

## Mango Flowering in Western Australia

Mango production regions in Western Australia (WA) can be found in the far north around Kununurra, on the central coast near Carnarvon, and around Gingin (near Perth). The large geographical diversity of production regions in Western Australia dictates variability in the timing of flowering throughout the state. The earliest flowering occurs in Kununurra in June/July and continues down the coast to Gingin which flowers last around November/December. These late flowering regions in southern Western Australia correspondingly produce the latest fruit in the Australian production season.

### Annual production cycle

The cooler climates of the southern production regions induce dormancy in mango trees followed by flowering in spring and an extended fruit development period. The production cycle in northern regions aligns with that of the Northern Territory.

### Climate drivers for flowering

In the northern regions, consistently warm maximum temperatures ensure growth all year round. Occurrences of cool weather are restricted to a short period between May and September. This onset of cool weather occurs when high pressure systems in southern Australia direct cool dry south-easterly air streams to Northern Australia. This phenomenon can be observed and forecast in [wind maps](#) of Australia found on the Bureau of Meteorology website. The timing of arrival of cool weather in northern Western Australia can vary from year to year.

In southern regions, the arrival of warmer spring temperatures initiates bud growth whilst minimum temperatures are inductive, leading to flowering. Poor fruit set of flowering in spring can occur if temperatures are consistently low (i.e.  $\leq 18^{\circ}\text{C}$ ) after flowering.

## Management practices for WA

Key management practices that promote mango flower induction in Western Australia are:

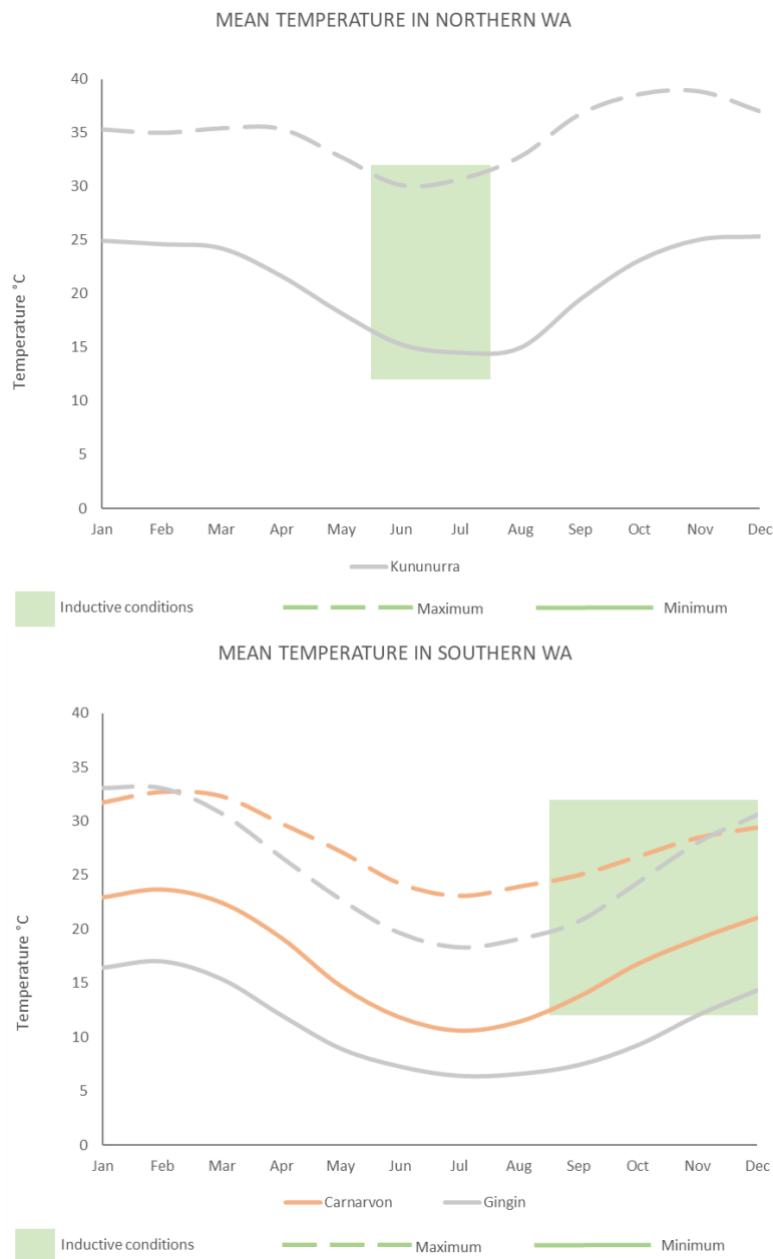
1. Northern WA:
  - a. Preventing new vegetative growth immediately before flowering by limiting irrigation and avoiding nitrogen fertiliser application.
  - b. Applying potassium nitrate (KNO<sub>3</sub>) in the days before the arrival of cold weather.
  - c. Applying paclobutrozol 4 weeks after harvest or up until mid-February.
  
