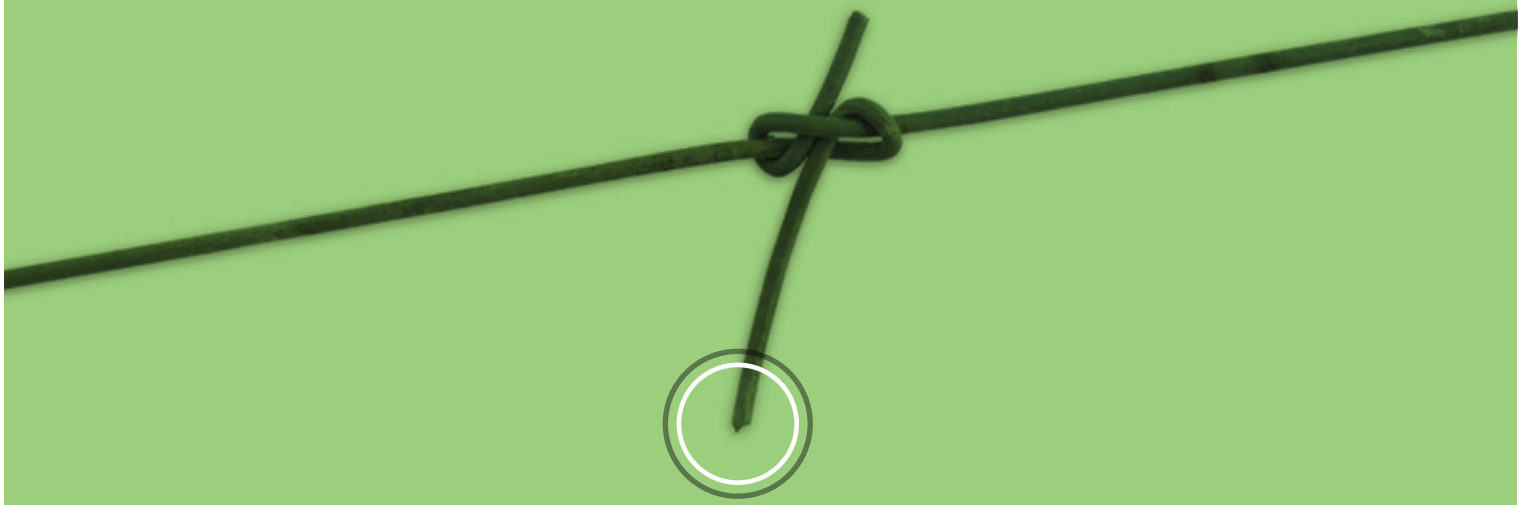
BEST PRACTICE GUIDELINES

for WORKPLACE SAFETY

PROTECTION FROM EYE INJURY IN A KIWIFRUIT ORCHARD



NEW ZEALAND Kiwifruit Growers

BACKGROUND

In 2008 an orchard worker accidentally cut through a vine causing a remnant wire that was under tension to flick into his eye resulting in blindness. In addition to this incident, ACC have recorded a slight increase in eye injuries in the Kiwifruit sector in the Bay of Plenty.

The level of claims is similar to those received within the Viticulture sector, but significantly higher than the level of injury being reported in the Arboriculture and Fencing sectors *(refer Table 1)*.

Table 1 Number of ACC Claims per year for Primary Industry Sectors.

YEAR	Kiwifruit (Bay of Plenty)	Viticulture (Marlborough)	Arboriculture - Forestry and Logging (Bay of Plenty)	Fencing (Waikato)
2005/06	19	14	8	3
2006/07	23	22	2	3
2007/08	26	27	5	3

(Source: Patricia Heydon ACC)

All these cases required medical attention for the injuries. Some of these had the potential of very serious consequences. In response to the 2008 incident and the increasing claims, New Zealand Kiwifruit Growers, Accident Compensation Corporation and OPAC convened a project to identify the level of risk that is present in kiwifruit orchards, with the aim of developing best practice guidelines to eliminate, isolate or minimise the risk of eye injury occurring on kiwifruit orchards.

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WHO HAS RESPONSIBILITY UNDER THE HEALTH AND SAFETY ACT 1992?

The Orchard Owner

Under section 16 of the health and safety act the orchard owner is in control of the place of work and must take all practicable steps to ensure that the orchard is safe to work in for employee's, contractors or employees of contractors.

Before work is undertaken in the orchard the owner must inspect the orchard and if hazards exist they must be eliminated, isolated or minimised before work starts. All hazards are to be notified to anyone entering the orchard.

