The Cutting Edge

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EFFECT OF ROW ORIENTATION ON INTERNAL FRUIT QUALITY

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Row orientation is one of several important pre-plant decisions in citrus production, and is one of those pre-plant activities that are difficult to change at a later stage, i.e. once an orchard is planted it is improbable that row orientation will be changed. Current planting practices, which include relatively high- density hedgerow systems, demand an emphasis on light interception and penetration. Where light interception and utilisation are sub-optimal yield, fruit size and internal fruit quality are adversely affected. However, of the numerous factors influencing internal fruit quality in citrus production, row orientation has received relatively little research attention although it is invariably recommended that citrus orchards should be planted with N-S (north-south) row orientation.

Given the competitiveness of international fruit marketing, citrus producers should do all in their power to optimise internal fruit quality to maintain competitive advantage. Unfortunately, there is relatively little experimental evidence on the effects of row orientation on internal fruit quality, probably because of the management problems involved in designing suitable experiments. Apparently, more research and theoretical studies on this aspect have been conducted with deciduous fruit crops than subtropical or tropical evergreens – the problem of light interception and utilisation being more acute in higher latitudes, i.e. the temperate regions of the world.

A small amount of research on row orientation in citrus has been conducted in Florida, Texas and Israel. In Florida, considerably more light is intercepted by N-S row orientation than E-W, and in both Florida and Queensland (Australia), N-S row orientation is recommended for optimal light utilization, and as a citricultural practice. In Texas, grapefruit orchards planted N-S had higher yield than orchards planted with E-W (east-west) row orientation. In Israel, Shamouti orange orchards with N-S row orientation allowed more light penetration into trees with interior leaves receiving twice as much sunlight as interior leaves of trees in the E-W orientation. Israeli scientists developed a model that predicts the advantages for N-S row orientation (in Israel's latitude), and for dense orchards which maximise surface area.

Recent research in Florida clearly shows the benefits of N-S row orientation on Valencia orange internal fruit quality (Table). Fruit from trees planted in N-S rows had significantly higher TSS (by 19.8 and 12.4 per cent in the 1999 and 2000 seasons, respectively) and acidity (by 18.1 and 17.6 per cent in the 1999 and 2000 seasons, respectively) than fruit from trees planted in E-W row orientation. Although there was no significant effect on ratio in the two seasons, flavour of fruit from N-S rows was richer due to higher TSS and acid levels. What was known anecdotally has now been clearly demonstrated by scientific data.

Under conditions of either extreme latitudes or relatively dense hedgerow orchard planting systems, N-S row orientation is essential to optimise internal fruit quality. Citrus producers should make use of this information.

Table. Internal fruit quality of Valencia oranges during 1999 and 2000 seasons, planted in N-S and E-W row orientation.

Row orientation	Total Soluble Solids (%)		Acid Content (%)		Ratio	
	1999	2000	1999	2000	1999	2000
N-S	12.7	11.8	1.11	1.20	11.56	10.02
E-W	10.6	10.5	0.94	1.02	11.36	10.38
lsd [1]	0.5	0.4	0.07	0.12	0.83	1.15
p-value [2]	0.0001	0.0001	0.0001	0.0085	0.6312	0.5164

[1] least significant difference.
[2] probability of detecting a significant difference between row orientations.

CHEMICAL CONTROL OF FALSE CODLING MOTH: SINK OR SWIM

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During the past season, false codling moth (FCM) again received a major share of research attention. Although the research was not altogether unsuccessful, there is little to get excited about.

During this season, as in the past, Alsystin and Nomolt are again blamed for poor FCM control. However, from experiments and orchard observations it is clear that the **biggest** blame lies with producers and not with the products. Orchard observations show that there was little difference between unsprayed controls and trees treated with Alsystin by producers. In the same orchards, fruit drop due to FCM was substantially reduced in screening experiments when Alsystin was applied by the author. Although the results were poorer than before FCM developed resistance to Alsystin and Nomolt, crop damage was still markedly reduced.

This finding places the spotlight squarely on the quality of insecticide applications. The following factors are totally, or at least grossly, neglected:

1. Citrus trees are not naturally spray-friendly. Despite this, trees are not properly prepared beforehand. They are not skirted or pruned, while dead and luxuriously growing inside branches are never, or seldom on a routine basis, removed. This aspect is a problem on most farms and ***is an extremely important factor*** where good spray coverage is required.

