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## Plant Traits and Production Rates from CO<sub>2</sub> Starvation to Saturation

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# **Appendix 1**

## Appendix 1.1 Articles used in the meta-analysis of chapter two.

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**Appendix 1.2** Overview of trait measurements reported for three or more species. **V:** Traits reported with error value, **X:** Traits reported without SE. Traits are ordered from most to least measured in low CO<sub>2</sub> studies. SLA/LMA, specific leaf area or recalculated leaf mass per area (g m<sup>-2</sup>);  $g_s$ , stomatal conductance (mol m<sup>-2</sup> s<sup>-1</sup>); DW, plant dry weight (g); A<sub>max</sub>, maximum photosynthesis (μmol m<sup>-2</sup> s<sup>-1</sup>); A<sub>net</sub>, net photosynthesis (μmol m<sup>-2</sup> s<sup>-1</sup>); WUE, water use efficiency (mmol mol<sup>-1</sup>); PNUE, photosynthetic nitrogen use efficiency (μmol mmol N<sup>-1</sup> s<sup>-1</sup>); r/s ratio, ratio root to shoot DW; C<sub>i</sub>/C<sub>a</sub>, ratio intercellular to atmospheric CO<sub>2</sub>; % Leaf N, percentage N per weight; % Leaf mass, percentage leaf DW of total DW, Root DW, root dry weight (g); Leaf DW, leaf dry weight (g); Chlorophyll, chlorophyll content (μmol g<sup>-1</sup>); Leaf N, N per area (g m<sup>-2</sup>); % Stem mass, percentage stem mass of total weight; RuBisCO, RuBisCO content (g m<sup>-2</sup>); Shoot DW: shoot dry weight (g), %Root DW, percentage root DW of total DW; Pore size, diameter of stomatal pore (μm).

Reference	Species	Form	C <sub>3</sub> /C <sub>4</sub>	SLA	gs	TotM	Amax	Anet	WUE	RSratio	Cl/Ca	LeafN%	Leaf%	RootM
Allen et al. 1991	Glycine max	herb	C <sub>3</sub>	x	x	x	x	x	x	x	x	x	x	x
Baker et al. 1990	Oryza sativa	herb	C <sub>3</sub>	x	v	v	v	v	v	v	v	v	v	v
Bunce et al. 2001	Abutilon theophrasti	herb	C <sub>3</sub>	x	v	v	v	v	v	v	v	v	v	v
	Chenopodium album	herb	C <sub>3</sub>	x	v	v	v	v	v	v	v	v	v	v
	Datura stramonium	herb	C <sub>3</sub>	x	v	v	v	v	v	v	v	v	v	v
	Xanthium strumarium	herb	C <sub>3</sub>	x	v	v	v	v	v	v	v	v	v	v
Campbell et al. 2005	Nicotiana tabacum	herb	C <sub>3</sub>	v	v	v	v	v	v	v	v	v	v	v
Campbell et al. 2006	Lupinus albus	herb	C <sub>3</sub>	v	v	v	v	v	v	v	v	v	v	v
Cowling and Sage 1998	Phaseolus vulgaris	herb	C <sub>3</sub>	v	v	v	v	v	v	v	v	v	v	v
Cunniff et al. 2008	Hordeum spontaneum	herb	C <sub>3</sub>	v	v	v	v	v	v	v	v	v	v	v
	Panicum milaceum	herb	C <sub>4</sub>	v	v	v	v	v	v	v	v	v	v	v
	Penisetum violaceum	herb	C <sub>4</sub>	v	v	v	v	v	v	v	v	v	v	v
	Setaria viridis	herb	C <sub>4</sub>	v	v	v	v	v	v	v	v	v	v	v
	Sorghum arundinaceum	herb	C <sub>4</sub>	v	v	v	v	v	v	v	v	v	v	v
Zea mays	herb	C <sub>4</sub>	v	v	v	v	v	v	v	v	v	v	v	v
Dipper et al. 1995	Abutilon theophrasti	herb	C <sub>3</sub>	x	v	v	v	v	v	v	v	v	v	v
	Amaranthus retroflexus	herb	C <sub>3</sub>	x	v	v	v	v	v	v	v	v	v	v
Ghannoum et al. 2010	Eucalyptus saligna	wood	C <sub>3</sub>	x	x	x	x	x	x	x	x	x	x	x
	Eucalyptus sideroxylon	wood	C <sub>3</sub>	x	x	x	x	x	x	x	x	x	x	x
Gonzalez-Meler et al. 2009	Arabidopsis thaliana	herb	C <sub>3</sub>	v	v	v	v	v	v	v	v	v	v	v
Hovenden and Schimanski 2000	Nothofagus cunninghamii	wood	C <sub>3</sub>	v	v	v	v	v	v	v	v	v	v	v
Kgope et al. 2010	Acacia karroo	wood	C <sub>3</sub>	v	v	v	v	v	v	v	v	v	v	v
	Acacia nilotica	wood	C <sub>3</sub>	v	v	v	v	v	v	v	v	v	v	v
	'Themeda triandra	herb	C <sub>4</sub>	v	v	v	v	v	v	v	v	v	v	v



