

The Cutting Edge

CITRUS RESEARCH NEWS FROM OUTSPAN CITRUS CENTRE

April 2000

No. 4

WANTED: NEW CITRUS CULTIVARS

Cultivar Development, Outspan Citrus Centre

Did you know that most commercially grown citrus cultivars, including the navel orange originated from single branch mutations growing in the field? These mutations occur in all cultivars and there is every chance that a number of exciting new citrus cultivars are just waiting to be discovered in your citrus orchards this season.

There is a great need to discover suitable local selections of cultivars to maintain our competitive edge.

The desired fruit characteristics can include: improved fruit size, earlier or later maturity, advanced rind colour, improved flesh colour, seedlessness, low rag, pest or disease tolerance, improved productivity and market acceptability.

Growers and their staff are therefore encouraged to be on the lookout for superior fruit and tree mutations in their orchards. Should such a mutation with promising characteristics be found, mark the tree and immediately contact a Cultivar Developer.

Should such a mutation be promising and become commercially desired it could involve taking out a plant breeders rights contract covering ownership, distribution rights and royalties for the discoverer.

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COLD DISINFESTATION TREATMENT OF RED SCALE (*AONIDIELLA* *AURANTII*) ON VALENCIA ORANGES

J Hendrik Hofmeyr
Outspan Citrus Centre, Citrusdal

Red scale, *Aonidiella aurantii*, is a common pest in southern African citrus. It has a cosmopolitan distribution and occurs in all major citrus producing countries worldwide.

On gaining access to Korea for southern African citrus exports in 1999, *A. aurantii* was listed as a phytosanitary pest by Korean Plant Protection authorities. As such, citrus fruit exported to Korea had to be free from live red scale. Consequently, exports to Korea were seriously restricted in 1999 with a 55% rejection rate due to red scale infestation. No data existed on the efficacy of a post harvest cold treatment on red scale and an experiment was conducted accordingly. The objective of the experiment was to establish whether the approved cold disinfestation treatment for false codling moth (22 days at -0,5°C), would kill red scale on oranges. In addition, the suitability of a shorter period of 16 days was also investigated.

Valencia oranges, heavily infested with red scale, were used. Cartons of infested fruit were placed in reefer containers with integral cooling apparatus, and were stored at +0,5°C for 22 days, or at -0,5°C for 16 and 22 days respectively.

For evaluation purposes approximately 200 000 red scale of all life stages were inspected in untreated control and treated fruit.

A large number of red scales of all developmental stages survived the 16-day treatment at +0,5°C. Eight out of 55 000 red scales, viz. four males (two prepupae and two pupae) and four females (3 x second instar and 1 x third instar), survived the 16-day treatment at -0,5°C. All immature life stages, including first instars, as well as adult male and female scales, were killed by the 16 day cold treatment. Treating the red scale at the same temperature for 22 days, however, was lethal and no survivors were found.

Taking all results into consideration, it seems that two factors in combination are responsible for red scale mortality. At 16 days, although live scale were found in both the +0,5°C and -0,5°C treatments, the colder treatment resulted in only a few survivors, demonstrating the influence of temperature. The 22-day treatment at -0,5°C, killed all red scale. This result suggests that apart from temperature, treatment duration plays an

important role in scale mortality.

It was therefore concluded that the false codling moth cold treatment protocol would ensure red scale disinfestation. The above mentioned findings were presented to the Korean Plant Protection authorities who accepted the recommended disinfestation treatment for red scale during March 2000.

In future South African citrus fruit exported to Korea will therefore not be subjected to zero tolerance rejections for red scale. This will greatly improve access to this lucrative new market.

DIFFICULTY IN CONTROLLING FRUIT FLIES UNDER DAMP CONDITIONS

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On account of the abnormally damp conditions that have prevailed this summer, citrus growers are finding it difficult to prevent fruit fly damage. In spite of bait applications, a considerable number of blind stings (stings without eggs) still occur on fruit. A possible explanation is that under very damp conditions, fruit flies are not eager to feed on the bait, but still make repeated attempts to lay eggs.

