














Horticulture Bushfire Toolkit



Contents

	Emergency Contacts	3
	Know Your Fire Danger Ratings	4
	Annual Bushfire Resilience Checklist	5
	Bushfire Survival Plan	10
	Pre High-risk Bushfire Checklist	14
	Extreme/Catastrophic Bushfire Warning Issued	15
	Emergency Kit Checklist	16
	Recovery Contacts List	17
	Post Bushfire Checklist	18
	Case Study in Central Queensland	24
	Dealing with Stress	28



Emergency contacts



PHONE LIST

Emergency	000
SES	132 500
Local Police Station	
Ergon - emergency	13 16 70
Ergon - power outage	13 22 96
Local Disaster Coordination Centre	
Local Regional Council	
Telstra	13 22 00
24 hour Statewide Road Report	13 19 40
Australian Red Cross	1800 733 276

TUNE IN

Local ABC Radio
Community Two-Way Emergency Channel

OTHER

Neighbours' contact details

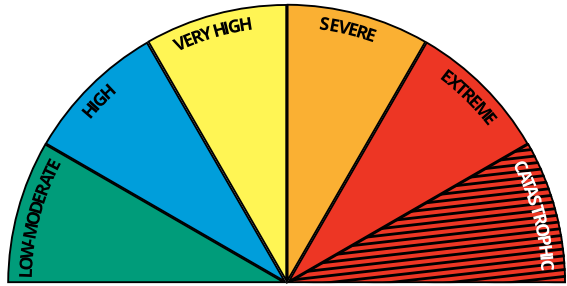
ONLINE

Weather	www.bom.gov.au/australia/meteye/
Traffic	qldtraffic.qld.gov.au/
QFF Farmer Disaster Support	www.farmerdisastersupport.org.au
Queensland Government Get Ready	getready.qld.gov.au
Queensland Health & Safety	https://bit.ly/worksafeqld-bushfire-smoke https://bit.ly/worksafeqld-bushfire



Know your Fire Danger Ratings

The Fire Danger Rating (FDR) is a tool based on forecast weather conditions to determine a risk rating each day. The FDR should act as your first trigger for action. The higher the rating, the higher the risk of bushfire, and the need for you to act.



On days when the fire danger is lower than extreme, your decision to leave or stay will be based on your Bushfire Survival Plan and how prepared you and your home are.

Keep up to date with the daily FDR by visiting the QFES website at www.qfes.qld.gov.au

CATASTROPHIC

EXTREME

Leaving is the only option for your survival. Fires may be uncontrollable, unpredictable and fast-moving. People may be injured and many homes and businesses could be destroyed.

SEVERE

VERY HIGH

Use your home as a place of safety only if it is well-prepared and well-constructed. During a fire, there may be injuries, and some homes or businesses may be damaged or destroyed.

HIGH

LOW-MODERATE

You should know where to get more information and monitor the situation for any changes. Conditions can change fast, so be prepared.

Annual Bushfire Resilience Checklist

To be completed/checked annually

- **House or lot number** displayed prominently in case it is required in an emergency
- **Adequate access** for fire trucks; 4 metres wide by 4 metres high and a turn-around area is needed
- Identified at least **one secondary escape route**
- Sufficient **personal protective equipment** (PPE) easily accessible – including protective eyewear and clothing
- Stocktake on **firefighting equipment** undertaken including following checks;
 - good working order
 - identified new equipment needed
 - know how to operate equipment
- **Bushfire Survival Plan** completed, reviewed and updated - <https://www.qfes.qld.gov.au/bushfires>

IMPORTANT

You cannot rely on emergency services to protect orchards and sheds. The fire brigade will focus on homes, houses and preservation of life. If your bushfire survival strategy involves staying to protect orchards and sheds, you will need vital fire fighting skills and equipment such as a slip-on firefighting unit available for vehicles that can be competently operated by a single person.



