

Imidacloprid can result in increased levels of false codling moth

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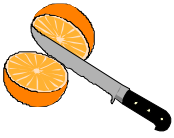
Imidacloprid has been registered on citrus for control of red scale and aphids for many years. Higher levels of false codling moth (FCM), *Thaumatotibia leucotreta*, and other moth pests on citrus have anecdotally been associated with the use of systemically applied imidacloprid for a number of years. It was initially speculated by some parties that if these anecdotal observations were indeed true, this may have been a result of less spraying being conducted in an imidacloprid-treated orchard and thus less inadvertent control of these moth pests. However, CRI believed that this situation was worth further investigation.

Three years ago CRI embarked on a three-year collaborative study with the Nelson Mandela Metropolitan University Department of Biochemistry and Microbiology. This study investigated three aspects: the physiological, biological and ecological effects of imidacloprid on FCM.

Two analytical methods were used to determine the physiological effect of imidacloprid on adult female FCM: mass spectrometry for ovarian protein and HPLC for quantifying Juvenile Hormone (JHIII) levels. Elevated ovarian protein and JHIII levels were recorded in moths which had developed from imidacloprid-treated fruit or diet. Additionally, fecundity of moths which developed from imidacloprid-treated fruit was significantly higher than that of moths which had developed on untreated fruit. In a field trial, FCM infestation in the imidacloprid-treated half of an orchard was almost double that in the untreated half of the orchard. This comparison was reliable, as there were no other differences in the pesticide programme and FCM levels in the two halves of the orchard had been virtually identical during the previous season. This trend was, however, not repeated in a second orchard.

Although this study will be extended for a further year, it is already concluded that imidacloprid treatment of citrus trees can lead to elevated levels of FCM in orchards. In the light of the phytosanitary pest status of FCM, this finding should influence decision-making on the use of imidacloprid. Growers are therefore cautioned to seriously reconsider the inclusion of imidacloprid in a citrus pest management programme, particularly on FCM-susceptible varieties, in high pressure FCM areas, and where there is an obvious history of FCM in an orchard.

Details of these findings will be presented at the Citrus Research Symposium in the Drakensberg (19-22 August 2012). However, as the timing for application of imidacloprid in some regions would precede this, it was necessary to communicate this through a Cutting Edge without delay.



Imidacloprid kan verhoogde vlakke van valskodlingmot veroorsaak

deur

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Imidacloprid is reeds vir baie jare op sitrus vir beheer van rooidopluis en plantluise geregistreer. Hoër vlakke van valskodlingmot (VKM), *Thaumatotibia leucotreta*, en ander motplae op sitrus is in die laaste paar jaar aan die gebruik van sistemies toegediende imidacloprid gekoppel. Daar is oorspronklik deur sekere partye gespekuleer dat as hierdie waarnemings inderdaad korrek was, kon dit dalk as gevolg van minder bespuitings in 'n imidacloprid-behandelde boord wees en dus minder onbewuste beheer van hierdie motplae. Ten spyte hiervan het CRI besluit dat hierdie situasie verdere ondersoek regverdig.

Drie jaar gelede het CRI 'n drie-jaar navorsings samewerking met die Nelson Mandela Metropolitaanse Universiteit se Departement Biochemie en Mikrobiologie begin. Hierdie studie het drie aspekte ondersoek: die fisiologiese, biologiese en ekologiese effekte van imidacloprid op VKM.

Twee analitiese metodes is gebruik om die fisiologiese effek van imidacloprid op monsters van volwasse VKM-wyfies te toets: massaspektrometrie vir ovarium proteïen en HPLC om jeughormoon (JHIII) vlakke te kwantifiseer. Verhoogde vlakke van ovarium proteïen en JHIII is in volwasse VKM wyfies gemeet wat op imidacloprid-behandelde vrugte of dieet ontwikkel het. Boonop was eierlegging van motte wat in imidacloprid-behandelde vrugte ontwikkel het, betekenisvol hoër as dié van motte wat in onbehandelde vrugte ontwikkel het. In 'n veldproef was VKM besmetting in die imidacloprid-behandelde helfte van die boord amper dubbel dié in die onbehandelde helfte van die boord. Hierdie vergelyking is betroubaar omdat daar geen ander verskille in die plaagdoder-program was nie en VKM vlakke in die twee helftes van die boord die vorige seisoen amper identies was. Hierdie tendens is egter nie in 'n tweede boord herhaal nie.

Alhoewel hierdie studie nog vir 'n verdere jaar uitgebrei sal word, is daar alreeds tot die gevolgtrekking gekom dat imidacloprid behandeling van sitrusbome tot verhoogde vlakke van VKM in boorde kan lei. In die lig van die fitosanitêre plaagstatus van VKM behoort hierdie bevinding besluitneming oor die gebruik van imidacloprid te bēinvloed. Produsente word dus gewaarsku om die insluiting van imidacloprid in 'n plaagbeheer program op sitrus ernstig te heroorweeg, veral op VKM-vatbare variëteite, in areas met hoë VKM-druk, en waar daar 'n duidelike geskiedenis van VKM in 'n boord is.

Besonderhede van hierdie studie sal by die Sitrus Navorsingssimposium in die Drakensberg (19-22 Augustus 2012) aangebied word. Omdat die tydsberekening vir toediening van imidacloprid in sekere streke hierdie aanbieding sal voorafgaan, word dit so belangrik beskou dat hierdie boodskap intussen so vinnig as moontlik deur 'n Snykant oorgedra moet word.