2. Mistblowers are used instead of handguns. Mistblowers are inefficient in several respects:

2.1. Low profile mistblowers are not suited to the application of spray mixtures for FCM control. The sprayers are not able to wet fruit completely on all sides, even if the correct spray volume is applied. High profile mistblowers with oscillating booms perform slightly better, although even these machines are not as effective as a good handgun application. An oscillating boom helps to agitate branches and fruit during spraying and facilitates better coverage.

2.2. Mistblowers are seldom adjusted to deliver the correct spray volume per tree. The required rate is the same as that applied by hand (this aspect will be discussed in a forthcoming article). The spray mixture cannot be concentrated to compensate for reduced spray volumes, as the insecticides used for FCM control, must be applied in the form of a film spray coverage. **A *diffuse (droplet) spray coverage is insufficient***.

2.3. Incorrect adjustment is not the only evil. Certain spray machines are just not capable of applying enough spray mixture per tree. Even if they were theoretically able to apply the appropriate insecticide as a film coverage (which is currently technically impossible with these machines), the insecticide would have to be concentrated to avoid applying a sublethal dosage.

3. Far too little spray mixture is applied by hand, which results in inadequate coverage. The operators are often poorly trained, or are trained by persons who do not know, or can't apply, the basic principles of correct handgun spraying. The operators are inevitably blamed for the poor results! Good supervision in general and in particular, continuous supervision by persons who are thoroughly acquainted with the principles of proper handgun spraying, is nearly completely absent on most citrus farms. Handgun spraying is a tiring, monotonous task which always feels never-ending. **Workers must therefore be motivated continuously to deliver their best**. The nature and extent of such measures fall outside the scope of this article.

4. Underdosing with insecticide results in poor FCM control over the short term. A much bigger problem, however, is that FCM can develop resistance to insecticides, as is currently the case with Alsystin and Nomolt. The problem is multifaceted:

4.1. All the registered products have a long residual action. After application they start breaking down and the residual efficacy on the treated plant material is gradually reduced. The probability of treated individuals surviving, increases as the season progresses. A survivor possessing a greater natural resistance, transfers its inherent survival characteristics to its progeny. Short residual insecticides are less exposed to this danger. Spray programmes consisting of eight to 11 sprays is common in the deciduous fruit industry. However, such programmes are highly unlikely to be seriously considered in citrus because of citrus' perennial nature, the general approach to pest control, the danger of excessive residues and finally, the treatment cost structure.

4.2. There are several FCM generations per season. Successive generations are therefore exposed to residues with ever-diminishing punch. The chance of an individual being exposed to sublethal residues is increased and this can promote the development of resistance.

4.3. FCM is polyphagous and the larvae feed on many host plants of divergent nature. All plants contain toxic compounds which are often used as defence mechanisms against insect feeding. The more plant types utilized by an insect species, the

better developed that insect's resistance mechanisms to these toxins will be. FCM therefore has the inherent capability to develop resistance to synthetic insecticides.

4.4. Insects that develop resistance to certain insecticides in the benzoyl urea group ("cross resistance") (Alsystin and Nomolt are both benzoyl ureas), are also liable to develop resistance to the pyrethroids ("multiple resistance"). This is because compounds in both insecticide groups can be degraded by common biochemical processes in treated insects. This season certain pyrethroids were used for FCM control for the first time in years. That unfortunately does not mean that these "new" insecticides will suppress FCM successfully for as long as Alsystin and Nomolt gave satisfactory results.

Each factor can contribute individually to resistance. In combination, they are an infallible recipe for the development of resistance in FCM. The problem will therefore not be completely solved by more thorough application of insecticides. It will, however, result in improved control over the short term, and can contribute, even in a small way, to postpone the advent or worsening of the resistance problem.

5. There has been a great improvement with respect to the choice of spray programmes during the past few seasons. Unfortunately, it still happens that spray programmes are initiated too early in the season. Protection is therefore reduced shortly before harvest, when the danger of FCM infestation is at its greatest. In most citrus producing areas it is seldom necessary to protect susceptible cultivars against FCM for longer than 16 weeks. A much shorter protection period will in fact suffice in most cases. When extended protection is required, as for example, during the present season in the Citrusdal region, spray programmes must be adapted accordingly with the help of experienced consultants.

Producers must accept that the prospects for new insecticides are poor. New, effective insecticides are already a rare phenomenon, and will become increasingly so in the future. Additionally, the trend is to develop insecticides with a short residual action which, if necessary, must be applied often. Alternative control procedures for FCM are being investigated, but progress is relatively slow. Producers will therefore, at least for the next few years, have to depend on what is currently available. Producers having problems with FCM will have to apply extraordinary effort to restrict pest damage. This can only be done if the factors discussed above, receive meticulous and constant attention.

