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Supplementary material

Interdependencies between flame length and fireline intensity in predicting crown fire initiation and crown scorch height

Martin E. Alexander[A,C] *and Miguel G. Cruz*[B]

[A]University of Alberta, Department of Renewable Resources and Alberta School of Forest Science and Management, Edmonton, AB, T6G 2H1, Canada.

[B]Bushfire Dynamics and Applications, CSIRO Ecosystem Sciences and Climate Adaptation Flagship, GPO Box 1700, Canberra, ACT 2601, Australia.

[C]Corresponding author. Email: mea2@telus.net

Estimating flame length from fireline intensity

Table 1 presents equations for calculating fireline intensity (I_B, kW m^{-1}) from flame length (L, m). Reciprocals of these equations can be useful for estimating flame length where fireline intensity is known. To facilitate estimation of flame length, Table S1 contains reciprocals of the equations from Table 1.

Table S1. Reciprocals of the fireline intensity–flame length equations in Table 1

Reference	Equation
Byram (1959)	$L = 0.0775 \cdot I_B^{0.46}$
Fons *et al.* (1963)	$L = 0.127 \cdot I_B^{0.667}$
Thomas (1963)	$L = 0.02665 \cdot I_B^{0.46}$
Anderson *et al.* (1966) – lodgepole pine slash	$L = 0.074 \cdot I_B^{0.651}$
Anderson *et al.* (1966) – Douglas-fir slash	$L = 0.0447 \cdot I_B^{0.67}$
Newman (1974)	$L = 0.0577 \cdot I_B^{0.50}$
Nelson (1980) – understorey fuels	$L = 0.04425 \cdot I_B^{0.50}$
Nelson (1980) – Southern US fuels	$L = 0.0377 \cdot I_B^{0.50}$
Clark (1983) – grasslands (head fire)	$L = 0.00015 \cdot I_B^{1.75}$
Clark (1983) – grasslands (backfire)	$L = 0.000722 \cdot I_B^{0.99}$
Nelson and Adkins (1986)	$L = 0.0475 \cdot I_B^{0.493}$
van Wilgen (1986)	$L = 0.0075 \cdot I_B^{0.46}$
Burrows (1994)	$L = 0.0147 \cdot I_B^{0.767}$
Weise and Biging (1996)	$L = 0.016 \cdot I_B^{0.7}$
Vega *et al.* (1998)	$L = 0.087 \cdot I_B^{0.493}$
Catchpole *et al.* (1998)	$L = 0.0325 \cdot I_B^{0.56}$
Fernandes *et al.* (2000)	$L = 0.0516 \cdot I_B^{0.453}$
Butler *et al.* (2004)	$L = 0.0175 \cdot I_B^{0.667}$
Fernandes *et al.* (2009) – maritime pine (head fire)	$L = 0.045 \cdot I_B^{0.543}$
Fernandes *et al.* (2009) – maritime pine (backfire)	$L = 0.029 \cdot I_B^{0.724}$