

Banana spider mites

Banana spider mites (*Tetranychus lambi*) are a common pest of banana, especially over the warmer summer months. Mites mainly feed on the plant leaves, consuming the contents of plant cells and damaging them so the leaf becomes less functional. Under high levels of mite damage, fruit development is delayed and occasionally fruit can be marked with a reddish discolouration towards the cushion end. Early detection and the adoption of practices to help minimize spider mite populations will greatly assist in managing this pest.

Causes of mite flare

While specific trials have not been carried out in bananas to monitor the impact of the following variables, field trials in other crops and extensive field observations in bananas, have provided the following list of factors likely to increase the potential for a mite problem:

- General plant stress
- Water stress
- High nitrogen rates (e.g. 500kg/ha plus)
- Dusty conditions
- Use of some insecticides and fungicides
- Warm/hot and dry weather conditions
- Weed spraying during hot weather, as it removes an alternative host encouraging the mites move onto the banana plants to feed.

Management options

Avoiding the above mentioned situations will greatly assist in managing spider mite populations. Other activities that will assist include:

1. Encouraging predators and beneficial insects
2. Monitoring mite populations
3. Restricting the use of chemicals that cause mite flare, or confining their use to low mite risk periods such as winter
4. Correct application of miticides.



Figure 1. Adult mite and its spherical eggs. Note the dark leaf tissue, an indication of dead leaf cells caused by mite feeding.

Encouraging predators and beneficial insects

Predatory insects can be encouraged by limiting the use of chemicals that are harmful to them. This includes broad spectrum insecticides and miticides in the case of the predatory mites. *Stethorus* (figure 2) and the large metallic blue lady beetles, *Halms ovalis* are naturally occurring. Their populations will lag behind the spider mites as they will need the spider mites present as a food source to sustain them. Predatory mites such as *Neoseilus californicus* and *Phytoseilus persimilis* can also be purchased for release in your paddocks. Due to the climatic conditions in far north Queensland and the nature of the mites, *N. californicus* is possibly the more appropriate beneficial mite to source.



Figure 2. The larva (left), pupa (bottom right) and adult ladybird beetle (top right), of *Stethorus*

Monitoring mite populations

Mites have a short life cycle which can be as short as 7-10 days during hot-dry conditions and as long as 4 weeks. Over the summer months, weekly monitoring would be preferable however fortnightly is sufficient during cooler, wet conditions. To monitor for the presence of mites inspect the underside of the leaf. It is important to take note of the youngest leaf the mites are present on, the relative numbers of the various mite life stages and the presence of predators. In general, the greater the number of mites and the younger the leaf they attack, will result in more severe damage. However, treatment may not always be required if predators are present.



Figure 3. To monitor for the presence of mites and their predators, inspect the underside of the leaf

Restricting the use of chemicals that cause mite flare

Some chemicals are associated with mite flare. This can be due to a number of reasons but primarily because they either encourage the mites to become more fecund (= laying more eggs) (the neonicotinoids, e.g. imidacloprid) or they eliminate predators (the synthetic pyrethroids, e.g. bifenthrin). Where possible avoid using these chemicals or if they must be used, time their use to the low-risk periods for mite flare e.g. winter.

Apply miticides correctly

With only a limited number of miticides available to the banana industry, it is important for treatment efficacy and the long term availability of these products that they are applied correctly.

- Miticides will not provide instant results and monitoring after spray applications is required as it may take 2-3 days before the mites begin to die.
- Apply miticides in the cooler parts of the day as the leaves will close up during the middle of the day and make coverage difficult. Mites are generally found on the undersides of the leaves therefore it is important the leaves are open at the time of application.
- Apply miticides with at least 400L/ha and up to 600 L/ha of water to ensure good coverage. Poor coverage will result in limited mite deaths and may create resistance problems.
- Rotate between the available chemicals and abide by the restricted number of annual uses for each product to minimise the chance of chemical resistance issues.
- **Avoid** using the broad spectrum pyrethroid (e.g. bifenthrin) as this product will remove the predator population and mites are known to have resistance.
- **Avoid** using neonicotinoids (e.g. imidacloprid), particularly if hot dry conditions are expected.
- Knockdown miticides will only control nymphs and adults and therefore may require a follow up application 10-14 days later to control mites that have hatched from the eggs.
- It is recommended to apply miticides when mite populations are low in order to obtain the best control. It is too late once high populations are present as the damage has already occurred.

For more information contact:

Queensland Department of Agriculture and Fisheries
South Johnstone 07 4064 1130 or Mareeba 07 4048 4600.

PLEASE NOTE: Product registrations listed in this table are current for Queensland as of 10 September 2015. Registrations and product labels should always be consulted prior to application. Trade names provided below have only been included to help identify the active constituent and do not reflect a preference for a particular product.

Activity Group/ Active Constituent	Example trade name	Max. no. of applications/ year	Comments
3A (pyrethroids)/ Bifenthrin	Talstar		AVOID: Quickly develops resistance and removes predator population.
10A / Clofentezine	Apollo	1	Ovicide meaning it controls the eggs and prevents eggs from hatching. Must be applied with a knockdown miticide to control the adult population.
10B / Etoxazole	Paramite	1	Mite growth regulator. Causes adults to lay sterile eggs and stops existing nymphs and eggs developing. It does not control adult mites. Can be ground or aerially applied.
12B / Fenbutatin oxide	Torque		Knockdown miticide that kills adults and nymphs. Acts more rapidly in hot weather.
12C / Propargite	Omite, Betamite		Knock down miticide meaning it controls adults not eggs. May cause phytotoxicity (fruit burn) to bunches. Recommended that use be restricted to unbunched blocks or at very least ensure all bunches are bagged. Avoid spraying under hot-humid conditions as phytotoxicity will be worse. CAUTION: re-entry periods are specified on the label and staff should wear overalls if entering within these periods.
21A/ Pyridaben	Sanmite		May not be available on the market place any longer.
Unknown / Dicofof	Miti-Fol, Kelthane		Knock down miticide meaning it controls adults not eggs. May have phytotoxicity issues.
Sulfur PER9409			Queensland and New South Wales for bunch treatment only. Advise that application to leaves may interfere with beneficial insects.

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