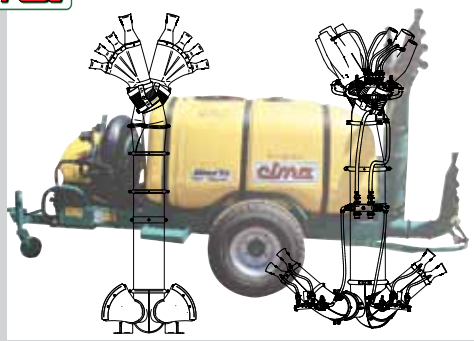
SOUTH AFRICAN

fruit journal

DIE JOERNAAL VIR DIE VRUGTEBEDRYF IN SUID-AFRIKA **FEB/MARCH 2015**



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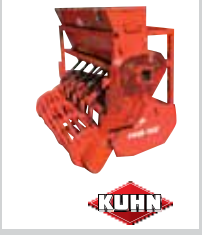

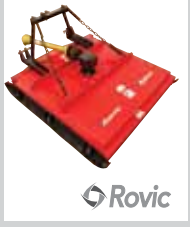

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TRANSFORMASIE *transformation*

Design and layout by
Colleen Goosen
082 779 2943
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Printed and bound
by Paarl Media, Paarl




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In the previous edition of the SA Fruit Journal (Dec/Jan 2015) the article: **Penicillium rot of apples and pears** by JP Louw and L Korsten was kindly published by Permission.
The work has previously been published in the journal Plant Disease.
The full scientific article is available at http://dx.doi.org/10.1094/PDIS-07-13-0710-RE.

REDAKTEURSBRIEF *editorial*

CHRISTA VAN ROOYEN
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Perseverance bears fruit

The answer to many a problem lies in co-operation between parties. Privileged are those who find a way to work together for a better future. On page 7 you can read more about the shared initiatives and vision of everyone involved in the signing of the Apple Export Protocol. Years of negotiations and dealings led to co-operation between different industries and countries, traditionally in competition, to the benefit of all parties involved. Teamwork and perseverance definitely does pave the way to a better future.

The fruit industry is blessed with industry leaders who put their heads and efforts together in order to secure new worlds and markets for Fruit SA. Read more about it on page 13.

Visiting Asia Fruit Logistica 2014 the interactive nature of the global fruit industry was underlined by a record attendance and showcasing, which served to underline the healthy and innovative ways in which business is conducted. Read more about the Asia Fruit Logistica 2014 on page 8. All of our industry leaders agree about the importance of relationships and perseverance in securing new markets for South Africa. Agriculture in South Africa, throughout the world, challenges everyone involved to action, effectiveness, involvement and commitment.

The world keeps on turning and every new day brings new markets, ideas, technology, cultivars, research, opportunities, services, faces and thoughts. To keep up and to sell your product demands energy and focus and perseverance. The SA Fruit Journal focuses on informing our readers about the latest, sound researched results, facts and ideas to enable you to make informed decisions. The magazine is the vehicle that reaches all South African role players in the fruit industry and oversea too. To ensure that the industry takes note of your product or service, advertise in the SA Fruit Journal. Contact Ignatius Vlok (advertisement manager) at cell. +27 (0)82 331 2127 or email at SALES@safj.co.za. For editorial enquiries, contact Christa van Rooyen, editor on cell +27 (0)84 948 1644 or email at christa@safj.co.za. Visit our website at www.safj.co.za for information about subscriptions and advertising and more.

Until next time

CHRISTA

"You can have brilliant ideas, but if you cannot get them across, your ideas will not get you anywhere."

LEE IACOCCA

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Says who?

On a recent flight to Hanoi in Vietnam (as a member of a Fruit SA Market Access delegation), I sat next to a young man from Vietnam and we started talking. When he heard that I was involved in the fresh fruit industry, the conversation turned to food, diets and eating habits. The Vietnamese are friendly and hospitable people (in my experience . . .) and thus this young man invited me to join him and his family for dinner at his parents' house that evening. My response was that I must check my SMS's after we have landed to see if it will be possible to accept the invitation.

However, being curious, I asked him what type of food he prefers - and obviously, he said fresh fruit - and meat. On enquiry about what meat dishes are popular, he mentioned that he eats any kind of meat "mouse, snake, pig, cat, dog . . ." Naturally, I asked him why/how can he eat dog and his response was "why not?" I explained that it is a pet - and his reply was: "Who decided that a dog is a pet?"

That response got me thinking . . . indeed, who decides . . .

• Facts are thus sometimes relative and are only of relevance when viewed in context. We (or at least I) assume things and judge others without understanding the context or their culture, frame-of-reference, etc . . .and vice versa;

• The old saying "beauty is in the eye of the beholder" is quite true.

• Everyone's perception of something/somebody is his/her truth.

The above-mentioned thus also holds true for consumers of fruit: in some countries, certain consumers will view a specific piece of fruit as being of high quality and are willing to pay a premium for it . . . while the same piece of fruit might be viewed in other countries under different circumstances, as of low quality. This is thus the challenge which marketers face - to fully understand the client/customer and his/her needs and wants - and then to supply the fruit which satisfies those needs and wants. By doing this, existing markets can be retained and expanded and new markets be developed.

May 2015 be a year in which we shall be able to increasingly understand our clients/customers better and thus contribute to the sustainability of our industry.

. . . and, regrettably, I could not accept the dinner invitation because I have discovered that I already had a meeting scheduled about an hour after we have landed in Hanoi . . .
Indeed: who decides?

ANTON KRUGER *(CEO, FPEF)*

ANTON RABE
Executive Director, HORTGRO

ANTON KRUGER
CEO, FPEF

WILLEM BESTBIER
CEO, SATI

JUSTIN CHADWICK
CEO, CGA

NB: 1st CGA CITRUS SUMMIT - 11th & 12th March 2015 at The Hans Merensky Hotel, Mpumulanga.
This summit is exclusively for growers of export citrus who are members of the Citrus Growers' Association of southern Africa. For more information please contact the CGA offices on 031 765 2514.

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SA FRUIT JOURNAL ISSN: 1683-4577
Reg. No: 2002/005974/07

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In 'n ander klas

RUBRIEK
spoeg 'n pit

HERMAN JONKER

Dis 'n moëe man wat die dag by my afgeleë kamp in Mosambiek aankom. Kort, netjies aangetrek, met 'n ronde gesig wat drup van die sweet. Calista, stel hy homself voor. Professore Calista - onderwyser by die skool op Makandazul. Hy het agt kilometer deur die warm wildernis gestap om te kom hulp vra. Gasolina, asseblief tog. Hy sal betaal.

In sulke eensame wêreld is mense van mekaar afhanklik, so ek tap vir hom 'n kannetjie petrol uit my drom en neem hom terug na waar hy gestrand staan. Terwyl ons aankruie op die slingerende bospaadjie vertel hy.

Hy's eintlik van 'n dorp naby Maputo, maar die owerheid het hom uitgeplaas na Makandazul. Hy's nou al 'n paar maande daar en dis nou die eerste keer dat hy bietjie wegkom. Hy moes 'n dag verlof neem om die naweek 'n slag te gaan kyk hoe dit met sy mense gaan by die huis. Daar's geen publieke vervoer hier in die bos nie en weinig voertuie, maar hy kon darem iemand met 'n bakkie in die hande kry om hom weg te neem na Mapai, so drie ure ver, van waar hy hoop om 'n taxi of iets te haal. Hy moes die man 'n aansienlike bedrag betaal, maar toe is die pad onbegaanbaar na die reën en toe moes hulle 'n ompad vat en nou is die petrol op.

Makandazul? Ek ken die plek. Dis nie 'n dorp nie, eerder 'n verspreide gemeenskappie van modderhutte tussen bos en laplandjies waar die inwoners nog met osse ploeg en hul karige oeste met houtsleë aanry. Daar's geen winkel nie, geen werk nie, geen straat nie, geen water nie, geen elektrisiteit nie, niks. As jy op Makandazul bly moet jy self kweek wat jy wil eet, self plan maak, self dokter en self begrawe. Die mense voer 'n tradisionele oorlewingsbestaan in die bos en stry ook nog teen olifante wat hul lande plunder en leeus wat hul diere vang.

Hoe gaan dit met jou daar, vra ek vir Calista. Kom jy reg?

Dis moeilik, sê hy. Daar's niks te koop nie en die water is ver - hy moet aandra van 'n modderige gat af, amper 'n kilometer. Maar hy het darem 'n huis om in te bly en daar's die skool wat hom besig hou. Hy hoop sy werk daar kan 'n verskil maak, dat dit dinge makliker sal maak vir 'n volgende geslag. Ek moet bietjie kom kyk, nooi hy.

Ek laai hom af waar sy reisgenote by 'n gehawende bakkie tussen die mopanies wag, help hulle om die skedonk weer aan die gang te kry, en ry weer terug na my kamp.

Twee weke later loop ek hom weer raak toe ek deur Makandazul ry. Calista staan langs die pad by 'n bondel vuurmaakhout, sy wit hemp en glimlag helder teen die vaal van die bos.

Hoe was jou vakansie by jou mense, vra ek hom, al weet ek dit was eintlik net 'n naweek.

Hy skud sy kop. Problema, sê hy. Nooit daar uitgekom nie. Die bakkie het gebreek. Hulle het die nag daar in die bos geslaap en die volgende dag het hy maar weer teruggestap Makandazul toe, meer as vier ure lank. Hy was baie bang, sê hy. Ngala. Leeu.

En die geld wat jy betaal het, vra ek.

Hy trek sy skouers op, gelate. Kom ek gaan wys jou die skool, sê hy.

Ons ry deur 'n driffie, hou in 'n sandpaadjie langs en kom uiteindelik by 'n stuk oop veld. Escola, sê Calista en beduie na 'n struktuur wat in die middel van die oopte staan.

Ek kyk, wil eers nie glo nie, en stap dan nader. Daar's geen deur nie, net 'n opening. Ek gaan in. Vyf meter by drie meter, skat ek die leë vertrek. Die mure is van ruwe pale wat in die grond geplant is, die dak van kaal sink. Geen vensters nie - lig skyn sommer deur die skrewe tussen die pale. Op die vloer lê 'n paar groterige klippe in die stofgetrapte grond. Sitplekke? Nee, sê Calista, dis tafeltjies vir die kinders om op te skryf. En die rooi botteldoppies wat daar lê is waarmee hulle leer tel. Die groen bord daar teen die pale en die bordkryt en die dakplate is deur die regering verskaf, die res het hulle maar so self gebou. As dit te vol raak hou hy daar anderkant onder die bome skool.

Hoeveel kinders, vra ek.

Dis maar moeilik vir 'n onderwyser, sê hy. Daar's omtrent 200 kinders in die gemeenskap maar net so 50 kom skool toe, baie van hulle net twee of drie keer per week. Die ouers, byna almal ongeletterd, sê hulle het die kinders nodig om beeste op te pas en te help op die lande.

Daardie aand, terug by my kamp, kry ek my kragopwekker aan die gang en skakel my satellietskottel en internet aan sodat ek kan bybly met sake in die RSA. Ek laai eers my e-pos af, antwoord 'n paar boodskappe, en toe kyk ek wat die koerante sê.

Een van die eerste nuusbrokkies wat ek kry gaan oor onrus by 'n skool in die Kaap. Onderwysers wat staak oor hulle ontevrede is met die geriewe en kinders wat toe die plek aan die brand gesteek het.

Seker maar toeval dat ek juis dit moes raaksien. Maar skielik het dit vir my gevoel of Suid-Afrika nie net anderkant die grens lê nie, maar in 'n heel ander sonnestelsel.

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CHINA ACCESS, A STEPPING STONE FOR SOUTH AFRICAN APPLE INDUSTRY

HORTGRO

After years of negotiation and dealing with technical issues, the South African Apple and Pear Producers' Association (SAAPPA) announced that the Apple Export Protocol to enable apple exports to China, has been approved and signed.

The protocol was signed by the Minister of Agriculture, Forestries and Fisheries, Mr Senzeni Zokwana and the Minister AQSIQ: Mr Zhi Shuping during a state visit to the People's Republic of China in Beijing on 4 December 2014. This culminates an eight year process between the two countries and will enable the SA industry to expand its ever broadening marketing footprint.

Tapping into this market has been a major priority in the industry for more than a decade and should act as a springboard to also more effectively access other markets in Asia. Apples are currently exported to eight primary destinations including Africa, the Far East and Asia, the United Kingdom, the Middle East, Continental Europe (including Russia) and smaller volumes to the Indian Ocean Islands, the USA and Canada. By adding China to the destination list, the fruit industry will continue to create more job opportunities in primary and secondary agriculture. Further market access will also support further growth and economic development which in turn will enhance land reform transformation and new plantings in the industry.

