PRESCRIBED FIRE IN YOUNG EUCALYPT PLANTATIONS

IS IT WORTH THE RISK?

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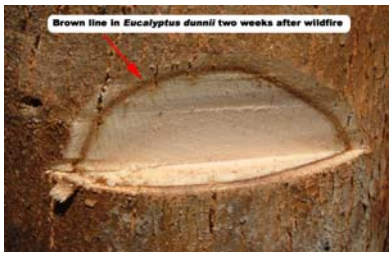
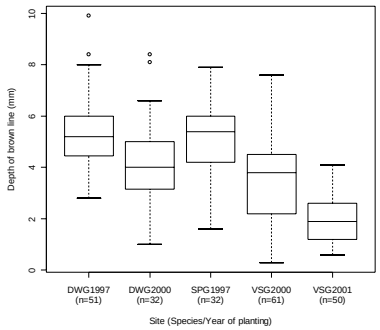
A series of experimental fires were conducted in 2005 and 2006 in three age classes of Dunn's White Gum and Spotted Gum plantations in Northern NSW to assess the feasibility of prescribed burning in young eucalypt plantations. The overall aim of the project was to determine the stand age/stem size, fuel load, and weather conditions that are appropriate for prescribed burning in order to minimise damage to plantation trees.

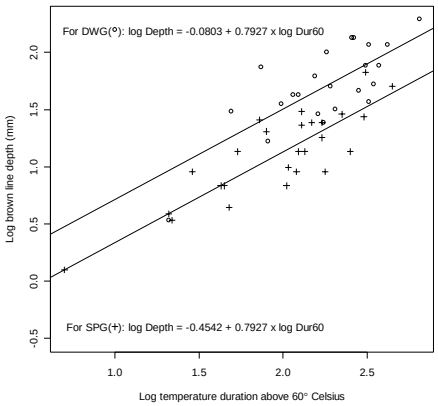
This poster focuses on the effect these fires had on wood quality.



The 'brown line' has been personally observed in numerous Eucalypt and Corymbia species that have been exposed to higher than ambient temperatures, such as during wildfire and prescribed fire. Previous research in this project shows that this line indicates the depth of cell death in living bark tissue.



Brown line depth at all sites and in both species ranged between 0 and 10 millimeters (see left). In the majority of cases, brown line depth was less than 6mm and never reached as deep as the cambium.



Strong relationship (r^2=0.79) between brown line depth and duration of temperature above 60° C within bark for Dunn's White Gum (DWG) and Spotted Gum (SPG).

60-65° C is the critical temperature for the death of any living tissue.

In May, 2007, 40 trees within the trial plots were felled to assess wood quality (specifically the formation of kino or gum veins) related to the low intensity prescribed burns. Images of selected stems, cut at 50cm above ground level (the same height as the within-bark temperature readings) are shown below.

Spotted Gum

Diameter:
15.7 cm
Bark thickness:
13 mm
Brown line depth:
6 mm
measurements at time of burn
photo taken 21 months after burn

Dunn's White Gum

Diameter:
15.5 cm
Bark thickness:
12 mm
Brown line depth:
5 mm
measurements at time of burn
photo taken 21 months after burn

There was no evidence of cambial death or kino (gum vein) formation in any of the sampled trees.

Low intensity hazard reduction burning will not cause wood quality defects in stems with bark at least 6mm thick. In terms of wood quality, prescribed burning is worth the risk!