



Royal Commission into National Natural Disaster Arrangements

Submission Form

Please complete this form if you would like to provide input or comments about coordination, preparedness for, response to and recovery from the 2019-20 'Black Summer' bushfires.

Personal and Background Information

1. Full Name
2. Email
3. Mobile/Telephone
4. What is your preferred method of contact if we want to follow up with you?

By email as above

5. The Commission would like to understand the views of community groups based on their respective experiences and background.
 - a. Please select Option 1 if you are providing input and comments primarily based on your personal situation.
 - b. Please select Option 2 if you are providing input and comments primarily based on your professional knowledge, qualifications or experience, or on behalf of a group or organisation

Option 1: Based on your personal situation, please complete the following.

- a. What was your personal situation in relation to the 2019-20 Bushfires? Please choose all that apply.
 - I was not living in an area affected by bushfire
 - I lived in an area affected by bushfires but was not evacuated, and didn't suffer personal or financial loss
 - I lived in an area affected by bushfires and was evacuated, but didn't suffer personal or financial loss
 - I lived in an area affected by bushfires and was evacuated, and I suffered personal or financial loss
 - I was part of the emergency response as a fire fighter on the ground
 - I was part of the emergency response as an aerial fire fighter
 - I was part of the emergency response as health professional
 - I was part of the emergency response as an Australian Defence Force member

- I was part of the emergency response as a Commonwealth or State government employee
- I assisted the emergency response as a community support volunteer
- I assisted the emergency recovery (i.e. after the fire event) as a community support volunteer
- Other

b. Where do you live? Please provide your Local Government Area, town name and post code.

Local Government Area Choose an item.
Town name
Post code

Option 2: Based on your knowledge, qualifications or experience, or your role representing a group or organisation, what is your area of expertise? Please choose all that apply.

- Emergency/disaster response and/or management
 - Environment/land management
 - Land use, planning, building standards
 - Impacts of changes in climatic conditions
 - Wildlife conservation
 - Traditional land and fire management practices of Indigenous Australians
 - Community welfare
 - Other – We make this submission as [REDACTED]
[REDACTED]
[REDACTED]
-

Input / Comments

6. In your experience, what areas of the bushfire emergency response worked well?

We don't have specific experience in addressing this question as an association and believe that those directly affected by the bushfires will be best placed to provide comment on what areas worked well in the bushfire emergency response. However, the ability to communicate continues to improve and generally worked well so anyone in danger is aware of the dangers and hopefully provided adequate warning to bunker down or leave.

7. In your experience, what areas of the bushfire emergency response didn't work well?

Again, we don't have specific experience in addressing this question from an industry body point of view.

However, we have been provided with some feedback from experience of a victim of fire:

1. Public money raised was difficult to obtain, huge paperwork and asking for documents that were lost in fires.
2. Government grants were impossibly difficult to negotiate.
3. The nursery was insured, and even though we were underinsured the ATO made the business pay capital gains tax on the payout.

8. In your experience, what needs to change to improve arrangements for preparation, mitigation, response and recovery coordination for national natural disaster arrangements in Australia?

The nursery industry across Australia can contribute to improve the arrangements around preparation, mitigation, response and recovery coordination for national natural disaster arrangements in Australia. A nursery industry levy funded project: Nursery Industry Natural Disaster Risk Mitigation and Disaster Recovery Plan, is currently being conducted. The project is due to run until March 2021.

The objective of the project is to determine the potential for natural disasters to impact the Australian production nursery industry. There is a trend of more natural disaster and severe weather events impacting Australia, with an increasing reluctance of governments to continually fund recovery and repairs. With expectation upon business, community and individuals to "share the responsibility" of natural disasters, a need exists for industry to build strategies for better preparedness, speedier recovery and stronger resilience.

The project intends to provide levy payers with resources to enable preparedness, mitigation, recovery and resilience to natural disasters. These activities are to be readily accessible, adopted and embedded in industry best management practice. This project will assess the type of natural disaster and level of risk posed to the industry. Interruption to business caused by natural disasters can have a multiplier effect on the supply chain and impose a significant cost to businesses and decrease industry value of production.

A Natural Disaster Recovery Action Plan will be developed that includes preparation activities to mitigate risks. The project will deliver a range of materials to build business resilience with the intention to enable levy payers to bounce back quicker from impact of a natural disaster. The project will enable the [REDACTED] to understand and recognise natural hazard risks, know and implement preparedness actions and therefore improve industry resilience and capacity to recover from an impact. The focus is on better preparedness resources for industry groups to enable a speedy and effective response in the event of a natural disaster.

