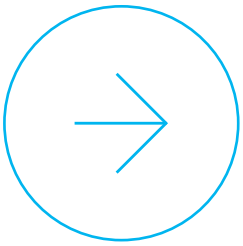
Sesame cultivation in Northern Australia: navigating production challenges in extreme weather



Managing sesame production in northern Australia during extreme weather events such as cyclones and floods requires a multi-faceted approach including proactive agricultural management strategies, adaptive response measures, and the support of agile government and industry stakeholders.

In recent years, northern Australia has experienced severe weather events that have significantly impacted agricultural production and essential infrastructure, including roads crucial for providing access for primary producers. While northern Australia traditionally experiences a wet season during summer, these periods are increasingly characterised by extreme weather events delivering intense rainfall over short durations.

Sesame can be grown year-round in northern Australia, provided soil temperatures exceed 18°C. Timing of planting is crucial. Planting should occur when there is sufficient soil moisture available and early enough that harvest can be completed before the onset of the summer wet season. Sesame is sensitive to water logging and prolonged periods of exposure to flooded conditions can devastate the crop, particularly in early crop growth stages.

Additionally, extreme wind events could cause lodging of the crop, particularly in the later crop growth stages making harvest difficult or impossible. Shorter stature varieties could help to reduce lodging in windy conditions.

Key take-outs

- Plan prospective cropping windows for optimum sowing conditions for best seedling establishment, AND ensuring that crop harvest is timed for reduced harvest risks.
- Invest in on-farm storage to reduce grain loss post-harvest and allow for marketing optimisation if not in a locked in contract.
- White sesame varieties are generally better suited for production in north Queensland than black sesame due to shorter days to harvest.
- New varieties may offer even greater flexibility for farmers in planning their cropping windows and options, ES 313 is currently being assessed and is showing promise as a less than 90-day crop.
- If yields are acceptable, this new variety could hold the key to success for sesame production in northern Australia.

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Variety selection

- In summer, sesame requires 90 to 120 days from planting to harvest as a summer crop, depending on the variety.
- White sesame typically matures faster than black sesame, allowing for a quicker harvest. Therefore, white sesame is better suited for northern production, as the shorter crop cycle allows the farmer more options to select a lower risk cropping window and potentially reduce the risk of adverse weather impacts.
- In the winter dry season, sesame can take 120 to 150 days to harvest

During research trials between 2023 and 2025, the varieties S57B (black) and ES 103 (white) were trialed in far north Queensland (Table 1).

Table 1 shows the same average number of days to harvest for both black and white varieties for each planting date, however this was achieved through the use of desiccants. The white sesame begins to dry naturally in the field, while desiccants were required on the black sesame to manage early crop termination and dry down for harvest.

Table 1: Sesame variety phenology of a spring plant, summer grown crop and late summer plant, autumn to winter grown crop in Tully, QLD.

Variety	Colour	Planting Date	Average days to 50% flowering	Average days to Harvest
S57B	Black	14 September 2024	43	111
ES 103	White	14 September 2024	38	111
S57B	Black	12 February 2023	40	137
ES 103	White	12 February 2023	34	137

A new shorter season white variety (ES 313) is currently being assessed and is showing promise as a less than 90-day crop. If yields are acceptable, this variety could hold the key to success for growing sesame in northern Australia. It would potentially provide a variety that can be sown on either late wet season moisture and harvested before the cooler winter months, or sown into moisture in early spring and harvested before the peak of the wet season in summer.

Crop desiccation

Drying down the crop is essential to ensure it is harvest ready. In hot conditions, withholding irrigation can create enough moisture deficit to naturally dry the sesame. However, in most cases, applying a desiccant 7 to 10 days before harvest is necessary (Figure 1) to achieve biomass dry enough to harvest and seed at 6% moisture.

Where possible, consulting long-range forecasts would allow selection of initial planting dates to reduce risk of rain at harvest and applying a desiccant ahead of a predicted severe weather event can enable an earlier harvest. While this may result in some yield loss due to sacrificing a portion of yield that is not yet mature, it can help secure the crop.

In-field desiccation can also be complemented by post-harvest drying, using fans to create airflow in a silo or shipping container to reduce seed moisture to 6% for optimal storage.



Figure 1. A mature sesame crop in Alton Downs QLD where no desiccant was applied. The crop dry down was staggered making harvest and post-harvest seed drying more challenging to manage.

Mature seed that is exposed to moisture while standing in the pod can cause 'shot and sprung' grain (Figure 2). This can cause significant harvest losses and may terminate the viability of harvesting a crop.



Figure 2. White sesame exposed to moisture as a result of an extreme tropical low event in Tully far north QLD. The seed germinated in the capsule and the crop was not viable to harvest.

Grain cleaning and storage

Supporting the growth of the sesame industry requires accessible grain cleaning, grading and storage facilities near production areas. During periods of extreme weather, floods and road damage can make transportation impossible. Local storage options allow producers to hold their grain until conditions improve, potentially securing better market prices.

Producers may also need to make strategic decisions when harvesting their crops. Mature sesame that is unable to be harvested before a flooding event may require adaptations to the harvest once the flood waters recede (Figure 3). A sesame crop that can withstand a flooding event could be harvested above the flood water line, cutting the plant above the silt layer to target clean grain in the harvester, however additional cleaning and grading of this product will likely be required.



Figure 3. Image on the left shows a crop after it was subjected to flooding. The crop was exposed to approximately 30 cm deep flood waters that deposited sediment into the lower pods. The seed product on the right is the harvest sample from the sesame crop exposed to flooding, and contains a high percentage of trash, silt and discoloured seed than non-flood affected seed.

Funding and policy

Government-supported cyclone and flood recovery efforts focused on rebuilding transport infrastructure are crucial for ensuring harvested crops reach the market, minimising storage losses which can be hard to maintain even with appropriately designed facilities in hot and humid environments, and enabling the timely delivery of essential agricultural inputs like fertilisers and agrochemicals. Funding agencies dedicated to climate resilience can prioritise research that advances genetic improvements, agronomic strategies and logistical solutions to better support producers.

This information was produced from research carried out as part of the Sesame Central initiative. It was funded by AgriFutures Australia through the Australian Sesame Industry Program of Research and the Corporative Research Centre for Developing Northern Australia (CRCNA) Great Northern Spices project.

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