Annual Bushfire Resilience Checklist

Personal safety & skills preparedness

- I know my **neighbours** and their plans in case of a bushfire
- Contact details** of neighbours are known, to share **emergency updates** before and after an event
- We have agreed to **communicate** our whereabouts during a bushfire, especially if evacuating
- I know **travel routes** in the area for emergency evacuation; I have considered there may be locked gates and have communicated with appropriate persons to have locks removed
- I have joined my **local fire brigade** for training, experience and networking
- I have a **two-way radio**; it will take pressure off mobile phone networks and eliminate the risk of losing communication
- Neighbours and close community have agreed on a **two-way channel** to be used
- I have considered **back-up plans** for picking up kids at school, looking after dependents and other essential tasks
- There are enough **food stocks** to last us for at least one week (including pets)
- Sufficient stored water; tanks, troughs, dams, swimming pool

RESOURCES

Having a plan is crucial, and communicating what is in the plan to your household and staff is fundamental to bushfire resilience.

The Queensland Fire and Emergency Services have an easy to use online Bushfire Survival Plan Template - <https://www.qfes.qld.gov.au/bushfires>



Orchard & shed preparedness

I have **identified areas** where vehicles, machinery, gas/petrol containers will be relatively safe during bushfire. For example, empty mowed paddocks or fallow cultivation, with safe distances from bushland, trees and crops.

I have identified underground **poly pipe** that needs to be monitored; fire can spread along poly pipe, even underground. Poly pipe should be at minimum 30cm underground to minimise risk of damage from fires.

I have considered splitting my **irrigation and watering systems** so areas that are damaged can be isolated. This will lower the risk of losing all water if there is damage to the system. I have considered the possibility of having **gravity fed water in case of power outages** or limited fuel available.

I have 50mm camlock male fittings on **water pumps** for the fire brigade to pump water from my property. I have a generator for loss of power to keep up irrigation and access to water (bore pumps) during the fire.

Debris such as leaves, timber stakes, old poly pipe, pallets and packaging; are **cleaned out** from shed, under low set houses, gutters etc.

A **generator/alternative power source and chainsaw** are available and in working order.

Emergency **fuel, diesel, chainsaw oil, tarps, woollen blankets, jockey straps, ropes**, etc. stored in an accessible place; available if needed.

I have taken “before” **photos** around the farm.

I have considered the risk of spreading **weeds/diseases** across my property and neighbouring areas in a bushfire. Where practicable I will wash down or travel in direction that minimises the spread of these.



Annual Bushfire Resilience Checklist

Communications & business preparedness

- Emergency kits** have been prepared for work and home - see *page 16* for a list of kit essentials
- I have registered for **weather alerts and warnings** (BoM app, local council and local SES Facebook pages)
- I have a list of **emergency contacts** available, including my local council's disaster/emergency centre - see *page 3*
- Essential business information and records are backed up** to a cloud, external hard drive or USB – personal photos, deeds, legal agreements, identification documents
- I have **communicated** our bushfire plan with employees and have designated an alternative leader if I am off farm
- I know **my rights and obligations as an employer** during a natural disaster for more information: www.growcom.com.au/disaster-risk-mgmt
- I have **cash available** in case of long power outages and loss of internet
- I have done an **inventory** of stock to ensure quick insurance claims
- I have reviewed our **insurance** policy, and a copy of this information is included in our emergency kit

RESOURCES

Seasonal forecasts

<http://www.bom.gov.au/climate/ahead/>

Climate projections

<https://www.longpaddock.qld.gov.au/qld-future-climate/dashboard/>

Climate risk assessment

<https://www.hort360.com.au/>



Additional pre-event checklist items











Bushfire Survival Plan

A **Bushfire Survival Plan** should be filled out well before a bushfire event and revised annually. It is a document that must be communicated to the entire household, workforce and next of kin.