## Appendix 1

Reference	Species	Form	C <sub>3</sub> /C <sub>4</sub>	LeafM	Chloro	LeafN	Stem%	NrStom	StemM	Rubisco	ShootM	Pore size
Allen et al. 1991	<i>Glycine max</i>	herb	C <sub>3</sub>	x							x	
Baker et al. 1990	<i>Oryza sativa</i>	herb	C <sub>3</sub>									
Bunce et al. 2001	<i>Abutilon theophrasti</i>	herb	C <sub>3</sub>									
	<i>Chenopodium album</i>	herb	C <sub>3</sub>									
	<i>Datura stramonium</i>	herb	C <sub>3</sub>									
	<i>Xanthium strumarium</i>	herb	C <sub>3</sub>									
Cambell et al. 2005	<i>Nicotiana tabacum</i>	herb	C <sub>3</sub>								v	v
Cambell et al. 2006	<i>Lathyrus album</i>	herb	C <sub>3</sub>								v	
Cowling and Sage 1998	<i>Phaseolus vulgaris</i>	herb	C <sub>3</sub>									
Cunniff et al. 2008	<i>Hordeum spontaneum</i>	herb	C <sub>3</sub>									
	<i>Panicum militaceum</i>	herb	C <sub>4</sub>									
	<i>Pennisetum violaceum</i>	herb	C <sub>4</sub>									
	<i>Setaria viridis</i>	herb	C <sub>4</sub>									
	<i>Sorghum arundinaceum</i>	herb	C <sub>4</sub>									
Zea mays	herb	C <sub>4</sub>										
Dippery et al. 1995	<i>Abutilon theophrasti</i>	herb	C <sub>3</sub>	v							v	
	<i>Amaranthus retroflexus</i>	herb	C <sub>3</sub>	v							v	
Ghannoum et al. 2010	<i>Eucalyptus saligna</i>	wood	C <sub>3</sub>								x	
	<i>Eucalyptus sideroxylon</i>	wood	C <sub>3</sub>								x	
Gonzalez-Meler et al. 2009	<i>Arabidopsis thaliana</i>	herb	C <sub>3</sub>									
Hovenden and Schiman-ski 2000	<i>Notogaea canninghamii</i>	wood	C <sub>3</sub>	v							v	v
Kgope et al. 2010	<i>Acacia karroo</i>	wood	C <sub>3</sub>								v	
	<i>Acacia nilotica</i>	wood	C <sub>3</sub>								v	
	<i>Themeda triandra</i>	herb	C <sub>4</sub>								v	

Reference	Species	Form	C <sub>3</sub> /C <sub>4</sub>	LeafM	Chloro	LeafN	Stem%	NrStom	StemM	Rubisco	ShootM	Pore size
Lewis et al. 2010	<i>Populus deltoides</i>	wood	C <sub>3</sub>				v					v
Maherali et al. 2002	<i>Bothriochlaea ischaemum</i>	herb	C <sub>4</sub>				v					v
Mohan et al. 2004	<i>Bromus japonicus</i>	herb	C <sub>3</sub>				v					v
	<i>Solanum dimidiatum</i>	herb	C <sub>3</sub>				v					v
	<i>Aer rubrum</i>	wood	C <sub>3</sub>				v					v
Polley et al. 1993	<i>Triticum aestivum</i>	herb	C <sub>3</sub>				v					v
Polley et al. 1994	<i>Prosopis glandulosa</i>	wood	C <sub>3</sub>				v					v
	<i>Schizachyrium scoparium</i>	herb	C <sub>4</sub>				v					v
Possel and Hewitt 2009	<i>Acacia nigrescens</i>	wood	C <sub>3</sub>				v					v
Sage and Reid 1992	<i>Phaseolus vulgaris</i>	herb	C <sub>3</sub>				v					v
Tissue et al. 1995	<i>Abutilon theophrasti</i>	herb	C <sub>3</sub>				v					v
	<i>Amaranthus retroflexus</i>	herb	C <sub>3</sub>				v					v
Tonsor and Scheiner 2007	<i>Arabidopsis thaliana</i>	herb	C <sub>3</sub>				v					v
Ward et al. 1999	<i>Abutilon theophrasti</i>	herb	C <sub>3</sub>				v					v
	<i>Amaranthus retroflexus</i>	herb	C <sub>3</sub>				v					v
Ward et al. 2008	<i>Abutilon theophrasti</i>	herb	C <sub>3</sub>				v					v
	<i>Amaranthus retroflexus</i>	herb	C <sub>3</sub>				v					v
Ward and Strain 1997	<i>Arabidopsis thaliana</i>	herb	C <sub>3</sub>				v					v