

## Communication of fire danger

The Scion Rural Fire Research Group has examined the effectiveness of fire danger warnings in New Zealand.

This study revealed that managers had reservations about the effectiveness of current fire danger warnings, and raised a number of other concerns that warranted exploration through a public survey. The survey canvassed public perception of rural fire danger communication in Northland and Canterbury.

Results showed that while most people are aware of fire danger warning signs and other communications, they frequently do not understand what the ratings mean or what behaviour is expected of them.

### Key recommendations:

- the range of risk factors is communicated more clearly, as the public appear to know what factors contribute to high fire danger and what activities can cause fires.
- guidelines need to be provided on what the public should or should not do as fire danger increases.
- simplify information and clarify linkages relating to fire danger, fire season status and permit requirements.





## How fire danger is communicated

Currently the main mechanisms to communicate fire danger to the public in rural areas are 'half grapefruit' signs positioned at the roadside in rural areas and other high fire-risk locations. These indicate 'Low' to 'Extreme' fire danger depending on conditions determined by the New Zealand Fire Danger Rating System. The signs are primarily to inform people of the increasing difficulty of controlling fires as the fire danger level increases, so as to limit the number of potential ignitions through people being more cautious in their use of fire or with activities that might cause a fire.

The 'half grapefruit' sign may also be supplemented with additional wording or add-on panels describing fire season status or permit requirements. Other mechanisms include the national fire prevention publicity campaign using the cartoon character 'Bernie' to educate people about rural fire danger in television and radio advertisements, pamphlets and information provided on Rural Fire Authority (RFA) websites.

## This project

The Scion Rural Fire Research Group has examined the effectiveness of fire danger warnings in New Zealand. This study explored the value of fire danger warnings in influencing positive public behaviour to reduce unsafe fire use practices. It also investigated the ability of roadside fire danger signs and media campaigns to identify and encourage the behaviour changes that RFAs are seeking. Data was gathered through interviews with fire and land managers in Canterbury (Langer and Chamberlain 2007) and Northland (Langer et al. 2009).

Results revealed that managers had reservations about the effectiveness of current fire danger warnings. They raised a number of concerns that warranted exploration through a survey of the general public's perception of rural fire danger communications. This survey was conducted in the same two regions (Canterbury and Northland) and found that, while most people are aware of fire danger warning signs and other communications, they frequently do not understand what the fire ratings mean or what behaviour is expected of them (Hide et al. 2010, 2011).



Figure1. Example of the 'half grapefruit sign' that is an important tool to prevent the ignition and spread of wildfires.

## Methods

Following a review of international literature (Bones et al. 2007) a study of fire and land managers' fire danger communication expectations was undertaken. Qualitative interviews were conducted with seven managers involved in rural fire safety in Canterbury and 12 in Northland. Managers interviewed represented RFAs, District Councils, NZ Fire Service, Department of Conservation, Federated Farmers of NZ and forestry companies.

Using concerns identified by the managers as a foundation, members of the public were interviewed in the same two regions about their understanding of fire danger communications. Following a pilot study of 12 people at the Whangarei A&P Show in Northland, a further 106 adults (53 Canterbury, and 53 Northland) were interviewed at five different locations in both regions – 68 people living locally, 28 New Zealanders visiting on holiday and 22 international visitors.

## Results

### Rural fire and land managers' perspectives

There were differing views amongst managers on the behaviour that they expected of the public from the fire danger communications. Hence they felt public confusion was likely.

Significant issues highlighted were:

- There is considerable overlap in the application of fire danger warnings signs intended to portray current fire danger and their use to convey seasonal conditions and/or fire permit requirements;
- Many messages associated with fire danger signs and classes are at odds with the purpose of the fire danger class criteria;
- No clear, distinguished information on signs to instruct the public in behaviour they should adhere to under different fire danger ratings, so more direct links are required between the sign and desired actions/behaviours;
- No clear consensus existed among fire managers on expected public behaviours as the fire danger level varied;
- The 'Bernie' figure and associated prevention messages need to be updated as questions were raised regarding their relevancy to different public age groups;
- Effectiveness of the 'Bernie' campaign needs to be accurately measured to determine what it is saying, and who hears it; and
- Region-wide policies on fire safety need to be developed to provide consistent information to the public.

### Public perceptions

The public surveys revealed a number of positive aspects plus a variety of shortcomings. Positive aspects included a high awareness of the fire danger warning sign and its alerting function to the risk or danger of fire, which is similar to NZ Fire Service telephone survey results (TNS 2010). Also for those that suggested a behavioural response to the fire danger warning, 'raised awareness' and 'taking more care' were amongst the most cited changes.

