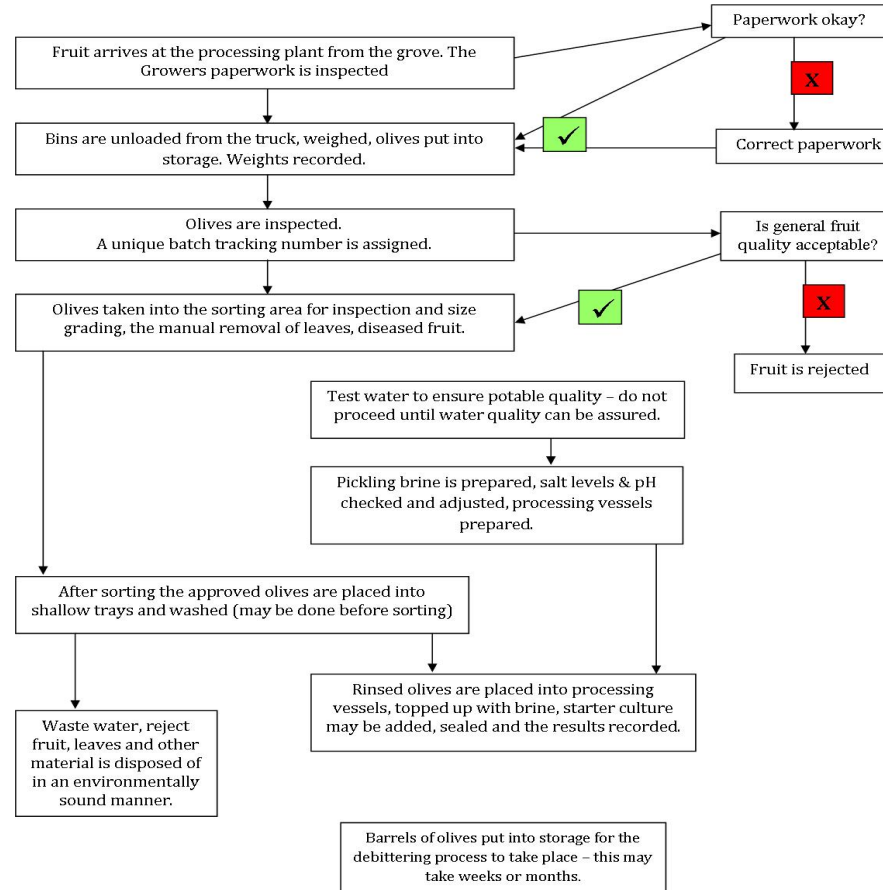
The Eight Steps of <i>OliveCare®</i> HACCP	
Step 1	Assemble a team
Step 2	Describe the product and its use
Step 3	Define the processes to be used
Step 4	Construct a flow-chart and confirm the viability of the plan
Step 5	Conduct a hazard analysis
Step 6	Determine Critical Control Points (CCPs) and their limits
Step 7	Establish monitoring systems, verification procedures and corrective actions
Step 8	Establish documentation and record keeping

OliveCare® Food Safety/Quality Plan

Section 3: Primary Processing – Natural Olives Major Steps

1	Receival and unloading of fruit at the processing plant
2	Recording of deliveries, batch tracking systems
3	Ensure potable water supply
4	Preparation of pickling brine
5	Preparation of processing vessels
6	Sorting of olives
7	Washing of olives
8	The pickling process
9	Monitoring post primary production

OliveCare® Food Safety/Quality Plan



HACCP Step 4 - Flow Chart for Section 3 – Table Olive Processing Natural Olives

OliveCare® Food Quality Plan

Step 5: Conduct a hazard analysis

The following is a standard HACCP formula to examine each step for potential food safety hazards from chemical, physical or biological contaminants, and environmental hazards.

Various food safety hazard analysis tables have also been developed throughout the templates.

For each step in your process, you will need to identify and consider each of the types of hazard:

OliveCare® Food Quality Plan

The following tables list steps in the process outlined in the earlier flow chart. In your plan you will need to list any potential hazards relating to each step, then use the formula for assessing the risk in your particular situation.

The column headings, and how you use them, are detailed below:

L = Likelihood: The team assesses the likelihood that the potential may occur on a scale of 1 (unlikely) to 5 (very likely)

S = Severity: The team assesses the impact of the hazard on food safety or food quality on a scale of 1 (insignificant) to 5 (catastrophic)

R = Risk: Multiply $L \times S$ to give a Risk Factor. A Risk Factor of 8 or over is **Significant**; a Risk Factor of 15 or over is **High**.

C = Consequence: Control measures must be applied to all significant or higher risks.

CP = Control Point (action needs to be taken)

CCP = Critical Control Point (tests need to be done to verify that there is no hazard)

QCP = Quality Control Point (potential to impact on product quality)

OliveCare® Food Quality Plan

Step 6 – Determine Critical Control Points (CCPs)

Hazard Analysis Methodology:

The level of an identified risk / hazard is based on a combination of the determined **consequence** and **likelihood** of the risk event occurring.

