Table 1. Summary of typically observed variation in thermally-relevant leaf traits with canopy height and/or between sun and shade leaves

trait	symbol	units	response*	forest type(s)[†]	reference(s)[‡]
Leaf anatomy and morphological traits					
leaf mass per area (or inverse of specific leaf area)	*LMA (or 1/SLA)*	g cm^{-2}	↑ with height	TrB, TeB, TeN, BoN	1, 7, 2, 3, 4, 6
			↑ with light	TrB, TeB, TeN, BoN	1, 7, 2, 3, 5, 6
leaf area	*LA*	cm^2	↓ with height	TrB, TeB, BoN	7, 8, 10
			↓ with light	TrB, TeB, BoN	7, 8, 3, 10
leaf thickness		µm	↑ with height	TrB, TeB, TeN	15, 11, 2, 13, 16
			↑ with light	TrB, TeB, TeN	11, 15, 2, 5
upper cuticle thickness	*CT*	µm	↑ with height	TrB, TeN	27, 4
			↑ with light	TrB, TeB	27, 28
leaf density		g cm^{-3}	↑ with height	TeB	2
			↑ with light	TrB, TeB	6, 2
			≈ with light	TeN	5
stomatal density	$D_{stomata}$	mm^{-2}	↑ with height	TrB, TeB, TeN	11, 12, 3, 13, 4
			↑ with light	TrB, TeB	12, 11, 3
total vein density	*VLA*	mm mm^{-2}	↑ with height	TeB	47
			↑ with light	TeB	47, 48
minor vein density	VLA_{min}	mm mm^{-2}	↑ with height	TeB	14
			↑ with light	TeB	14, 48
trichome density		mm^{-2}	↑ with height	TrB	17
			↑ with light	TrB, TeB	17, 18, 19, 20
pinnate lobation		cm^2	↑ with height	TeB	3
			↓ with height	TeB	8
			↑ with light	TeB	8, 3
drip tip length		cm	↓ with height	TrB	27
			↓ with light	TrB	27
adaxial leaf wettability (as drop contact angle)	DCA_{ad}	°	↑ with height	TeB	13
			↑ with light	TeB	13
duration of surface wetness		%	↑with height (higher in mid-canopy)	TrB	29
		min day^{-1}	↑with height (higher in mid-canopy)	TeB	13
blade inclination angle (vertical)	*φB*	°	↑ with height	TrB, TeB	21, 22, 23

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			↑ with light	TrB, TeB	21, 24, 23, 22, 49
leaf packing		no./cm stem	↑ with light	TeN	25, 26
Leaf biochemical and physiological traits					
nitrogen content	*N*	g m^{-2}	↑ with height	TrB, TeB, TeN, BoN	7, 30, 31, 33, 32, 9
			↑ with light	TrB, TeB, TeN, BoN	15, 34, 31, 30, 33, 32, 9
		mg g^{-1}	≈↓ with height	TrB, TeB, TeN	15, 7, 30, 31, 33, 35
			≈↓ with light	TrB, TeB, TeN	7, 36, 30, 31, 33, 5
phosphorous content	*P*	g m^{-2}	↑ with height	TrB, TeB, TeN	15, 37, 1, 38
			↑ with light	TrB, TeB, TeN	15, 5
			≈ with light	TrB, TeB	1
		mg g^{-1}	≈↓ with height	TrB	15, 36, 1
			≈ with light	TrB, TeB	15, 36, 1
xanthophyll cycle pigments	*VAZ*	µmol m^{-2}	↑ with height	TrB, TeB	39, 31, 22
			↑ with light	TrB, TeB	40, 31
chlorophyll content	*Chl*	mg cm^{-2}	↓ with height	TrB, TeB	41, 42
			↓ with light	TrB, TeB	43, 42
chlorophyll a/b ratio	*chl a/b*	mol mol^{-1}	↑ with height	TrB, TeB, BoN	43, 31, 6
			↑ with light	TrB, TeB, BoN	43, 31, 40, 22, 6
β-carotene and lutein		µmol m^{-2}	↑ with height	TrB, TeB, BoN	31, 43, 6
			↑ with light	TrB, TeB, BoN	31, 39, 6
carbon isotope composition	$\delta^{13}C$	‰	↑ with height	TrB, TeB, TeN	7, 44, 32
			↑ with light	TrB, TeB, TeN	7, 30, 32
Intercellular CO_2 concentration	C_i	µmol mol^{-1}	↓ with height	TeB	31, 45
			↓ with light	TeB	31, 45
PAR absorptance		% nm	≈ with height	TrB	43, 46
			≈↑ with light	TrB	43, 46
absorptance efficiency per unit biomass		% g^{-1}	↓ with height	TrB	43, 46
			↓ with light	TrB	43, 46
PAR transmittance		%	↓ with height	TrB	43, 46

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trait	symbol	units	response*	forest type(s)[†]	reference(s)[‡]
Reflectance		%	↓ with light	TrB	43, 46
			≈ with height	TrB	43, 46
			↑ with height	BoN	6
			≈ with light	TrB	43, 46

1. Mau et al. 2018; **2.** Coble and Cavaleri 2014; **3.** Sack et al. 2006; **4.** Chin and Sillett 2019; **5.** Wyka et al. 2012; **6.** Atherton et al. 2017; **7.** Kenzo et al. 2015; **8.** Kusi and Karasi 2020; **9.** Dang et al. 1997; **10.** Gebauer et al. 2015; **11.** Marenco et al. 2017; **12.** Kafuti et al. 2020; **13.** Van Wittenberghe et al. 2012; **14.** Zhang et al. 2019; **15.** Weerasinghe et al. 2014; **16.** Oldham et al. 2010; **17.** Ichie et al. 2016; **18.** Gregoriou et al. 2007; **19.** Levizou et al. 2005; **20.** Liakoura 1997; **21.** Fauset et al. 2018; **22.** Niinemets et al. 1998, **23.** Ishida et al. 1998; **24.** Millen and Clendon 1979; **25.** Smith and Carter, 1988; **26**. Hadley and Smith 1987; **27.** Panditharathna et al. 2008; **28.** Baltzer and Thomas 2005; **29.** Dietz et al. 2007; **30.** Coble et al. 2016; **31.** Scartazza et al. 2016; **32.** Duursma and Marshall, 2006; **33.** Harley et al. 1996; **34.** Hernandez et al. 2020; **35.** Turnbull et al. 2003; **36.** Chen et al. 2020; **37.** van de Weg et al. 2012; **38.** M.A Cavaleri et al. 2008; **39.** Koniger et al. 1995; **40.** Mastubara et al. 2009; **41.** Harris and Medina 2013; **42.** Hansen et al. 2001; **43.** Poorter et al. 1995; **44.** Coble et al. 2017; **45.** Niinemets et al. 2004; **46.** Poorter et al. 2000; **47.** Zwieniecki et al. 2004; **48.** Sack and Scoffoni, 2013; **49.** Ball et al., 1988