However, the data identified a range of concerns:

#### 'Half grapefruit' sign

- Many participants (40%) were unsure whether sign information was current – for some vandalism and lack of date indicating last attention reduced credibility;
- Potential for possible sign interpretation difficulties – visual problems, insufficient English language skills etc.;
- Some felt that the signs were directed at specific groups –e.g. campers, smokers) or reckless people rather than to themselves;

- The ratings were most commonly seen as a signal to identify hazard, risk or danger; but
- It was not clear that the public 'see' each rating level with any distinction. Many (n=36) were more conscious either of general left to right arrow movement on the sign, or attributed most meaning to arrow position at the ratings 'Low' and 'Extreme'.

#### Translating fire danger ratings into behaviour change

- There was uncertainty about appropriate behaviour for each rating - many guessed or were unable to provide an answer about how they should behave;
- Although many (n=78) acknowledged that the sign identified fire danger or risk level, only a third (n=40) reported that this also alerted them to change their behaviour; and
- Descriptions of expected behaviour for the central three ratings were much more varied.

#### Fire season information

- The 'Open' fire season was generally well understood, but responses were mixed on the understanding of the meaning of 'Restricted' and 'Prohibited' fire seasons, and associated burning restrictions and fire permit requirements;
- Relatively few followed publicity (radio/newspaper) on the need to have a fire permit – many felt that permits were more for specific fire activity types or locations (e.g. burning off vegetation on private land, or bonfire at a public function) than for any fire use within restricted or prohibited fire periods; and
- Only a minority saw any association between the fire danger warning sign and fire season information.

#### Publicity initiatives

- A small number of people were aware of fire slogans used in TV advertisements, but almost half (n=58, 49%) were unaware of the 'Bernie' message. However there were high levels of recognition for 'Bernie' and his message of 'Keep it green' within the target audience (15-28 year old NZ males, Mitchell Communication Group 2011);
- Many identified that the 'Bernie' message was to alert them to identify fire danger (n=28), risk level or to 'Keep it green' (n=17); but fewer reported that the message alerted them to the need to change their behaviour;
- Some saw TV and/or radio as the most useful alternative communication methods, but only about half reported awareness of such publicity;
- 'Newspapers' ranked quite highly as useful, but awareness of receiving newspaper information was relatively low; and
- There was poor awareness of rural fire danger communication amongst international visitors, with few aware of the range of alternative communication methods used.

## Conclusion

The Canterbury and Northland fire managers' studies concluded that there were varying views on behavioural changes managers expect of the public through communication of fire danger warnings. As a result, there is also likely to be public confusion regarding the fire danger messages being conveyed.

Results from the public survey suggested that most people are aware of fire danger warning signs, but they frequently do not understand what the ratings mean or what behaviour is expected of them as the fire danger level changes.

The recommendations resulting from this research are that there is a need to:

1. Provide greater clarity in communicating the range of risk factors for fire (in terms of both the factors contributing to high fire danger, and the activities that can cause fires), as these do not appear to be widely known by the public.
2. Provide guidance on expected behaviour – what the public can or should not do as fire danger increases.
3. Initiate efforts to clarify and simplify information (on fire danger, fire season status and permit requirements) concurrently with guidance on recommended behavioural change.
4. Explore integrating the 'half grapefruit' sign and fire season restrictions into a single sign 'graphic' and incorporating supplementary symbols to identify acceptable or prohibited activities.
5. Further consider sign location, condition and 'up-to-datedness' to make signs more relevant and visible.
6. Further develop the 'Bernie' media campaign to more clearly target specific groups and include guidance on behaviour modification.
7. Further consider the range of communication avenues used, and if and how they need to be tailored for different audiences.
8. Clarify links and distinctions between fire danger communications and fire season status, the national publicity campaign and other varied fire prevention education methods in New Zealand.
9. Carry out further research to facilitate understanding by agencies of key behavioural changes expected, and of target audiences and messages required to effect these; and
10. Investigate the public's understanding of these messages and their effectiveness in achieving the expected behaviour changes.

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## Further information

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**Key contact:** [Lisa.Langer@scionresearch.com](mailto:Lisa.Langer@scionresearch.com)

For more information, contact:  
Scion Rural Fire Research Group  
PO Box 29237, Fendalton,  
Christchurch 8540  
Telephone: 03-364 2949  
[www.scionresearch.com/fire](http://www.scionresearch.com/fire)

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