A similar process to also open this market for South African pears has already started after which various other fruits, including stone fruit, will follow. It is trusted that the process to formalise further protocols will be fast tracked, given that the fruit exporting industry could prove compliance with international best practice in terms of food safety and phytosanitary requirements.

In his reaction to the signing of the protocol, Nicholas Dicey, chairman of SAAPPA, expressed his sincere appreciation and thanks to the Ministry and Department of Agriculture, Forestry and Fisheries (DAFF), particularly the Plant Health and Plant Inspection divisions of the Department and South African Embassy personnel in Beijing, for their endeavours to work hard and finalise the protocol with their counterparts in China. He also thanked industry technical specialists for their critical role in supporting the government officials with technical and scientific data over an extended period of time. "This was a real team effort and augers well for future cooperation between industry and government", he concluded.

Anton Rabe, Executive Director of HORTGRO, confirmed that the industry has been proactive in preparing for the possible exports of apples as from the 2015 season. After the very successful verification visit of Chinese quarantine (AQSIQ) officials in 2014, the industry has prepared the required orchard and export registration lists which could be provided to AQSIQ as soon as it is requested. Once the Chinese quarantine officials have approved and signed off on this list, exports could commence immediately.

ASIA Fruit Logistica 2014 underlines growing importance of Asian markets

Visiting Asia Fruit Logistica 2014 the seriousness and purposeful way in which role players in the fresh produce industry operate, was almost tangible. The interactive nature of the global industry was underlined by a record attendance and showcasing, which served to underline the healthy and innovative ways in which business is conducted. Top-level decision-makers from all over the world – that describes in a nutshell the industry professionals attending Asia FRUIT LOGISTICA 2014 in Hong Kong.

ASIA FRUIT LOGISTICA Hong Kong enjoyed a landmark year in 2014, with visitor numbers growing by 24 per cent and exhibitor numbers increasing by 28 per cent compared with the 2013 event. More than 8 100 trade visitors from 64 different countries attended ASIA FRUIT LOGISTICA 2014 and the Asiafruit Congress in September last year at Hong Kong's AsiaWorld-Expo Center.

According to Marletta Kellerman (Fresh Produce Exporters' Forum) and Lady in Charge of the South African pavillion, the expo seemed more busy than previous years, emphasizing the overall growth of the event. Visitors included all major industry decision makers, commercial partners, growers, importers, exporters and other role players from all over the world. "The South African pavillion was buzzing with action and tables were occupied throughout the event. Meetings took place from beginning till end," she says.

Marletta Kellerman, Anton Kruger en Antonia Appel van FPEF.

ANTON KRUGER

CEO Fresh Produce Exporters' Forum (FPEF)

Wat is jou oorhoofse/algemene indrukke van hierdie expo?

Dit was 'n suksesvolle deelname deur Fruit SA en 'n groei van 24% in navrae deur middel van die FPEF se besigheidskaartjiestelsel (Get Connected), is ontvang. Die toename in besoekers aan die stalletjie was ook duidelik weerspieël deurdat FPEF 'n honderd meer "Export Directories" as verlede jaar laat druk het, wat alles uitgedeel is 'n halfdag, voordat die skou gesluit het. Die FPEF se 1 000 digitale weergawes van die publikasie, wat in beide Engels en Mandaryns beskikbaar was, is ook alles teen die laaste dag van die skou uitgedeel. Dit was weereens 'n 100 m² stalletjie wat baie positiewe kommentaar ontlok het, aangesien dit oop, helder en funksioneel was. Ons stalletjie het die korrekte beeld van Suid-Afrika uitgedra as 'n uitvoerder van hoë-gehalte vrugte. Die aktiewe deelname deur PPECB-personeellede, asook deur HORTGRO, SATI en die CGA het bygedra tot die sukses van ons uitstalling en het ook onderlinge bande tussen die onderskeie bedryfsorganisasies en die PPECB versterk. 'n Opwindende toevoeging was die Twitter-rekening wat deur Antonia Appel geskep en bestuur is. Daaglikse twiets het mense op hoogte gehou van gebeure (insluitend foto's wat deurentyd deel was van die twiets). Soos gebruiklik, het die teenwoordigheid van Chinese tolke kommunikasie baie vergemaklik.

Is daar enige spesifieke sake/uitdagings rondom julle uitstalling wat genoem kan word?

Befondsing bly 'n uitdaging, maar die FPEF, HORTGRO, SATI en die CGA, asook die Wes-Kaapse Departement van Landbou het finansieël bygedra om ons deelname te verseker.

Dink jy die Asia Fruit Logistica is van spesifieke belang vir die Suid-Afrikaanse vrugtebedryf?

Ja, beslis, want al Suid-Afrika se mededingers (Suidelike Halfrond vrugte-uitvoerders) is elke jaar teenwoordig en as SA nie teenwoordig is nie, kan dit baie negatief impakteer op ons beeld en handelsvertroue skaad.

Is Suid-Afrikaanse vrugte in aanvraag in die Oosterse markte, vir verbruikers, invoerders?

Ja, veral op grond van die kwaliteit van ons vrugte wat aan die Oosterse verbruiker se behoeftes voldoen (helder kleur, groot, soet).

Wat is die terugvoer van Suid-Afrikaanse uitvoerders? Is daar goeie besigheid gedoen, al dan nie?

Baie positief, beide wat die ontwerp van die stalletjie betref, asook die aantal navrae. Uitvoerders wat teenwoordig was, het rapporteer dat hulle goeie besigheid kon doen, veral in die lig van die Russiese sanksies teen sommige Westerse lande (wat geleenthede vir SA skep), asook die ontwikkeling van bykomende markte vir sitrus.

Wat is jou toekomsvisie vir die Suid-Afrikaanse vrugtebedryf in die Ooste?

Die SA vars vrugte-uitvoerbedryf besef die potensiaal en geleenthede in die Oosterse markte en is sedert 2013 aktief betrokke om marktoegang vir SA vrugte in teikenmarkte te verkry en/of te verbeter.

The South African stand.

Justin Chadwick.

Creating awareness of SA fruit in the East

JUSTIN CHADWICK

CEO of the Citrus Growers' Association (CGA)

"Asia Fruit Logistica is a very important event for South African producers and exporters. Our production growth shows an increase of between 7 to 9% per year for the last ten years. We are now at 115 million cartons per season. Therefore we need to find new markets for fruit. The only real new markets are in the East, Eastern Europe and Africa. The result is that we have to focus our activities on opening up markets in South East Asia. We have to come to this show where everyone congregates. We also work on increasing our volumes to markets in Indonesia and India," says Chadwick.

"The Blackspot issue is very relevant to our citrus industry – 40 to 45% of our volumes go to Europe, which remains our most important market. We shall have to reduce our market share, should the issue continue in the EU. The cost of measures to meet the EU are becoming higher, making it a less attractive market. According to Chadwick export requirements differ from country to country in the East. "That is why we emphasize research. Our biggest hurdles are tariffs, not phytosanitary issues, as well as uncertain regulatory requirements. We have to handle new regulations, very often, without warning, like recently in Indonesia. They are learning, but are uncertain of how to police their own food safety. Issues with South East Asia include specifically logistics. We have a hundred year experience, networks and branding in Europe. We have been sending citrus to Japan since the 1970's and to China since 2004 and we are still developing these markets.

"Another issue is networking or relationship building. Jason Bosch once said: 'You can bully the Chinese, but will most certainly not get a relationship. They want to be your friend.' We also have to create an awareness of South African fruit in the East by branding and establishing free trade agreements with China, but we certainly do need the support of our Government."

Handelsmerke domineer Asiafruit Congress

Die week van varsprodukte-aktiwiteite in Hong Kong het afgeskop met die Asiafruit Congress, op 2 September, die dag voor ASIA FRUIT LOGISTICA. Die voldag konferensie is bygewoon deur meer as 400 bedryfsleiers van 33 verskillende lande.

Die hooftema van vanjaar se konferensie was 'n paneelbespreking oor die rol van handelsname in Asië se vars produkte besigheid. Daar is ook gefokus op die blink toekoms vir produsente handelsname in Asiatiese markte, met 'n spesifieke fokus op die geleenthede om verbruikers-handelsmerke te vestig. Die belangrikheid van marktoegang tot China en die behoefte om met streeksverspreiders wat kyk na direkte invoere, saam te werk, is ook bespreek

Besoekers kon ook daagliks twee inligtingsessies bywoon tydens die *Asiafruit Business Forum*. Dag Een het gefokus op bemarking, Dag Twee op tegnologie en Dag Drie op produksie.

Jacques du Preez, Mono Mashaba and Michelle Kruger (Clemengold).

Willem Bestbier en Jan le Roux (Le Roux Groep).

New markets and access to the East of utmost importance

JACQUES DU PREEZ

Hortgro General Manager: Trade and Markets

"ASIA FRUIT LOGISTICA is an extremely useful and important fair for the South African fruit industry. We are here to lay the groundwork for future sales to Asian markets. It is always a great opportunity to gain contacts and to increase business in Asia. ASIA FRUIT LOGISTICA has become a must-attend event for exporters to Asia and by exhibiting we hope to consolidate the work we've been doing up to now and expand our client base in the region," says Du Preez.

"Given the Russian ban, the big European pome fruit crops of 2014 and subsequent carry-over stock into 2015, the SA crop that is expected to return to a normal level again and the increase in orchards established over the last 5 years, we have to send our fruit elsewhere and there is a good market for our apples and pears here."

Du Preez considers the importance of developing new markets for apples and pears in the East and networking at events like the Asia Fruit Logistica as crucial. "Europe remains our biggest market for apples and pears. European markets are under pressure, making the development of new markets and access to the East of utmost importance. We are currently busy with research and the development of market access to Indonesia (country of recognition status), Thailand, Fillipines, China, India, UAE and Malaysia and African countries. Africa has the potential to grow into our biggest export market. It is very important to be visible in the East and events like the Asia Fruit Logistica are an excellent opportunity to build relationships regarding new markets. Everything is about relationships and to market our products.

The sponsors of the SA pavillion.

Groot geleenthede in die Ooste

WILLEM BESTBIER

CEO, SA Tafeldruifbedryf (SATI)

Wat is jou oorhoofse indrukke van die expo?

Fruit Logistica Asia is beslis 'n opwindende en gewilde geleentheid vir blootstelling aan die breë markgroepering bekend as Asië, wat Indië insluit. Die expo is goed georganiseer, word goed ondersteun en groei van jaar tot jaar. Ons produsente en uitvoerders moet beslis hier wees.

Dink jy die Asia Fruit Logistica is van spesifieke belang vir die Suid-Afrikaanse vrugte-/tafeldruifbedryf?

Asia Fruit Logistica is veral vir Suid-Afrikaanse tafeldruiwe belangrik, aangesien die Verre-Ooste en Asiatiese markte van kritiese strategiese belang vir ons is. Tans gaan steeds sowat 75% van ons uitvoervolumes na die tradisionele markte, te wete Europa en die Verenigde Koninkryk. Hierdie konsentrasie is nie strategies gewens nie en 'n beter verspreiding na byvoorbeeld die Verre-Ooste sal van groot waarde wees. In hierdie wêreldele is daar goeie vraag na vrugte en die ekonomieë groei sterk. 'n Sterk fokus moet dus geplaas word op markuitbreiding na die markte, primêr deur hierdie expo te bedien en te ondersteun.

Is Suid-Afrikaanse tafeldruiwe in aanvraag in die Oosterse markte, vir verbruikers, invoerders?

Daar is 'n baie goeie vraag na Suid-Afrikaanse tafeldruiwe vanuit die Oosterse en Asiatiese

Jason Li and Sean, importers from Shanghai: "Grapefruit and citrus from South Africa are well accepted by Chinese people. South African produce are cheaper than the USA and Australia and easy to get here. We can bridge the seasonal gap with South African imports. This is just the beginning."

Carl van der Westhuizen (managing director Sino Gold), Freek Dreyer (executive director Zestfruit) and Hendrik Warnich (market manager Far East, Zestfruit).

Registration.

Andries van der Westhuizen (Stargrow) and Jay Chow (Everfresh Fruits Import Trading Sdn Bhd).

Nico van Staden (Core) and Craig Schaefer (Core) meeting a potential customer from the north of China.