2. Southern WA:
  - a. Avoid an early winter flowering.
  - b. Protect flowers from frosts: design orchards that avoid trapping cool air and irrigate during light frosts.
  - c. Commence irrigation to encourage growth at the end of winter during inductive conditions.
  - d. If required, at bud break apply boron and potassium nitrate.

## Key references

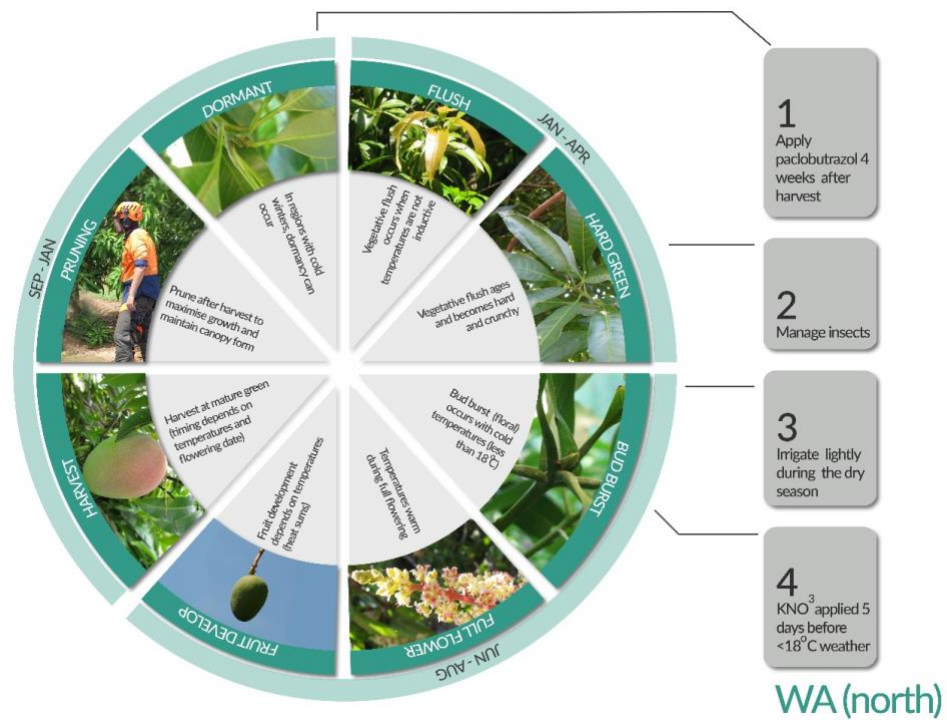
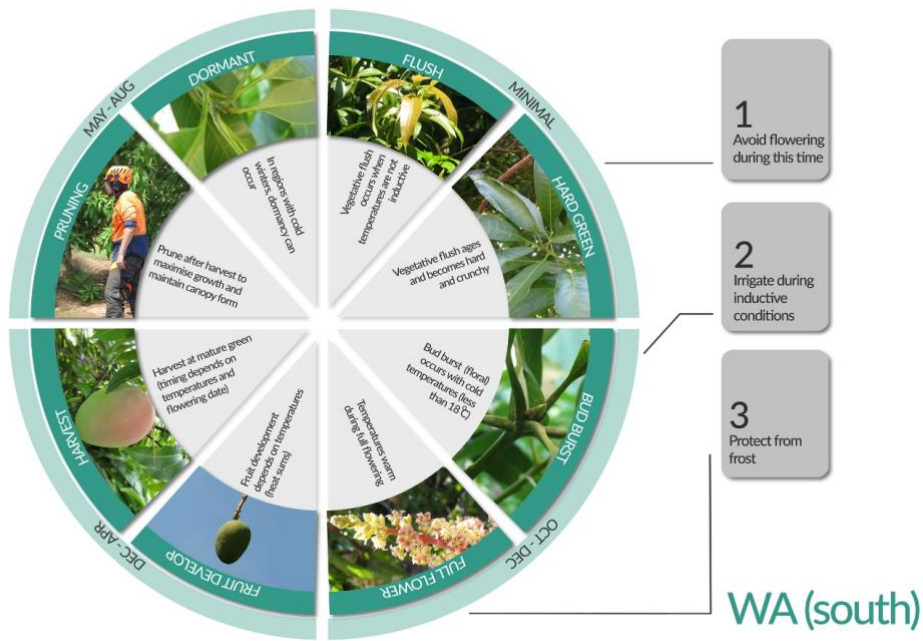
Australian Government Bureau of Meteorology (BOM). 2020. Monthly mean maximum temperature data for several locations. Retrieved from <http://www.bom.gov.au/climate/data/>

[Mangoes in Western Australia \(2020\) Department of Primary Industries and Regional Development, Western Australia](#)

## Tables and Figures



**Figure 1. Mean minimum and maximum temperatures for each month and floral inductive period for Kununurra, Carnarvon and Gingin mango production regions. Temperature data is a monthly average maximum and minimum for the period of 1996 – 2019. Weather stations Kununurra Aero, Gingin and Carnarvon. Data source: Australian Government Bureau of Meteorology (BOM) 2020.**



**Figure 2. Annual flower management and phenological cycle for mango grown in Western Australia.**



*Figure 3. Mango flowers*