Table 1.2: Some of the peer reviewed literature on the stomatal conductance response to UV radiation and its effect on leaf temperature, assimilation rate and instantaneous water use efficiency. GPAS: generalised plant action spectrum; PGIAS: plant growth inhibition action spectrum (Flint and Caldwell, 2003).

Reference	Experiment Environment	UV Treatment	PAR (400-700 nm)	Plant Species	Stomatal Conductance	Leaf Temperature	Assimilation Rate	Water Use Efficiency	Comments
Reyes *et al*. (2018)	Climate chambers	1.69 W m^{-2} UV-B = 3.04 or 6.08 kJ m^{-2} PGIAS for 30 min or 60 min	100 µmol m^{-2} s^{-1}	Quinoa	Reduced after 1 day and more so after 3 days	Not studied	Reduced	Not studied	Results may be exaggerated by very low PAR with UV-B treatments
Novotná *et al*. (2016)	Field (Czech Republic) 890 m a.s.l.	Solar (unquantified) UV exclusion for 7 weeks from May	Solar (unquantified)	Mountain grassland	Reduction inferred (stomatal closure inferred)	Increase (~2°C)	Not studied	Not studied	Not a direct investigation of UV radiation and leaf temperature
Kataria & Guruprasad (2015)	Field (Indore, India) – UV exclusion	UV-A/B: 88.3/5.10 µmol m^{-2} s^{-1} (unweighted) daily maximum	Solar (up to 1390 µmol m^{-2} s^{-1}) daily maximum	4 Indian wheat varieties	Reduction (stomatal closure)	Not studied	Reduced	Not studied	2 varieties were most sensitive to UV radiation
Dehariya *et al*. (2012)	Field (Indore, India) – UV exclusion	UV & UV-B exclusion (unquantified)	Up to 10 W m^{-2}	Cotton	Reduction	Not studied	Reduced	Not studied	Not reference to cause of reduced conductance
Ni *et al*. (2014)	Glasshouse (China)	0.5 W m^{-2} (unweighted) 2 hours a day for 10 days	Solar (up to 1200 µmol m^{-2} s^{-1})	Rapeseed	Increase (stomatal opening)	Not studied	Not studied	Not studied	Wax reduced adaxial conductance causing abaxial opening
Tossi *et al*. (2014)	In vitro	0-5.45 µmol m^{-2} s^{-1} (unweighted) for 3 hours	200 µmol m^{-2} s^{-1}	Arabidopsis	Reduction (stomatal closure)	Not studied	Not studied	Not studied	In vitro: Abaxial epidermal strips
Kataria *et al*. (2013)	Field (Indore, India) – UV exclusion	UV-A/B: 88.3/5.10 µmol m^{-2} s^{-1} (unweighted) daily maximum	Solar (up to 1390 µmol m^{-2} s^{-1}) daily maximum	Cotton, wheat, amaranthus, sorghum	Reduction (stomatal closure)	Not studied	Reduced	Not studied	Dicots (wheat & sorghum) most sensitive to UV-B
Gitz III *et al*. (2013)	Field (no location given) – UV exclusion	Solar UV exclusion (UV-B- & UV-B+; unquantified)	Solar (unquantified)	Soybean (4x isolines)	Reduced (3 of 4 isolines, reduced stomatal density) No change (1 isoline)	Not studied	No change (3 isolines) Reduced (1 isoline)	Increase (3 of 4 isolines) No change (1 isoline)	Conductance reduced due to reduction in stomatal density

Table 1.2 continued.