This may also explain unusually low catches in Sensus traps which have been experienced with the food attractants Ceratitisure and Questlure. However, blind stings have also been observed in cases where Capilure catches were low. It is possible that some of these were not made by fruit flies.

The possibility also exists that the Decis tablet used as the fly killer in the Sensus traps is not working as it should. This matter is being investigated. Meanwhile, growers can order dichlorvos blocks from Quest and use them instead of the Decis tablets. The dichlorvos blocks are effective and much cheaper than the Decis tablets.

Where growers notice blind fruit fly stings in spite of bait applications, they should consider using the registered aerial bait application which is a chemical control method. It will be advisable to keep the spray swaths adjacent to one another rather than leaving an untreated strip between each swath.

The recommendation for aerial bait application is 750 ml protein + 250 ml Malation UL per hectare. The aeroplane application recipe can also be applied with a Mantis bait-applicator. In this case,

500 ml Malathion UL and 750 ml protein must be added to 45 litres water. When applied at 45 ml per tree, this spray mixture will cover two hectares. As soon as the fly population is brought under control, growers must go back to the conventional bait control recipe because the high Malathion content in the aerial mixture can disrupt the biological control of citrus pests.

Because the M3 bait station contains a food bait, similar problems to those described with bait spraying could be experienced with the M3. Where growers have hung out M3 bait stations and still notice stung fruit, they must use the above-mentioned bait sprays until the conditions return to normal.

FUNGUS GROWTH ON CERATITIS AND QUESTLURE CAPSULES IN THE SENSUS TRAP

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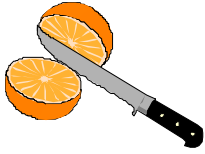
Growers using Ceratitisure and Questlure capsules in their Sensus traps must examine the surface of the capsules to see whether they are covered with fungus growth. If so, the capsules must be replaced because the fungus growth reduces fly attraction.

This problem has arisen for the first time this year and it is ascribed to very high moisture content in the air. In the regions where air moisture has remained over 80% RH for four or five days, the fungus growth is generally evident. A fungicide is now being added to the attractants to inhibit fungus growth.

UNUSUAL FLY LARVAE IN STUNG OR DAMAGED FRUIT

Tim G Grout
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Unusual fly larvae have been found in stung or damaged fruit in the subtropical production regions. These larvae have more noticeable, black mouthparts than fruit fly larvae and the spiracles at the rear of the larvae protrude. These flies are unable to sting fruit and must lay eggs in blind stings caused by fruit fly or damage caused by other insects or thorns. They are therefore not primary pests and are related to the vinegar flies (Drosophilidae) usually found around decaying fruit. This larger species seems to be very abundant this year, due possibly to the high rainfall.



Die Snykant

SITRUSNAVORSINGSNUUS VAN OUTSPAN SITRUSSENTRUM
April 2000

GESOEK: NUWE SITRUSKULTIVARS Kultivarontwikkeling, Outspan sitrusentrum

Het u geweet dat die meeste kommersiële sitruskultivars, insluitende die nawellemoen, ontstaan het as 'n takmutasie aan 'n boom wat in 'n boord groei? Die mutasies gebeur by alle kultivars en daar is 'n goeie kans dat 'n hele aantal opwindende nuwe sitruskultivars in u sitrusboord net wag om ontdek te word.

Om ons voorsprong bo ons mededingers te behou, is dit noodsaaklik dat geskikte plaaslike seleksies ontdek word.

Die gewenste eienskappe is onder andere: Beter vruggrootte, vroeër of later rypwording, gevorderde skilkleur, verbeterde vrugvleisgehalte, saadloosheid, lae veselinhoud, plaag- of siekteverdraagsaamheid, groter opbrengs en markaanvaarbaarheid.

Produsente en hul personeel word aangemoedig om op te let vir uitstaande vrug- en boommutasies in hul boorde. Indien so 'n mutasie met belowende eienskappe opgemerk word, merk die boom en kontak dadelik een van die Kultivarontwikkelaars.

Gestel so 'n belowende mutasie wys kommersiële potensiaal, kan dit meebring dat 'n planttelerssooreenkoms vir die ontdekker opgestel word om eienaarskap, verspreidingsregte en tantieme te dek.