When preparing your Bushfire Survival Plan it is important to consider the following:

- In catastrophic conditions no back-up should be expected, you are likely to be on your own
- You need a safe place to shelter if things do not go to plan
- Each disaster is different and you can always reconsider your 'stay to defend' plan until last call is made to leave safely.
- Any changes to your plan needs to be communicated to key contact person
- Consider a way to communicate if you have left the property, for example some sort of sign on letterbox/gate

ACTION

Prepare your Bushfire Survival Plan - <https://www.qfes.qld.gov.au/bushfires>

Assess your personal risk level. Leave or stay - <https://bit.ly/climatewise-check-tool>



Consider the following when developing your bushfire plan

Leaving?

Who will leave early?

Triggers for leaving?

Where will they go?

How will they get there? *Including alternative routes*

What is the plan for pets?



Bushfire Survival Plan

Staying?

Who will stay?

How will you prepare yourself and your farm? (Clothing, PPE)

What steps will you take so you and your home can withstand the fire?



Where will you safely seek cover inside your home?

After the fire has passed, what area of your property will you check for spot fires and burning embers?

What is the plan for pets, livestock?



Pre High-risk Bushfire Checklist

To be completed when there is a high risk of Severe, Extreme or Catastrophic bushfire

- I have **pruned** and **removed dead wood** from orchard
- I have **cleared** and/or **maintained all fire breaks**
- I have **mown and slashed along roads, paths and other access routes** to reduce fuel loads before it gets too dry (to avoid inadvertent spark from starting a fire)
- I have **removed debris and rubbish** around the shed and other infrastructure on farm (such as pump sheds)
- I have double checked my **firefighting gear** and made sure it is in good working order
- I have prepared an **identified safe area** for storage of vehicles, machinery, gas/petrol containers
- I have sufficient **fuel** on-farm to run generator, machinery and vehicles for at least a week
- I have sufficient **supplies** to last for at least a week, taking into consideration that roadblocks might hinder return access to farm
- I have identified one **key person**, that I will keep updated during the bushfire on my wellbeing; this person will inform others to keep my mobile free for emergency communication
- I have shared my **bushfire survival plan** with next of kin and will keep them updated on any changes
- I have considered **alternative care** for kids/family/dependants in case we are isolated by fire

Extreme/Catastrophic Bushfire Warning Issued

I am tuning into **emergency warnings**

I am drinking plenty of water and eating regularly to **stay fuelled and hydrated**

I am **irrigating crops** to ensure the soil moisture profile is full and orchard area moist

I have **disconnected gas bottles**

I have filled the bath tub, wheelie bins, 1000L pods and other containers with water

I have relocated **tractors, harvesters, fuel supplies** to cultivated or cleared paddock areas

I have **tools** (pliers, bolt cutters, battery operated angle grinder etc.) in my vehicle for emergency opening of locked gates/fences

I have **moved furniture and curtains** away from walls in my home, office and farm buildings

I have been through my **emergency plan** and **evacuation strategy**

I have reviewed my **evacuation route**, using current warnings being issued and have identified an alternative route if needed

I keep my **key contact person** updated to avoid worry and unnecessarily being listed as a 'missing person'



Emergency Kit Checklist

HOME

- First Aid kit
- Toilet paper
- Soap
- Camera
- Duct tape
- Knife
- Garbage bags
- Spare keys
- Cash
- Blankets - natural fibres
- Sunscreen/insect repellent
- Toys for children
- Snacks and water
- Fuel in all vehicles and equipment
- warm clothing/spare clothing
- Copies of your insurance policies
- Emergency Contact List - *see page 3*
- Recovery Contact List - *see page 17*
- Toiletries including personal needs
- Medication, including prescriptions
- Light (torches, lanterns, extra batteries)
- Communications (phone, chargers, battery operated radio, two-way radio, battery pack to charge phone on the go)
- Original or certified copies of important personal documents (marriage certificate, birth certificates)
- Protective clothes in natural fibres - long sleeve shirt, jeans, hat, boots, raincoat/Personal protective equipment (gloves, masks and safety glasses that are closed in to avoid embers)
- Tools for emergency opening of locked gates on evacuation route/necessary movements between properties