The Employer

To comply with the NZ Health and Safety in Employment Act 1992 (sections 6 to 15) employers are required to take all practical steps to:

- Provide and maintain a safe working environment.
- Include employees in the development of health and safety procedures.
- Identify hazards and take practical steps to control significant hazards.
- Provide and maintain facilities for the health and safety of employees.
- Ensure plant and equipment is safe.
- Ensure any process employees are involved in will not impact adversely on their health or safety.
- Provide employees with information on workplace hazards and ensure that employees are trained and supervised. This information shall be in a form and manner that the employee is able to understand.
- Record and investigate workplace accidents.
- Develop procedures to deal with emergencies.

In practice, this means before putting employees into an orchard, the employer must:

(a) Inspect the orchard to determine if hazards exist.
(b) Systematically identify existing and new hazards.
(c) Determine whether the hazards are significant *(could they cause serious harm)*.
(d) Eliminate / Isolate / Minimise the hazards.

Effectively this means if there is any risk of serious harm the employer is obliged to supply and enforce the use of Personal Protective clothing and Equipment (PPE) – for example eye protection.

If an employee is seriously harmed (eye injury) and one or more of the above has not been done the employer has not taken 'all practicable steps'.

It is worth noting that employees also have a duty to take 'all practicable steps' for their own safety (including using PPE provided) and that they also have a right to refuse to do dangerous work.

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WHAT ARE THE RISKS

What are the likely risks to cause eye injury injury in the Orchard?

To identify what risks were present in an orchard and how often they occurred, a detailed survey was completed across 5232 bays of kiwifruit representing 65 hectares of Green and Gold orchards in the Opotiki district. The survey covered orchards only recently planted through to those over 25 years old.

There were a number of issues identified on the orchards that pose a risk to a workers' eye safety, if they were not wearing safety glasses and came into contact with them. While each orchard surveyed had at least one of the issues outlined below, the number of risks found on the individual orchards ranged from as little as 1% of orchard bays with a problem, to 18% of orchard bays having problems present.

Examples of the main risks to eye injury on a Kiwifruit Orchard.

1. Protruding wires

Of the potential risks found, 25% were protruding wires in orchards. The problem was not isolated to any specific variety or age of orchard. It is a direct reflection of the quality of workmanship during installation and maintenance on the orchard canopy. All of the examples shown above could result in serious eye injury to a worker if they were to come into contact with the wire while working in the orchard.

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RECOMMENDED BEST PRACTICE

Orchards that have used 2.5mm gauge wire had a higher incidence of these protruding wires as a result of wires snapping under fruit load.

Fortunately all of these risks can be removed from the orchard with routine maintenance.

Recommended Best Practice

- Remove all loose wires in the end assembly areas and ensure the ends of wires are cut to less than 1 cm in length.
- Assess orchards where lower gauge wire has been used to ensure any snapped wires are adequately maintained.

2. Old leader wires protruding

Where the central leader wraps itself around the leader wire, the wire eventually snaps and needs to be replaced. The wire left in the vine needs to be cut back flush with the vine to prevent injury to workers.

Of the risks found, 20% were attributed to a protruding leader wire.

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RECOMMENDED BEST PRACTICE

Recommended Best Practice

- All wires protruding from the leader of the vine should be cut off flush to prevent injury.

3. Excess tail on crimps, figure 8 knots and tie downs

Where wires are joined or tied off to posts, the end of the wire was often found to protrude downwards in to the row where orchard workers were likely to come into contact with the wire.

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RECOMMENDED BEST PRACTICE

Recommended Best Practice

- The end of all ties should be cut as flush as possible to prevent injury.

Below are examples of acceptable wire joining knots and crimps.

End assembly wires should be tied well with the end of the wire flush with the knot as shown above.

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WHERE ARE THE PROBLEM AREAS

The survey of the orchards has found that 95% of the problems described can be found in the first five rows and last five rows within an orchard block.

This makes it an easier task to identify where risks might be present on an orchard and fix the problems.

Recommended Best Practice

- To categorise the risk on any orchard it is recommended that the first five and last five rows in each block are checked to see what maintenance is needed to remove the risk of eye injury occurring within that block.
- Where problems are found it is recommended these are repaired by experienced wire installers with the skills to correctly tie and install knots and crimps respectively.
- The checks should be completed in autumn once the leaf canopy has gone and repairs completed before winter pruning.

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RECOMMENDED PROCEDURE

Wire Hazard Analysis – Prevention of eye Injury.

Identify and Assess Hazard – Significant hazards to be Eliminated – Isolated – Minimised.

Identifying and assessing the hazard – *Process*

Category (a) and (b) above
Eye protection always compulsory as hazard is present and cannot be eliminated for this work.

(c), (d) and (e)
Undertake competent and comprehensive assessment of the orchard particularly first and last five bays.