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KOUEDISINFESTASIE VAN ROIDOPLUIS (*AONIDIELLA AURANTII* MASK.) OP VALENCIA-LEMOENE

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Rooidopluis, *Aonidiella aurantii*, is 'n algemene plaag op Suider-Afrikaanse sitrus. Dit is wydverspreid en kom wêreldwyd in alle groot sitrusproduserende lande voor.

Suider-Afrikaanse sitrusuitvoere na Korea is vir die eerste keer gedurende 1999 toegelaat. *A. aurantii* is egter deur die Koreaanse Plantbeskermingsowerheid as 'n fitosanitêre plaag verklaar. As sodanig mag sitrusvrugte wat na Korea uitgevoer was, nie met lewendige rooidopluise besmet wees nie. Uitvoere na Korea was gevolglik gedurende 1999 ernstig beperk toe 55% van uitvoervrugte weens rooidopluisbesmetting afgekeur is.

Daar was geen inligting oor die invloed van 'n na-oes kouebehandeling op rooidopluis beskikbaar nie en 'n proef is daarom uitgevoer. Die doel daarvan was om vas te stel of die goedgekeurde kouedisinfestatiebehandeling vir valskodlingmot (22 dae teen $-0,5^{\circ}\text{C}$) ook rooidopluise op lemoene sou doodmaak. Die invloed van 'n korter 16-dag behandelingsduur is bykomend ondersoek.

Hewig besmette valencia-lemoene is gebruik. Kartonne besmette vrugte is in skeepshouers wat met verkoelingsapparaat toegerus is, geplaas en vir 16 dae by $+0,5^{\circ}\text{C}$, asook 16 en 22 dae onderskeidelik by $-0,5^{\circ}\text{C}$, gehou.

Na behandeling is ongeveer 200 000 rooidopluise van alle ouderdomme op onbehandelde kontrolevrugte en behandelde vrugte ondersoek.

'n Groot aantal rooidopluise in alle ontwikkelingsstadia het die 16-dag behandeling by $+0,5^{\circ}\text{C}$ oorleef. Agt van 55 000 rooidopluise, naamlik vier mannetjies (twee prepapies en twee papies) en vier wyfies (3 x tweede instar en 1 x derde instar) het die 16-dag behandeling by $-0,5^{\circ}\text{C}$ oorleef. Alle ander onvolwasse stadia, insluitend eerste instars, asook volwasse mannetjies en wyfies, is deur die kouebehandeling gedood. Die 22-dae lange behandeling by dieselfde temperatuur was egter dodelik en geen oorlewendes is gevind nie.

Alle resultate in ag genome, skyn dit asof twee faktore gesamentlik vir rooidopluisdoding verantwoordelik is. Alhoewel lewendige dopluise in die 16-dae behandeling by beide $+0,5^{\circ}\text{C}$ en $-0,5^{\circ}\text{C}$ gevind was, het net 'n paar die kouer temperatuur oorleef, wat die invloed van temperatuur toon. Die 22-dae behandeling by $-0,5^{\circ}\text{C}$ het alle dopluise gedood. Dié resultaat toon dat behandelingsduur, afgesien van temperatuur, 'n belangrike rol by dopluisdoding speel.

Daar is dus afgelei dat die kouebehandelingsprotokol vir valskodlingmot, rooidopluisdisinfestatie sal verseker. Die Koreaanse Plantbeskermingsowerhede is van dié bevinding in kennis gestel, wat die aanbevole

disinfestasiëbehandling vir rooidopluis gedurende Maart 2000 goedgekeur het.

In die toekoms sal Suid-Afrikaanse sitrus wat na Korea uitgevoer word, dus nie aan zero-toleransie afkeurings vir rooidopluis onderhewig wees nie. Dit sal uitvoere na dié winsgewende mark grootliks bevorder.

