

### Supplementary Material

#### Revised emission factors for estimating direct nitrous oxide emissions from nitrogen inputs in Australia's agricultural production systems: a meta-analysis

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Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Grace <i>et al.</i> (2004)	Narrabri	NSW	570	Cotton	Cotton	2002	79	Urea	100	0.03	
Grace <i>et al.</i> (2006)	Narrabri	NSW	570	Cotton	Cotton	2003/04	118	Urea	140	-0.26	
Grace <i>et al.</i> (2004)	Narrabri	NSW	570	Cotton	Cotton	2002	79	Urea	100	0.38	
Grace <i>et al.</i> (2004)	Narrabri	NSW	570	Cotton	Cotton	2002	79	Urea	100	0.1	
Grace <i>et al.</i> (2004)	Narrabri	NSW	570	Cotton	Cotton	2002	79	Urea	200	0.23	
Grace <i>et al.</i> (2004)	Narrabri	NSW	570	Cotton	Cotton	2002	79	Urea	200	0.4	
Grace <i>et al.</i> (2004)	Narrabri	NSW	570	Cotton	Cotton	2002	79	Urea	200	0.26	
Grace <i>et al.</i> (2004)	Narrabri	NSW	570	Cotton	Cotton	2002	79	Urea	300	2.27	
Grace <i>et al.</i> (2007)	Dalby	QLD	594	Cotton	Cotton	2006/07	150	Urea	189	0.44	
Grace <i>et al.</i> (2008)	Dalby	QLD	594	Cotton	Cotton	2007/08	214	Urea	195	0.51	
Grace <i>et al.</i> (2006)	Dalby	QLD	594	Cotton	Cotton	2005/06	165	Urea	207	0.41	
Grace <i>et al.</i> (2007)	Dalby	QLD	594	Cotton	Cotton	2006/07	150	Urea	129	1.05	
Grace <i>et al.</i> (2008)	Dalby	QLD	594	Cotton	Cotton	2007/08	214	Urea	155	0.97	
MacDonald <i>et al.</i> (2015)	Narrabri	NSW	570	Cotton	Cotton	2011/12	173	Urea	120	0.35	
MacDonald <i>et al.</i> (2015)	Narrabri	NSW	570	Cotton	Cotton	2011/12	173	Urea	200	0.12	
MacDonald <i>et al.</i> (2015)	Narrabri	NSW	570	Cotton	Cotton	2011/12	173	Urea	320	3.15	
Scheer <i>et al.</i> (2013)	Kingsthorpe	QLD	694	Cotton	Cotton	2009/10	185	Urea	200	0.09	High irri.
Scheer <i>et al.</i> (2013)	Kingsthorpe	QLD	694	Cotton	Cotton	2009/10	185	Urea	200	0.19	Medium
Scheer <i>et al.</i> (2013)	Kingsthorpe	QLD	694	Cotton	Cotton	2009/10	185	Urea	200	0.1	Low
Scheer <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Cotton	Cotton	2010/11	376	Urea	180	0.29	
Scheer <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Cotton	Cotton	2010/11	376	Urea	270	0.5	
Scheer <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Cotton	Cotton	2010/11	376	Urea	90	0.13	
De Antoni <i>et al.</i> (2014)	Kingaroy	QLD	744	Maize	Irri. Crop	2011/12	184	Urea	40	0.26	
De Antoni <i>et al.</i> (2014)	Kingaroy	QLD	744	Maize	Irri. Crop	2011/12	184	Urea	100	0.53	
De Antoni <i>et al.</i> (2014)	Kingaroy	QLD	744	Maize	Irri. Crop	2011/12	184	Urea	160	0.93	
De Antoni <i>et al.</i> (2014)	Kingaroy	QLD	744	Maize	Irri. Crop	2011/12	184	DMPP	160	0.24	
De Antoni <i>et al.</i> (2014)	Kingaroy	QLD	744	Wheat	Irri. Crop	2011	143	Synthetic	20	-0.29	
De Antoni <i>et al.</i> (2014)	Kingaroy	QLD	744	Wheat	Irri. Crop	2011	143	Urea	80	0.19	

