TARGET SPOT

Target spot is a foliar disease that is most common in tropical cotton growing regions, such as northern Australia, and grown-on crops in Central Queensland, where environmental conditions favour disease development.



FACT SHEET

THE PATHOGEN

Target spot is caused by the fungal pathogen *Corynespora cassiicola*, which has been confirmed in samples collected from rainfed and irrigated cotton crops across Australia. The pathogen has a broad host range, potentially infecting more than 400 plant species. It also causes target spot in papaya in tropical north Queensland and sporadic outbreaks in coastal Queensland soybean crops, but it's not known whether isolates are host-specific or can infect multiple crop hosts.

Between seasons, the pathogen survives on infected crop debris, seed, and a range of broadleaf weed species, providing a source of primary inoculum for subsequent crops. During the growing season, necrotic infected leaves act as a secondary source of inoculum, producing spores that can be spread by rainfall. Multiple infection cycles can occur within a season; however pathogen presence does not necessarily result in disease. **Significant disease development is most likely when susceptible crop growth stages align with favourable environmental conditions**.

SYMPTOMS

Brown concentric rings develop on the upper side of leaves within the lower canopy from mid-flowering onwards. As the disease progresses, symptoms spread upwards to the mid-canopy, where affected leaves may yellow and become necrotic, often resulting in premature defoliation.

Foliar diseases can produce similar symptoms, making accurate identification challenging at times. Where disease is suspected, submitting plant samples for diagnosis can help confirm the causal pathogen. Information on collecting and submitting samples is available on the CottonInfo website.



Initial target spot symptoms
(left) early symptoms on lower canopy leaves; (right) yellowing and necrosis in the mid-canopy.

CONDITIONS FAVOURING DEVELOPMENT

Infection and disease development are strongly influenced by the interaction between crop phenology, canopy development, and environmental conditions. Prolonged periods of leaf wetness, moderate temperatures (~25-30°C), and high relative humidity are key influencing factors.

Inter-row canopy closure creates a dense, humid microclimate that can trap moisture, and target spot is most likely to occur in vigorous, well-growing northern Australian crops with closed canopies that experience frequent periods of leaf wetness from rainfall, drizzle, dew or overhead irrigation. Crops restricted by soil constraints (e.g. waterlogging or soil acidity) or other stresses often don't achieve canopy closure and rarely develop target spot outbreaks. However, canopy closure alone does not necessarily result in disease if environmental conditions are not conducive.

In Central Queensland (CQ), target spot has mainly been reported in grown-on cotton, where crops are retained and grow a second flowering cycle through the January-March rainfall period. However, disease development in CQ is generally mild, as environmental conditions leading to prolonged periods of leaf wetness are less common than in the coastal environments of Far North Queensland. As per the images below, growing conditions can be highly variable in northern Australia.



ABOVE: *March 2024, early season waterlogging resulted in stunted growth.*

BELOW: *February 2025, favourable growing conditions resulted in vigorous growth.*



ECONOMIC IMPACT

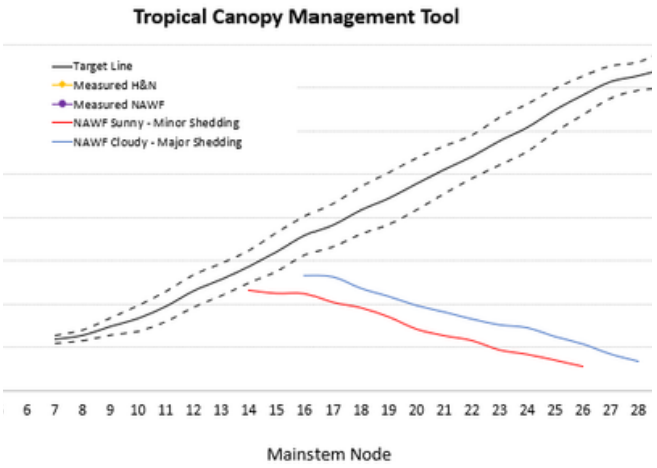
In the southeastern United States and Brazil, target spot can reduce yield, especially when outbreaks develop during mid-flowering and cause premature defoliation. The potential impact of this disease on yield is in Australia is under investigation, and likely to be variable each year, depending on disease severity and whether crop development and environmental conditions coincide to favour disease development and subsequent crop compensation.

MANAGEMENT PRACTICES

Target spot is best managed using an integrated approach. Cultural practices should be used where possible and economically feasible to reduce disease risk, minimise fungicide use and reduce the risk of fungicide resistance.

Manage canopy density

Excessively large dense canopies can promote a humid microclimate. Use RX-380® (mepiquat chloride) according to the 'Tropical Canopy Management Tool' (available via cottoninfo.com.au/northern-australia-cotton-production) to maintain balanced growth.



Wider row spacing or skip row configurations can reduce (or in some situations largely eliminate) target spot, however the benefits would need to be considered against any potential yield loss from wider spacings.

CRCNA and CRDC-funded research conducted by QDPI, led by Samuel Krekeler, is continuing to investigate the influence of canopy development on target spot risk in cotton systems in Far North Queensland and grown-on crops in Central Queensland. Pilot experiments conducted during the 2025 – 2026 season investigated whether varieties such as okra-leaf cotton, which provide a more open canopy, could enable similar benefits to wider row spacing. However, comparisons between okra-leaf and regular broadleaf varieties have shown no differences in disease severity.

Reduce inoculum carry over

Bury infected crop residues as soon as possible after harvest to reduce inoculum build-up and disease carryover into the following season.

Avoid planting cotton in the same field in consecutive seasons. Follow cotton with a rotational crop and remove all volunteer and ratoon cotton plants to reduce the amount of pathogen inoculum that survives between seasons.

Fungicide management
Fungicide decisions should consider the likelihood of disease developing and progressing within the crop. Consider fungicide application where:

- Target spot is present in the field,
- Environmental conditions favour disease development, and
- The crop is at a susceptible growth stage (imminent canopy closure).

Scout for disease symptoms from the third week of flowering onwards, when the canopy progressively starts to close over the inter-row.

Two minor use permits are currently available for the management of target spot in cotton:

- Merivon® (pyraclostrobin + fluxapyroxad) - PER95142
- Belanty® (mefentrifluconazole) - PER95141

Both permits are valid from 5 December 2024 to 31 December 2029.

During field efficacy trials conducted over three seasons (2024–2026), Merivon® consistently provided excellent control. Belanty® delivered more variable results and is best utilised as part of a fungicide resistance management strategy to rotate modes of action if additional applications are required.

In most situations, one to two fungicide applications have been sufficient for disease control. Good spray coverage (particularly through the mid-canopy where disease commonly develops) is essential for effective control, so apply fungicides before row closure to maximise canopy penetration.

In Central Queensland, fungicide timing can be challenging in grown-on crops as canopy closure over the inter-row often occurs well before the January–March rainfall period that is more conducive to target spot development. Research planned for the 2026–27 season will investigate the most appropriate timing for application of fungicides under these conditions. For more information on fungicide use for target spot in cotton, contact Samuel Krekeler, samuel.krekeler@dpi.qld.gov.au.



All images by Samuel Krekeler (QDPI)
> more images are available in the Cotton Pest Management Guide.

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For further information
cottoninfo.com.au/northern-australia-cotton-production

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