

45. High throughput allelic discrimination of B and Q biotypes of the whitefly, *Bemisia tabaci*, as an aid to monitoring and managing insecticide resistance.

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The whitefly, *Bemisia tabaci* (Gennadius), is a major pest of agricultural and horticultural crops worldwide and exists as a complex of morphologically indistinguishable populations, termed biotypes. The B and Q biotypes are generally regarded as the most significant given their global distribution and strong resistance to insecticidal compounds. Since these biotypes can coexist and differ markedly in their insecticide resistance profiles, a rapid but reliable means of discriminating between them would be a valuable complement to resistance monitoring and management programmes. A number of DNA-based methods have been developed to determine the biotype status of *B. tabaci* populations, however these all require post-amplification procedures, which increase both time and labour. We have developed an allelic discrimination real-time PCR assay using fluorescent-dye labelled probes to distinguish the B and Q biotypes. The assay targets a single nucleotide polymorphism (SNP) in the mitochondrial cytochrome oxidase 1 (mtCO1) gene. To evaluate the assay, DNA was extracted from individual whiteflies of known biotype from strains maintained at Rothamsted Research and all were correctly genotyped as a B or Q biotype. The technique requires little optimisation, is designed to run on a 96-well plate and results are acquired in less than 90 minutes. The development of this rapid assay has important potential for routine monitoring of B and Q biotypes on ornamental plants and for the screening of *B. tabaci* populations in countries where these biotypes are not yet established.