Washiela Williams (Agriculture Attaché South African Embassy Beijing) and Michelle Kruger (Clemengold).

markte en dit is grootliks te danke aan die goeie reputasie wat ons vrugte en uitvoerders daar oor tyd verwerf het, ten spyte van uitdagings soos lang afstande en baie streng verskepingsprotokolle. Oor die algemeen geniet vrugte vanuit die Suidelike Halfrond goeie steun en vraag in hierdie markte. Oor die afgelope dekade byvoorbeeld het totale vrugte invoere deur hierdie markgroep met gemiddeld 5,5% per jaar gegroei, maar die invoere vanaf die Suidelike Halfrond het oor dieselfde periode met gemiddeld 8,2% per jaar gegroei. Die geleentheid vir Suid-Afrikaanse tafeldruiwe blyk baie duidelik hieruit.

Asia Fruit Awards winners announced

The Asiafruit Congress concluded with the presentation of the Asia Fruit Awards, which were created by Asiafruit Magazine and ASIA FRUIT LOGISTICA to celebrate excellence in Asia's fresh fruit and vegetable business. Three Asia Fruit Awards were given. The Marketing Campaign of the Year was awarded to a joint promotion to sell cherries online in China between US marketing body Northwest Cherry Growers, fruit e-tailer Fruitday and e-commerce giant TMall. Thai company Vachamon won the Importer of the Year Award, while Singaporean food retailer NTUC Fairprice scooped the Produce Retailer of the Year Award.

Wat is die terugvoer van Suid-Afrikaanse uitvoerders?

Die terugvoering wat ek direk vanaf 'n paar uitvoerders ontvang het, is dat hulle baie tevrede is. Trouens, op dag 3 van die Expo het 'n paar uitvoerders begin traag raak om voornemende en nuwe kopers te ontmoet, aangesien hulle bekommerd begin raak het oor beskikbaarheid van produk.

Kan jy statistieke oor die huidige toedrag van sake rondom uitvoere van ons tafeldruifprodukte na die Ooste bespreek?

Oor die 5 miljoen kartonne (4.5 kg ekwivalente) Suid-Afrikaanse tafeldruiwe is gedurende die 2013/14 seisoen na die Verre-Ooste uitgevoer. Dit verteenwoordig 'n 55% groei oor 'n vyf jaar periode. Die groei word hoofsaaklik gedryf in die pitlose kultivars (meer as 73% van die totale volume), veral swart pitloos. Dit blyk tog dat volume uitvoere na hierdie markgroepering begin afplat, wat grootliks toegeskryf word aan strawwe protokolle.

Wat is jou toekomsvisie vir die Suid-Afrikaanse Tafeldruifbedryf in die Ooste?

Die Verre-Oosterse en Asiatiese markte is vir Suid-Afrikaanse tafeldruiwe 'n strategiese

Jacques du Preez, Willem Bestbier, Marletta Kellerman, Anton Kruger, Mono Mashaba, Antonia Appel, Justin Chadwick at the South African stand.

The International Trade Press Stand at ASIA FRUIT LOGISTICA offers trade visitors and exhibitors an extensive range of international trade press publications which provide information on latest trends and innovations in the fresh fruit and vegetable trade world.

A meeting at the South Afrcan stand.

Tina-Louise Rabie en Sinovuyo Matai.

prioriteit en 'n geleentheid waarvoor SATI homself sterk beywer. Daar word gefokus om nuwe markte te bekom, bestaande markte te behou en uit te brei en veral dan aan die tegniese kant, om protokolle te beding wat enersyds aan die invoerlande die verlangde beskerming bied en andersyds ons vrugte toelaat om goed op die rak te presteer.

Asia's fresh produce hub enjoys growth surge. Visitors to ASIA FRUIT LOGISTICA found an exhibition that had grown by almost a third. Some 478 companies from 38 different countries exhibited at the trade fair from 3 to 5 September 2014, an increase of 28% on the previous year's edition, while bookings for stand space grew by 25%.

China remained the single largest country in terms of exhibitor numbers, with 94 companies exhibiting, while Italy held onto second place with 39 companies. Australia surged into third place with 34 exhibitors, marking a 54% increase on last year, and Egypt also ramped up its presence, moving up into fourth place with 31 exhibitors (up 47%). The US retained its position in the top five with 30 exhibitors. Asia once again accounted for the largest percentage of exhibitors on a regional basis, with 12 different Asian countries making up 34% of the exhibitor numbers. Europe retained its share of exhibitor numbers at 25%, while Latin America increased its presence to 15%. Oceania (11%), Africa (8%) and North America (7%) completed the global picture. Latin American exporting nations Argentina, Ecuador and Mexico, along with Spain, all registered increases in exhibitor numbers of more than 60%, while other big movers included New Zealand (+100%), Japan (+75%), Turkey (+50%), The Netherlands (+40%) and India (+40%).In a clear sign of Asia's growing importance as a market for the global fresh fruit and vegetable business, most exhibiting nations invested in upgrading or expanding their stands at this year's show. Some 19 different countries had national pavilions, while Costa Rica, Poland and Saudi Arabia all exhibited for the first time at ASIA FRUIT LOGISTICA.

Senior buyers and executives from leading food retailers were out in force at ASIA FRUIT LOGISTICA. One of them was Sumit Saran, head of international foods for Indian retail giant Future Group. "It's not just the quality of the people you meet at ASIA FRUIT LOGISTICA that makes this show so special, it's the quality of the time you get in those meetings," said Saran. "It enables you to really do business and plan programmes."

Visitors & exhibitors can look forward to an even bigger show in 2015

The next edition of ASIA FRUIT LOGISTICA takes place from 2 to 4 September 2015 at AsiaWorld-Expo Centre in Hong Kong, with Asiafruit Congress held on 1 September. Join the biggest and best gathering of the international fresh fruit and vegetable business in Asia under one roof by booking a stand at ASIA FRUIT LOGISTICA. Exhibitor registrations are now open, with applications available to download from the ASIA FRUIT LOGISTICA website: www.asiafruitlogistica.com/en/ExhibitorService/ApplicationForms/

Vrugte SA besoek Oosterse markte

'n Vrugte SA afvaardiging onder leiding van dr. Mono Mashaba bestaande uit Anton Rabe (HORTGRO), Willem Bestbier (SATI), Derek Donkin (SubTrop) en Justin Chadwick (CGA), het gedurende November 2014 verskeie prioriteits markte in die Ooste besoek.

Die hoogs suksesvolle besoek het ingesluit Thailand, Vietnam en China waar die groeiende Vrugte en Groente Handelskou in Beijing onder andere ook ingesluit is. Hierdie besoek maak deel uit van die VrugteSA marktoegang strategie wat lande soos Indonesië, Indië, Japan, die Fillipyne en Suid-Korea in die gebied insluit. Laasgenoemde lande is op soortgelyke besoeke gedurende April en September 2014 gebring en sal gedurende 2015 herhaal word. Sodanige besoeke en fokus op teikenlande in die Midde-Ooste en Afrika, sal in 2015 uitgebrei word. Uitstekende samewerking van en skakeling met die Departement van Landbou en hulle eweknieë in teikenlande, asook ambassade personeel in die verskillende lande, is reeds gevestig wat die momentum met hierdie strategie sal versnel.

Agter staan Mono Mashaba en Anton Rabe, voor is Derek Donken, Justin Chadwick, Anton Kruger en Willem Bestbier.

Anton Rabe en Mono Mashaba.

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VAN MASSEY FERGUSON

MASSEY FERGUSON

SA Rosynebedryf hoog geag

Die Internasionale Rosyne Konferensie. Francisco Vizcaino en Carlos Huertas, beide Argentinië; Dappie Smit, voorsitter; Johannes Fourie en Kobus Hanekom, die Suid-Afrikaanse afvaardiging.

Die 54ste Internasionale Rosyne Konferensie is in November in San Juan, Argentinië, aangebied waar globale produksie- en bemarkingsinligting uitgeruil is. Afvaardigings van Argentinië, Australië, Chili, Suid-Afrika, Turkye en die VSA het die Konferensie bygewoon. Verslae vanaf China, Griekeland, Indië en Iran is ook voorgelê.

Die Konferensie is amptelik geopen deur mnre. Jos Luis Gioja, goewerneur van San Juan en Marcelo Alos, minister van produksie van die provinsie.

Dappie Smit is herverkies as voorsitter van die Konferensie met Osman Oz van Turkye as die ondervoorsitter, terwyl die voorsitter van die Reëlingskomitee, Carlos Javier Huertas Garcia, as sekretaris verkies is.

Die Konferensie het hoofsaaklik gefokus op produksie- en bemarkingstatistieke en Wêreldvoorrade. Dr. Tony Halstead, Landbou-ekonoom van die Verenigde State se Dept. van Landbou, het breedvoerig verduidelik hoe hul buitelandse landboudiens inligting verwerk word en voorbeelde getoon wat hul beskikbaar het. Verteenwoordigers van alle produserende lande het ook statistieke betreffende hul produkte, uitvoere en invoere voorgelê.

Dr. David Hughes, emiritus-professor in Voedselbemarking aan die Imperial Kollege in Londen, het 'n referaat gelewer oor globale voedselbemarking tendense en die implikasie daarvan vir rosyne produserende lande.

Dr. Arianna Carughi, Gesondheid- en Voeding Navorsingskoördineerder vir Sun-Maid produsente van Kalifornië, het konferensiegangers insig gegee in die gesondheids- en voedingswaarde van rosyne en navorsing wat gedoen is in die VSA om dit te bewys.

Hierdie 54ste Konferensie van rosyne produserende lande het ook besoek afgelê by pitlose druif wingerde asook rosyne pakhuise. Afgevaardigdes het die vordering waargeneem wat gemaak is betreffende meganiese oes en droog aan die wingerdstok om die oes teen ongunstige weerstoestande te beskerm.

Afgevaardigdes het ook die huis besoek waar Domingo Faustino Sarmiento, 'n aktivitis, intellektueel, skrywer, staatsman en 7de president van Argentinië grootgeword het. Die huis is in 'n museum omskep en hier het die voorsitter en ondervoorsitter 'n gedenkplaat onthul ter ere van die 54ste Konferensie van rosyne produserende lande. Tydens die besoek het afgevaardigdes 'n Sultana wingerdstok geplant ter ere van die 54ste Internasionale Konferensie wat die eerste keer in Argentinië aangebied is.

Dappie Smit, voorsitter van die konferensie onthul 'n gedenkplaat vir die konferensie by die huis (tans 'n museum) van Domingo Fausto Sarmiento, sewende president van Argentinië.

Johannes Fourie plant 'n Sultana wingerdstok ter ere van die groeiende rosynebedryf in San Juan, Argentinië.

The value of receiving a sales report from your market agent

LIZEL PRETORIUS

Often farmers dismiss the value of receiving at least weekly, system-generated sales reports, from their market agents. They believe that the daily "whatsApp" or telephone call is sufficient.

The importance of receiving a system-generated sales report cannot be overemphasised, as it provides valuable insight into a host of aspects, such as:

- Whether the expected prices realised were in terms of current market demand and supply principles. This entails receiving the detail sales report on sold and unsold produce within several days after delivery in order to make an informed choice, especially where expected prices did not realise and a decision needs to be made whether the fresh produce should be moved or returned;
- Whether further consignments of fresh produce should be delivered and how often deliveries should take place;
- Sales reports monitored over a period of time also provide statistics on seasonal trends and can assist with forecasting.

Farmers should be very suspicious when receiving a handwritten sales report, as all fresh produce markets work on IT systems and factual, computer generated information should be provided (not on a letterhead of the agency but generated on the market's IT system).

"I don't like these sales figures. Prepare them in another color and another font and resubmit them."

Also ensure the sales report provides information per day, per volume sold and price achieved, and does not give an average price for the whole consignment as poor prices can be disguised.

Even though most farmers and agents relationships are built on trust, it should still be "backed-up" with the necessary concrete documentation.

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Positive! EU Audit Mission

LINDI BENIÇ REPORTS

The EU FVO Delegation visits the PPECB offices, Montagu Gardens.

In an effort to strengthen market access endeavours, The Food and Veterinary Office (FVO) Audit Mission to South Africa (SA) took place from the 9 -18 September 2014. Lindi Benić reports.

An EU FVO Audit was conducted to evaluate controls of pesticides in food of Plant origin intended for export to the EU, focussing on assessing controls in pome fruit (apples & pears) and table grapes. An industry reference group was established to coordinate inputs related to the proposed EU FVO Audit.