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
De Antoni <i>et al.</i> (2014)	Kingaroy	QLD	744	Wheat	Irri. Crop	2011	143	DMPP	80	0	
De Antoni <i>et al.</i> (2015)	Kingaroy	QLD	744	Sorghum	Irri. Crop	2012/13	281	Urea	100	1.17	
De Antoni <i>et al.</i> (2015)	Kingaroy	QLD	744	Sorghum	Irri. Crop	2012/13	281	Urea	70	0.63	
De Antoni <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Sorghum	Irri. Crop	2013/14	198	Urea	160	0.7	
De Antoni <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Sorghum	Irri. Crop	2013/14	198	Urea	80	0.5	
De Antoni <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Sorghum	Irri. Crop	2013/14	198	DMPP	160	0.1	
De Antoni <i>et al.</i> (2016)	Kingaroy	QLD	648	Sorghum	Irri. Crop	2013/14	198	Urea	120	0.4	
De Antoni <i>et al.</i> (2016)	Kingaroy	QLD	648	Sorghum	Irri. Crop	2013/14	198	Urea	80	0.3	
De Antoni <i>et al.</i> (2016)	Kingaroy	QLD	648	Sorghum	Irri. Crop	2013/14	198	DMPP	120	0.1	
Galbally <i>et al.</i> (2005)	Griffith	NSW	398	Maize	Irri. Crop	2004/05	129	Urea	300	1.6	
Galbally <i>et al.</i> (2005)	Griffith	NSW	398	Maize	Irri. Crop	2004/05	129	Urea	300	2.8	
Galbally <i>et al.</i> (2005)	Griffith	NSW	398	Maize	Irri. Crop	2004/05	129	Urea	50	0.13 <sup>C</sup>	
Jamali <i>et al.</i> (2016)	Griffith	NSW	398	Maize	Irri. Crop	2014	162	Urea	173	0.29 <sup>C</sup>	Excluded
Jamali <i>et al.</i> (2016)	Griffith	NSW	398	Maize	Irri. Crop	2014	162	Urea	173	0.24 <sup>C</sup>	Excluded
Jamali <i>et al.</i> (2016)	Griffith	NSW	398	Maize	Irri. Crop	2014	162	DMPP	173	0.14 <sup>C</sup>	Excluded
Jamali <i>et al.</i> (2016)	Griffith	NSW	398	Maize	Irri. Crop	2014	162	DMPP	173	0.13 <sup>C</sup>	Excluded
Scheer <i>et al.</i> (2012)	Kingsthorpe	QLD	694	Wheat	Irri. Crop	2009	133	Urea	200	0.31	
Scheer <i>et al.</i> (2012)	Kingsthorpe	QLD	694	Wheat	Irri. Crop	2009	133	Urea	200	0.15	
Scheer <i>et al.</i> (2012)	Kingsthorpe	QLD	694	Wheat	Irri. Crop	2009	133	Urea	200	0.16	
Barton <i>et al.</i> (2016)	Buntine	WA	313	Canola	Non-irri. crop	2012/13	364	Urea	100	0.08	+OM
Barton <i>et al.</i> (2016)	Buntine	WA	313	Canola	Non-irri. crop	2012/13	364	Urea	100	0.01	
Barton <i>et al.</i> (2016)	Buntine	WA	313	Barley	Non-irri. crop	2013/14	363	Urea	100	0.02	
Barton <i>et al.</i> (2016)	Buntine	WA	313	Barley	Non-irri. crop	2013/14	363	Urea	100	0.13	+OM
Barton <i>et al.</i> (2016)	Buntine	WA	313	Oat	Non-irri. crop	2014	211	Urea	100	0.03	+OM
Barton <i>et al.</i> (2016)	Buntine	WA	313	Oat	Non-irri. crop	2014	211	Urea	100	0	
Barton <i>et al.</i> (2008)	Cunderdin	WA	306	Wheat	Non-irri. crop	2005/06	364	Urea	100	0.02	
Barton <i>et al.</i> (2010)	Cunderdin	WA	306	Canola	Non-irri. crop	2007/08	361	Urea	75	0.06	
Barton <i>et al.</i> (2013)	Wongan Hills	WA	402	Wheat	Non-irri. crop	2009/10	371	Urea	75	0.03	

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Barton <i>et al.</i> (2013)	Wongan Hills	WA	402	Wheat	Non-irri. crop	2009/10	371	Urea	75	0.01	
Barton <i>et al.</i> (2013)	Wongan Hills	WA	402	Wheat	Non-irri. crop	2010/11	364	Urea	20	0.06	
Barton <i>et al.</i> (2013)	Wongan Hills	WA	402	Wheat	Non-irri. crop	2010/11	364	Urea	20	0.1	
Barton <i>et al.</i> (2013)	Wongan Hills	WA	402	Wheat	Non-irri. crop	2010/11	364	Urea	50	0.05	
Barton <i>et al.</i> (2013)	Wongan Hills	WA	402	Wheat	Non-irri. crop	2010/11	364	Urea	50	-0.02	
Li <i>et al.</i> (2012)	Cunderdin	WA	306	Wheat	Non-irri. crop	2006/07	337	Urea	75	0.01	
Hill <i>et al.</i> (2012)	Horsham	VIC	414	Wheat	Non-irri. crop	2011	224	Urea	100	0.03	
Officer <i>et al.</i> (2010)	Horsham	VIC	414	Wheat	Non-irri. crop	2008/09	396	Urea	50	0.16	
Officer <i>et al.</i> (2015)	Horsham	VIC	414	Wheat	Non-irri. crop	2007	180	Urea	50	0.15	
Officer <i>et al.</i> (2015)	Horsham	VIC	414	Wheat	Non-irri. crop	2007	180	Urea	50	0.22	
Officer <i>et al.</i> (2015)	Horsham	VIC	414	Wheat	Non-irri. crop	2007	180	Urea	50	0.18	
Officer <i>et al.</i> (2015)	Horsham	VIC	414	Wheat	Non-irri. crop	2008	129	Urea	50	0.13	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2014	250	Urea	80	1.75	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2014	250	Urea	80	0.13	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2015	250	Urea	80	0.15	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2015	250	Urea	80	0.09	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2016	250	Urea	80	1.55	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2016	250	Urea	80	2.41	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2016	250	DMPP	80	0.41	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2014	250	Urea	80	2.14	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2014	250	Urea	80	0.16	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2015	250	Urea	80	0.24	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2015	250	Urea	80	0.11	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2016	250	Urea	80	0.97	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2016	250	Urea	80	0.83	
Poole (2017)	Yarrawonga	VIC	500	Wheat	Non-irri. crop	2016	250	DMPP	80	0.12	
Wallace <i>et al.</i> (2016)	TaylorsLake	VIC	440	Wheat	Non-irri. crop	2012	190	Urea	50	0.26	
Wallace <i>et al.</i> (2016)	TaylorsLake	VIC	440	Wheat	Non-irri. crop	2012	190	DMPP	50	-0.02	

