The Northern Agricultural (WA) region covers around 8.5 million hectares, of which 73% is under agricultural production. It is a major broadacre cropping region, growing cereals, oilseeds, pulses and hay, with livestock and horticulture also represented. The region contributed almost $1.4 billion to the Australian economy in 2017–18.

Primary producers make decisions using their knowledge and expectations of regional weather patterns. The purpose of this guide is to provide an insight into the region’s climate and an understanding of changes that have occurred through recent periods. This information can potentially assist primary producers and rural communities make better informed decisions for their business and livelihoods. This guide is part of a series of guides produced for every Natural Resource Management area around Australia.

In the last 30 years in the Northern Agricultural region

- Annual rainfall has decreased by 8%
- Dry years have occurred 12 times and wet years four times
- Rainfall has decreased in the autumn months
- Winter rainfall is reliable; summer and autumn is unreliable
- The autumn break occurred before the end of May in the south west of the region, early to mid-June through much of the central region and not until mid-July in the east and north east
- There have been more hot days
- Moderate to severe heat stress days for livestock are increasing

Northern Agricultural region at a glance

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A guide to weather and climate in the Northern Agricultural region

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A climate guide for agriculture
Northern Agricultural, Western Australia
Annual rainfall in the Northern Agricultural region has decreased by 8%

Annual rainfall in the Northern Agricultural region has decreased by 40 mm (-8%) from about 400 mm to about 360 mm over the past 30 years (1989–2018) when compared to the previous 30 years (1959–1988). The charts show annual rainfall (blue bars), with a 10-year running average (solid blue line) for Carnamah and Mullewa. Although there has been a decrease in annual rainfall in the past 30 years, it is within the range of natural variability.

In the past 30 years (1989–2018), dry years (lowest 30%) have occurred 12 times and wet years (highest 30%) have occurred four times, while the remaining years were in the average range. Note the Millennium drought accounted for six of these dry years in the recent period. During the previous 30-year period (1959–1988), dry years occurred nine times and wet years occurred eight times.

Rainfall reliability maps for the past 30 years (1989–2018) show winter rainfall has been moderately reliable across the region (blue areas), with usually about 60 mm difference from one year to the next. Spring rainfall has also been moderately reliable, particularly in the region’s south west. This is in contrast to autumn rainfall, which has been less reliable (light red and red areas). Although there have been some wet summers in the past 30 years, summer rainfall has been unreliable across the region (red areas) from year to year.

For more information on future projections, visit the Climate Change in Australia website > www.climatechangeinaustralia.gov.au


Northern Agricultural winter rainfall is reliable; summer is unreliable

Rainfall reliability maps for the past 30 years (1989–2018) show winter rainfall has been moderately reliable across the region (blue areas), with usually about 60 mm difference from one year to the next. Spring rainfall has also been moderately reliable, particularly in the region’s south west. This is in contrast to autumn rainfall, which has been less reliable (light red and red areas). Although there have been some wet summers in the past 30 years, summer rainfall has been unreliable across the region (red areas) from year to year.
There has been a decrease in rainfall in the autumn months

Rainfall in the late autumn and early winter months decreased at Dalwallinu and Three Springs between 1989–2018 (orange bars) compared with 1959–1988 (blue bars). Over the past 30 years, winter rainfall (April to October inclusive) for Dalwallinu was 259 mm, 26 mm lower than the 285 mm average for the previous 30-year period (1959–1988). For Three Springs, winter rainfall has decreased by 29 mm over the same period, from 310 mm to 281 mm.

Over the same 30-year periods, summer rainfall (November to March inclusive) decreased by 26 mm at Dalwallinu, from 101 mm to 75 mm. At Three Springs, summer rainfall increased by 3 mm, from 73 mm to 76 mm.

Timing of the autumn break in the Northern Agricultural region

In the Northern Agricultural region, the autumn break can be defined as at least 25 mm of rainfall over three days, prior to the commencement of sowing. The map shows that over the past 30 years (1989–2018), the break typically occurred before the end of May in the south west of the region (blue-green areas), early to mid-June (green areas) through much of the central region and not until mid July in the east and north east (light green to yellow areas).

In much of the east of the region in the last 30 years, the autumn break occurred up to one month later than it did in the previous 30-year period.
The region has experienced more hot days in the past 30 years

The chart shows the annual number of days above 38 °C (red bars), with a 10-year running average (solid red line) for Mullewa. Mullewa experienced an average of 37 days per year above 38 °C between 1989–2018, compared to an average of 30 days per year above 38 °C between 1959–1988. While the overall number of hot days has been increasing, instances of consecutive hot days have remained unchanged in the past 30 years. Mullewa has experienced seven periods of six or more days in a row above 42 °C since records began. These occurred in 1933, 1955, 1956, 1962, 1969, 2009 and 2010. Since 1989, very hot temperatures of 46 °C have been recorded for Mullewa eight times. In the previous 30-year period, a temperature of 46 °C was recorded for Mullewa once, in 1985.

Moderate to severe heat stress days for livestock are increasing

THI (temperature humidity index) is a measure of heat stress for animals and humans. The THI chart shows the annual number of days with a THI of 80 or above (Moderate-Severe) with a 10-year running average for Wongan Hills. Wongan Hills experienced an average of 60 days per year with a THI of 80 or above between 1989–2018, compared to an average of 44 days per year between 1959–1988.