USE OF 2,4-D AND GUAZATINE FOR JAPAN

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Official notification has been received from the Ministry of Welfare in Japan, as well as a copy of Nisseikyo's (Produce Import Association) News Bulletin, advising that 2,4-D (Sodium Salt) may be used on citrus destined for Japan.
Guazatine (Deccotine) is also now allowed as a pre-harvest chemical, but not as a post-harvest treatment, with a residue limit for oranges and Grapefruit of 1 ppm. This enables the use of Guazatine (Deccotine) in the pre-degreening drench. The residue limit of 1ppm is unlikely to be exceeded as the fruit must be put through the packhouse, after degreening, and most of the residue will be washed off.

GRAS CHEMICALS AND SANITIZING AGENTS

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GRAS (Generally Regarded As Safe) chemicals (eg. Calcium Carbonate, Calcium Bicarbonate, Calcium Chloride, Sodium Carbonate etc.) and sanitizing or disinfecting agents (eg. quaternary ammonium compounds such as Terminator, Sporekill, Desogerme and also other products such as Ozone etc.) are not currently recommended for use in citrus dumptanks nor fungicide baths in citrus packhouses. The suitability of using such products as well as their compatibility with fungicides requires further attention.

The only sanitizing agents currently recommended for citrus dumptanks and descalers are Chlorine and Chlorine Dioxide.

CULTIVAR NOTE

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It appears as if the Messina citrange may not be earlier than the Troyer citrange as was previously speculated. There would therefore be no advantage in planting the Messina citrange rather than the Troyer citrange.

There have been reports that the Nova seedless is not 100% seedless in all the areas.

Die Snykant

SITRUSNAVORSINGSNUUS VAN OUTSPAN SITRUSSENTRUM

Junie 2000

DIE INVLOED VAN BOOMRYRIGTING OP INTERNE VRUGKWALITEIT

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Boomryrigting is een van verskeie belangrike voorplantbesluite by sitrusproduksie. Dit is een van daardie voorplantaktiwiteite wat moeilik op 'n later stadium verander kan word, aangesien boomryrigting in 'n klaargeplante boord, onwaarskynlik verander sal word. Huidige plantpraktyke, wat relatiewe hoëdigtheid heiningstelsels insluit, beklemtoon ligonderskepping en -indringing. Wanneer ligonderskepping en -aanwending nie die beste is nie, kan vruggrootte en interne vrugkwaliteit benadeel word. Van al die menige faktore wat interne vrugkwaliteit in sitrusproduksie beïnvloed, het boomryrigting relatief min navorsingsaandag ontvang, alhoewel dit sonder uitsondering aanbeveel word dat sitrusboorde in 'n Noord-Suid (N-S) rigting aangeplant moet word.

Die mededingendheid van internasionale vrugtebemarking is 'n feit. Sitrusprodusente moet daarom alles in hulle vermoë doen om vrugte met die beste interne kwaliteit te produseer om mededingend te bly. Daar is ongelukkig relatief min navorsingsinligting oor die invloed van boomryrigting op interne vrugkwaliteit, waarskynlik as gevolg van die bestuursprobleme wat met die ontwerp van gepaste proewe gepaard gaan. Meer navorsing en teoretiese studies oor dié onderwerp is skynbaar met sagtevrugtegewasse as met subtropiese of tropiese immergroen plante uitgevoer - die probleem van ligonderskepping en -aanwending is nypender in hoër breedtegrade, m.a.w. die gematigde streke van die wêreld.

'n Bietjie navorsing op boomryrigting in sitrus is in Florida, Texas en Israel uitgevoer. In Florida word heelwat meer lig onderskep deur 'n N-S boomryrigting as O-W (Oos-Wes). 'n N-S boomryrigting word beide daar en in Queensland (Australië) vir optimale ligaanwending en as 'n sitrusverbouingspraktyk aanbeveel. In Texas het pomeloboorde wat N-S geplant is, groter oeste gelewer as boorde met 'n O-W boomryrigting. 'n N-S boomryrigting in Israel laat meer ligindringing toe in Shamouti-lemoenboorde, met binneblare wat twee keer meer sonlig ontvang as bome wat O-W geplant is. Israeli-wetenskaplikes het 'n model ontwikkel waarmee die voordele vir N-S boomryrigting (by Israel se breedtegraad) en vir digte boorde wat maksimum gebruik van grondoppervlakte maak, voorspel kan word.