The following is an example of a simple **risk level matrix**:

RISK OUTCOME					
Low					
Moderate					
Significant					
High					
Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
	1	2	3	4	5
Almost Certain 5	5	10	15	20	25
Likely 4	4	8	12	16	20
Possible 3	3	6	9	12	15
Unlikely 2	2	4	6	8	10
Rare 1	1	2	3	4	5

OliveCare® Food Safety/Quality Plan

Step 6 – Document Control Measures (continued):

POTENTIAL HAZARD	L	S	R	C	CONTROL MEASURE	CP CCP QCP
MAJOR STEP: WATER SUPPLY						
Biological: chance of microbiological spoilage due to organisms in non-potable water.	1	4	4	M	Use potable water.	CP
Physical: no food safety issues.						
Chemical: chance of introducing or spreading contaminants in the washing water.	1	4	4	M	Use potable water.	CP
MAJOR STEP: PREPARATION OF BRINE						
Biological: chance of contamination from non-potable water.	1	4	4	M	Always use potable water.	CP
Chemical: chance of contamination from cleaning chemicals, salt and acidifying agents, non-food grade equipment.	1	4	4	M	Rinse thoroughly and sanitise before use Purchase only from approved suppliers. <u>9.2 Approved supplier program</u>	CP
Physical: change of material falling into the brine solution.	1	4	4	M	Ensure nothing falls in, storage vessel is kept covered.	CP

OliveCare® Food Safety/Quality Plan

Step	Hazard	Control Measure	Monitoring Procedures	Critical Limits	Corrective Action	Records
Arrival of fruit at the processing plant, unloading & storage.	Vermin or bird droppings, chemicals or other foreign material in with the olives	Inspect the bins of olives on arrival	<u>What:</u> condition of the fruit <u>How:</u> manual inspection <u>When:</u> during unloading the bins from the truck <u>Who:</u> processing plant supervisor	Presence of significant amounts of foreign material, off smells from chemicals or fuel	Reject any batches deemed to be over acceptable limits.	9.7 Olive Delivery Record
Record deliveries and assign batch codes.	None	N/A	N/A	N/A	N/A	9.7 Olive Delivery Record
Washing and processing water supply	Contaminated water	Use only potable water	<u>What:</u> check water quality <u>How:</u> samples sent for inspection <u>When:</u> before the start of the processing season <u>Who:</u> processing plant supervisor	Pre-determined levels of micro-biological contamination exceeded	Do not process until water of an acceptable standard is available	NATA lab tests
Preparation of brine	Contamination by yeast, spores, non-potable water	Clean and sterilize all equipment and materials before use	<u>What:</u> check water, salt <u>How:</u> manual inspection <u>When:</u> before mixing brine <u>Who:</u> plant operator	Discoloured salt, cloudy acids	Discard any salt or acid that is not sound	9.6 Daily Cleaning Checklist

Hazard Management Table – Processing Facility

Table Olive Production References:

The following references available for download from the AOA website will assist operators in designing and implementing a Food Quality & Food Safety Plan for table olive production and processing:

- *The Voluntary Standard for Table Olives in Australia* (RIRDC Publication 12-111, October 2012-Revised January 2020)
- *'Australian Product Label Guide: Table Olives'* (AOA August 2020).
- *'Table Olive Production Manual'* (RIRDC Publication 12-100, October 2012 – Revised November 2020).
- *'Olive Growing'* manual (*El Cultivo Del Olivo*) Ch 18 'Processing Olives' (RIRDC Publication 09-067, Oct 2010).
- *Hunter Olive Handbook Hunter Olive Association 2018 (e-book)* - purchase on-line from the Hunter Olive Association
- *'Organic Olive Production Manual'* by Paul Vossen, (*University of California 2007*) available for purchase through various on-line booksellers (approx \$20)
- *Establishing Protocols and Guidelines for Table Olives processing in Australia (RIRDC 2004)*, and a companion publication – *Producing Table Olives* (Landlinks Press 2007), by Professor Stan Kailis and David Harris provide Australian olive growers and processors with internationally based guidelines for ensuring the quality and safety of processed table olives
- *Olives and Olive Oil in Health and Disease Prevention, Second Edition (Academic Press 2020): Chapter 2:* Naturally processed table olives, their preservation and uses by Manuel Brenes and Stanley George Kailis.
- *Nutritional and Sensory Quality of Table Olives* by Barbara Lanza (*IntechOpen July 2012*)
- *Australian Table Olives – Industry Snapshot (AOA 2020)*

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LEVEL 1 Fees	Licensing fees for 10,000 litres (or less) of OLIVE OIL products
\$105 ex GST	Licensing fees for 10,000 kilograms (or less) of TABLE OLIVE products
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Thank You !



Please complete the post webinar participant survey that will be sent to you.

This project is funded by Hort Innovation, using the Hort Innovation olive research and development levy, co-investment from the Australian Olive Association and contributions from the Australian Government.