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Wallace <i>et al.</i> (2016)	TaylorsLake	VIC	440	Wheat	Non-irri. crop	2012	190	NBPT	50	0.23	
Wallace <i>et al.</i> (2018)	Horsham	VIC	414	Wheat	Non-irri. crop	2014	190	Urea	50	0.11	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2014	250	Urea	80	0.01	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2014	250	Urea	80	-0.11	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2015	250	Urea	80	0.1	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2015	250	Urea	80	4	Excluded
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2016	250	Urea	80	0.07	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2016	250	Urea	80	0.14	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2014	250	Urea	80	0.22	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2014	250	Urea	80	0.07	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2015	250	Urea	80	0.09	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2015	250	Urea	80	3.59	Excluded
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2016	250	Urea	80	0.02	
Poole (2017)	Hart	SA	458	Wheat	Non-irri. crop	2016	250	Urea	80	0.1	
Li <i>et al.</i> (2016)	Wagga Wagga	NSW	504	Canola	Non-irri. crop	2013/14	364	Urea	100	0.05	
Li <i>et al.</i> (2018)	Wagga Wagga	NSW	504	Wheat	Non-irri. crop	2012/13	219	Urea	100	0.04	
Li <i>et al.</i> (2018)	Wagga Wagga	NSW	504	Wheat	Non-irri. crop	2012/13	219	NBPT	100	0.04	
Li <i>et al.</i> (2018)	Wagga Wagga	NSW	504	Wheat	Non-irri. crop	2012/13	219	DMPP	100	0.01	
Barker-Reid <i>et al.</i> (2005)	Rutherglen	VIC	583	Wheat	Non-irri. crop	2004/05	330	Urea	83	0.11	
Barker-Reid <i>et al.</i> (2005)	Rutherglen	VIC	583	Wheat	Non-irri. crop	2004/05	330	Urea	83	0.06	
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2006/07	365	Urea	90	0.72	CTRB
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2006/07	365	Urea	90	0.76	CTRR
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2006/07	365	Urea	90	0.39	NTRB
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2006/07	365	Urea	90	0.57	NTRR
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2007/08	365	Urea	90	0.76	CTRB
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2007/08	365	Urea	90	1.08	CTRR
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2007/08	365	Urea	90	0.69	NTRB
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2007/08	365	Urea	90	0.73	NTRR

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2008/09	365	Urea	90	1.25	CTRB
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2008/09	365	Urea	90	1.57	CTRR
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2008/09	365	Urea	90	0.49	NTRB
Wang <i>et al.</i> (2011)	Hermitage	QLD	668	Wheat	Non-irri. crop	2008/09	365	Urea	90	0.63	NTRR
Scheer <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2012/13	364	Urea	170	1.27	
Scheer <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2012/13	364	PCU	170	0.31	
Scheer <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2012/13	364	DMPP	170	0.14	
Scheer <i>et al.</i> (2016)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2012/13	364	Nitrapyrin	170	0.83	
Harris <i>et al.</i> (2016)	Tarrington	VIC	704	Wheat	Non-irri. crop	2013	268	Urea	50	-0.12	
Harris <i>et al.</i> (2016)	Tarrington	VIC	704	Wheat	Non-irri. crop	2013	268	Urea	100	0.99	
Harris <i>et al.</i> (2016)	Tarrington	VIC	704	Wheat	Non-irri. crop	2013	268	Urea	100	0.31	
Harris <i>et al.</i> (2016)	Tarrington	VIC	704	Wheat	Non-irri. crop	2013	268	DMPP	100	0.35	
Harris <i>et al.</i> (2016)	Hamilton	VIC	615	Wheat	Non-irri. crop	2012	222	Urea	50	8.4	Excluded
Harris <i>et al.</i> (2016)	Hamilton	VIC	615	Wheat	Non-irri. crop	2012	222	Urea	100	8.9	Excluded
Harris <i>et al.</i> (2016)	Hamilton	VIC	615	Wheat	Non-irri. crop	2012	222	Urea	100	1.2	
Harris <i>et al.</i> (2016)	Hamilton	VIC	615	Wheat	Non-irri. crop	2012	222	DMPP	100	0.53	
Harris <i>et al.</i> (2016)	Hamilton	VIC	615	Wheat	Non-irri. crop	2014	237	Urea	50	1.72	
Harris <i>et al.</i> (2016)	Hamilton	VIC	615	Wheat	Non-irri. crop	2014	237	Urea	100	2	
Harris <i>et al.</i> (2016)	Hamilton	VIC	615	Wheat	Non-irri. crop	2014	237	Urea	100	0.63	
Harris <i>et al.</i> (2016)	Hamilton	VIC	615	Wheat	Non-irri. crop	2014	237	DMPP	100	-0.27	
Schwenke <i>et al.</i> (2015)	Tamworth	NSW	639	Canola	Non-irri. crop	2009/10	373	Urea	80	0.63	
Schwenke <i>et al.</i> (2015)	Tamworth	NSW	639	Canola	Non-irri. crop	2009/10	373	Urea	80	0.27	
Schwenke <i>et al.</i> (2015)	Tamworth	NSW	639	Canola	Non-irri. crop	2009/10	211	Residue	62	0.54	Excluded
Schwenke <i>et al.</i> (2015)	Tamworth	NSW	639	Chickpeas	Non-irri. crop	2009/10	216	Residue	51	0.23	Excluded
Schwenke <i>et al.</i> (2015)	Tamworth	NSW	639	Canola	Non-irri. crop	2009/10	211	Residue	81	0.16	Excluded
Schwenke <i>et al.</i> (2015)	Tamworth	NSW	639	Chickpea	Non-irri. crop	2009/10	216	Residue	80	0.12	Excluded
Schwenke <i>et al.</i> (2015)	Tamworth	NSW	639	Faba bean	Non-irri. crop	2009/10	231	Residue	15	0.62	Excluded
Schwenke <i>et al.</i> (2015)	Tamworth	NSW	639	Field pea	Non-irri. crop	2009/10	231	Residue	31	0.26	Excluded

