



Water Use Efficiency in Northern NSW Winter Crop Enterprise Budgets

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Introduction: Water Use Efficiency (WUE) examples are given in each of the winter crop enterprise budgets.

Monthly average rainfall data for northern NSW from Australian Rainman® computer program (<http://www2.dpi.qld.gov.au/rainman>) were used. An average of Pallamallawa and Gunnedah was used for the Eastern Zone and an average of Walgett and Coonamble for the Western Zone. The assumed fallow period for short-fallow crops is Dec-April (inclusive), and May-April (inclusive) for long-fallow crops, with 25% fallow efficiency assumed. GSR= growing season rainfall (i.e. in-crop)

EASTERN-SHORT FALLOW														
AVERAGE	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	25% fallow efficiency
Fallow	67	76	70	51	37								300	75 mm
Growing season (i.e. in-crop)						43	41	44	39	37	54	61	317	+ 317 mm GSR
Total water available for crop (mm)														392 mm
EASTERN-LONG FALLOW (growing season rainfall same as above)														
AVERAGE	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	25% fallow efficiency
Fallow	43	41	44	39	37	54	61	67	76	70	51	37	617	154 mm + 317 mm GSR
Total water available for crop (mm)														471 mm
WESTERN-SHORT FALLOW														
AVERAGE	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total	25% fallow efficiency
Fallow	43	63	55	43	35								239	60 mm
Growing season (i.e. in-crop)						41	36	35	31	30	41	41	253	+ 253 mm GSR
Total water available for crop (mm)														313 mm
WESTERN-LONG FALLOW (growing season rainfall same as above)														
AVERAGE	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total	25% fallow efficiency
Fallow	41	36	35	31	30	41	41	43	63	55	43	35	494	124 mm + 253 mm GSR
Total water available for crop (mm)														377 mm

Early crop water use (ECWU) figures are from "Cropping Systems for sustainable wheat production" NSW DPI, 1999. This is the average amount of moisture a crop uses in biomass (total green material) production before it starts to produce grain yield.

Total crop water use (TCWU) = fallow moisture + growing season rainfall - early crop water use

	ECWU	TCWU	Yield t/ha	kg grain per mm TCWU	GM/mm
<u>Eastern Dryland- Summary</u>					
Wheat - long fallow	110	361	3.50	9.7	\$2.14
Wheat after wheat	110	282	2.50	8.9	\$1.49
Wheat after canola	110	282	3.00	10.6	\$2.10
Wheat after chickpea	110	282	3.00	10.6	\$2.29
Durum	110	282	2.50	8.9	\$1.98
Barley - malting	90	302	2.80	9.3	\$1.68
Barley - feed	90	302	3.20	10.6	\$1.51
Triticale	90	302	3.00	9.9	\$1.78
Oats	90	302	2.00	6.6	\$1.08
Chickpeas	130	262	1.50	5.7	\$1.66
Faba beans	130	262	2.20	8.4	\$2.13
Field peas	130	262	1.50	5.7	\$1.76
Canola	110	282	1.60	5.7	\$1.71
Safflower	110	282	1.50	5.3	\$0.85
Linseed	110	282	1.02	3.6	\$1.87
<u>Western Dryland- Summary</u>					
Wheat - long fallow	110	267	2.40	9.0	\$2.05
Wheat after wheat	110	203	1.70	8.4	\$2.04
Wheat after canola	110	203	2.00	9.9	\$2.57
Wheat after chickpea	110	203	2.00	9.9	\$2.64
Barley - malting	90	223	1.85	8.3	\$1.49
Barley - feed	90	223	1.85	8.3	\$1.14
Chickpeas	130	183	1.30	7.1	\$2.07
Lupins	130	183	1.40	7.7	\$2.03
Faba beans	130	183	1.80	9.8	\$2.44
Field peas	130	183	1.50	8.2	\$2.46
Canola	110	203	1.30	6.4	\$2.37

NOTE: Gross margin per mm figures based on prices in the Northern NSW Winter Crop Budgets, pricing as of late Feb 2008.

All budgets are short fallow unless stated.

* NOTE: These figures are a guide only to demonstrate the method, you should calculate your own WUE for your own situation.

For more information, refer to the SOILpak Guides at <http://www.dpi.nsw.gov.au/agriculture/resources/soils/guides>