To improve “preparation” or mitigation of natural disasters, we believe that a more integrated approach to the development of parks, gardens, forests and green infrastructure would be appropriate. In this regard, nursery and allied industry representation would be invaluable. Any green and natural infrastructure development should have resilience at its core, which would lend itself to specific nursery and horticultural knowledge amongst other areas of expertise. The interface between urban areas undergoing development or consolidation, and green space is integral in managing the safety of people and providing essential health and well-being benefits, yet certain local councils and State and Territory Government departments seem to operate in isolation. A unified approach incorporating best practice development that aims to mitigate disasters and expedite response is much needed. We therefore propose an ‘Independent Advisory Committee’ be established.

Various research and studies have been conducted into “Fire Retardant Plants” (refer attached) and plants that are more resistant and resilient in the face of fire. The recommendations from the research would help inform what species to grow in high risk areas. Other resources available include:

<https://www.cfa.vic.gov.au/plan-prepare/landscaping>

<https://www.cfa.vic.gov.au/plan-prepare/plant-selection-key>

https://cdn.cfa.vic.gov.au/documents/20143/72271/landscaping_for_bushfire_plant_selection_key.pdf/0de33610-864a-77ec-d3e7-63931b2ff373

Landscape and Building Design for Bushfires, 2003 (ebook)

<https://www.publish.csiro.au/book/3461/>

Some approaches to refining and updating material include:

1. Review, refine, expand, improve the CFA materials?
2. Nursery, landscape, turf, irrigation and other greenlife alliance sector bodies working together
3. Consider council development application (DA) requirements for ways to influence them for greater variety particularly incorporate bushfire appropriate alternatives.

4. Start the discussion at a council level with the Australian Local Government Association <https://alga.asn.au/> and try to tap into the Greener Spaces Better Places network (of councils supportive of greenlife).

5. A more extensive concept could be an expansion of the nursery industry 'grow me instead' search tool concept for selecting what plant to grow and where alternatives can be considered for bushfire zones. This could be overlaid for regionally available and suitable varieties and use the 'Risk Map' being developed by the Natural Disaster Risk Mitigation project referenced above.

Additionally, to support efforts to mitigate the effects of natural disasters, nursery industry representatives have the experience and expertise to help formulate policy and provide guidance around future plantings. As stipulated, we would recommend a broader independent committee of experts and would support involvement by qualified horticultural experts.

The Federal Government needs an approach and ability to establish strong partnerships, in conjunction with the State and Territories Governments, supported through this independent advisory body which will enable delivery of vital green infrastructure. The purposes of the committee include but are not limited to:

1. Provide expert strategic advice to the relevant Ministers about integrating green infrastructure outcomes into Government managed land.
2. Articulate the issues and solutions surrounding green infrastructure implementation
3. Build the capacity of Government policy makers to embed integrated green infrastructure outcome into decision making.
4. Advocate for integrated state and territory planning outcomes: housing, climate change, urban development and consolidation, integrated water management, green infrastructure, education and socio-cultural-economic planning, and advocate for a Federal Centre of Excellence in green infrastructure.
5. Provide expert, independent advice, showing leadership and support for other landholders, including local governments and other land managers.

Recovery – the nursery industry can assist in the recovery of areas ravaged by a natural disaster. This could be on an individual residence, street, community, residential/urban, city and rural (forests, farms, etc) level. The nursery industry can support the replanting and revegetation process to contribute to the recovery process. It can work with initiatives such as Habitat Recovery, Threatened Species and Greening Australia to assist in the replanting and reforestation programs.

9. Is there anything else you would like to tell the Royal Commission?

_____ and the _____
 _____ commend the Federal Government on this Royal Commission into National Natural Disaster Arrangements and welcome the opportunity to make a submission.

The nursery industry is diverse, significant and important in the support and delivery of nutritional, physical and mental health and well-being to all Australians. It covers the geographic diversity of the country from North Queensland to Tasmania and over the Western Australia. There are over 1600 production nursery businesses that employ approximately 23,000 staff and produce over 2.0 billion plants at a value of \$2.4 billion annually. It provides the planting stock for production and ornamental horticulture, the landscape industry for residential, commercial, industrial and infrastructure developments and for the floral and forestry industries.