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Schwenke & Haigh (2016)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2012/13	380	Urea	120	0.53	
Schwenke & Haigh (2016)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2012/13	380	Urea	200	0.46	
Schwenke & Haigh (2016)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2012/13	380	Urea	40	0.56	
Schwenke & Haigh (2016)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2012/13	135	Urea	120	1.76	
Schwenke & Haigh (2016)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2012/13	135	Urea	160	1.53	
Schwenke & Haigh (2016)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2012/13	135	Urea	200	2.17	
Schwenke & Haigh (2016)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2012/13	135	Urea	240	3.22	
Schwenke & Haigh (2016)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2012/13	135	Urea	40	1.28	
Schwenke & Haigh (2016)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2012/13	135	Urea	80	2.39	
Schwenke & Haigh (2016)	Pine Ridge	NSW	595	Sunflower	Non-irri. crop	2011	115	Urea	160	0.41	
Schwenke & Haigh (2016)	Pine Ridge	NSW	595	Sunflower	Non-irri. crop	2011	115	Urea	80	0.67	
Schwenke & Haigh (2019a)	Pine Ridge	NSW	595	Sunflower	Non-irri. crop	2011	115	DMPP	80	0.05	
Schwenke & Haigh (2016)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2010/11	142	Urea	160	2.37	
Schwenke & Haigh (2016)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2010/11	142	Urea	80	1.53	
Schwenke & Haigh (2019a)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2010/11	142	DMPP	80	-0.35	
Schwenke <i>et al.</i> (2016)	Tamworth	NSW	639	Wheat	Non-irri. crop	2010/11	333	Urea	85	0.42	
Schwenke <i>et al.</i> (2016)	Tamworth	NSW	639	Wheat	Non-irri. crop	2010/11	354	Urea	85	0.2	
Schwenke <i>et al.</i> (2016)	Tamworth	NSW	639	Barley	Non-irri. crop	2010/11	364	Urea	65	-0.02	
Schwenke <i>et al.</i> (2016)	Spring Ridge	NSW	677	Wheat	Non-irri. crop	2011	160	Urea	40	0.08	
Schwenke <i>et al.</i> (2016)	Spring Ridge	NSW	677	Wheat	Non-irri. crop	2011	160	Urea	80	0.06	
Schwenke <i>et al.</i> (2016)	Spring Ridge	NSW	677	Wheat	Non-irri. crop	2011	160	Urea	160	0.11	
Schwenke <i>et al.</i> (2016)	Spring Ridge	NSW	677	Wheat	Non-irri. crop	2011	160	Urea	80	0.03	
Schwenke <i>et al.</i> (2016)	Spring Ridge	NSW	677	Wheat	Non-irri. crop	2011	160	DMPP	80	0.01	
Schwenke <i>et al.</i> (2016)	Bithramere	NSW	674	Barley	Non-irri. crop	2011	161	Urea	30	0.42	
Schwenke <i>et al.</i> (2016)	Bithramere	NSW	674	Barley	Non-irri. crop	2011	161	Urea	60	0.45	
Schwenke <i>et al.</i> (2016)	Bithramere	NSW	674	Barley	Non-irri. crop	2011	161	Urea	90	0.36	
Schwenke <i>et al.</i> (2016)	Bithramere	NSW	674	Barley	Non-irri. crop	2011	161	Urea	60	0.18	
Schwenke <i>et al.</i> (2016)	Bithramere	NSW	674	Barley	Non-irri. crop	2011	161	DMPP	60	0.11	

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Schwenke <i>et al.</i> (2018)	Tamworth	NSW	639	Wheat	Non-irri. crop	2010/11	333	Urea	85	0.47	
Schwenke <i>et al.</i> (2018)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2010/11	365	Urea	45	0.99	
Schwenke & Haigh (2019a)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2013/14	365	Urea	100	0.64	
Schwenke & Haigh (2019a)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2013/14	365	DMPP	100	0.22	
Schwenke & Haigh (2019b)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2013/14	365	Urea	100	0.12	
Schwenke & Haigh (2019a)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2013/14	160	Urea	80	0.22	
Schwenke & Haigh (2019a)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2013/14	160	DMPP	80	0.02	
Schwenke & Haigh (2019a)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2013/14	160	Urea	100	0.39	
Schwenke & Haigh (2019a)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2013/14	160	DMPP	100	0.01	
Schwenke & Haigh (2019b)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2013/14	160	Urea	100	0.08	
Schwenke & Haigh (2019b)	Quirindi	NSW	683	Sorghum	Non-irri. crop	2013/14	160	Urea	100	0.13	
Schwenke & Haigh (2019a)	Breeza	NSW	647	Sorghum	Non-irri. crop	2014/15	129	Urea	90	0.56	
Schwenke & Haigh (2019a)	Breeza	NSW	647	Sorghum	Non-irri. crop	2014/15	129	DMPP	90	0.11	
Schwenke & Haigh (2019a)	Breeza	NSW	647	Sorghum	Non-irri. crop	2014/15	129	DMPP	90	0.10	
Schwenke & Haigh (2019a)	Breeza	NSW	647	Sorghum	Non-irri. crop	2014/15	129	PCU	90	0.37	
Schwenke & Haigh (2019b)	Breeza	NSW	647	Sorghum	Non-irri. crop	2014/15	129	Urea	90	0.23	
Schwenke & Haigh (2019b)	Breeza	NSW	647	Sorghum	Non-irri. crop	2014/15	129	Urea	90	0.20	
Schwenke & Haigh (2019b)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2014/15	363	Urea	40	-0.05	
Schwenke & Haigh (2019b)	Tamworth	NSW	639	Sorghum	Non-irri. crop	2014/15	363	NBPT	120	0.19	
Bell (2015)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2014/15	204	Urea	80	0.47	
Bell (2015)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2014/15	204	Urea	120	1.13	
Bell (2015)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2014/15	204	Urea	160	1.62	
Bell (2015)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2014/15	204	DMPP	80	0.45	
Bell (2015)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2014/15	204	DMPP	120	0.52	
Bell (2015)	Kingsthorpe	QLD	694	Sorghum	Non-irri. crop	2014/15	204	DMPP	160	0.44	
Bell (2015)	Kingaroy	QLD	648	Sorghum	Non-irri. crop	2014/15	335	Urea	60	0.92	
Bell (2015)	Kingaroy	QLD	648	Sorghum	Non-irri. crop	2014/15	335	Urea	120	1.59	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Broccoli	Horticulture	2013/14	69	Urea	120	0.1	



Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Broccoli	Horticulture	2013/14	69	Mix	108	0.04	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Broccoli	Horticulture	2013/14	69	Mix	108	0.04	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Broccoli	Horticulture	2013/14	69	Mix	120	0.03	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Broccoli	Horticulture	2013/14	69	Mix	120	0.04	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Beans	Horticulture	2013/14	95	Urea	90	0.12	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Beans	Horticulture	2013/14	95	Mix	284	0.02	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Beans	Horticulture	2013/14	95	Mix	330	0.06	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Beans	Horticulture	2013/14	95	Mix	150	0.6	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Beans	Horticulture	2013/14	95	Mix	192	0.26	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Lettuce	Horticulture	2013/14	84	Urea	100	0.02	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Lettuce	Horticulture	2013/14	84	Urea	100	0.04	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Lettuce	Horticulture	2013/14	84	Urea	100	0.04	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Lettuce	Horticulture	2013/14	84	Urea	96	0.04	
De Rosa <i>et al.</i> (2016)	Gatton	QLD	765	Lettuce	Horticulture	2013/14	84	Urea	96	0.08	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Vegetables	Horticulture	2014/15	360	Urea	340	0.18	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Vegetables	Horticulture	2014/15	360	Mix	154	1.14	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Vegetables	Horticulture	2014/15	360	Mix	399	0.51	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Vegetables	Horticulture	2014/15	360	Mix	287	0.39	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Vegetables	Horticulture	2014/15	360	Mix	529	0.3	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Vegetables	Horticulture	2014/15	180	Urea	120	0.24	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Sweet corn	Horticulture	2014/15	180	Mix	195	0.77	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Sweet corn	Horticulture	2014/15	180	Mix	279	0.39	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Sweet corn	Horticulture	2014/15	180	Mix	337	0.05	
De Rosa <i>et al.</i> (2018)	Gatton	QLD	765	Sweet corn	Horticulture	2014/15	180	Urea	406	0.16	
Huang <i>et al.</i> (2012)	Nambour	QLD	1697	Cust. apple	Horticulture	2006/07	344	Synthetic	92	0.49	
Huang <i>et al.</i> (2012)	Nambour	QLD	1697	Pineapple	Horticulture	2006/07	344	Synthetic	445	-0.2	
Muller <i>et al.</i> (2022)	Gatton	QLD	765	Sweet corn	Horticulture	2015/16	149	Urea	120	0.26 <sup>C</sup>	Excluded

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Muller <i>et al.</i> (2022)	Gatton	QLD	765	Sweet corn	Horticulture	2015/16	149	DMPP	96	0.16 <sup>C</sup>	Excluded
Muller <i>et al.</i> (2022)	Gatton	QLD	765	Sweet corn	Horticulture	2015/16	149	3MP+TZ	96	0.16 <sup>C</sup>	Excluded
Pandeya <i>et al.</i> (2020)	Katherine	NT	1012	Mango	Horticulture	2017/18	360	Urea	190	0.08	
Pandeya <i>et al.</i> (2020)	Katherine	NT	1012	Mango	Horticulture	2017/18	360	Urea	190	0.37	
Porter & Riches (2016)	Clyde	VIC	811	Celery	Horticulture	2014/15	380	DMPP	907	0.16	
Porter & Riches (2016)	Clyde	VIC	811	Celery	Horticulture	2014/15	380	Mix	907	0.45	
Porter & Riches (2016)	Clyde	VIC	811	Celery	Horticulture	2014/15	380	3MP+TZ	907	0.26	
Porter <i>et al.</i> (2017)	Clyde	VIC	811	Celery	Horticulture	2014	116	Synthetic	587	3.1	
Porter <i>et al.</i> (2017)	Clyde	VIC	811	Celery	Horticulture	2014	116	DMPP	587	0.9	
Porter <i>et al.</i> (2017)	Clyde	VIC	811	Celery	Horticulture	2015	125	Synthetic	592	1.3	
Porter <i>et al.</i> (2017)	Clyde	VIC	811	Celery	Horticulture	2015	125	DMPP	592	0.4	
Porter <i>et al.</i> (2017)	Clyde	VIC	811	Celery	Horticulture	2015/16	84	Synthetic	371	1.2	
Porter <i>et al.</i> (2017)	Clyde	VIC	811	Celery	Horticulture	2015/16	84	Synthetic	186	1.9	
Porter <i>et al.</i> (2017)	Clyde	VIC	811	Celery	Horticulture	2015/16	84	DMPP	186	0.4	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Lettuce	Horticulture	2011/12	56	Synthetic	35	0.2	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Lettuce	Horticulture	2011/12	56	Synthetic	121	0.16	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Lettuce	Horticulture	2011/12	56	Urea	125	0.2	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Lettuce	Horticulture	2011/12	56	DCD	121	0.16	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Lettuce	Horticulture	2011/12	56	Alzon	125	0.16	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Lettuce	Horticulture	2011/12	56	DMPP	121	0.05	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Lettuce	Horticulture	2011/12	56	DMPP	125	0.07	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Broccoli	Horticulture	2011	60	Synthetic	39	0.2	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Broccoli	Horticulture	2011	60	Mix	252	0.19	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Broccoli	Horticulture	2011	60	DCD	126	0.15	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Broccoli	Horticulture	2011	60	DMPP	126	0.03	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Broccoli	Horticulture	2011	35	DMPP	126	0.06	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Broccoli	Horticulture	2011	60	3MP+TZ	252	0.06	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Cauliflower	Horticulture	2013/14	73	Mix	145	0.43	