If hazard present –

Eliminate
– Conduct wire maintenance program to eliminate all loose wire ends.

Isolate
– Not a practical option.

Minimise
– Re-assess orchard to check loose wires removed – eye protection recommended (not compulsory).

NOTE:
If elimination incomplete or not undertaken – Eye protection is compulsory. In this situation the employer has a duty under Section 10 (2) (b) to supply eye protection and to enforce usage. Note that under Section 10 (3) (a) and (b) the payment of an allowance to employees to provide their own eye protection or requiring an employee to provide their own does not comply with the Health and Safety in Employment Act 1992.

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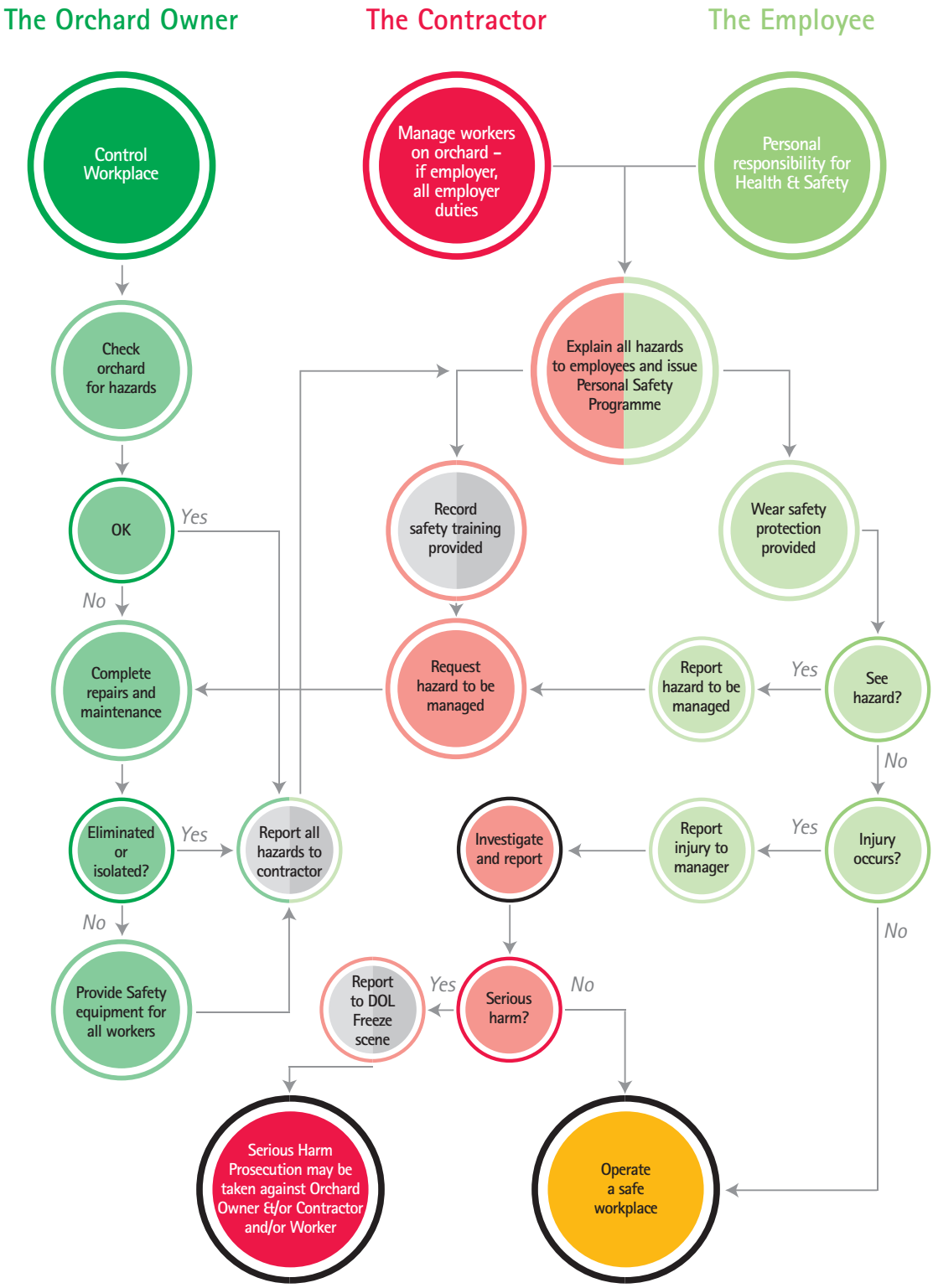
RESPONSIBILITIES

Responsibilities for workplace safety on a kiwifruit orchard.



