

# MANAGING RAMULARIA LEAF SPOT (RLS) IN COTTON IN NORTHERN AUSTRALIA

## FACT SHEET

FEBRUARY 2024

### INTRODUCTION

Ramularia leaf spot (RLS; grey mildew) in tropical cotton is a foliar disorder caused by *Ramulariopsis* sp. that can be easily identified by the presence of white to greyish spores on the underside of the leaf. Affected leaves dry up from the margin and cup inward before turning yellowish-brown and falling off prematurely.

Symptoms develop first in the lower canopy and, depending on environmental conditions can appear as early as first square. Early disease symptoms appear as yellowish lesions on the upper leaf surface and white powdery 'mildew' on the underside of the leaf, although the mildewy growth may also occur on the upper leaf surface. As the disease develops and spreads to younger leaves, it can eventually affect the entire plant, with advanced stages of disease likely to result in premature senescence.

RLS is a polycyclic disease (meaning that several infection cycles may occur during the cropping season). Disease outbreaks are favoured by temperatures between 23-27°C and a relative humidity above 80%. Spore germination is limited at  $\geq 33^{\circ}\text{C}$ .

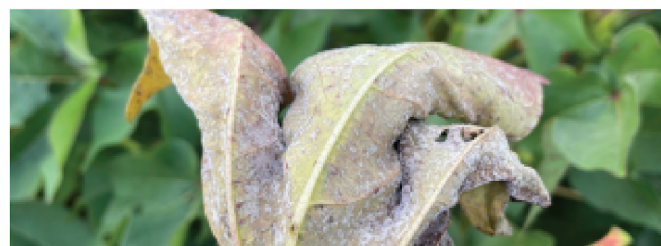
### HOW DOES IT SPREAD?

The primary method of infection is through spores from infected crop residues or volunteer and ratoon cotton. Subsequent infections in the cropping cycle occur from spores released from the early infected leaves, which can be spread by rain splash, wind, irrigation water or farm equipment throughout the canopy.

A notable difference between RLS and other mildews such as powdery mildew of cucurbits is the ability of *Ramulariopsis* sp. to grow on non-living organic residues without needing a living host. Known as a 'false mildew', the pathogen can persist on decomposing plant material between seasons, making management more difficult. Importantly, Australian cotton is resistant to powdery mildew.

### IMPACT OF RLS OVERSEAS

The disease occurs in other tropical cotton growing regions such as Brazil and the southeastern US. In Brazil, the disease can show up early in the season and cause major yield losses (up to 50%) if left untreated, with several fungicide applications per season required. In the US, the disease is only deemed problematic if disease outbreaks occur early (i.e., during the 3rd or 4th week of flowering) and cause premature defoliation. Later outbreaks tend to act as a natural defoliant and do not warrant chemical control.



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## IMPLICATIONS FOR AUSTRALIAN GROWERS & CONTROL OPTIONS

The exact behaviour and impact of this new disease on Australian cotton is yet to be studied in detail. However, the impact is likely to be varied across the different cropping regions in Northern Australia due to climate differences.

An Emergency Use Permit (PER94282) to control RLS has been issued for Belanty® (mefentrifluconazole) use in Queensland, Northern Territory and Western Australia, valid from **2 February 2024 to 28 February 2026**, and intended for high disease-pressure situations which can negatively affect yield.

In rainfed crops in the Northern Territory, under the current planting window and temperature range, RLS infection is likely to coincide with crop cut-out, leaving limited opportunity for disease buildup that would lead to premature senescence. However, pivot-irrigated crops in the Northern Territory may create conditions that are conducive for an earlier and more persistent RLS infection, with more of the crop production period coinciding with temperatures that are favourable for RLS. Similarly, heavy dews during April and May in northern Australia for surface irrigated crops are likely to create an environment conducive to disease development.

Belanty® has proven highly efficacious in controlling RLS overseas, outperforming several co-formulated products. Its 'curative' action gives crop managers more versatility in terms of spray timing, a key aspect considering the novelty of the disease and the lack of familiarity with early disease symptoms.

A range of fungicides that may have application for the management of RLS will be tested in the 2023-24 cropping season. Experience from overseas has shown that reliance on one mode of action can lead to the development of resistance. This research is being undertaken as part of the CRC-NA & CRDC-funded project North Queensland cotton-grains-cattle farming systems, that has a focus on sustainable management of foliar diseases in cotton.

## AN INTEGRATED APPROACH MATTERS

The permit for Belanty® provides growers with a fungicidal option for RLS. However, control ultimately relies on taking an integrated approach.

Other important tactics that can reduce the incidence or severity of RLS include:

- Bury infected crop residues as soon as possible after harvest.
- Cultivate/kill volunteer cotton plants.
- Avoid back-to-back cotton (plant a break crop).
- Avoid excessive application of nitrogen.
- Use planting densities and row spacings that encourage air flow.



**IF YOU SEE ANYTHING UNUSUAL CALL THE EXOTIC PLANT PEST HOTLINE 1800 084 881**

### Fact Sheet Acknowledgements

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