

CRI Cutting Edge

CRI Snykant

RESEARCH NEWS FROM CITRUS RESEARCH INTERNATIONAL
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Warning of possible phosphonate phytotoxicity on late mandarin fruit

By

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Reports were received from soft citrus growers who observed phytotoxic burn on soft citrus after phosphonate applications. As phosphonates are especially important to apply for the control of *Phytophthora* brown rot of fruit, these reports were investigated by CRI in trials in the Western Cape and Mpumalanga production areas.

In the trials different sets of 'Nadorcott' mandarin trees were sprayed monthly from November 2015 to end of May 2016 by applying either potassium phosphite or ammonium phosphite. The products were applied as recommended under optimal spray conditions and registered dosages on citrus.

Fruit from sprayed trees were rated at commercial maturity in June 2016 for any signs of phosphonate phytotoxicity. These evaluations indicated at both the Western Cape and Mpumalanga trials sites that severe phosphonate phytotoxicity was present only on fruit sprayed after colour break (Fig. 1 – 4), irrespective of the product applied. These symptoms were not seen on fruit from unsprayed trees (Fig. 4 and 5). It therefore seems that the 'Nadorcott' mandarin fruit rind becomes more sensitive to phosphonate phytotoxicity as colour develops. The observed results will be further confirmed with a repetition of the trial in 2016/2017. In addition, other late Mandarin and Clementine cultivars will also be included in the evaluations to determine their sensitivity to phosphonate applications.

However, given the winter rains that are experienced in several citrus production areas and the resulting need for phosphonate applications to prevent *Phytophthora* brown rot, the following warning is deemed appropriate at this stage.

Phosphonate applications on late mandarin fruit should NOT be done after colour break. However, applying phosphonates to fruit still totally green is safe.

Please note that this warning is at this stage ONLY valid for late mandarin cultivars and NOT

any lemon, orange, grapefruit or early mandarin cultivars.

This warning and research results confirm the warning in Cutting Edge No. 176 that states that soft citrus cultivars must not be sprayed with phosphonates after December in order to avoid phytotoxicity.

An alternative measure that can be employed to manage *Phytophthora* brown rot in soft citrus orchards includes the skirting of trees to prevent fruit from hanging onto the orchard floor. If skirting is not an option, fruit in the bottom 0.5 m of the canopy should not be harvested for export as these fruit have the highest likelihood of becoming infected by *Phytophthora nicotianae* that causes *Phytophthora* brown rot.

Waarskuwing van moontlike fosfonaat fitotoksiteit op laat mandaryn vrugte

Deur

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Verskeie sagte sitrus produsente het gemeld dat fitotoksiteit waargeneem word op die vrugskil na afloop van fosfonaattoedienings. Siende dat fosfonaattoedienings belangrik is vir die beheer van *Phytophthora* bruinvrot op vrugte, is hierdie bewerings deur CRI ondersoek, deur middel van proewe in die Mpumalanga en Wes-Kaap produksie areas.

In hierdie proewe is afsonderlike 'Nadorcott' mandaryn bome maandeliks vanaf November 2015 tot einde Mei 2016 met kaliumfosfiet of ammoniumfosfiet gespuit. Produkte is toegedien onder optimale spuittoestande en volgens die geregistreerde dosisse soos vir sitrus.

Vrugte van gespuite bome is net voor kommersiële oes in Junie 2016 vir enige teken van fosfonaat toksiteit ondersoek. Evaluasies het getoon dat in die Wes-Kaap en Mpumalanga areas erge fitotoksiteit teenwoordig was, slegs op vrugte wat gespuit was na kleurbreek, ongeag die produk wat gespuit is (Fig. 1 – 4). Hierdie simptome is nie waargeneem op vrugte van ongespuite kontrole bome nie. (Fig. 4 en 5). Dit wil dus voorkom of die skil van 'Nadorcott' mandaryn vrugte meer sensitief word vir fosfonaat fitotoksiteit soos



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kleurontwikkeling plaasvind. Die waargenome resultate sal bevestig word deur die proewe in 2016/2017 te herhaal. Addisioneel sal ander Mandaryn en Clementine kultivars ingesluit word om ook hul sensitiwiteit vir fosfonaat toedienings te bepaal.

Gegewe winterreëns wat tans in baie sitrus produksie areas ondervind word, en die noodsaaklikheid vir fosfonaattoedienings om bruinvrot te voorkom, word die volgende waarskuwing as gepas beskou.

Fosfonaattoedienings op laat mandaryn vrugte MOET NIE gedoen word na kleurbreek nie. Fosfonaattoedienings op vrugte wat steeds algeheel groen is, is egter veilig.

Neem ook kennis dat hierdie waarskuwing SLEGS GELDIG is vir laat mandaryn kultivars en NIE van toepassing is op enige suurlemoen, lemoen, pomelo of vroeë mandarynkultivars nie.

Hierdie waarskuwing is ook in lyn met die waarskuwing in Snykant 176 wat aandui dat sagte sitrus kultivars nie na Desember met fosfonate gespuit moet word, ten einde fitotoksiteit te verhoed nie.

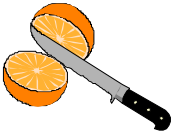
'n Alternatiewe manier om *Phytophthora* bruinvrot in sagte sitrusboorde te beheer, is om die bome te "skirt" sodat vrugte nie op die grond hang nie, of om die vrugte in die onderste 0.5 m van die boom nie te pluk nie. Hierdie vrugte het die grootste risiko om besmet te raak met *Phytophthora nicotianae* wat bruinvrot veroorsaak.



Fig. 1. Phytotoxic symptoms observed on fruit at harvest that was sprayed with either potassium phosphite or ammonium phosphite at colour break. / Fitotoksiese simptome waargeneem op vrugte tydens oes wat gespuit is met kaliumfosfiet of ammoniumfosfiet tydens kleurbreek.



Fig. 2. Phytotoxic symptoms observed on fruit at harvest that was sprayed with either potassium phosphite or ammonium phosphite at colour break. / Fitotoksiese simptome waargeneem op vrugte tydens oes wat gespuit is met kaliumfosfiet of ammoniumfosfiet tydens kleurbreek.



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Fig. 3. Phytotoxic symptoms observed on fruit at harvest that was sprayed with either potassium phosphite or ammonium phosphite at full colour. / Fitotoksiese simptome waargeneem op vrugte tydens oes wat gespuit is met kaliumfosfiet of ammoniumfosfiet tydens volkleur.



Fig. 4. Phytotoxic symptoms observed on fruit at harvest that was sprayed with either potassium phosphite or ammonium phosphite at full colour. / Fitotoksiese simptome waargeneem op vrugte tydens oes wat gespuit is met kaliumfosfiet of ammoniumfosfiet tydens volkleur.



Fig. 5. Untreated fruit from the trial. / Onbehandelde vrugte uit die proef.



Fig. 6. Untreated fruit from the trial. / Onbehandelde vrugte uit die proef.

JOU HEFFING WERK VIR JOU – PRODUSENTE SE HEFFINGS WORD AANGEWEND OM DIE AKTIWITEITE VAN DIE CRI TE BEFONDS