Die jongste navorsing in Florida toon die voordele van N-S boomryrigting op die interne vrugkwaliteit van Valencialemoene duidelik (Tabel). Vrugte van N-S geplante boomrye het beduidend meer vastestowwe (TOV) (19,8 en 12,4% onderskeidelik in die 1999 en 2000 seisoene) en suur (18,1 en 17,6% onderskeidelik in die 1999 en 2000 seisoene) as vrugte van bome in 'n O-W boomryrigting geplant. Alhoewel daar nie 'n betekenisvolle invloed op die TOV/suurverhouding in die twee seisoene was nie, was die smaak van die vrugte van die N-S boomrye beter as gevolg van groter TOV en suurvlakke. Wat dus slegs interessantheidswaarde gehad het, is nou wetenskaplik bewys.

Onder toestande van óf uiterste breedtegrade óf relatiewe digte heiningplantstelsels, is N-S boomryrigting noodsaaklik om die beste interne vrugkwaliteit te kry en behoort sitrusprodusente van dié inligting gebruik te maak.

Tabel. Interne vrugkwaliteit van Valencialemoene wat in N-S en O-E boomryrigtings geplant is (1999 en 2000 seisoene).

Boomryrigting	% Totale Opgeloste Vastestowwe		% Suur		Verhouding	
	1999	2000	1999	2000	1999	2000
N-S O-W	12.7 10.6	11.8 10.5	1.11 0.94	1.20 1.02	11.56 11.36	10.02 10.38
kbv[1] p-waarde[2]	0.5 0.0001	0.4 0.0001	0.07 0.0001	0.12 0.0085	0.83 0.6312	1.15 0.5164

[1]Kleinste betekenisvolle verskil

[2]Waarskynlikheid dat 'n betekenisvolle verskil tussen boomryrigtings waargeneem kan word

CHEMIESE VALSKODLINGMOTBESTRYDING: SWEM OF VERDRINK

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Valskodlingmot (VKM) het die afgelope seisoen weer sy regmatige aandeel van navorsingsaandag gekry. Alhoewel die navorsing nie heeltemal vrugteloos was nie, is daar geen opwindende nuwe verwikkelinge nie.

Soos in die verlede het Alsystin en Nomolt vanjaar weer die skuld vir swak VKM-bestryding gekry. Dit het egter duidelik uit proewe en boordwaarnemings geblyk dat die ***grootste*** skuld by produsente self lê en nie by die produkte nie. Boordwaarnemings het getoon dat daar weinig verskil in oesskade weens VKM was tussen onbehandelde kontroles en bome wat deur produsente met Alsystin bespuit was. In dieselfde boorde is vrugval sterk verminder in waardebepalingsproewe toe Alsystin deur die skrywer toegedien was. Laasgenoemde resultate was wel nie so goed as voordat VKM weerstand teen Alsystin en Nomolt ontwikkel het nie, maar oesskade is nogtans baie verminder.

Bogenoemde verskynsel plaas die soeklig vierkantig op die kwaliteit van insekdoderbespuitings. Die volgende faktore word in geheel, of minstens grotendeels, verwaarloos:

1 Sitrusbome is nie natuurlik spuitvriendelik nie. Desondanks word bome nie vooraf voorberei nie. Hulle word nie opgerand of gesnoei nie, terwyl dooie én weliggroeiende binnetakke dikwels nooit, of selde op 'n gereelde basis, verwyder word. Laasgenoemde aspek is op amper alle plase 'n probleem en is ***'n uiters belangrike faktor*** wat goeie spuitbedekking verhoed.

2 Newelblasers word gebruik in plaas van handspuite. Eersgenoemde skiet in verskeie opsigte te kort:

2.1 Laeprofiel-newelblasers is nie geskik vir die toediening van spuitmengsels vir VKM-bestryding nie. Die spuitmasjiene is nie naastenby daartoe in staat om vrugte rondom te benat nie, selfs al word die regte hoeveelheid spuitmengsel toegedien. Hoëprofiel-spuitmasjiene met wikkelbalke kan die werk effens beter doen, alhoewel selfs dié spuitmasjiene nie so doeltreffend soos 'n goeie handbespuiting is nie. Die wikkelbalke help baie om takke en vrugte gedurende bespuiting te beweeg en beter bedekking te bewerkstellig.