Nuwe aanstellings by HORTGRO

CARMEN KLEINHANS

HORTGRO Paarl het onlangs vir Carmen Kleinhans as Databasis Operateur aangestel. As gebore Ceresiet was die plaaslewe maar altyd in haar bloed. Sy is reeds vanaf 2005 werksaam in die Landbou-omgewing. Carmen is ervare as dit by 'n databasis kom en beskik oor meer as nege jaar ervaring in soortgelyke omgewings. As enkel ma van twee pragtige dogters probeer sy om soveel moontlik kennis op te doen om haar omgewing en visie te verbreed. Carmen geniet die buitelewe en sy is baie lief vir diere. Rugby is natuurlik een van haar swakpunte en volgens wat sy sê, klink dit of sy altyd beter weet as die skeidsregter. Een van haar doelwitte vir 2015 is dat sy wil graag gaan reksprong.
Carmen sien HORTGRO as die plek waar sy baie ondervinding en ervaring gaan opdoen.

SIMPHIWE TSHONI

Simphiwe Tshoni, a final year Masters student from Stellenbosch University, Agricultural Economics recently joined HORTGRO as an Agricultural Economist. His research topic is: Analysis of smallholders' farm diversity and risk attitudes in the Stellenbosch Local Municipality, Western Cape Province. This study can be broadly classified as a typology kind of study meant for profiling of different types of farming systems taking place in the Western Cape. Simphiwe was born and grew up in the Eastern Cape and came to Stellenbosch University in 2011 to do his Honours degree in Agricultural Economics. Simphiwe is a young, passionate person and a hard worker. "I believe that everyone is destined for great things in life, but hard work, focus and optimism are the key inputs".

NINA GOOSEN

HORTGRO in Paarl recently appointed SU MComm Agriculture Economics graduate, Nina Goosen, as Agriculture Economist. Her thesis topic was: "Wellington as a developing South African wine tourism destination". Her passion for research and writing makes her a good fit for her new position at HORTGRO and Nina feels that she has much to offer towards her new line of work. "I may be new to the deciduous fruit industry, but I am always open to new ideas and I welcome all challenges with open arms," she said. Born and bred in Strand, Nina enjoys an active and outdoor lifestyle i.e. going to the beach, jogging and spending time with friends and family around a braai. She also enjoys watching rugby and cricket (every now and again). Having a good balance in life is one thing that she feels is very important.

Preliminary findings and conclusions were presented at the closing meeting, with the EU FVO Audit team highlighting they were impressed by the collective industry/private controls and the collaborative efforts made by all parties to consolidate efforts and work together towards managing/maintaining critical market access to key markets.

The draft audit report confirmed, regular pre-export controls take place, including sampling for pesticide residues, which are performed by competent and knowledgeable inspectors. In addition to these official controls, comprehensive own controls conducted by exporting Food Business Operators (FBOs), growers and pack houses, further complemented by the proactive approach undertaken by the industry, are all factors providing a high level of confidence that exports to the EU, will meet EU pesticide residue standards. The report makes recommendations to the competent authority, aimed at rectifying identified shortcomings and enhancing the implementation of control measures.

Update on the National Road Traffic Act

22ND AMENDMENT

MITCHELL BROOKE (CGA)

The National Department of Transport has published the Twenty Second Regulation Amendment (previously referred to as the Twenty First Amendment) to the National Road Traffic Regulations. The Government Gazette is No 38142 published on 31 October 2014.

The amendment introduces various new provisions to the transport industry and amends many provisions relating to a number of areas in the legislation. It is available from the Government Printers at www.gpwonline.co.za. A simple registration is required to access the file (7Mb).

PLEASE NOTE: the implementation clause on page 142 of the gazette - Regulation 78 is the provision with the implementation dates. The numbers in regulation 78 refer to the amendment gazette numbers and not to the numbers of the regulations once they are inserted in the main gazette.

The Twenty Second Regulation Amendment to the National Road Traffic Regulations will have an impact on all parties involved in [fruit] agricultural harvesting, production and especially that of the transportation of goods between a 'Consignor' and a 'Consignee'. The following amended or new regulations are deemed to be important to [fruit] packhouses, transport operators, cold storage facilities and all parties involved in dispatching and receiving of goods transported by road on 'goods vehicles':

THE BELOW REGULATIONS ARE ENFORCED IMMEDIATELY FROM TIME OF PUBLICATION

1. Amendment of regulation 1 of the Regulations:

1) The substitution for the definitions of *"adaptor dolly"*. This means a semi-trailer with one or more axles, designed or adapted to be attached between a truck-tractor or a haulage tractor and a semi-trailer.

2) The amendment to the definition and relevance of a 'Consignor' and 'Consignee',

"Consignee" *in relation to goods transported or to be transported by a vehicle means the person excluding a consignee of dangerous goods in terms of regulation 273, who is named or otherwise identified as the intended consignee of more than 500 000 kilograms (500 tons) of goods in a month in the goods declaration for the consignment and who actually receives such goods after they are transported by road.*

"Consignor" *means a person excluding a consignor of dangerous goods in terms of regulation 273, who is named or otherwise identified as the consignor of goods in the goods declaration relating to the transportation of more than 500 000 kilograms (500 tons) of goods in a month by road or engages an operator of a vehicle, either directly or indirectly or through an agent or other intermediary, to transport the goods by road or has possession of, or control over, the goods immediately before the goods are transported by road or loads a vehicle with the goods, for transport by road, at a place where goods are stored in bulk or temporarily held but excludes a driver of the vehicle, or any person responsible for the normal operation of the vehicle during loading.*

3) The substitution for the definition of *"goods vehicle"* with the inclusion of a *'haulage tractor'* (The definition of a haulage tractor is to mean a heavy, load bearing tractor not designed or capable of attaining a speed of more than 40 km/h on a level road and with an ability to operate both in-field and on-road). In other words a conventional farm tractor used for drawing a trailer of harvested field produce. The importance of this amendment is that a 'haulage tractor' was previously omitted from compliance with regulations, now requiring compliance of the vehicle and trailer, vehicle registration, driving licences, professional driving permit, operators permits and loading compliance (vehicle and axle weights in terms of the regulations as of 31st October 2014).

2. Insertion of regulation 56A in the Regulations 'Vehicle Identification Number' (VIN) to be affixed to a motor vehicle.

3. Amendment of regulation 99 of the Regulations. This pertains to the amendment of certain drivers licence codes, the amendment of specific classes of motor vehicles permitted to operate and the authorization to operate other classes of vehicles. The inclusion of a 'haulage tractor' under code EC.

4. Amendment of regulation 154 of the Regulations. This pertains to the amendment of conditions of brakes in respect to trailers drawn by 'haulage tractors' registered for the first time or after 1 July 1999 required to comply to standard specification SANS 1447.

5. Substitution of regulation 155 of the Regulations *"Braking performance of service, emergency and parking brakes"*. This pertains to the braking performance of vehicles including 'haulage tractors'.

6. Substitution of regulation 192A of the Regulations *"Side and rear retro-reflective material to be fitted to vehicles (contour or strip marking)"*. This pertains to the affixing of retro-reflective material to be affixed to goods vehicles and trailers.

7. Amendments to certain regulations 217 to 272 of the Regulations, pertaining to but not limited to – insertion of 'haulage tractor' and insertion of conditions of operating 'haulage tractors' in applicable regulations, driving time limitations and recording of driving time (log book records) and powers of traffic officers iro driving time limitations (No implementation date has been provided).

8. Insertion of regulation 330A to 330D in the Regulations (Implementation date will be 31st January 2015):

"330A. Offering and acceptance of goods on overloaded vehicle prohibited",

1) A consignor or consignee of goods shall not offer goods or accept goods if the vehicle in which it is transported is not loaded in terms of the provisions for the loading and transportation of goods as prescribed in this Act.
2) A consignor shall require from the operator of the vehicle in which the goods he or she offers for transport and in which the goods will be transported, a written submission as to the payload of such vehicle and the distribution of such load on a vehicle.
3) If a consignor is responsible for the loading of a vehicle of an operator, he or she shall take such steps as are necessary to ensure that the vehicle is loaded as contemplated in sub regulation (1) and (2).
4) A consignor or consignee shall not conclude a contract with the operator to transport goods on a vehicle, if the vehicle is overloaded when such load is transported on such vehicle.

"Consignors" and "Consignees" will be required to become acquainted with the provisions of the regulation concerned with loading and transportation of goods. By interpretation, transport operators will be required to submit the legal payload mass of each vehicle offered to transport goods, the "Consignor" must ensure the goods do not exceed the payload mass of the vehicle type and load the vehicle as recommended by the transport operator – to ensure the vehicle is not overloaded. The "Consignor"; who is responsible for the loading of goods, shall do so to ensure the

vehicle is not overloaded and that the loading and transportation is done in terms of the provisions of the Act.

"330B. Consignor to have a method of determining mass",

1) A consignor shall use a method of establishing the mass of a vehicle and any axle or axle unit of such vehicle that is accurate as to ensure that such vehicle axle or axles are not overloaded in terms of Part IV of Chapter VI.
2) A consignor shall keep a record of the mass of every load transported from his or her premises as contemplated in sub regulation (1).
3) The record as contemplated in sub regulation (2) shall be put at the disposal of any traffic officer or person appointed as contemplated in section 50 or authorised as contemplated in section 82 of the Act.

By interpretation, the "Consignor" who is responsible for the loading should use either a weighbridge or suitable alternate axle weight measuring devise (such as a portable axle weigh mat) or other to measure and record each axle or axle units mass; to ensure the axle masses comply to the loading regulations of a specific vehicle. A suitable form of capturing the Gross Vehicle Mass (GVM) and axle masses is necessary, the consignment note could be adapted and used for this purpose; which is then kept on record.

"330C. Goods declaration to be carried on a motor vehicle",

A person operating on a public road a motor vehicle which carries goods shall be in possession of a declaration containing the following information:
a) the licence number of each vehicle in the combination of vehicles;
b) the nature and quantity of goods transported;
c) the contact particulars of the operator or in the case of a combination of vehicles, of every operator in the combination of vehicles;
d) the particulars of the consignor and consignee of the load or in the case of loads collected at and delivered to more than one consignor and consignee, the particulars of every consignor or consignee;
e) the name, residential and postal address of every natural person or in the case of a juristic person, the responsible director or member, an agent, consignor, consignee or operator listed in the declaration;
f) the consignor and operator shall conclude a written agreement for the transportation of goods stating:

i. the nature of the agreement;
ii. the loading instructions; and
iii. the responsibilities of the parties.

g) Schedule of insurance as contemplated in regulation 330D.

In terms of compliance to the above regulation 330D; in the case of a fruit packhouse, the consignment note could be considered an applicable form of declaration containing the required information as described above. The consignment note in its present form will be required to be formatted to contain the level of information as per point (a) to (f). The following recommendations are considered in the adaption of the consignment note to be considered as a declaration:

i. Vehicle and trailer licence numbers,
ii. The nature and quantity of goods,
iii. Mandatory weighing of cartons and or pallets with quantities contained within the consignment note to determine the gross payload mass of a load,
iv. The particulars of the "Consignor" and "Consignee" as contained in (d) and (e) above.

"330D. Consignor or Consignee to insure goods to be carried on a motor vehicle and the motor vehicle",

A consignor or consignee of goods shall not transport goods on a public road or accept goods unless such transportation is fully insured for damages that can occur as a result of an incident.

By definition, a transport operator will be required to provide sufficient written evidence to the "Consignor" and "Consignee" that the *vehicle and the goods* to be transported are suitably insured as required by the regulation, failing which the "Consignor" and "Consignee" is obliged not to transport goods or accept goods without such.

Besides the above amendments to the regulations as contained in the 22nd Amendment, it is deemed to be prudent on behalf of fruit packhouses (or producers), cold storage facilities and all affected parties, that an appointed custodian (manager) be designated to familiarize themselves with all the relevant aspects of the Act. In particular:

1. Interpretations and definitions. i.e. what constitutes a public road,
2. Requirements of vehicles in compliance with regulations,
3. Requirements of the loading of vehicles. i.e. vehicle masses, axle masses and loading,
4. Requirements of drivers. i.e. licences, permits and driving hours,
5. Obligations of the "Consignor" / "Consignee" provisions. i.e. 330A to 330D of the regulations,
6. Act or omission of manager, agent, or employee of "Consignor" and "Consignee",
7. Criminal proceedings as a result of non-compliance to the Act.

The Transport Act in its entirety can be accessed from the following link: http://www.acts.co.za/index.html.

For more information regarding the amendment to the Regulations, contact Mitchell Brooke mitchell@cga.co.za Tel: (031) 765 2514.