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Riches <i>et al.</i> (2016)	Werribee	VIC	548	Cauliflower	Horticulture	2013/14	73	Synthetic	142	0.02	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Cauliflower	Horticulture	2013/14	73	DMPP	142	0.02	
Riches <i>et al.</i> (2016)	Werribee	VIC	548	Cauliflower	Horticulture	2013/14	73	DMPP	145	0.06	
Rowlings <i>et al.</i> (2013)	Mooloolah	QLD	1645	Lychee	Horticulture	2008/09	365	Urea	265	1.56	
Scheer <i>et al.</i> (2014)	Gatton	QLD	765	Broccoli	Horticulture	2012	158	Urea	120	-0.22	
Scheer <i>et al.</i> (2014)	Gatton	QLD	765	Broccoli	Horticulture	2012	158	DMPP	108	-0.13	
Scheer <i>et al.</i> (2014)	Gatton	QLD	765	Broccoli	Horticulture	2012	158	DMPP	120	-0.14	
Scheer <i>et al.</i> (2017)	Gatton	QLD	765	Mix	Horticulture	2013/14	355	Urea	310	0.13	
Scheer <i>et al.</i> (2017)	Gatton	QLD	765	Mix	Horticulture	2013/14	355	DMPP	310	0.08	
Scheer <i>et al.</i> (2017)	Gatton	QLD	765	Mix	Horticulture	2013/14	355	3MP+TZ	310	0.21	
Vaughan <i>et al.</i> (2011)	Gatton	QLD	765	Mix	Horticulture	2013/14	325	Urea	150	1.05	
Vaughan <i>et al.</i> (2011)	Gatton	QLD	765	Mix	Horticulture	2013/14	325	Urea	150	1.49	
Vaughan <i>et al.</i> (2011)	Gatton	QLD	765	Mix	Horticulture	2013/14	325	Urea	150	1.54	
Chen <i>et al.</i> (2010)	Kyabram	VIC	447	Grass	Irri. pasture	2003/05	578	Urea	300	0.2	
Chen <i>et al.</i> (2010)	Kyabram	VIC	447	Grass	Irri. pasture	2003/05	578	Urine	2000	0.25	
De Rosa <i>et al.</i> (2020)	Casino	NSW	1054	Grass	Irri. pasture	2014/17	900	Urea	340	2	
De Rosa <i>et al.</i> (2020)	Kerry	QLD	866	Grass	Irri. pasture	2014/17	900	Urea	140	0.9	
Kelly <i>et al.</i> (2008)	Kyabram	VIC	447	Grass	Irri. pasture	2005	120	Urine	1000	0.57	
Kelly <i>et al.</i> (2008)	Kyabram	VIC	447	Grass	Irri. pasture	2005	120	DCD	1000	0.3	
Kelly <i>et al.</i> (2008)	Kyabram	VIC	447	Grass	Irri. pasture	2006	70	Urine	1000	0.47	
Kelly <i>et al.</i> (2008)	Kyabram	VIC	447	Grass	Irri. pasture	2006	70	DCD	1000	0.34	
Livesley <i>et al.</i> (2010)	Melbourne	VIC	603	Grass	Irri. pasture	2007	123	Synthetic	48	-0.1	
Livesley <i>et al.</i> (2010)	Melbourne	VIC	603	Grass	Irri. pasture	2007	123	Synthetic	48	0	
Mumford <i>et al.</i> (2019)	Casino	NSW	1045	Grass	Irri. pasture	2015/16	360	Urea	381	0.62	High irri.
Mumford <i>et al.</i> (2019)	Casino	NSW	1045	Grass	Irri. pasture	2015/16	360	Urea	381	0.49	Medium
Mumford <i>et al.</i> (2019)	Casino	NSW	1045	Grass	Irri. pasture	2015/16	360	Urea	381	1.17	Low
Rowlings (2015)	Gympie	QLD	1045	Grass	Irri. pasture	2013/14	371	Urea	485	0.6	
Rowlings (2015)	Gympie	QLD	1045	Grass	Irri. pasture	2013/14	371	DMPP	485	0.7	

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Rowlings (2015)	Gympie	QLD	1045	Grass	Irri. pasture	2013/14	371	NBPT	485	0.7	
Rowlings (2015)	Gympie	QLD	1045	Grass	Irri. pasture	2012/13	377	Urea	161	0.31	
Rowlings (2015)	Gympie	QLD	1045	Grass	Irri. pasture	2012/13	377	DMPP	161	0.12	
Rowlings (2015)	Gympie	QLD	1045	Grass	Irri. pasture	2012/13	377	Urea	315	0.27	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2012/13	180	Urine	1019	0.42	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2012/13	180	DCD	1019	0.14	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013	180	UAN	939	0.01	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013	180	Urea	939	0.01	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	90	Dung	396	0.09	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	90	Urine	799	0.09	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014		Dung	334	0.06	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014		Urine	759	0.04	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014	30	Dung	357	0.07	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014	30	Dung	382	-0.01	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014	30	Dung	388	0.04	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014	30	Urine	779	0.02	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014	30	Urine	979	0.05	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2009/10	258	Urine	1000	0.3	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2009/10	258	DCD	1000	0.16	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2009/10	258	Urine	1000	0.31	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2009/10	258	DCD	1000	0.19	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2010	153	Urine	1000	0.16	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2010	153	DCD	1000	0.05	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2010	153	Urine	1000	0.15	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2010	153	DCD	1000	0.05	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2010/11	225	Urine	1000	0.73	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2010/11	225	DCD	1000	0.45	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2010/11	225	DCD	1000	0.17	