2.2 Newelblasers is selde ingestel om die regte hoeveelheid spuitmengsel per boom toe te dien. Die hoeveelheid wat nodig is, is dieselfde as wat met handspuite toegedien moet word (dié aspek sal in 'n volgende artikel behandel word). Die spuitmengsel kan nie gekonsentreer word om te vergoed vir kleiner spuitvolumes nie, aangesien die insekdoders wat teen VKM gebruik word, as 'n filmbedekking toegedien moet word. ***'n Druppelbedekking is nie geskik nie***.

2.3 Verkeerde instelling is nie die enigste euwel nie. Sekere spuitmasjiene is net nie in staat om genoeg spuitmengsel per boom toe te dien nie. Al was hulle teoreties in staat om die betrokke insekdoder as 'n filmbedekking toe te dien (wat tans met sulke spuitmasjiene tegnies onmoontlik is), dan sou die insekdoder gekonsentreer moes word om die toediening van 'n subletale dosis insekdoder te vermy.

3 Hopeloos te min spuitmengsel word met handspuite toegedien en die gevolg is 'n kollerige bedekking met insekdoder. Die werkers is dikwels swak opgelei, of is opgelei deur persone wat self nie die basiese beginsels van goeie handbespuiting ken of dit kan toepas nie. Dié werkers kry onvermydelik die skuld vir swak resultate! Goeie toesig in die algemeen en in besonder, deurlopende toesig deur persone wat deeglik met die grondbeginsels van deeglike handbespuiting vertroud is, is amper totaal afwesig op die meeste sitrusplase. Handbespuiting is 'n vermoeiende, vervelige taak wat altyd nimmereindigend voel. ***Werkers moet daarom voortdurend gemotiveer word om hul beste te lewer***. Die aard en omvang van sulke maatreëls val nie binne die bestek van dié artikel nie.

4 Onderdosering met insekdoders het swak bestryding van VKM oor die kort termyn tot gevolg. 'n Baie groter probleem is egter dat VKM oor die langer termyn weerstand teen die insekdoders kan ontwikkel, soos met Alsystin en Nomolt aan die gebeur is. Die probleem is veelsydig:

4.1 Al die geregistreerde produkte het 'n lang nablywende werking. Na bespuiting begin hulle met verloop van tyd stadig afbreek en die doeltreffendheid van die residu's op die bespuite plantmateriaal verminder gaandeweg. Die waarskynlikheid dat behandelde indiwidue sal oorlewe, vergroot dus met verloop van die seisoen. Die oorlewendes wat 'n groter natuurlike weerstand het, dra hul inherente oorlewingsvermoëns na hul nageslag oor. Insekdoders wat vinnig afbreek, is baie minder aan dié gevaar blootgestel. Spuitprogramme met agt tot 11 bespuitings is nie onbekend in die sagtevrugtebedryf nie. Dit is egter onwaarskynlik dat sulke programme ernstig vir VKM-bestryding op sitrus oorweeg sal word, as gevolg van die bladhoudende aard van sitrus, die algemene plaagbestrydingsbenadering, die gevaar van ontoelaatbare residu's en les bes, die kostestruktuur daarvan.

4.2 VKM het verskeie generasies per seisoen. Opeenvolgende generasies kom dus in aanraking met residu's wat al hoe minder trefkrag het. Die kans dat 'n indiwidu met subletale residu's in aanraking kom, vergroot daarom baie en kan die ontwikkeling van weerstand bevorder.

4.3 VKM is polifaag en die larwes voed op baie voedsterplante van uiteenlopende aard. Alle plantsoorte bevat giftige bestanddele wat dikwels as verdedigingsmeganisme teen insekvoeding dien. Hoe meer plantsoorte deur 'n insekspesie benut word, hoe beter is daardie spesie se weerstandsmeganismes teen dié plantgifstowwe ontwikkel. Dit het dus die inherente vermoë om weerstand teen sintetiese gifstowwe te ontwikkel.

4.4 Insekte wat weerstand ontwikkel teen sekere insekdoders in die bensoïelureumgroep ("kruisweerstand") (Alsystin en Nomolt behoort beide aan dié insekdodergroep), is ook geneig om weerstand teen die piretroïede te ontwikkel ("veelvuldige weerstand"). Dit is omdat verbindings in beide insekdodergroepe deur dieselfde biochemiese prosesse in behandelde insekte afgebreek word. Sommige piretroïede is vanjaar vir die eerste keer in jare teen VKM gebruik. Dit beteken ongelukkig nie dat dié "nuwe" insekdoders VKM ook so lank soos Alsystin en Nomolt, doeltreffend gaan onderdruk nie.