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PRODUCTS THAT WORK FROM PEOPLE WHO CARE

Suzette Poole, Nicholas Dicey and Jacques du Preez (in the back row) with teachers and pupils of La Plaisante Crêche during the delivery of the books.

SA Deciduous fruit industry distributes books to schools and crêches

Excited readers of La Plaisant NGK Primary.

The South African deciduous fruit industry (DFI) has delivered another container full of English language reading and textbooks to farming schools and farm crèches in the fruit areas. This follows on a similar project in 2013. The aim of this initiative is to contribute to social investment in South Africa as part of the international market development campaign in various fruit importing countries. By entering a competition it teaches and encourages children and consumers in the United Kingdom to eat and buy more South African Fruit.

Increasingly shoppers are making ethical choices to eliminating poverty and creating jobs. South Africa's deciduous fruit industry is a huge employer and provides household income and food security to a third of a million people. The SA Fruit Industry plays a prominent part in the food supply chain.

The books were collected in the United Kingdom, along with entries to the "Help a South African School" competition, organised by HORTGRO. The competition is part of a campaign where schools in the UK submit English language books, which were collected from each competition entrant and shipped to South Africa to help rural schools in fruit producing parts of the country. These UK schools are invited to collect and donate unwanted English language text and reading books to schools in South Africa in rural and farming regions.

The "Help a South African School" campaign is a wonderful initiative that provides disadvantaged children with valuable education resources. It plays a vital part in educating and supporting farming families. We believe that education is the great equalizer in the world, and books are at the foundation of a strong educational system. For many children in South Africa, the gift of books is truly is a gift of hope.

Ready-Steady-Work

During the last week of November, twenty-four young people from around the country gathered at Seula Zimbili on the banks of the Tugela River in Zululand to take part in the Citrus Academy's Ready-Steady-Work programme.

The programme consists of a workshop held over four days and was facilitated by Carien Taute of Buzz Communications, who is an expert in workplace mentoring and coaching. Ready-Steady-Workers not only benefited from a well-organised and facilitated programme of talks and learning activities, but were also given the opportunity to face their fears with adventure activities such as abseiling, zip-lining and obstacle courses.

The highlight of the week was the potjiekos competition and gala dinner which was organised entirely by the students, and attended by special guests Michelle Kruger, global brand director of ClemenGold, and Jacomien de Klerk, general manager of the Citrus Academy. A great time was had by all, friendships were formed, bonds were created and reaffirmed, and it was clear that confidence and abilities were developed throughout the week.

We would like to say a special word of thanks to ClemenGold and Du Roi for their generous sponsorship of the 2014 Ready-Steady-Work programme.

Tengitile Mtethwa; Gugu Mokoena; Ncediswa Mbekela and Sonwabo Ncera conquering the obstacle course.

Life long friendships formed.

Tengitile Mthethwa; Yamkelo Mboko; Prudence Msibi; Lindokuhle Mamba; Sithembile Ground and Kanyisa Ndyoki at the start of Ready-Steady-Work 2014.

Challenges, obstacles and puzzles – thinking out of the box.

Constance Makhubela; Bahle Kweba; Ncediswa Mbekela; Lindokuhle Mamba; Lucy Ngcane; Nqabakazi Gwebani Xolani Siboza; Nolundi Fani; Kanyisa Ndyoki; Sithembile Ground; Sive Mbangiswano and Catherine Savage take five before the next class starts.

Candice Burgin (Citrus Academy Bursary Fund manager), Carien Taute (Buzz Communications), Jacomien de Klerk (Citrus Academy general manager) and Michelle Kruger (ClemenGold global brand manager) at the gala dinner.

Nolundi Fani, Constance Makhubela and Sithembile Ground showing off their cooking skills in the potjiekos competition.

Lindokuhle Mamba is all smiles after flying through the air on the zipline.

Catherine Savage about to take the plunge.

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Agriculture is a serious business

LUKHANYO NKOMBISA *Transformation*

As the year comes to an end one wishes that things would calm down in terms of engagements and other activities. But within the Citrus Industry we were still busy ensuring that all our growers' requirements in terms of trade relations, linking our producers to finances and support from national, provincial, district and local municipalities have been addressed.

2014 was a hectic year for the transformation portfolio of the Citrus Growers' Association. The most important issues I think that needed our engagement with our stakeholders was the commodity approach in terms of supporting the commercial and small holder farmers. It was repeatedly mentioned by politicians and industries that we need to take agriculture seriously and most importantly as a growing business concern.

Pilot of Agricultural Business Management Programme

The CGA transformation portfolio and Citrus Academy came together in piloting the Agriculture Business Management programme in the EC for our small producers. The programme kicked off very well, interest being shown by our producers irrespective of the fact that it was also during the harvesting season.

The programme is still under way as it is arranged in blocks with breaks in between. This is one of the initiatives of taking agriculture as a business seriously.

DAFF & CGA Engagements

The CGA and Citrus Academy have had a number of meetings with DAFF Directorates of Marketing, Small Holder Support and Extension Service. The purpose of these meetings was to request DAFF to work with CGA in initiatives that required their intervention and support. The Directorate Marketing committed to support CGA/CA in the industry's initiative of the Emerging Export Excellence Programme. They indicated that they would fund the whole initiative. A JV agreement is in the final stages of being signed.

The Extension Service directorate was requested by CGA to prepare a proposal to be sent to AgriSETA requesting funding for the training of provincial extension officers who will provide extension services to citrus producers. The process is on-going as CGA indicated that it would assist in the development of the proposal to be sent to AgriSETA.

CGA Provincial Engagement & Planning

As we are all aware many initiatives slowed down or came to a standstill in the run up to and during the South African general elections. A new government is now in place and we can expect to move forward in our developmental objectives.

After the elections new ministers and MECs were appointed and it is with appreciation that the CGA has been able to interact with them at an early stage. This early interaction was seen as being important due to the MOUs which CGA has in place with a number of provinces. In addition, with regard to provinces where citrus is produced and CGA does not have MOUs, it was seen as an opportunity to renew discussions to move towards entering into constructive relationships.

In these engagements I would like to single out the Western Cape Province as it has shown a lot of interest in supporting the transformation initiatives of the Citrus Growers' Association.

Western Cape

The CGA was approached by Goede Hoop Sitrus in Citrusdal about programmes that the provincial department has to support the development of commodities. The Transformation Manager subsequently met with Goede Hoop Sitrus.

At the same time a meeting was also held with the department of agriculture to not only introduce CGA to them, but also to advise it that CGA would like to be involved in a Citrus Commodity Project Allocation Committee as is the case with other commodity organisations. It was agreed that the process would be set in motion. A close working relationship will need to be established with CASIDRA which oversees the WC support programme.

Consultation commenced with the Executive of the chamber to proceed with the engagement in the Western Cape. Meetings will have to be held with WC citrus growers to explain the initiative and to get their support.

Chris Hani District Municipality – EC

The Chris Hani District Municipality in the EC in the area of Queenstown invited all relevant stakeholders to a round table investment session for two days. This is one of the district's initiatives to ensure that agriculture is revived in the province and is taken seriously as the sector that can respond to the challenges that SA is facing.

The CGA and other fruit industries were invited to the session to advise the district and the province on the relevant fruits that can be planted in that district. An estimated 1500 ha has been put aside to plant all kinds of fruit that will be relevant in the area looking at the climate, the type soils and also water availability. CGA was requested to head the panel discussion on Fruit Production Cluster in the District.

Extension Services

At the beginning of every year the Citrus Research International's two dedicated extension officers meet their producers to plan extension activities for CONTINUED ON PAGE 28


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Bosveld Citrus - National farmer of the year for 2014

The Agricultural Writers of South Africa presented Bosveld Citrus with their prestigious award for National Farmer of the Year in 2014.

Cornel van der Merwe, Milaan Thalwitzer, Marius Neethling and Piet Smit.

The identification and nomination of the candidates are undertaken with the following criteria in mind:

- History of the candidate
- How their land is used – biological productivity
- Risk and management of risks
- Maintenance and management of natural resources
- Economical sustainability
- Social Responsibility
- Involvement in industry and organised agriculture.

The Writers from the Agricultural Society elect provincial winners and then a panel of former winners, writers and academics consider the nominations to elect a national winner.

Bosveld Citrus is owned by the Milaan Thalwitzer Trust and is managed by Milaan and his three sons-in-law, Piet Smit, Cornel van der Merwe and Marius Neethling, who each take responsibility for certain aspects of the business.

Milaan Thalwitzer was born in 1942 in Brakpan and matriculated in 1960 at Heilbron High School in the Free State before obtaining his BSc (Agric) degree from the University of Pretoria in 1964. He has been involved in citrus farming since 1965 and was the main driving force in the development and expansion as well as the diversification of the Bosveld Sitrus Group of Companies.

The Bosveld Group of Companies started off on 100 ha of citrus in Letsitele in the 1960's, and now encompasses 3 730 ha of citrus, producing 5.5 million cartons of export citrus – the biggest private citrus grower and exporter in South Africa. The group also produces bananas, sugar cane, litchis and mango on the various estates in Letsitele, Hoedspruit, Burgersfort, Politsi, Malelane and Komatipoort.

The group of companies includes Golden Frontier Citrus, Mabete Sitrus, Karino Farms, Waterval Citrus and Richmond Kopano Farming. Richmond Kopano Farming is an operations company that has leased the farm Richmond since 2011. It is owned by the Moletele Communial Property Association after a successful land claim process. Bosveld Sitrus currently holds all shares in the operating company but the Moletele community has the right to buy 49% of the shares. The lease expires in 2025 after which time the community will take over the operations of the farm. The first profit share to the CPA took place recently and the cheque for nearly a million rand was handed over to the chairman of the Moletele CPA, Ezekiel Nkosi by Piet Smit.

Ezekiel Nkosi (chairman of Moletele CPA) and Piet Smit (managing director of Bosveld Group Holdings).

CONTINUED FROM PAGE 26 the year.

The programmes have been progressing well. The information days held were very successful. We must thank the sponsors who contributed to these days.

Research and development is very important for the citrus industry and extension plays a crucial role in gathering and disseminating information especially with regard to minimising the impact and costs of unexpected outbreaks of pests and diseases.

Chamber Executive Meetings

The chamber has agreed that its executive should deal with urgent matters and that these should not be held over to the chamber's next meeting to ensure that necessary work can proceed. It is recorded that the executive has met on a number of occasions to address matters concerning the proposed development company and matters relating to grower development and support. These meetings have enabled progress to be made in the various areas.

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Farm Costing Solutions is hoogs betalend

"Die stelsel het homself binne vyf maande afbetaal," sê Anton Muller van Laborie Boerdery in die Limpopo-Provinsie.

Anton hanteer die sitrusboerdery van die Muller Familie Boerdery Trust in Letsitele. Sy neef, Michael Muller, van Doornfontein Boerdery, boer in Politzi met avokado's. Beide Anton en Michael het agt maande gelede Time Management Solutions (TMS) begin gebruik.

Die Mullers boer op sewe plase waarvan vyf avokado's en twee sitrus en groente produseer. Aan die sitruskant van die boerdery het hulle 29 permanente werkers en tussen 60 en 70 seisoenswerkers. Daar is ook tussen 12 en 20 werkers wat met groente werk. By die avokadoboerdery is daar 70 permanente werkers en 120 tydens seisoenstyd betrokke. Hierdie groot arbeidsmag het dit dus genoodsaak dat arbeidsverwante koste en produktiwiteit meer noukeurig gemonitor word. Tydens 'n gesprek met Anton en Michael het hulle die volgende voordele wat FCS vir hul boerdery gebring het, uitgelig.

Die effektiewe monitering van werkers

Volgens Anton was die kaartjieknipstelsel wat hulle voorheen gebruik het baie moeilik om te kontroleer en is die TMS-stelsel meer akkuraat.

TMS word by boere se individuele behoeftes aangepas. In Anton se geval kan die sagteware stukwerk reguleer om werkers nie meer as een keer binne 35 sekondes te laat klok nie. Sakke wat tydens middagetes en naure geklok word kan maklik vir korrektheid kontroleer word. Op hierdie wyse word die geleenthede vir bedrog uitgeskakel.

Dit is op grond van hierdie ooglopende besparings waar hulle voorheen vir werkers betaal het vir werk wat nie gedoen is nie, dat Anton meen dat die stelsel hom reeds binne vyf maande afbetaal het. Deurdat oneerlikheid uitgeskakel word, het verhoudinge tussen die bestuur en werkers ook baie verbeter.

WAT IS TMS?