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2011	160	Urine	1000	0.52	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2011	160	DCD	1000	0.3	
Kelly (2012)	Terang	VIC	782	Grass	Non-irri. pasture	2011	160	DCD	1000	0.09	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2012/13	409	Urine	750	0.45	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2012/13	409	DCD	750	0.28	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2012/13	409	DCD	750	0.12	
Kelly (2015)	Noorat	VIC	782	Grass	Non-irri. pasture	2012/13	352	Urea	200	0.32	
Kelly (2015)	Noorat	VIC	782	Grass	Non-irri. pasture	2012/13	352	DCD	200	0.23	
Kelly (2015)	Noorat	VIC	782	Grass	Non-irri. pasture	2012/13	352	DMPP	200	0.24	
Kelly (2015)	Noorat	VIC	782	Grass	Non-irri. pasture	2012/13	352	NBPT	200	0.34	
Kelly (2015)	Noorat	VIC	782	Grass	Non-irri. pasture	2014/15	298	Urea	100	0.2	
Kelly (2015)	Noorat	VIC	782	Grass	Non-irri. pasture	2014/15	298	DCD	100	0.12	
Kelly (2015)	Noorat	VIC	782	Grass	Non-irri. pasture	2014/15	298	DMPP	100	0.23	
Kelly (2015)	Noorat	VIC	782	Grass	Non-irri. pasture	2014/15	298	NBPT	100	0.18	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	279	Dung	448	0.09	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	279	Urine	1000	0.47	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	279	Nitrapyrin	1000	0.36	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	285	UAN	150	0.13	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	285	Urea	150	0.08	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	285	DMPP	150	0.04	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2013/14	285	NBPT	150	0.08	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014/15	350	Dung	152	0.13	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014/15	350	Dung	308	0.1	
Kelly (2015)	Terang	VIC	782	Grass	Non-irri. pasture	2014/15	350	Nitrapyrin	308	0	
Singh <i>et al.</i> (2021)	Menangle	NSW	656	Grass	Non-irri. pasture	2019	146	Urine	141	0.09	
Singh <i>et al.</i> (2021)	Menangle	NSW	656	Grass	Non-irri. pasture	2019	146	Urine	211	0.1	
Singh <i>et al.</i> (2021)	Menangle	NSW	656	Grass	Non-irri. pasture	2019	146	Urine	282	0.07	
Singh <i>et al.</i> (2021)	Menangle	NSW	656	Grass	Non-irri. pasture	2019	146	Urine	709	0.09	

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Singh <i>et al.</i> (2021)	Menangle	NSW	656	Grass	Non-irri. pasture	2019	146	Urine	141	0.12	
Singh <i>et al.</i> (2021)	Menangle	NSW	656	Grass	Non-irri. pasture	2019	146	Urine	211	0.16	
Singh <i>et al.</i> (2021)	Menangle	NSW	656	Grass	Non-irri. pasture	2019	146	Urine	282	0.09	
Singh <i>et al.</i> (2021)	Menangle	NSW	656	Grass	Non-irri. pasture	2019	146	Urine	709	0.26	
Suter <i>et al.</i> (2016)	Murroon	VIC	791	Grass	Non-irri. pasture	2010	155	UAN	240	0.51	
Suter <i>et al.</i> (2016)	Murroon	VIC	791	Grass	Non-irri. pasture	2010	254	Urea	240	0.17	
Suter <i>et al.</i> (2016)	Murroon	VIC	791	Grass	Non-irri. pasture	2010	87	DCD	240	0	
Suter <i>et al.</i> (2016)	Murroon	VIC	791	Grass	Non-irri. pasture	2010	254	DMPP	240	0.04	
Suter <i>et al.</i> (2016)	Murroon	VIC	791	Grass	Non-irri. pasture	2010	57	NBPT	240	-0.24	
Suter <i>et al.</i> (2016)	Murroon	VIC	791	Grass	Non-irri. pasture	2010	254	Urea	240	0.44	
Suter <i>et al.</i> (2020)	Wye	SA	714	Grass	Non-irri. pasture	2014	170	Urea	250	0.12	
Suter <i>et al.</i> (2020)	Wye	SA	714	Grass	Non-irri. pasture	2014	170	Urea	420	0.12	
Suter <i>et al.</i> (2020)	Wye	SA	714	Grass	Non-irri. pasture	2014	170	DMPP	250	0.07	
Suter <i>et al.</i> (2020)	Wye	SA	714	Grass	Non-irri. pasture	2014	170	NBPT	250	0.1	
Suter <i>et al.</i> (2020)	Wye	SA	714	Grass	Non-irri. pasture	2014	170	PCU	250	0.07	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	111	Dung	388	0.01	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	111	Nitrapyrin	388	0.01	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	111	Urine	779	0.03	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	111	Nitrapyrin	779	0.02	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	86	Dung	357	0.12	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	86	Nitrapyrin	357	0.13	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	86	Urine	979	0.08	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	86	Nitrapyrin	979	0.06	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	92	Dung	424	0.01	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	92	Nitrapyrin	424	0.02	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	92	Urine	759	0.06	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014	92	Nitrapyrin	759	0.05	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014/15	88	Dung	396	0.03	

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014/15	88	Nitrapyrin	396	0.02	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014/15	88	Urine	759	0.04	
Ward <i>et al.</i> (2018)	Glenormiston	VIC	811	Grass	Non-irri. pasture	2014/15	88	Nitrapyrin	759	0.04	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2013	86	Dung	396	0.08	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2013	86	Nitrapyrin	396	0.02	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2013	86	Urine	799	0.1	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2013	86	Nitrapyrin	799	0.08	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	111	Dung	334	0.04	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	111	Nitrapyrin	334	0.02	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	111	Urine	759	0.04	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	111	Nitrapyrin	759	0.01	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	86	Dung	382	0.02	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	86	Nitrapyrin	382	0	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	86	Urine	779	0.02	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	86	Nitrapyrin	779	0.02	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	86	Dung	447	0.05	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	86	Nitrapyrin	447	0.05	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	86	Urine	979	0.19	
Ward <i>et al.</i> (2018)	Terang	VIC	782	Grass	Non-irri. pasture	2014	86	Nitrapyrin	979	0.14	
Allen <i>et al.</i> (2010)	Jacobs Well	QLD	1411	Sugarcane	Sugarcane	2003/04	365	Urea	100	1.07	
Allen <i>et al.</i> (2010)	Jacobs Well	QLD	1411	Sugarcane	Sugarcane	2003/04	365	Urea	100	1	
Allen <i>et al.</i> (2010)	Jacobs Well	QLD	1411	Sugarcane	Sugarcane	2003/04	365	Urea	200	3.35	
Allen <i>et al.</i> (2010)	Jacobs Well	QLD	1411	Sugarcane	Sugarcane	2003/04	365	Urea	200	1.47	
Salazar Cajas (2019)	Abergowrie	QLD	1386	Sugarcane	Sugarcane	2014/15	279	Urea	148	0.52	
Salazar Cajas (2019)	Abergowrie	QLD	1386	Sugarcane	Sugarcane	2014/15	279	Urea	91	0.39	
Salazar Cajas (2019)	Abergowrie	QLD	1386	Sugarcane	Sugarcane	2014/15	279	Urea	91	0.26	
Salazar Cajas (2019)	Abergowrie	QLD	1386	Sugarcane	Sugarcane	2015/16	288	Urea	148	1.5	
Salazar Cajas (2019)	Abergowrie	QLD	1386	Sugarcane	Sugarcane	2015/16	288	Urea	91	1.72	

