

A FIRE DANGER RATING FOR THE JARRAH FOREST REGION

By G.B.Peet

Both fire suppression and controlled burning are dependent on a daily personal estimate of fire intensity. A fire danger rating has been calculated, designed to assist local forest officers in the northern jarrah forest with daily estimates of fire intensity. This article provides some preliminary information on the fire danger tables.

The fire danger rating is built around fire hazard. The concept of the two measures must be clear. Fire danger is an estimate of fire intensity while fire hazard is an estimate of fuel inflammability. Fire hazard has proven a reliable regional forecasting medium, because of reasonably constant levels of fuel inflammability during the usual fire weather, and the correlation between fire hazard and the profile moisture content of jarrah leaf litter. Fire danger is not a regional forecasting medium. It must be applied to specific forest areas in which the factors affecting fire intensity are constant e.g. wind velocity and fuel quantity.

Fuel inflammability affects fire intensity, hence it is a logical step to link the forecasting medium (fire hazard), to fire danger, by providing loadings which will enable local officers to define fire danger for specific forest areas.

Fire danger is forecast from three variables:-

Fuel inflammability.
Fuel quantity.
Wind velocity.

A basic fire hazard index defining fuel inflammability is loaded with fuel quantity, and wind velocity, to obtain the predicted rate of forward spread of headfire, the measure of fire danger.

The range of fire danger covered in the tables is 0 to 75 ft./min. rate of forward spread of headfire. This range of fire danger is divided into nine classes, based on a colour code.

The rate of forward spread of headfire is a suitable measure for defining difficulty of suppression and method of lighting in controlled burning. The fire danger rating is provided in two parts.

1. Fire Danger Tables.

These tables are designed to cover the weather conditions which may be experienced during a fire season, and are designed primarily to assist in fire suppression. Nine fire danger classes are shown, based on the predicted rate of forward spread in five-year-old fuel; but fuel age corrections are available.

2. Fire Behaviour Guide for Controlled Burning.

This guide is limited to three fire danger classes, Purple, Green and Blue, which represent the controlled burning range of weather conditions.

These tables are designed to provide a standard for preliminary planning, and the daily forecast of fire intensity, which will enable the planned results to be achieved.

A predicted maximum scorch height has been allocated to each fire danger class. Preliminary planning involves allocating an acceptable scorch height to each proposed area and tabulating the specifications. The daily burning programme is implemented by relating forecast fire danger to these specifications.

D.F.O. Campbell is conducting an intensive preliminary planning programme for controlled burning in the Dwellingup Division, and his comments on method of application would have great value as a follow up to this article.

For method of burning the controlled burning guide provides an estimate of the correct strip width and spot distance, to obtain maximum area production and quality of burn.

Scorch Height.

Burning under small size poles and saplings will usually be confined to the Purple fire danger class and Spring conditions, because low scorch height is critical.

Experimental evidence indicates that the moisture content of the outer dead bark of jarrah plays a part in regulating scorch height. Where scorch height is critical it is important to ensure that dead bark moisture content is high enough to prevent flare.

Bark moisture content follows a seasonal trend and is usually higher in Spring than in Autumn. The moisture content of the outer dead bark is related to amount of recent rain.

In addition to a Purple-Spring specification for critical low scorch areas the following is suggested:-

1. If the critical scorch height is 10 ft., the rainfall in the past 14 days should exceed 300 points before the burn is attempted.
2. If the critical scorch height is 20 ft., rainfall in the past 14 days should exceed 100 points before the burn is attempted.