- Die TMS-stelsel is 'n produk van Farm Costing Solution (FCS). Dit is 'n gebruikersvriendelike en tydbesparende metode om elektronies alle arbeidsverwante kostes te versamel en dan daarvoor te begroot.
- Afgesien van die feit dat kostes en produktiwiteit akkuraat bepaal word, is TMS ook 'n effektiewe metode om plaaswerkers se werksure te kontroleer.
- Plaaswerkers kry 'n kaart (tag) om deur 'n elektroniese leser te trek wanneer hulle aan diens kom en ook as hulle van diens af gaan. Op hierdie manier word die werksure akkuraat bepaal.
- Hierdie inligting is toeganklik en integreer met 'n verskeidenheid betaalstelsels soos VIP, Donkerhoek Data en FCS Payroll. Rekords vir afwesigheid, laatkom, korttyd, oortyd, daaglikse en weeklikse werksure, kan maklik opgeroep word.
- TMS is ideaal vir stukwerk.
- Onder toesig van 'n bestuurder trek werkers hul kaart (tag) deur 'n draag bare elektroniese leser as hulle 'n spesifieke taak voltooi het.
- Die stelsel bepaal dan outomaties elke werker se loon gebaseer op die werk wat hy voltooi, bv. die aantal sakkies lemoene wat hy daardie dag gepluk het.
- Al hierdie inligting word na 'n sentrale databasis gestuur.
- Toegang tot inligting is te alle tye beskikbaar.

Verhoogde vertroue tussen werker en werkgewer

Daar was aanvangsprobleme vir al die partye, meen Michael. Om van 'n hand-, pen- en papiermetode na 'n elektroniese stelsel oor te skakel was vir die bestuurspan 'n uitdaging. Vir die werkers was dit ook moeilik om 'n "masjientjie" wat hulle ure kan lees, verwerk en registreer, te vertrou.

Die werkers het die stelsel begin vertrou omdat hulle teenwoordig is as die data ingevoer word. Die kaartlesers word deur operateurs beman om die korrekte invoering van die totale geplukte kratte te verseker. Die plukker staan by as sy kratte getel word en sien dat die korrekte hoeveelheid teen sy naam ingevoer word. Die inklok en uitklok van die werker word akkuraat registreer met die gevolg dat navrae van die werkers in verband met die hoeveelheid ure wat hulle gewerk het nou vinnig en deursigtig afgehandel kan word. Dit het ongeveer drie maande geneem om aan die nuwe proses gewoond te raak.

Die verbruikersvriendelikheid en korrektheid van die stelsel het wedersydse vertroue ingeboesem wat baie bevorderlik is vir werksverhoudinge. Albei die Mullers meen dat die vertrouensverhoudinge op die plase baie verbeter het.

Baie minder spanning

Vir Michael is die belangrikste voordeel van die gebruik van TMS dat die bestuur se stresvlakke verlaag het. Volgens hom loop korrektheid en tyd en gesondheid en geld hand aan hand.

TMS skakel die tydsame en dikwels onakkurate invoer van data met die hand uit. Om foute reg te stel was 'n tydrowende proses wat tot spanning tussen bestuur en werkers gelei het. TMS bespaar nie net tyd met die vaslegging van data nie, maar ook die hantering van navrae word baie vinniger afgehan-

WAT IS FCS PAYROLL?

Dit is 'n betaalstaatmodule wat ontwerp is met maklikheid en gebruikersvriendelikheid as uitgangspunt.

Van die eienskappe van die stelsel is:

1. dat dit salarisstrokies maklik, vinnig en korrek genereer;
2. 'n gelyktydige toekenning aan kostesentrums;
3. loontarief kan per uur of per dag bereken word;
4. daar is vinnige toegang tot vorige salarisstrokies;
5. 'n werknemer se rekening kan maklik bestuur word;
6. dit akkommodeer verskeie betalingsmetodes;
7. belastingvorms word outomatiese genereer en kostes kan omvattend rapporteer word.

del. Die akkuraatheid van TMS bespaar tyd en koste en is spanningsvry.

Die Mullers het ook die loonprogram, FCS Payroll aangekoop.

Die tyd wat aan die opstel van betaalstate en administratiewe werk spandeer word, word aansienlik verminder. Waar dit vir die Mullers voorheen twee dae geneem het om die lone te doen, word dit nou binne ure afgehandel. Weer eens word navrae vinnig hanteer. Alles is bydraend tot laer stresvlakke.

Selfmotivering van werkers

Die avokadoplukkers word per geplukte krat, wat ongeveer 16 kg vrugte bevat, betaal. TMS bereken daagliks elke plukker se totaal. Hierdie totale word uitgedruk en opgeplak. Soggens voor werk kyk die plukkers na die vorige dag se totale en probeer daarop verbeter. Die sterk plukkers probeer hul posisies behou en die swakkeres probeer verbeter. Omdat dit met heelwat skertsery gepaardgaan, is dit 'n baie gesonde vorm van kompetisie, meen Michael. Hierdie selfmotivering lei tot groter produktiwiteit.

Ondersteuning en nasorgdiens

Beide Anton en Michael is baie beïndruk met die opleiding wat TMS verskaf, asook met hul volgehoue ondersteuning.

"Hulle lewer 'n verskriklike goeie diens, ek het net nog nooit voorheen so iets beleef nie," sê Anton.

Deur middel van TeamView kan probleme feitlik onmiddellik uitgestryk word. FCS het boonop 'n verteenwoordiger in Limpopo wat persoonlike diens verskaf. As gevolg van die ondersteuning kon hy die stelsel baie maklik implementeer.

Volgens Michael was: "Die aanvanklike diens, asook naverkope-diens en ondersteuning fantasties. Hulle is flink en byderhand."

Die gebruik van FCS het vir die Mullers groter beheer oor hul arbeidsmag gegee; produktiwiteit is verhoog en verhoudinge op die plase is verbeter. FCS se goeie diens gee hulle gemoedsrus. En om Michael aan te haal: "'n Stresvrye boer is 'n gesonde boer."

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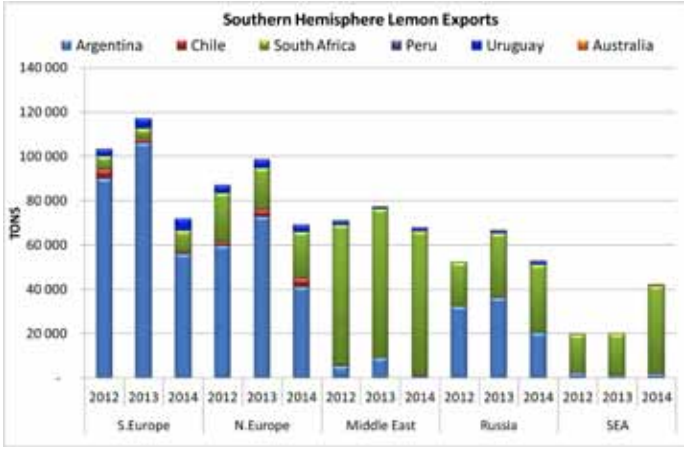
CITRUS: Looking back at Southern Hemisphere 2014 and forward to Northern Hemisphere 2014/15

JOHN EDMONDS

The 2014 season saw a drop of about 7% in the total citrus exports of the Southern Hemisphere Association of Fresh Fruit Exporters (SHAFFE) member countries (Argentina, Australia, Chile, Uruguay, Peru and South Africa). The main contributors to this trend were severe droughts and freezing incidents in Argentina which caused lemon export volumes to plunge whilst 2013 Chile had its worst freeze in 50 years. In South Africa the grapefruit was down as expected from the alternating trend in production.



Southern Europe was the biggest casualty of Argentina's poor lemon crop. South Africa benefited but distributed its bigger export volumes in similar proportions to last year with the exception of South East Asian exports which more than doubled, making them the second largest South African lemon market for lemons after the Middle East.

The supply of Southern Hemisphere soft citrus to the Northern Hemisphere markets painted a relatively more stable picture although northern Europe and USA felt the effects of the South Americans' troubles.

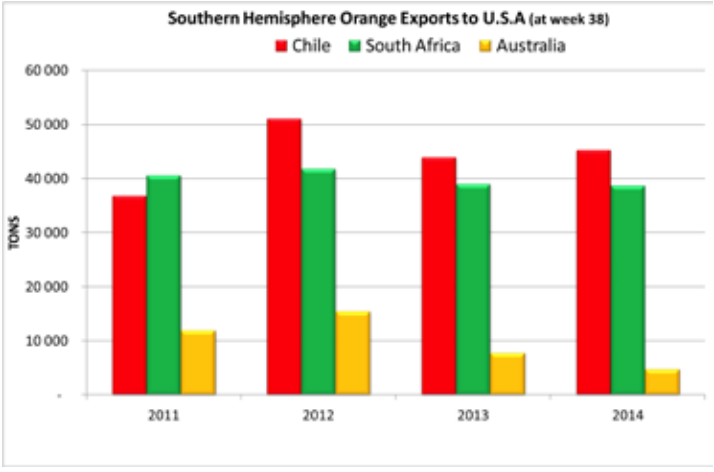
SHAFFE member countries are showing more interest in the Asian region with South Africa seeking to reduce dependence on Europe in light of EU compliance demands with regard to citrus black spot interceptions. Australia orange exports in China felt the effects of South Africa's added focus in this region although Japan remains their leading market. Although South Africa dominates the SHAFFE orange exports, there is competition in the USA market where Chile and South Africa remained relatively stable with Australia finishing around 22 per cent lower than last year in spite of the Australian dollar falling 20% against the U.S dollar. However the other SHAFFE countries' exports also benefited from weakening exchange rates.

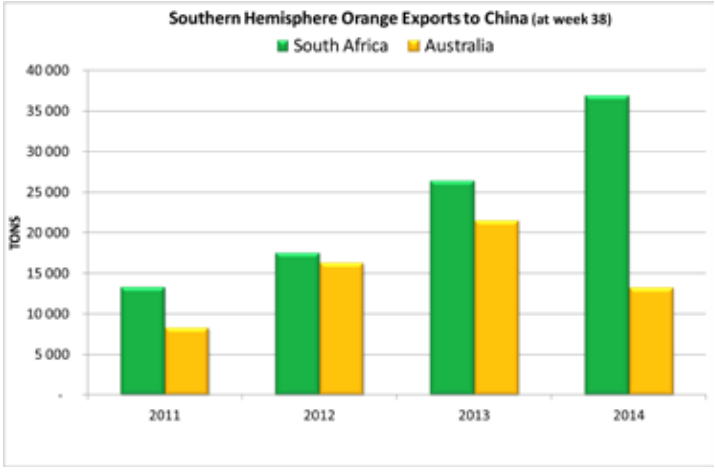
As with oranges, South Africa dominates the grapefruit offering with no meaningful comparison to the other SHAFFE members.

Northern Europe and Japan continue to take the bulk of southern African grapefruit – although the volumes for both dropped in 2014; in Japan from 3.3 m to 3 m cartons and in northern Europe a more significant reduction from 5.3 m to 3.5 m.

Northern Hemisphere:

Citrus production in the Northern Hemisphere is due to decline by approximately 4% in 2014/2015 to 28.7 million tons. Oranges are expected to be down 5% (17.3 million tons), soft citrus down by 1% (6.3 million tons), lemons will decrease by 5% (3.3 million tons) and while grapefruit will be down by 6% (1.6 million tons). The decline of production is more significant in the EU (-10%) than in other Mediterranean countries basin (-3%), leading to a shorter production in the Mediterranean by 7% compared to the previous season. However, in spite of the production decrease, exports are expected to be less affected. In the USA production is predicted up by 2%.





Online market registrations for the citrus industry

PAUL HARDMAN

For markets that require pre-registration Department of Agriculture, Fisheries and Forestry (DAFF) Directorate Plant Health (PH) agreed to introduce a web-based tool for PUC and orchard registrations for the 2015 citrus export season as an alternative to the manual systems used in previous years. The tool was developed by DAFF: PH in conjunction with the CGA in order to make the registration process more efficient and accurate.

In summary 89.5 percent of growers used the online tool. DAFF: PH captured the remaining paper-based applications onto the same web-based tool so all the data is housed in the same database. The overall view is that the registration process worked extremely well despite some early teething issues. Some improvements were identified and will be taken into consideration for next year.

One advantage of an electronic registration tool is to be able to analyse the data. This next section provides some basic information on the registration applications.

Descriptive Statistics

This data has been taken off the draft summary of the registration applications on 4th December 2014 and is subject to change before the start of actual exports in 2015. TABLE 1 shows the number of PUCs per province, total orchards per province and the application status of those orchards per market (those that require pre-registration). "Provisional" registrations are subject to further changes to the import protocols while "pending" indicates applications that must still be approved before 2015.