PROBLEME OM VRUGTEVLIEË ONDER HOË VOGTIGHEIDSTOESTANDE TE BEHEER

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Weens die abnormale hoë vogtigheidstoestande wat hierdie somer in sitrusboorde heers, vind produsente dit moeilik om vrugtevliegbesmetting te verhoed. Produsente ondervind ten spyte van lokaastoedienings, dat daar nog heelwat blinde steke (steekplekke sonder eiers) op vrugte voorkom. 'n Moontlike verklaring is dat onder die hoë vogtigheidstoestande vrugtevlieë nie gretig is om op lokaas te voed nie, maar nog steeds herhaaldelik probeer om eiers te lê.

Dit kan ook die kleiner vangste verklaar met Sensuslokvalle wat met die voedsellokase Ceratitislure en Questlure toegerus is. Blinde steke is egter ook waargeneem waar vangste met Capilure klein was. Dit is moontlik dat sommige van dié blinde steke nie deur vrugtevlieë veroorsaak was nie.

Dit is ook moontlik dat die Decis-tablet wat as vliegdoder in die Sensuslokvalle gebruik word, nie na wense werk nie. Die saak word ondersoek. Intussen kan produsente dichloorvos-blokkies vanaf Quest bestel en dit in die plek van die Decis-tablette gebruik. Die dichloorvos-blokkies is doeltreffend en is baie goedkoper as die Decis-tablette.

Wanneer produsente blinde vrugtevliegsteke ten spyte van lokaastoedienings waarneem, moet hulle dit oorweeg om die geregistreeerde vliegtuiglokaastoediening, wat 'n chemiese bestrydingsmetode is, toe te pas. Dit sal raadsaam wees om alle boomrye te behandel en nie bome oor te slaan nie.

Die aanbeveling vir vliegtuiglokaastoediening is 750 ml proteïene + 250 ml Malation UL per hektaar. Die resep kan ook met 'n Mantis lokaastodiener aangewend word. In dié geval moet 500 ml Malation UL en 750 ml proteïen by 45 ℓ water gevoeg word. Teen 45 ml lokaas per boom toegedien, sal hierdie spuitmengsel twee hektaar dek. Sodra die vliegbevolking onderdruk is, moet produsente weer terugval op die konvensionele lokaasbeheerresep, omdat die hoë Malation-inhoud in die vliegtuigmengsel die biologiese beheer van sitrusplae kan versteur.

Omdat die M3-lokval 'n voedsellokaas bevat, kan soortgelyke probleme soos wat tans die geval met lokaastoedienings is, ondervind word. Waar produsente M3-lokvalle uitgehang het en nog steeds gesteeke vrugte waarneem, moet bogenoemde lokaastoedienings aangewend word totdat toestande na normaal terugkeer.

SWAMGROEI OP CERATITIS- EN QUESTLURE-KAPSULES IN DIE SENSUSLOKVAL

Carel Buitendag en Wena Naudé
Outspan sitrussentrum, Nelspruit

Produsente wat Ceratitis- en Questlure-kapsules in hulle Sensuslokvalle gebruik, moet kyk of die oppervlakte van die kapsules nie met swamgroeibedek is nie. Indien wel, moet die kapsules vervang word omdat die swamgroeivlieglokking benadeel.

Hierdie probleem het vanjaar die eerste keer ontstaan en dit word toegeskryf aan baie hoë lugvog. In die streke waar die lugvog vir vier of vyf dae bokant 80% RLV bly, kom die swamgroeialgemeen voor. In die toekoms sal 'n swammiddel by die lokmengsels gevoeg word om die swamgroeite te inhibeer.

ONGEWONE VLIÉGLARWES IN GESTEEKTE OF BESKADIGE VRUGTE

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In die subtropiese gebiede word vanjaar ongewone vliegglarwes aangetref in gesteeke of beskadigde vrugte. Die larwe kan uitgeken word aan swart mondele en die spirakels aan die agterlyf wat opgehewe is. Hierdie vlieë kan nie die vrugte steek nie. Hul eiers word in blinde vrugtevliegsteke of gaatjies wat deur ander insekte of dorings veroorsaak is, gelê. Die vlieg is dus nie 'n primêre plaag nie, maar is familie van die kleiner asynvlieë (Drosophilidae) wat gewoonlik in bederfde vrugte aangetref word. Dié groter spesie is blykbaar vanjaar volop, moontlik as gevolg van die hoë reënval.