Reference	Location	State	MAR <sup>A</sup> (mm)	Crop	Industry	Season	Duration (days)	Fertiliser	Rate (kg N ha <sup>-1</sup> )	EF <sup>B</sup> (%)	Notes
Salazar Cajas (2019)	Abergowrie	QLD	1386	Sugarcane	Sugarcane	2015/16	288	Urea	91	1.78	
Salazar Cajas (2019)	Abergowrie	QLD	1386	Sugarcane	Sugarcane	2015/16	288	Urea	91	1.31	
Salazar Cajas (2019)	Maroochydore	QLD	1483	Sugarcane	Sugarcane	2014/15	280	Urea	160	8.3	Excluded
Salazar Cajas (2019)	Maroochydore	QLD	1483	Sugarcane	Sugarcane	2014/15	280	Urea	80	3.5	Excluded
Salazar Cajas (2019)	Clare	QLD	952	Sugarcane	Sugarcane	2015/16	280	Urea	250	0.9	
Salazar Cajas (2019)	Clare	QLD	952	Sugarcane	Sugarcane	2015/16	280	Urea	180	0.8	
Di Bella (2015)	Hamleigh	QLD	1767	Sugarcane	Sugarcane	2012/13	258	Urea	120	0.58	
Takeda <i>et al.</i> (2021)	Ayr	QLD	952	Sugarcane	Sugarcane	2020	330	Urea	150	0.82	
Takeda <i>et al.</i> (2021)	Ayr	QLD	952	Sugarcane	Sugarcane	2020	330	Urea	200	0.7	
Takeda <i>et al.</i> (2021)	Ayr	QLD	952	Sugarcane	Sugarcane	2020	330	Urea	250	1.11	
Wang <i>et al.</i> (2012)	Mackay	QLD	1548	Sugarcane	Sugarcane	2010/11	358	Urea	150	4	
Wang <i>et al.</i> (2012)	Mackay	QLD	1548	Sugarcane	Sugarcane	2010/11	358	DMPP	150	1.2	
Wang <i>et al.</i> (2012)	Mackay	QLD	1548	Sugarcane	Sugarcane	2010/11	358	Urea	75	6	
Wang <i>et al.</i> (2015)	Bundaberg	QLD	1085	Sugarcane	Sugarcane	2013/14	186	Urea	145	2.6	
Wang <i>et al.</i> (2016a)	Ingham	QLD	1767	Sugarcane	Sugarcane	2003/04	304	Urea	140	3.14	
Wang <i>et al.</i> (2016b)	Mackay	QLD	1548	Sugarcane	Sugarcane	2006/07	328	Urea	150	1.32	
Wang <i>et al.</i> (2016b)	Mackay	QLD	1548	Sugarcane	Sugarcane	2006/07	328	Urea	80	1.19	
Wang <i>et al.</i> (2016b)	Mackay	QLD	1548	Sugarcane	Sugarcane	2006/07	328	DMPP	80	1.19	
Wang <i>et al.</i> (2016b)	Mackay	QLD	1548	Sugarcane	Sugarcane	2006/07	328	PCU	80	2.8	
Wang <i>et al.</i> (2016b)	Murwillumbah	NSW	1595	Sugarcane	Sugarcane	2005/06	343	Urea	80	13.8	Excluded
Wang <i>et al.</i> (2016b)	Murwillumbah	NSW	1595	Sugarcane	Sugarcane	2005/06	343	Urea	160	10	Excluded
Wang <i>et al.</i> (2016b)	Murwillumbah	NSW	1595	Sugarcane	Sugarcane	2005/06	343	DMPP	80	10.7	Excluded
Wang <i>et al.</i> (2016b)	Murwillumbah	NSW	1595	Sugarcane	Sugarcane	2005/06	343	PCU	80	4.9	Excluded
Wang (2015)	Mackay	QLD	1548	Sugarcane	Sugarcane	2011/12	308	Urea	150	2.35	
Wang (2015)	Mackay	QLD	1548	Sugarcane	Sugarcane	2011/12	308	Urea	150	3.35	
Westermann (2017)	Maroochydore	QLD	1483	Sugarcane	Sugarcane	2014/15		Urea	160	8	Excluded
Denmead <i>et al.</i> (2010)	Murwillumbah	NSW	1595	Sugarcane	Sugarcane	2005/06	342	Urea	160	21	Excluded
Denmead <i>et al.</i> (2010)	Mackay	QLD	1548	Sugarcane	Sugarcane	2006/07	292	Urea	150	2.8	



<sup>A</sup>Mean Annual Rainfall (bom.gov.au)

<sup>B</sup>Emission Factor corrected for background emissions (0 N input)

<sup>C</sup>Uncorrected Emission Factor, no background emissions available

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