Elke faktor op sigself kan tot weerstand bydra. In kombinasie met mekaar, is dit 'n onfeilbare resep vir die verwekking van weerstand in VKM. Die probleem sal daarom nie heeltemal uitgeskakel kan word deur insekdoders slegs deegliker toe te dien nie. Dit sal egter beter korttermyn resultate lewer en kan help, al is dit miskien min, om die ontwikkeling of verergering van weerstand uit te stel.

5 Daar was die afgelope paar seisoene 'n groot verbetering sover dit die keuse van spuitprogramme betref. Dit gebeur egter nog dat spuitprogramme te vroeg in die seisoen ingelei word. Beskerming word dan kort voor oestyd ingeboet, wanneer die VKM-gevaar op sy grootste is. In die meeste sitrusproduserende gebiede is dit selde nodig om vatbare kultivars vir langer as 16 weke teen VKM te beskerm. 'n Baie korter beskermingsduur sal trouens in die meeste gevalle voldoende wees. Wanneer uitgerekte beskerming wel somtyds nodig is, soos byvoorbeeld gedurende die huidige seisoen in die Citrusdalgebied, moet spuitprogramme dienooreenkomstig, met die hulp van ervare voorligtingspersoneel aangepas word.

Produsente moet aanvaar dat die vooruitsigte vir nuwe insekdoders is nie belowende nie. Nuwe, doeltreffende produkte is alreeds 'n seldsame verskynsel en dit gaan in die toekoms nog raarder word. Daarbenewens is die neiging om insekdoders te ontwikkel wat 'n relatiewe kort nablywende werking het, wat indien nodig, dikwels toegedien moet word. Alternatiewe bestrydingsmetodes vir VKM word ondersoek, maar vordering is relatief stadig. Produsente is daarom, minstens vir die volgende paar jaar, aangewese op wat tans beskikbaar is. Alle produsente wat las van VKM het, sal buitengewone pogings moet aanwend om die plaag hok te slaan. Dit sal slegs gedoen kan word indien die faktore wat hierbo bespreek is, nougesette en voortdurende aandag ontvang.

GEBRUIK VAN 2,4-D EN GUAZATINE VIR JAPAN

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Amptelike kennisgewing van die "Ministry of Welfare in Japan" sowel 'n afskrif van "Nisseikyo (Produce Import Association)" se Nuus Brief is ontvang. Die stel ons in kennis dat 2,4-D (Natrium Sout) op sitrus, wat vir uitvoere na Japan toe bedoel is, gebruik mag word.

Guazatine (Deccotine) mag ook nou gebruik word as 'n vooroes maar nie 'n naoes behandeling nie, met ‘n residu perk vir lemoene en pomelos van 1 dpm. Dit verskaf die geleentheid dat Guazatine (Deccotine) in die voorontgroening stortbad gebruik kan word. Dit is onwaarskynlik dat die 1dpm perk ooskry sal word aangesien die vrugte nog deur die pakhuis behandelings moet beweeg na ontgroening, en die meeste Guazatine residu afgespoel sal word.

GRAS CHEMIKALIEË EN ONTSMETTINGSMIDDELS

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GRAS (“Generally Regarded As Safe”) chemikalieë (bv. Kalsium Karbonaat en Bikarbonaat, Kalsium Chloried, Natrium Karbonaat ens.) en ontsmettingsmiddels (bv. kwaternêre ammonia middels soos Terminator, Sporekill, Desogerme en ook ander produkte soos Osoon ens.) word nie huidiglik aanbeveel vir gebruik in sitrus dompelbaddens of swamdoderbaddens in sitrus pakhuise nie. Die bruikbaarheid van sulke produkte sowel hulle mengbaarheid met swamdoders moet bepaal word. Die enigste ontsmettingsmiddels tans aanbeveel vir sitrus dompelbaddens en hoëdrukspuit stelsels is chloor en chloordioksied.

KULTIVAR NOTAS

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Dit blyk asof die Messina citrange nie ‘n vroeër onderstam as die Troyer citrange is nie. Daar is dus geen voordeel om die Messina citrange i.p.v. Troyer citrange te plant nie.

Daar is gevalle gevind waar die “Nova saadloos” nie geheel en al saadloos was nie. Die tellings was egter uiters laag.