

Environmental Baseline – Adelaide, South Australia (Outdoor Cannabis)

Climate (Adelaide – Mediterranean, Csa): Adelaide's climate is Mediterranean: hot dry summers and cool, wetter winters ¹. For example, January (mid-summer) averages ~28.7°C high and 16.6°C low ², whereas July (mid-winter) averages ~15.0°C high and 7.6°C low ². Annual rainfall is ~526 mm (1991–2020 normals), with winter peaks (~72 mm in June) and very little rain in summer (~20 mm in January) ³. Daytime humidity is lowest in summer (~36% average in Jan afternoons) and highest in winter (~61% in June) ⁴. Adelaide is very sunny: ~2,765 h of bright sunshine per year ⁵ (~10–11 h/day even in winter ⁶). Solar UV is extreme in midsummer (max UV index ~11+) and drops to ~2–5 in late autumn/spring ⁷.

- **Temperature & Rainfall (monthly):** See [21] for BOM normals. Summer days often exceed 30°C (Jan–Feb), winter highs around 15–18°C. Rainfall is strongly seasonal (Mediterranean): **June/July** are wettest (~65–77 mm each) and **Dec–Feb** driest (~20–28 mm each) ³. Annual rainfall ~526 mm ³. Seasonal summary: hot dry Dec–Feb; cool wet Jun–Aug; transition in Mar–May and Sep–Nov.
- **Sunlight & Photoperiod:** Adelaide gets high solar radiation year-round. Mean sunshine ~10–11 h/day even in winter ⁶ (Jan ~11 h, Jun ~5 h, Oct–Dec ~9–10 h). Day length varies from ~9 h 48 min on the winter solstice to ~14 h 31 min on the summer solstice ⁸. (Daylight Saving Time adds ~1 h in evenings from early Oct to early Apr).
- **Humidity:** In summer, afternoons are very dry (~36% RH in Jan) ⁴, which can stress plants but reduce fungal risk. In winter, RH often exceeds 60% (June ~61% ⁴), especially at night.
- **Wind:** Winds are moderate year-round (~10–12 mph, ~16–19 km/h average) ⁹. The strongest winds tend to be westerly in spring (July–Oct) and southerly in late autumn–winter (Oct–May) ¹⁰, due to synoptic patterns (southern frontal systems and hot coastal winds).

Soil Characteristics (Adelaide Plains)

- **Soil Types:** Soils around Adelaide are typically *alluvial loams and clays* (red-brown earths and brown soils) derived from marine sediments and alluvial fans ¹. Many are calcareous (lime-rich) due to coastal limestone deposits.
- **Texture & Water Retention:** Texture varies from sandy loams to heavy clays. Sandy soils (low clay) drain very well but have **poor water-holding and low nutrient storage** ¹¹. Clay-rich soils hold more water (and nutrients) but can become waterlogged or hard-set. In general, clay soils can hold up to ~20–30% water by volume (plant-available fraction), whereas coarse sand might retain <5–10% ¹¹ ¹².

- **pH:** Most Adelaide soils are neutral to **alkaline**. Over 60% of South Australian agricultural soils are alkaline ¹³, and calcareous soils often have pH ~8.0–8.2 ¹⁴. These pH values generally do not critically limit plant growth, but can affect micronutrient availability.
- **Salinity:** Urban and parkland soils in Adelaide are generally low-salinity. For example, soil surveys found *electrical conductivity* <2.2 dS/m (non-saline) in public gardens ¹⁵. Salinity risk is low unless using reclaimed water or in old irrigated orchards; most native soils have light salt accumulation.
- **Nutrients & Microbes:** Detailed local data are scarce. In general, loamy topsoils contain moderate organic matter (~1–3%) and supply typical macronutrients (N–P–K) adequate for field crops. Heavy clays may be richer in calcium/magnesium (from carbonates). Microbial diversity in Mediterranean soils is usually high (rich bacterial and fungal communities), but specific Adelaide soil surveys were not found. (Inoculated or organic management may boost local microbial activity.)

Photoperiod and Solar Cycle

Adelaide's latitude (~34.9°S) gives a pronounced photoperiod cycle. Daylight ranges ~9.8–14.5 hours over the year ⁸, with longest days in Dec (summer) and shortest in Jun (winter). Twilight extends daily light by ~1–2 hours beyond sunup/sundown. Seasonal daylight changes influence cannabis physiology (flowering is triggered as days shorten after summer). Note that Daylight Saving Time (late Oct–early Apr) shifts clocks 1 h forward, effectively extending evening light.

Pest and Pathogen Pressure (by Season)

- **Summer (Dec–Feb):** Hot, dry weather fosters insect pests. **Spider mites** (e.g. *Tetranychus* spp.) thrive in these conditions ¹⁶, often building webbing under leaves and causing stippling or leaf drop. Other summer pests include aphids, whiteflies, thrips and caterpillars (armyworms), which reproduce rapidly when nights are warm. (High heat can slow fungal diseases but favors chewing/sucking pests.)
- **Autumn (Mar–May):** As temperatures cool and rains begin, pest pressure shifts. Spider mite populations decline in higher RH, but early-autumn rain and humidity can trigger **powdery mildew** or fungal spots if conditions are still mild. Cooler nights and some residual warmth create periods with RH often 60–80%, which can challenge canopy drying.
- **Winter–Spring (Jun–Nov):** Cool, damp weather increases disease risk. **Bud rot (*Botrytis cinerea*)** is the primary concern in late-flowering plants if humidity stays high; *Botrytis* spores germinate rapidly at ~70% RH and 17–24°C ¹⁷. Periods of prolonged wet or dewy weather (common June–Aug) can allow *Botrytis* to infect buds. Powdery mildew and downy mildew fungi are also possible on leaves when days are warm and nights humid. Root or crown rots (e.g. *Phytophthora*, *Pythium*) can occur in waterlogged soils from winter rains. Overall, disease pressure peaks in cool wet months, whereas insect outbreaks are favored by hot dry months ¹⁶ ¹⁷.

Sources: Official climate normals (BOM/Elders Weather) and academic/agricultural literature for SA soils and cannabis pests ¹⁸ ¹⁹ ¹³ ²⁰ ¹ ¹⁶ ¹⁷. This baseline compiles local climate data and known soil/pest characteristics to inform season-specific cannabis cultivation strategies in Adelaide.

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