Nursery industry businesses have been impacted by many natural disasters over recent years, including fire, flood, storms, drought and pestilence and now even through the impact of the Coronavirus (COVID-19) pandemic. As industry representative bodies we can assist with industry businesses prepare, mitigate, response and recover to and from natural disasters. An important aspect is for elements in the natural environment within our control to be managed as best as possible and those beyond control have their potential impact mitigated as much as possible. This will need to be assessed on a 'risk vs reward' basis so that businesses are still viable commercially.

The industry is available and willing to provide additional information in support of this submission and through interview if required.

Do you intend to provide supporting material?

Yes

No

If you are providing any supporting material, please include it with your Submission if possible. If you need to send it separately (e.g. if you make a Submission over the phone), please ensure supporting material can be clearly identified as relating to your Submission by including your name or other identifier so that it can be considered with your Submission.

10. Do you agree to your submission being published? (Mandatory)

Yes, I agree to my submission being published in my name

Yes I agree to my submission being published anonymously

No I don't agree to my submission being published

Once you have completed this form, email it to rcnda.submissions@royalcommission.gov.au or print the form and post it to the Royal Commission at:

National Natural Disaster Royal Commission
Locked Bag 2000
Manuka ACT 2603

Fire Retardant Plants: Literature review and plant list

Introduction

There are many lists on the internet and in books that suggest plants for fire prone areas. Most are based on opinion, but some are based on plants farmers have used for well over a hundred years as fire breaks, or plantings that have actually helped save peoples homes in bush fires. One study by the CSIRO tested the ignitability of Australian plants.

In recommending which Ozbreed plants are more suitable than others for fire prone areas, we have taken all this information into account. It must be noted that any plant can burn when exposed to enough flames and heat, it is just that some are

less likely to ignite, or may take longer to ignite. For this reason you cannot rely on plant selection alone to stop bush fires, but it makes sense to use plants that generally delay in their ignition.

Information

The CSIRO study is the only scientific study that tested how quickly both dry and moist leaves of certain plants take to ignite. This and plants that farmers have used for years as fire breaks are the most reliable information that is available. So in the first category of plants that are fire retardant, we will list the types that did well in these categories.

List 1. Plants backed by scientific evidence, or overwhelming use as a fire break.

Lomandra longifolia took 38.53 seconds to ignite at 400 degrees using fresh leaves, and 11.13 seconds for oven dried specimens. Compare this to eucalyptus elata that took 11.57 seconds to ignite when fresh, and 3.22 seconds when oven dried, and it is easy to see why Lomandra longifolia is a good choice for fire prone areas. Listed below are results for other plants, with the cultivars available from Ozbreed listed next to the information.

Plant variety	Average ignition delay times of leaves at 400°C	
	Fresh leaves	Oven-dried leaves
Lomandra longifolia	38.53	11.13
Tanika ® Lomandra longifolia 'LM300' (b)		
Nyalla ® Lomandra longifolia 'LM400' (b)		
Lomandra longifolia ' Katrinus Deluxe ' (b)		



	Average ignition delay times of leaves at 400°C	
	Fresh leaves	Oven-dried leaves
Anigozanthos (Kangaroo Paw) Based on this data, if kept green, Kangaroo Paws will work well. Avoid allowing their foliage to go dry.	40.05	3.51
Anigozanthos hybrid 'Gold Velvet' (b)		
Anigozanthos hybrid 'Regal Velvet' (b)		
Anigozanthos hybrid 'Amber Velvet' (b)		
Ruby Velvet™ Anigozanthos hybrid		
Casuarina glauca	43.02	10.53
Free Fall™ Casuarina glauca 'CAS01' (b)		

The full CSIRO paper can be found at http://www.aff.org.au/Gill_ignitibility_final.pdf

Sample of other plant data from study:

Plant Variety	Average ignition delay times of leaves at 400°C	
	Fresh leaves	Oven-dried leaves
Olearia argophylla	14.73	4.03
Acacia podalyrifolia	16.49	4.35
Callistemon citrinus	22.61	7.46
Eucalyptus sideroxylon	18.10	4.27
Dodonaea viscosa	16.28	3.84
Average of all plants in study	24.34	6.11

Agapanthus were not in the CSIRO trial as they are an exotic plant, but over one hundred years ago, farmers around Australia planted Agapanthus as fire breaks. In the recent bushfires in Victoria, there are some farmers that claim these plants saved them. Agapanthus' have been one of the most popular plant when it comes to fire breaks. Unfortunately, many are concerned that high seed yielding Agapanthus could in certain wetter regions have weed potential. Even

if this is the case in some regions, there are enough varieties available, including Queen Mum, that have very low seed set compared to the high seed yielding, seed grown types. They are safe selections as far as invasion is concerned, yet will provide the same level of fire protection.