Improvements on the 2013 registration process

A number of indicators highlight the improvement using an online tool compared to the paper-based systems, including:

- Growers have more influence over the accuracy of the data entering the system. After all they are the ones that know their farms best.
- Improved accuracy in spelling of varieties. In 2013 approximately 560 "different" cultivars were listed (including 64 different spellings and combinations of Bahianinha navels). In 2014 only 118 cultivars are listed (and only one version of Bahianinha!). This does not reflect a change in the Citrus Export Quality Standards, but rather improved adherence to the Standards.
- All data was captured by 15th November 2015. In previous years it was a huge struggle to complete the process by end of November.
- Growers were afforded the opportunity to check/verify the information on two weeks earlier and for two weeks longer than in previous years.
- Tree census: 90% of the tree census was completed in October 2014. It was most unfortunate that the paper-based applications did not all capture the orchard area. In future a 100% of the information will be captured in a one-step process.

However, the greatest value of the online registration tool and having the data reside in a single database is the potential it unlocks to create integrated tools to make other aspects of the export and certification process more effective and efficient. For example, this data can be used by DAFF regional offices to plan farm verification visits.

Growers that made the leap and used the online tool are thanked for making the change this year. Now that the data is on the central database it is expected that future rounds of registrations will be considerably easier.

TABLE 1

ITEM	EASTERN CAPE	KZN	LIMPOPO	MPUMA LANGA	NORTH WEST	NORTHERN CAPE	WESTERN CAPE	TOTAL
PUC	720	48	434	101	17	36	543	1 899
TOTAL ORCHARDS	9 191	478	7 341	1 426	60	273	3 824	22 593
CHINA (PENDING)	9 178	476	7 247	1 382	59	251	2 823	21 416
EU (PENDING)	8 311	396	6 246	988	53	273	3 824	20 091
IRAN	8 608	367	6 743	1 380	52	143	3 029	20 322
JAPAN	8 193	460	6 519	1 084	23	208	2 021	18 508
PHILIPPINES (PROVISIONAL)	8 601	338	6 357	1 331	58	160	2 231	19 076
SOUTH KOREA (PENDING)	21	421	5 313	826	5	62		6 648
THAILAND (PENDING)	9 181	410	6 733	1 325	55	160	2 132	19 996
USA (PROVISIONAL)	8 573	215	5 148	956	50		107	15 049
USA						258	3 268	3 526

Rekord rosyne-oes in vooruitsig

'n Rekord rosyne-oes word in die vooruitsig gestel vir die komende seisoen. Spesiale maatreëls sal betyds getref moet word om grootmaat verpakking en verwerking te akkommodeer, indien huidige gunstige klimaatstoestande voortduur. So sê Dappie Smit, hoof uitvoerende beampte van DTD. Die goeie nuus is verder dat daar geen probleme rondom verhandeling aan oorsese markte behoort te wees nie.

Johannes Fourie, Prof. Gerhard Pietersen, Kobus Hanekom.

Kobus Hanekom, DTD; Strys Strauss, Redsun Raisins; Johannes Fourie, DTD; prof Gerhard Pietersen, Universiteit van Pretoria - raadslede van DTD en sprekers by die Inligtingsdag in Upington op 25 November 2014.

Droëvrugte Tegniese Dienste (DTD) het op 25 November in samewerking met OWK 'n baie insiggewende Inligtingsdag vir droëvrugte produsente in Upington aangebied. By die geleentheid het Hein Kruger, besturende direkteur van Kruger Internasionaal, 'n omvattende oorsig oor die Suid-Afrikaanse ekonomie gegee en ook hoe dit die landbou bedrywe raak.

Baie goeie markinligting is verskaf deur Peter Kuilman, besturende direkteur van Redsun Raisins, waaruit produsente prysverwagtinge kan aflei. Dappie Smit van DTD het die oesskattings en voorraadverwagtinge van al die rosyne produserende lande behandel. Hy het die Suid-Afrikaanse verwagtinge met hierdie skattings vergelyk om aan te dui waar die kompetisie die strafste sal wees en watter rosyne tipes die maklikste sal verkoop.

Alle aanduidings klop met DTD en OWK se oesskattings wat dui op 'n totale rosyne-oes van meer as 60 000 ton indien huidige gunstige klimaatstoestande voortduur. Dit sal 'n rekord-oes wees. Smit het gewaarsku dat produsente betyds bemarkings- en leweringsreëlings moet tref met verpakkers om seker te maak dat hulle nie voor dooiemansdeur beland nie. Verwerkers sal finansiering moet reël om so 'n groot oes te kan hanteer.

Daar is beklemtoon dat die internasionale mark nie 'n probleem sal hê om so 'n oes op te neem nie. Finansiering om alles kontant aan te koop kan 'n probleem wees. Dit is ook benadruk dat die hele bedryf moet fokus daarop om goeie gehalte rosyne te produseer wat wel in die hoër prysklas-mark kan meeding.

Professor Gerhard Pietersen van Universiteit Pretoria het sy navorsingsresultate voorgehou wat bewys dat die Rolblaarvirus die oeste van besmette stokke kan halveer en ook bydra tot onegalige rypwording en verkorte leeftyd van wingerde. Pietersen het die waarde van gesertifiseerde plantmateriaal onderstreep en gesê produsente moet nie hierop probeer bespaar nie. Dit is ook duidelik gedemonstreer deur Henning Burger van OWK wat die vestigingskoste en gelykbreek punte van rosyneproduksie behandel het. 'n Paar ekstra tonne ge-oes kan die wêreld se verskil aan die winsgewendheid van 'n wingerd maak.

Die praktiese ondervinding van almal betrokke by evaluasie van die nuwe kultivars, Selma Pete, Summer Muscat, Diamond Muscat en Sugra-39 is baie treffend deur Strys Strauss van Redsun Raisins voorgedra. Veral die vroegheid en goeie dragpotensiaal wat hierdie kultivars toon is baie entoesiasties ontvang.

Verskeie patente en meganiseringstegnieke is gedemonstreer om alle aspekte van wingerdverbouing te vergemaklik. Dit het onkruidbeheer, plant van wingerdpale, tegnieke om te top en snoei, planters vir dekgewasse tot oesprosesse ingesluit.

Produsente was dit eens dat dit 'n baie waardevolle geleentheid was met noodsaaklike inligting wat prakties aangewend kan word.

SATI Emerging Producer visit to Germany

PHIL BOWES *Transformation Manager SATI*

In November 2014, SATI's Transformation Manager accompanied five selected applicant producers on a trip to see importers, retailers and researchers in Germany.

Some interesting findings were noted that may have a significant impact on Table Grape suppliers to the European Union (EU). The delegation observed key trade practices and learnt about expected changes in some of the following areas;

1. The grape market supply calendar resulting from longer transit times and the expansion of India and Peru as European Autumn suppliers and changes in Southern European supply patterns;
2. Retail formats in terms of Discount stores and Supermarkets;
3. Packaging trends for regular sized berries,
4. Maximum Residue Levels as private standard differentiators, and not only as standards imposed by the EU;
5. New tariff costs for South African Fruit;
6. The implications of European Union Russian produce sanctions on South African table grape exports;
7. Market information communication and dissemination;
8. The value that can be derived from participating in retailer product promotions.
9. The value that can be derived from astute cultivar selection.

Prospects for table grape supply to Europe

Brazilian, Lebanese and Italian grapes dominated the market window at the time of the tour, which allowed delegates to observe and sample the merchandise from those respective countries.

There was a significant shortage of grapes in the EU over the period of the tour, which was considered to be a good sign for some of the potential prices for South African produce. The importance of market standard compliance was reiterated as a rarely negotiable market requirement.

South Africa, according to most parties asked, enjoys the status of being one of the preferred countries for taste. However, competition from India, Peru and Chile was highlighted as a significant consideration for South African suppliers.

Discount Stores vs Supermarkets

Important to note was the implications of the rise of discount stores such as Aldi and Lidl. Importers cited the corporate cultural difference in dealing with supermarkets as opposed to dealing with discounters. The aspect of retailing is not only important for the European Union, but for the United Kingdom also, where major German discount chains are making significant inroads into the retail sector.

Russian bans on EU imports

It was found that the imposition of food sanctions by the Russian Government on European companies is having a significant impact on local intermediaries who traditionally import produce from South Africa and other supplier countries for further distribution into Russia. South African intermediaries in Europe mentioned that they were still in a position to trade with the Russians, but with an added layer of paper work imposed under the said ban. A volatile Russian Roubel was mentioned as a risk factor that needed to be considered when supplying product directly to Russia.

Alec Abrahams (Siyazama), Elize Boer (Osplaas) and Abie Pietersen (Alpha) inspect murchansie from Italy and Brazil at a Globus store in Bonn.

Conclusion

Though compliance with market standards is essential in the course of business of table grape production, there remains an opportunity for emerging producers to supply the European Union if they are able, in cooperation with their market intermediaries, to secure retail programmes one year in advance, and then to honour those programmes. The EU is still welcoming of market standard compliant table grapes from South Africa. Ours is the challenge of supplying market scarce cultivars into segments of lower saturation at a viable time of the year.

SAPO supports breast cancer at Hortgro Golf Day

ELSA MULLER

SAPO Trust took part in the annual golf day of Hortgro at the lovely Devon Valley Golf Estate on Thursday, 23 October 2014. The team consisted of Frederik Voigt (captain), Divan Venter, Armand van Niekerk, Daniell du Preez, Rudi Vos (waterboy) and Elsa Muller (organiser).

SAPO decided that because October is breast cancer awareness month they will dress in Pink to show their support. It took a little convincing to get all the guys to wear pink, but the positive feedback was wonderful for the egos. Elsa's pink shirt was auctioned for R1000 during the prize giving, which was donated to CANSA.

We are looking forward to be part of this event again next year, and hereby challenge the other teams to also do their bit to show their support.

Back row: Daniell, Armand, Divan and Frederik.
Front: Rudi and Elsa.

Establishment of Royal apricot mother block

FREDERIK VOIGT *Business Unit Manager Production*

Most of the scions available to the South African apricot industry are only compatible with Royal (Blenheim) seedling rootstock. (Reinten et al., 2009). This rootstock is ideal for deep, well-drained soils but not for high clay, water-logged calcareous and ring nematode infested soils. Currently only apricot seedlings (Royal and Soldonné) are compatible with apricot scion cultivars. It is therefore very important for SAPO Trust to supply enough Royal seeds to the nurseries, but there is no demand for the fruits of this variety anymore and no more commercial Royal production blocks are planted anymore.

To overcome this problem, SAPO Trust in co-operation with Dried Fruit Technical Services, the Western Cape Department of Agriculture, Prins Albert Municipality and Montagu Dried Fruit established a Royal apricot planting for production of dried fruit and certified seeds in the Prins Albert region. This project will not only supply enough certified seeds to the nurseries, but will also create new jobs for this high unemployment area.

Apricot trees on Royal seedling.

SAPO Trust hosted two field days

RUDI VOS

Two field days were organised and held to promote the imported low chill stone fruit varieties from the University of Florida in the USA and Mexico. The first field day was a combined day with ZaigerSA. It was held on the 22nd October at the farm Overvaal near Rustenburg in the North Western Province. 15 people attended the day that was opened by Dr. Phillip Fourie from SAPO Trust. After the opening the visitors had the opportunity to taste the fruit varieties at a fruit exhibition. After the exhibition the visitors were treated with a visit to the commercial orchards.

At the second field day that was held on 7th November at the farm Swartdam near Riebeeck Kasteel in the Western Cape Province, 27 people attended the day. Again the visitors had the opportunity to taste the fruit at a fruit exhibition where the varieties were on display. After the fruit exhibition the evaluation block was visited where the visitors could see the fruit first-hand on the trees.

