

Q biotype Whitefly

A new insect pest of Queensland crops

Fact Sheet

What is Q biotype whitefly?

A new insect pest—the Q biotype Whitefly—has been discovered in Queensland crops. While many crop producers would be very familiar with the silverleaf whitefly (B biotype), this new strain of the *Bemisia tabaci* species complex is now in Australia. It is important because it has the ability to develop resistance quickly to some insecticide groups, particularly if they are used repeatedly.

The presence of Q biotype was confirmed from whitefly collections from vegetable crops in north Queensland in late 2008, and southern Queensland and north-western NSW in 2009.

These biotypes are morphologically identical and can only be separated using biochemical or molecular techniques.

How is Q different from B?

B and Q are very similar in many respects, for example, their life cycle and host plant range. However, they differ in some important aspects. According to overseas experience:

- Q biotype does not induce the physiological changes normally associated with feeding by the B biotype such as
 - silverleafing in pumpkin, squash and zucchini
 - fruit colour changes in soybeans, pumpkin and squash
 - colour changes in the stem and floret of broccoli and cauliflower
 - irregular ripening in tomatoes.
- Q does cause damage through feeding and the production of honeydew, similar to B

Overseas, Q biotype has developed high level resistance to insect growth regulators (IGRs) such as Admiral® and neonicotinoids such as Confidor®. This has resulted in serious control difficulties, particularly in glasshouses.



Q biotype whitefly adult.

Photo: Zara Ludgate, DEEDI.

Much of the concern regarding Q is its capacity to transmit viruses, but in reality this is no different to B. The main issue is that any new incursions, whether Q or B, could carry viruses that are not present in Australia. No exotic whitefly-vectored viruses have been reported at this point in time.

What crops are affected?

Q biotype has a host range of greater than 500 species and includes:

- Cucurbitaceae: melons, squash, zucchini, pumpkin, cucumbers
- Solonaceae: tomato, eggplant, potato and to a lesser extent capsicum
- Brassicaceae: cabbage, broccoli, cauliflower
- Fabaceae: soybeans, green beans
- Malvaceae: cotton
- Convolvulaceae: sweet potato
- and a wide range of ornamental species.



Q biotype distribution

Q biotype has been identified in vegetables in some locations in the Bowen and Burdekin regions in north Queensland and in cotton in southern Queensland (Goondiwindi) and north-western NSW (Wee Waa). It is likely that Q biotype is more widely distributed than just these regions.

Q biotype can disperse by short flights, and may also be capable of longer distance flights associated with B, but transportation on ornamentals is the major means of spread over long distances.

How do you know if you have Q biotype in your crops?

A main indicator of Q biotype could be the presence of high densities of whitefly that are not readily controlled by the use of insecticides. Both Q and B biotypes may have various levels of insecticide resistance. It requires analyses at the molecular level to distinguish between these biotypes.

Are there natural enemies that may help manage this pest?

Parasitic wasps (*Encarsia* spp. and *Eretmocerus* spp.) commonly provide some level of biological control. Predators include big-eyed bugs, lacewing larvae and ladybirds. A management strategy is needed to preserve and promote the activity of parasites and predators. In particular, avoid the early-season use of broad spectrum insecticides such as pyrethroids and organophosphates.

Helping industry to manage this pest

At this stage, Queensland Primary Industries and Fisheries' efforts are directed at better defining the distribution of Q biotype in Australia. Samples will be collected from crops and weeds and identified using molecular techniques.

Management strategies are in place for the effective management of B biotype. These will be reviewed to consider additional requirements for Q biotype management.

What should you do if you have it in your crops?

Infestations of Q biotype may potentially be very difficult to control with some registered insecticides. There is a high likelihood that Q biotype could develop high level resistance to the IGR and neonicotinoid groups of insecticides in some locations. Rotation of insecticide groups and avoiding overuse of any single group of insecticides are key elements of insecticide resistance management strategies. Insecticides used to control other pests may also disrupt natural enemies and flare whitefly numbers.

Where high pest densities are present, identification of the biotype present should be a key objective.



Pale yellow-green nymphs.

Photo: S Subramaniam, DEEDI

Where can I find more information on Q biotype?

Queensland Primary Industries and Fisheries
www.dpi.qld.gov.au Telephone: 13 25 23 (to speak to an expert in your region)

[Whitefly home page](http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/26_10277_ENA_HTML.htm)
(http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/26_10277_ENA_HTML.htm)

Cotton Industry Biosecurity Plan see Appendix 3 pages 32-42

www.planthealthaustralia.com.au/project_documents/display_document.asp?category=12&ID=453

Overseas, Q type whitefly is a serious pest of horticulture
www.q-biotypewhiteflies.com
www.mrec.ifas.ufl.edu/iso/bemisia/bemisia.htm

Additional information
www.q-biotypewhiteflies.com/doc/QBioType_GG.pdf

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