OFFICE

- Critical data, records saved to external hard drives/USB/cloud
- Emergency Plan
- Business contact list
- Laptop/charger

Recovery Contacts



PHONE LIST

Growcom	3620 3844
Insurance	
Grower's Association	
Department of Agriculture and Fisheries	3404 6999
Queensland Rural and Industry Development Authority (QRIDA)	Freecall 1800 623 946
Rural Financial Services	Freecall 1800 900 090
Telephone/Internet Provider	
Bank	
Supplier	
Customer/Agent	
Accountant	
Legal	
Employees	

✓ Post Bushfire Checklist

Safety is paramount; stay indoors or at evacuation point until bushfire has passed. Listen to radio for warning and updates.

Communicate that you are safe to local emergency services and next of kin.

Ember attacks and spot fire checks; 85% of houses burn down from ember attack. Check roof spaces, under house/verandah, garden beds, mulches, gutters etc. Spot fires may occur for many days after the fire.

Assessment; wear covered shoes, appropriate clothing and PPE.

Take photos of damage and check on the following:

- Damaged or fallen powerlines (Ergon – emergency 13 16 70, Ergon – power outage 13 22 96)
- Potential dangers such as buildings, trees, netting at risk of collapsing. Mark areas to avoid incidents
- Gas, chemical leaks and other dangerous materials
- Damaged and burnt trees around culverts, bridges, roads etc. Burnt tree roots can cause delayed collapse of tree and earth around it.
- Any animals that have not been indoors
- Impact on water supply to house and sheds
- Impact on irrigation equipment and accessibility to water for orchards and crops
- Road access on/off farm
- Equipment (tractors, plant and machinery, cold rooms)



Damage assessment notes

✓ Post Bushfire Checklist

Contact your **neighbour** to ensure their safety. This also gives you an opportunity to share your experience (a vital part of recovery).

Contact **staff** who are not on farm to check in and arrange coming back to the farm. Allow staff time to ensure their home and families are safe.

Contact your **insurance** company, you should now have an idea of damage and photos to share.

Contact Growcom (3620 3844 or bit.ly/growcom-disaster-resilience) or Department of Agriculture and Fisheries (13 25 23) to fill out a Damage Estimate Form.

You may also like to contact other industry groups to update them. These groups represent and speak on behalf of growers during the aftermath of disasters. Grower information can also be used in making assessments regarding disaster assistance and categories. Any **media enquiries** can be forwarded to industry groups.

Contact nurseries/agents/customers/transport companies and other business stakeholders to **update** them on your situation.

Spend some time to **prioritise** what needs to be done around the farm and make a list of jobs. **Communicate** this with any staff/family who are there.



Post Bushfire Checklist

Clean up

Some key things to remember:

- Fatigue is a huge issue post natural disasters; make sure staff, family and yourself have **enough rest**
- **Drink plenty of water** and limit alcohol intake
- Always remember to wear **personal protective equipment** (PPE)
- Make sure anyone using equipment is experienced and have the **correct licences** for the equipment (for example chainsaws)
- Volunteers are covered by the Workplace Health and Safety Act 2011; be aware of **risks and hazards to personal safety** and communicate these to volunteers
- Establish a **sign-in** and **sign-out sheet** for visitors/volunteers and staff; this will assist you in calculating wages and hours incurred through the clean-up
- Remember it's a **stressful time for everyone** and everybody responds differently. Keep an eye on people around you and yourself, seek professional help if needed
- Attend any **de-brief sessions** held in the area, to aid recovery and learn from the disaster
- **Check in** with **neighbours and people in the community**
- If there are disaster grants available, check conditions and requirements to qualify for this.

DID YOU KNOW?

Even if your orchard or crops were not directly impacted by fire, it may have been impacted by smoke, interruptions to irrigation and/or loss of water used for firefighting. You may be eligible for financial assistance. If you are not receiving the Farm Household Allowance, it is worthwhile checking if you are eligible to receive this payment intended for primary producers to assist with household cash flow.



