

COTTON APHID

RESISTANCE ALERT



Cases of Insecticide resistance associated with the cotton aphid (*Aphis gossypii*) have been reported since the mid-1960's. Resistance to organophosphate, carbamate, cyclodiene organochlorine and pyrethroid insecticides are considered as globally widespread.

More recently there have been substantive reports of resistance to the nicotinic acetylcholine receptor competitive modulators (IRAC group 4). This group of chemistries has provided effective control of the cotton aphid for many years, but now reports of resistance are increasing.

The first reports of resistance to the nicotinic acetylcholine receptor competitive modulators (IRAC Group 4A-D) could be found in China and Japan & Korea and more recently resistance has also been reported in Turkey. Samples of aphids collected from both cotton and vegetables in these countries demonstrated significantly reduced susceptibility to this chemical group. The resistance has been strongly associated with the R81T mutation which reduces binding of the insecticide to its target site. The same mutation has also been associated with IRAC Group 4 resistance in the green peach aphid (*Myzus persicae*).

In addition there have also been cases of resistance to the IRAC Group 4A insecticides reported in the USA and Australia. These cases are not associated with the target site mutation, suggesting more than one resistance mechanism could be selected if nicotinic acetylcholine receptor agonists are overused.



Not all locations within these countries are affected by resistance, but in the regions where nicotinic acetylcholine receptor competitive modulator resistance has been reported, other control options not affected by resistance should be given priority in pest management programs.

There is little or no evidence of cross-resistance amongst the different mode of action groups used for cotton aphid control. It is therefore recommended to rotate between insecticides with different modes of action to provide effective control.



For more information and advice regarding cotton aphid resistance management visit the IRAC Cotton Aphid web page at www.ircac-online.org/pests/aphis-gossypii