Reference	Experiment Environment	UV Treatment	PAR (400-700 nm)	Plant Species	Stomatal Conductance	Leaf Temperature	Assimilation Rate	Water Use Efficiency	Comments
Lidon & Ramalho (2011)	Controlled environment growth chamber	GPAS weighted UV: 22 W m^{-2} providing 2.975 kJ m^{-2} d^{-1} for 7 days	400 µmol m^{-2} s^{-1} during cultivation, reduced to 100 µmol m^{-2} s^{-1} for UVB treatment	Rice	>80% reduction	Not studied	>80% reduction	Not studied	PAR:UV ratio reduced substantially which may have exaggerated results
He *et al*. (2005, 2011a, 2011b, 2013)	In vitro	0-1 W m^{-2} (GPAS)	0.1 mmol m^{-2} s^{-1}	*Broad bean* and *Arabidopsis thaliana*	Not studied	Not studied	Not studied	Not studied	Stomatal closure in epidermal strips
Gitz III *et al*. (2005)	Glasshouse	13 kJ m^{-2} d^{-1} GPAS weighted for 28 days	~50% of ambient solar radiation	Soybean (4x lines)	Reduced (3 of 4 lines, reduced stomatal density) No change (1 line)	Not studied	Reduced (1 line) No change (3 lines)	Increase (3 of 4 lines) No change (1 line)	Conductance reduced due to reduction in stomatal density
Kakani *et al*. (2003a)	Sunlit controlled environment chamber	0, 8 & 16 kJ m^{-2} d^{-1} unweighted for 66 days after emergence	Solar (unquantified)	Cotton	Not studied	Not studied	Not studied	Not studied	Increase in stomatal density, index & length, but not width
Eisinger *et al*. (2003)	Growth chamber	Xenon arc lamp at 284 & 360 nm giving 0.18 µmol m^{-2} s^{-1} unweighted	500 µmol m^{-2} s^{-1}	*Arabidopsis thaliana*	Not studied	Not studied	Not studied	Not studied	Stomatal opening in the absence of green light
Kostina *et al*. (2001)	Field with supplemental UV-B	Modulated system providing 30% increase on ambient	Solar (unquantified)	Birch	Increased	Not studied	Not studied	Not studied	Stomatal density, length & width increased
Jansen and Noort (2000)	Growth chamber	Plants: 3 h of 2.2 W m^{-2}. Epidermal strips 2 h of 1.1 W m^{-2} UV-B.	40-400 µmol m^{-2} s^{-1} during UV treatment	*Broad bean*	Not studied	Not studied	Not studied	Not studied	Stomatal opening & closing depending on metabolic state of guard cells (& PAR)
Noguès *et al*. (1999)	Glasshouse	GPAS weighted UV: 0.63 W m^{-2} (32 kJ m^{-2} d^{-1}), 0.30 W m^{-2} (15 kJ m^{-2} d^{-1}), 0.21 W m^{-2} (11 kJ m^{-2} d^{-1}) for 10 days	500 µmol m^{-2} s^{-1}	Pea, commelina & oilseed rape	Pea: 0.30 & 0.63 W m^{-2} reduced, Commelina & oilseed rape: 0.63 W m^{-2} reduced	Not studied	Reduced (55%) in response to 0.63 W m^{-2} (14 hour treatment)	Not studied	Stomatal closure

Table 1.2 continued.

Reference	Experiment Environment	UV Treatment	PAR (400-700 nm)	Plant Species	Stomatal Conductance	Leaf Temperature	Assimilation Rate	Water Use Efficiency	Comments
Allen *et al*. (1999)	Field – modulated UV-B facility (UK)	1.89 kJ m^{-2} d^{-1} (ambient) & 2.44 kJ m^{-2} d^{-1} (30% above ambient) weighted by the erythemal BSWF	271 W m^{-2} ≈ 1250 µmol m^{-2} s^{-1}	Pea	No effect	Not studied	No effect	Not studied	No response to UV radiation
Noguès *et al*. (1998)	Glasshouse	GPAS weighted UV: 0.63 W m^{-2} (32 kJ m^{-2} d^{-1}), for 15 days	500 µmol m^{-2} s^{-1}	Pea	Reduced adaxial by 65%	Not studied	10-15% reduction	Not studied	Stomatal closure
Dai *et al*. (1995)	Glasshouse	Unweighted: 0.15 W m^{-2} (control) 1.94 W m^{-2} (UVB treatment) for 4 weeks.	940 µmol m^{-2} s^{-1}	Rice	Not studied	Not studied	Not studied	Not studied	Stomatal density in UV-B sensitive cultivars: 2 weeks (reduced), 4 weeks (further reduced)