Assessment of fields

ASSESS

Check damage to orchard trees by cutting into bark, stems and meristem. Wind, intensity, speed, direction and fire duration will determine damage. Checking damage under the bark with a small 'window' may not give sufficient insight into the damage sustained to the plant. It might be worth sacrificing a few trees in strategic areas to fully assess and understand damage.

INSPECT

Organise soil testing to be taken when practicable. Ash can have an alkaline effect on soil, and bushfire can be highly detrimental to soil microbial activity, bacteria, fungi and seed banks.

TASTE

Taste test crops that are close to harvest. Volatiles can get into fruits after just 30 minutes of smoke exposure. Most will sit in the skin but some can permeate into the flesh. Volatiles bind to sugars to form glycosides; this flavour cannot be detected by smell but will be released by enzymes in the mouth when eating or during fermentation.

CHECK

If a tree has sustained severe damage to the phloem - "ring-barked" around the trunk, for example - it will be unable to transport carbohydrates to the roots. If the heat or flames have not reached the xylem (which carries water and nutrients to the canopy) the tree may initially look healthy and fill fruit, but long-term its health will likely decline.



Case Study in Central Queensland

Examples of different approaches by horticulture growers

The Cobraball bushfire took place in November 2019. The fire affected 275 hectares of horticulture crops with impacts of \$10M to the industry.

Jack, Rae and their son, Eddie Cowie, run Daly Creek Orchards - 32 hectares - located in Bungundarra (near Yeppoon).

The fire hit with little warning - with only enough time to fill all the water tanks and for Rae to leave while Jack and Eddie stayed behind. They saved the house and four sheds but lost 1,200 lychee trees and their entire lychee crop. The fire also destroyed 4 hectares of netting and 15 kilometres of irrigation lines.

With mains power cut to the property and access limited for many weeks, the Cowies couldn't immediately restore irrigation. Instead, they collected in the netting wire so it wouldn't hamper them later. Next, they high-stumped all the damaged trees, applying diluted water-based paint on stumps to prevent sunburn in the hope that they would re-shoot. But sadly, the heartwood had been destroyed because the fire was so hot.

The Cowies planted marcots between the stumped trees, using newer and better fruit-producing varieties Erdon Lee, Baitangying and Kaimana to improve the property. Eventually, 50-60% of the damaged trees sent up root suckers. The best suckers were selected and trained as new trees, demonstrating exceptional growth of 1.8-2.4m. Early signs have been promising, with some already flowering.

The Cowies' 2019 lychee crop was expected to bring in an income of \$250,000, and it will be 2023 before the new trees are mature enough to start fruiting again. But Jack feels the fire will ultimately leave them in a better place financially.




Daly Creek Orchards high stumped lychee trees after the Cobraball bushfire



The fire forced us to change, improving the farm. In another 2-3 years, we'll be back on top.



-Jack Cowie



Robert and Joycelyn Sikes' 40 hectare property, Tropic Fields, was also badly affected. They grow several varieties of mangoes, custard apples, passionfruit, avocados and run a few cattle. With more warning, the Sikes were able to reinforce their fire breaks, but still lost trees, fences and irrigation infrastructure.

With 1600 young Honey Gold mango trees damaged by the fire, the Sikes were reluctant to cut back trees without first allowing them an opportunity to recover. Instead, they immediately focused on reinstating irrigation. Fortuitously, replacement irrigation was on hand (for a new orchard), and they could access generators. Robert has since bought a generator for the property. On the advice of an agronomist, a foliar spray was applied to damaged trees along with a restorative soil nutrition program.

About a month after the fire, a premature fruit drop, possibly through heat or smoke damage, led to crop loss throughout the unburnt orchards. After two months, while many burnt trees were recovering, 500 dead mango trees were removed and replaced.

In addition to the immediate losses of trees, crops and equipment (valued over \$320,000), the Sikes estimated that two years of lost production cost their business around \$143,000. Only a small component of this loss has been covered by insurance or disaster recovery funding.

