PROGRAM A

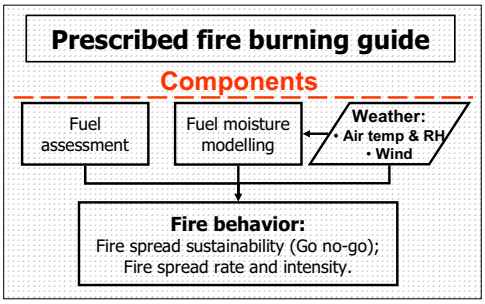
Project FuSE South Australia - fuel dynamics and fire behaviour in mallee-heath vegetation

M. Cruz, J. Myers, S. Matthews, P. Ellis, J. Gould
Bushfire Research, Forest Biosecurity and Protection, Ensis - CSIRO, ACT.
M. Henderson and B. Stephens
Department for Environment & Heritage, SA.

Objectives:

Develop a **prescribed burning guide** for South Australian mallee–heath vegetation. The research is focusing on:

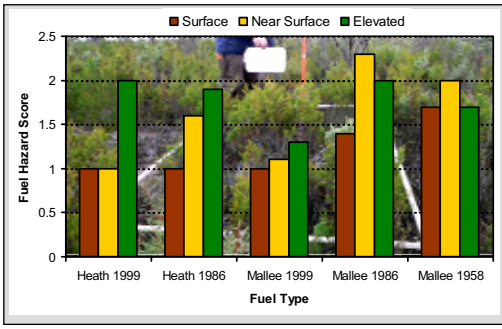
- Fuel structure change over time since fire;
- Fuel moisture dynamics in mallee-heath vegetation;
- Threshold conditions for fire spread sustainability;
- Fire behaviour associated with mallee-heath vegetation.



Fuel Assessment:

Objective: Characterise fuel dynamics in mallee-heath fuel complex.

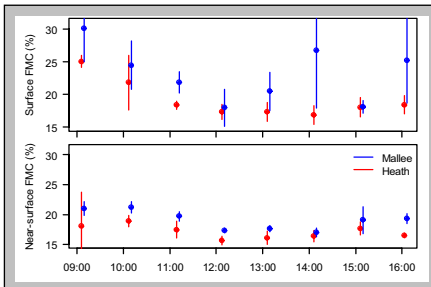
2006 phase: Extensive fuel sampling was conducted covering three fuel ages (7, 20 and 48 years) in mallee and heath fuels.



Hazard scores for the various fuel components in heath and mallee fuels.

Fuel Moisture Dynamics:

Objective: Characterise the diurnal dead fuel moisture dynamics of mallee-heath fuel types and provide fuel moisture data for go no-go and fire behaviour burns.

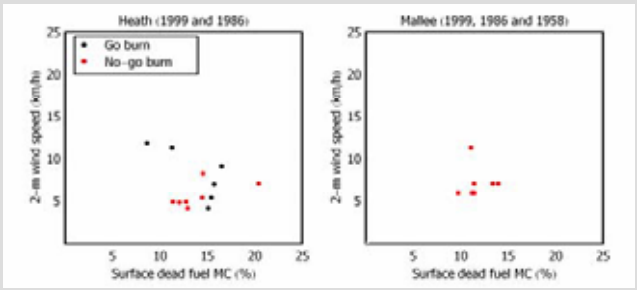


Diurnal fuel moisture dynamics for surface and near surface fuels.

Fire Behaviour: Spread and sustainability (Go No-go)

Objective: Determine the threshold fire weather conditions that will sustain fire propagation in mallee-heath fuel complexes, and the associated fire behaviour.

2006 phase: A total of 23 burns (10 in mallee fuels, 13 in heath fuels) were accomplished in the Ngarkat Conservation Park, SA. Six burns, all in the 1986 heath fuel type, were considered to sustain propagation and the remaining 17 fires self-extinguished.



Distribution of wind speed and surface fuel moisture content and associated fire sustainability for the autumn 2006 burns.

Key findings from first burning phase were:
- Drastic differences in fire behaviour between heath and mallee fuels (pictures above depict simultaneous burns);
- Heath fuel complex structure only sustains high intensity fire behaviour.

Future work:

- Conduct experimental fires under **higher fire potential** conditions;
- Develop **rapid deployment fire measurement** packages to monitor fire behaviour in operational burns;
- Conduct fire measurements in **operational burns**.