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PREFERRED SAFETY GLASSES

Safety glasses are worn by workers to prevent debris getting into their eyes but often the glasses are discarded due to the lenses fogging up.
The following eyewear has been tested by kiwifruit orchard workers and recommended as suitable options to provide adequate eye protection while they carry out their work.

The rating system used is: 1 = not suited to orchard work with 10 = excellent for orchard work.

	Model	RRP Gst incl	Eye Protection	Anti fog	Durability	Clarity of vision	Comfort	Comments
A	**Prosafe Antifog** 403328	$19.61	9	8.5	8	9	8.5	Fogs when working in hot conditions but good in cool climate. Tinted lens is useful.
B	**Uvex Cybric** 500333	$21.31	8	9	8	6.5	8	
C	**Bolle Blade** 400050	$19.03	9.5	10	8.5	8	10	Good glasses to wear and comfortable.
D	**Bolle Hurricane** 501069	$27.53	9.5	9.5	9.5	9.5	9	Very comfortable, could have lighter tint. Need to take care not to scratch them.
E	**Crews Smoke Checkmate**	$9.75	8	8	8	9.5	9.5	Light to wear, comfortable, good level of tint. Need to take care not to scratch.
F	**Protector** 402540	$6.70	7.5	6.5	7	7	8	
G	**Prosafe** 403328	$19.27	8	9.5	7.5	7	7.5	Fog up easily, comfortable, could have darker tint.
H	**Prosafe** 404044	$12.80	7	9	7.5	7	7	
I	**Prosafe** 404046	$21.94	8.5	9	7.5	6.5	6.5	
J	**Visor Browguard**	$50.62	8	6	6	9	6	Too bulky and impairs your vision.
K	**Green mesh visor**	$35.95	7.5	N/A	8.5	6.5	8.5	Dust enters the mesh but very comfortable to wear.
L	**Orange mesh glasses**	$42.50	5	N/A	8.5	5.5	8.5	Vision is blurred causes eye strain as you look through the mesh.

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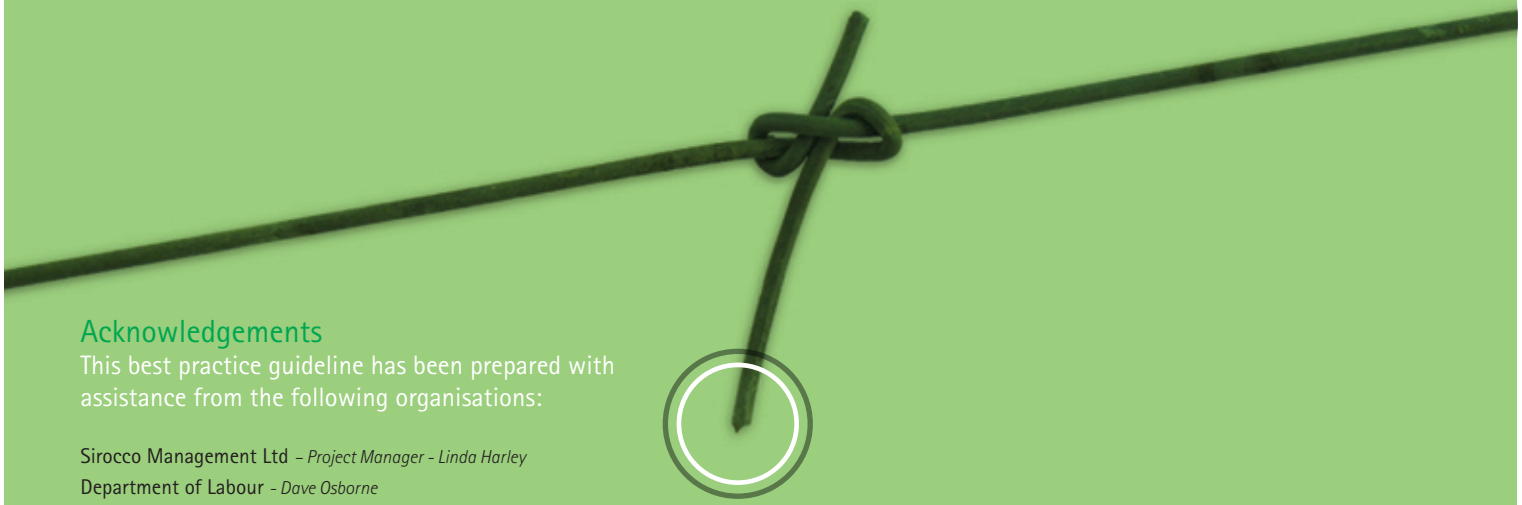

Acknowledgements

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