Robert advocates for better fire management, such as expanding existing cool-burn programs to reduce fire loads and increasing fire break sizes around mature timber conservation areas.

For full case study:



<https://bit.ly/growcom-disaster-resilience>



Robert and Joycelyn Sikes pictures with their destroyed mango orchard (Photo from The Morning Bulletin)



Post Bushfire Checklist

Financial Assistance

In case of damage from natural disasters to farm businesses and homes, financial support might become available.

- **Contact Rural Financial Counsellor**
(North Qld – 07 4652 5669, South Qld 07 4622 3699)
- **Queensland Rural and Industry Development Authority**
(1800 623 946)
- **Farmer Assistance Hotline** (132 316)
- **Growcom** (07 3620 3844)
- or your local grower or industry group to enquire about available financial support.

Remember, even if you do not have damage, indirect impacts might make you eligible.

RESOURCES



<https://bit.ly/bushfire-orchard>

Download valuable lessons learned by apple growers in NSW who experienced devastating bushfire impacts in 2019-2020 in a publication prepared by the Department of Primary Industries NSW Government (NSW DPI).



Other Notes

! Dealing with Stress

Common reactions experienced following a major traumatic event include:

- feelings of fear, sadness or anger
- feeling overwhelmed
- feeling numb, detached or withdrawn
- difficulty with focusing attention and concentration
- difficulty planning ahead
- tearfulness
- unwanted and recurring memories or bad dreams related to the event
- sleep problems
- constant questioning – “What if I had done x, y or z, instead?” and “What will happen now?”
- ‘replaying’ the event and inventing different outcomes in order to be prepared should it happen again.

It is recommended that you relay this information to your staff and make sure they are aware of the support services available. Sometimes local industry groups and councils can provide or have access to additional support.

These reactions can be quite strong and are often at their worst in the first week. They are not signs of weakness. In most cases, they fade over the following weeks, although the person may experience them from time to time for a much longer period.

Warning signs

If you or someone you know experiences any of the following symptoms at any time, seek professional help:

- If the distress feels extreme or interferes with the person’s ability to participate in day-to-day activities
- Feeling overwhelming fear for no obvious reason

- Panic symptoms: increased heart rate, breathlessness, shakiness, dizziness and a sudden urge to go to the toilet
- Avoiding things that bring back memories of what happened to the point where day-to-day tasks cannot be carried out
- Excessive guilt about things that were or were not said or done
- Loss of hope or interest in the future
- Thoughts of ending one's life or self-harming.

As a general rule, it is a good idea to seek help if you think that you are not coping. You should speak to a health professional if:

- your problems seem too severe
- the emotional reactions are lasting too long
- you are finding it difficult to engage in day-to-day activities or get along with family and friends.

Most people who have experienced a disaster will go through times when they find things difficult or challenging and it is important to understand the benefits of professional assistance. Do not think you need to be struggling or suffering severely to access help.

You may find it useful to talk to someone who is not a friend or family member. Many people find that one or more visits to a counsellor, chaplain, GP or psychologist greatly assists their recovery.

Making the decision to access professional assistance if you need it is a wise choice that can often help you to regain emotional strength and resilience.



Dealing with Stress

PHONE LIST

Beyond Blue Support Service	1300 22 4636
Lifeline	13 11 14
MensLine Australia	1300 78 99 78
Kids Helpline	1800 55 1800
Relationships Australia	1300 364 277
Suicide Call Back Service	1300 659 467
Rural Financial Counselling Service	1800 686 175
Local Centacare	



Photo credits:

David Groves, Edward Cowie, Rob Sikes
ABC Capricornia, The Morning Bulletin

Although funding for this product has been provided by both the Australian and Queensland Governments, the material contained herein does not necessarily represent the views of either Government.



Australian Government



**Queensland
Government**



07 3620 3844

Primary Producers House
Level 3, 183 North Quay
Brisbane Qld 4000

PO BOX 12101
George Street QLD 4003

www.growcom.com.au