Queen Mum™ Agapanthus orientalis 'PMN06' (b) is a safe low seeding variety that has high water content in its leaves, ideal for using as an attractive fire break.

List 2. Ozbreed plants that have the genus and species regularly appear on many lists as fire retardant plants. See bibliography for lists.

Strappy Leaf Plants

- Blaze™** Dianella tasmanica 'NPW2' (b)
- Breeze®** Dianella caerulea 'DCNC0' (b)
- Cassa Blue®** Dianella caerulea 'DBB03' (b)
- King Alfred®** Dianella caerulea 'JOHN316' (b)
- Little Jess™** Dianella caerulea 'DCMP01' (b)
- Little Rev™** Dianella revoluta 'DR5000' (b)
- Lucia™** Dianella caerulea 'DC101' (b)
- Revelation®** Dianella revoluta 'DRG04' (b)
- Silver Streak™** Dianella hybrid
- Tasred®** Dianella tasmanica 'TR20' (b)
- Wyeena®** Dianella tasmanica 'TAS300' (b)

Foliage First Range

Dianellas

- Aranda™** Dianella caerulea 'DC150' (b)
- Baby Bliss®** Dianella revoluta 'DTN03' (b)
- Destiny™** Dianella tasmanica 'TAS100' (b)
- Emerald Arch®** Dianella tasmanica 'DT23' (b)
- Prestige** Dianella revoluta 'REV101' (b)
- Rainbow Twist™** Dianella prunina 'DPV308' (b)
- Utopia®** Dianella revoluta 'DP303' (b)

Phormiums

- Chocomint Mist™** Phormium tenax 'PHOS4' (b)
- Flamin'®** Phormium tenax 'PHOS3' (b)

- Sweet Mist®** Phormium tenax 'PHOS2' (b)

Liriopes

- Amethyst™** Liriope muscari 'LIRTP' (b)
- Isabella®** Liriope muscari 'LIRF' (b)
- Just Right®** Liriope muscari 'LIRJ' (b)
- Pure Blonde™** Liriope muscari 'LIRBLONDE' (b)

Native Shrubs and Ground Covers

- Purple Fusion™** Scaevola humilis 'PFS100' (b)
- Yareena™** Myoporum parvifolium 'PARV01' (b)
- Aussie Rambler™** Carpobrotus glaucesens 'CAR10' (b) pending

Advanced Trees

- Pinnacle™** Syzigium australe 'AATS' (b)
- Luscious®** Tristaniopsis laurina 'DOW10' (b)
- Red Head** Acmena smithii 'BWNRED' (b)
- Sublime™** Acmena smithii 'DOW30' (b)

Encore Azaleas

- Autumn Royalty™** Rhododendron hybrid 'CONLEC' (b)
- Autumn Twist™** Rhododendron hybrid 'CONLEP' (b)

Hardy Exotic Range

- Cosmic White™** Raphiolepis indica 'RAPH01' (b)
- Double Gold™** Gazania hybrid 'GT20' (b)

List 3. These fire retardant plants have been selected based on their appearance in some of the lists, or the fact that they need some extra management criteria.

Plant Name	Extra management criteria
Flirt™ Nandina domestica 'MURASAKI' (b)	If it looks dry, prune back. Usually only required every few years.
Blush™ Nandina domestica 'AKA' (b)	If it looks dry, prune back. Usually only required every few years.
Mundi™ Westringia fruticosa 'WES05' (b) Naringa™ Westringia 'WES01' (b)	Ensure they do not get dry looking foliage. Prune each 1 to 3 years to achieve this, depending on conditions.
Meema™ Hardenbergia violacea 'HB1' (b)	Ensure it does not get dry looking foliage. Prune each 1 to 2 years to achieve this, depending on conditions.

Please Note: In fire prone areas, with any plant, whether it be in category 1, 2 or 3, it is recommended that it be pruned should the foliage go brown.

Discussion

For areas that receive very little care, plants from group 1 and 2 are a better choice. However, they will need pruning in fire hazard times should they brown off, it is just less likely they will. A lush green garden or turf will reduce fire hazard. Any green lawn regardless of type will work well. Keep areas well mown around buildings in fire hazard periods. Low water lawns such as Zoysia will help for these areas, as will their reduced mowing requirements.

Disclaimer: Ozbreed provides this information in good faith, but by using this information you understand Ozbreed or the authors cannot and will not be held liable for damage or loss incurred due to a fire should this advice be used in selecting plants. As stated earlier, any plant can burn given the right conditions.

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