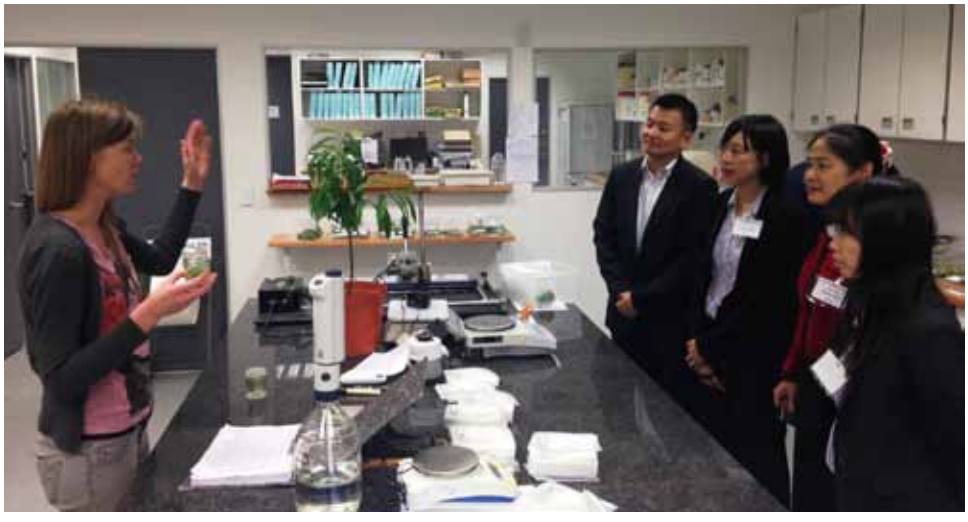
Swartdam orchard evaluation.

Taiwanese Fruit delegation visited SAPO Trust

FREDERIK VOIGT *Business Unit Manager Production*

A delegation from the Taiwan Institute of Economic Research unit recently visited SAPO Trust. After decades of efforts, Taiwan has established a reputation for the quality and varieties of the fruits it provides. The purpose of the visit was to look at collaboration with the institute on licensing plant material of deciduous and subtropic fruit types. SAPO Trust will especially be interested in the licensing of their new guava white flesh varieties and subtropic fruits like Litchi and Jujube.

Right: Taiwanese visitors.



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SAPO Trust is forty years old

DR PHILLIP FOURIE *Email: info@saplant.co.za*

SAPO Trust celebrated its 40th birthday on 5 Nov 2014 at Blaauwklippen, Stellenbosch.

Guests attending the 40th anniversary of SAPO.

The manor house at Stellenbosch after restoration.

DIE BURGER, DONDERDAG, 24 JUNIE 1976

SAPO distributed the first certifiable plum plant material to nurseries in 1976.

SAPO was founded on 30 April 1974 and two of the original founder members attended the celebration as well as the ex and current chairmen, general managers and Trustees. Other distinguished guests included producer and nursery associations' chairmen, clients and associated business partners like DAFF, DPA, officials of the Western Cape Province Department of Agriculture and our sponsor, Thorpe Paarl. In total 80 guests attended.

SAPO commenced with their plant improvement business on Excelsior farm in Ceres in 1974, re-located to Fleurbaix farm in Stellenbosch and later to Tygerhoek farm in Riviersonderend. The head office remained at Stellenbosch since 1987 although the facilities and laboratory were upgraded through the years.

Interesting to note is that the amount of nurseries declined from 365 vine and 1 273 tree fruit nurseries in 1973 to 28 vine and 18 tree fruit nurseries in 2014.

The first certifiable plant material, plums on Marianna rootstock, were handed over to the chairman of the Nursery Association, Johan Ligthelm by min. Ben Schoeman in 1976 (see photograph from 'Die Burger' above) and the nurseries gave the first of these super material to Piet Wolfaardt, a producer of Prince Alfred Hamlet.

From 1987 to 1989 the old historical manor house, wine cellar, slave quarters and stables on Fleurbaix farm, built in 1768, underwent a complete restoration process by the deciduous fruit marketing boards (see pic above left) to accommodate SAPO.

Subsequently in 2012 SAPO bought part of Fleurbaix and is currently in the process of establishing their new offices on the premises.

Fuller's rose weevil found in stone fruit orchards in the Robertson area

F G H VAN ZYL *Business Unit Manager, Pathology & Registration, SAPO Trust*
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The weevil that was identified in stone fruit trees in Robertson, Klein-Karoo during September 2014 was not the *Diaprepes* root weevil, but was identified as Fuller's rose weevil *(Naupactus godmanni)*.

The Fuller rose beetle (FRB), *Naupactus godmanni* (Crotch), sometimes known as the Fuller's rose weevil, caused considerable damage to winter roses when it was first reported in the United States, California in 1879 (Chadwick 1965). Damage was also reported on other ornamental plants including camellias, geraniums, primroses, carnations, dracaenas, azaleas, cissus, begonias, lilies, and horticultural crops such as citrus, persimmon, apple, peach, plum, apricot, strawberry, raspberry, and blackberry (Chadwick 1965).

Distribution

FRB is generally a cosmopolitan species found widely distributed in North and South America, Europe, the Mediterranean countries, South Africa, Australia and many Pacific islands (see world distribution map). (CABI 2005).

World distribution of the Fuller rose beetle (FRB), Naupactus godmanni *(Crotch), as of 2005. Illustration by CAB International.*

Description

The description of the life stages is mainly based on Woodruff and Bullock (1979).

Adult: The brownish grey (with intermixed white scales) adults are 6 to 8.5 mm long (~ 1/3 inch). Eyes are in lateral position and appear bulging; rostrum (snout) is slightly curved towards the ground. As the elytra (wing covers) are fused, the insect cannot fly.

Larvae of Fuller's rose weevil.

Fuller's rose weevil.

Egg: The yellowish cylindrical eggs, 1 mm (1/25 inch) long, are laid in a mass and covered with a white sticky material. They are placed in cracks and crevices of bark, between leaves, and under fruit calyces.

Larva: The white larva, which is legless, has a yellowish head capsule with contrasting black mandibles. When fully grown, it measures 10 to 12 mm (nearly1/2 inch) in length.

Biology

The FRB generally overwinters as larvae in the soil. Only females are known for this species, and reproduction occurs without fertilization, a phenomenon known as parthenogenesis (Chadwick 1965).

The female lays eggs in a mass and covers them with a white sticky material. In general, eggs are typically stuck under stones, in bark crevices, inside calyx lobes of fruits, or in curled dead leaves (CABI 2005). Up to 1 000 eggs have been reported as laid by an adult female during its lifetime (Masaki et al. 1996). It takes from two to six weeks for eggs to hatch, depending upon temperature (Lakin and Morse 1989).

After hatching, the legless larva drops to the ground, enters the soil, and feeds on the roots for the next eight to ten months if there is only a single generation. The larva is active to a depth of 61 cm, but the third instar larva moves closer to the soil surface to prepare a smooth walled earthen cell prior to pupation. The larva rotates its abdomen and produces anal secretions that line the walls of the cell. The pupal stage lasts for one and half to two months. Adults emerge and crawl up to their host plant to feed on the leaves, buds or flowers (roses). Adults live for three to eight months (Masaki et al. 1996).

Hosts Plants

The number of host plants for FRB is very extensive, but the primary hosts include *Citrus*

spp., *Cucurbita* spp., strawberry (*Fragaria ananassa),* beans (*Phaseolus* spp.), peach *(Prunus persica)*, rhubarb *(Rheum hybridum)*, rose (*Rosa* spp.), and potato (*Solanum* tuberosum).

Secondary hosts include wattles (*Acacia* spp.), oriental persimmon *(Diaspyros kaki)*, walnut *(Juglans regia)*, apple *(Malus pumila)*, banana (*Musa* spp.), passionfruit *(Passiflora edulis)*, avocado *(Persea americana)* (Anonymous 2005).

Some other economically important hosts of the adult include apricot *(Prunus americana)*, azalea (*Rhododendron* spp.), Begonia, blackberry and raspberry (*Rubus* spp.), Gardenia, Hibiscus, Hydrangea, lily (*Lilium* spp.), oak (*Quercus* spp.), plum *(Prunus domestica)* (Anonymous 1996).

Damage

FRB adults and larvae cause damage. Adults feed on the foliage while the larvae feed on the roots. Leaf damage symptoms typically consist of notched or serrated edges with a ragged appearance. Under severe infestations, these weevils can consume the entire leaf, leaving only the midrib.

Young larvae chew off the root hairs or rootlets, while older larvae girdle the lateral roots. Root damage results in poor and stunted growth as damaged roots cannot absorb water and nutrients efficiently. Plants with severely damaged roots may die during periods of drought or the root system may be predisposed to fungal infection (*Phytopthora* spp.).

Management

An integrated pest management approach lays emphasis on monitoring the emergence of a pest population and assessing the amount of damage before making any decision on method and means of control. This is very much applicable to FRB adult management which generally have certain peak periods. For FRB, October and November have been the peak emergence period (McCoy et al. 2006).

Monitoring

FRB emergence can be monitored by using ground traps or observing fresh leaf damage. Routine inspection of plants is necessary to check for damage symptoms (ragged appearance) on low hanging foliage. Low-hanging fruits near the trunk should be examined for egg masses, particularly under the calyx. As FRB are nocturnal in habit, they may not be active during the day and are therefore not very apparent.

Mechanical control

Preventing the flightless weevils from reaching the canopy is the best management strategy. By skirt pruning, the emerging adult weevils can only climb up on the tree trunk. The main trunk thus needs to be treated (banded) with long-lasting sticky materials for trapping the adults. The sticky material is best applied on a non-absorbent material fastened around the trunk to minimize the potential risk of trunk burning (Anonymous 2005).

Chemical control

Recommendations and related information on chemical management of Fuller rose beetle and other root weevils are available. Please contact your local chemical consultant for any further information.

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The importance of planting certified trees that are free of *Apple mosaic virus* (ApMV)

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***Apple mosaic virus* (ApMV) causes a reduction in yield and overall life-expectancy of fruit trees, especially on sensitive cultivars such as 'Golden Delicious' and 'Jonathan'.**

In South Africa, it is governed under the South African Plant Certification Scheme and it is required that plant material distributed within the Scheme be tested and found free from the virus. The Certification Scheme has been very successful in expanding the coverage of orchards free of ApMV over the years, to the benefit of the whole deciduous fruit industry. ApMV has various synonyms such as *Mild apple mosaic virus,* Severe *apple mosaic virus, Rose mosaic virus, European plum line pattern virus, Hop virus A, Hop virus C, Dutch plum line pattern virus* and *Birch ringspot virus* (Petrzik, 2005).

Host range

ApMV is a pathogen with a diverse natural host-range consisting primarily of woody plants. Hosts include apple, apricot, cherry, almond, rose (Fulton, 1972), hazelnut, blackberry, raspberry, hops (Petrzik & Lenz, 2002) and strawberry (Tzanetakis & Martin, 2005). Pear was not considered a host of ApMV until recently (Petrzik & Lenz, 2002).

Transmission

ApMV is transmitted by grafting and infected propagation material (Petrzik & Lenz, 2002). No insect vectors for ApMV are known to occur. It is still unknown whether ApMV is pollen or seed transmissible (Aramburu & Rovira, 2000).

Symptom expression

ApMV infection can vary from showing no symptoms to leaf symptoms including pale to bright yellow spots, mosaic and vein necrosis on leaves of apples (see photograph right) (Nemeth, 1986). ApMV also causes line-pattern symptoms in plum trees and mosaic symptoms in roses (Fulton, 1972). The symptoms can appear clearly in late spring to early summer, but later diffuse to mild symptoms (Lee et al., 2002). Most commercial cultivars are affected by the virus, but cultivars 'Golden Delicious' and 'Jonathan' are more sensitive to the disease and significant yield losses have occurred in some regions on these varieties (Desvignes, 1999).

Detection of ApMV

ELISA and RT-PCR are some of the regularly used techniques developed for the detection of ApMV. ELISA is routinely used for detecting the virus worldwide (Choi & Ryu, 2003) and the technique is based on antibody-antigen interaction. Some producers have been witness to the regular visits during spring when SAPO Trust personnel collects leaf samples from their mother block orchards for these routine tests required by the Certification Scheme.

The reason why samples are collected during spring, is that the viral concentration of ApMV varies seasonally and this affects the detection of ApMV (Svoboda & Polak, 2010). For instance, it has been found that only 10% to 13% of the ApMV infected stone fruit and hazelnut trees, were detected when tested during a hot summer season (Matic et al., 2008). The viral concentration also varies between the types of plant material used for detection. The highest virus concentrations were found in young leaves, followed

SAPO Trust employee obtains M.Sc (Agric)

Sophia Malan (photo above), who has been working at SAPO Trust for the past nine years, recently completed her M.Sc. (Agric) Plantpathology successfully at the University of Stellenbosch. She officially received her degree during the December 2014 graduation ceremony. Her thesis was titled "ELISA detection of *Apple chlorotic leafspot virus* (ACLSV) and *Apple mosaic virus* (ApMV) in comparison to RT-PCR detection and the determination of genetic variation of these virus species in South Africa". It focused on two viruses, ACLSV and ApMV, regulated under the South African Plant Certification Scheme. She compared two detection techniques, ELISA and RT-PCR, to determine which technique is most sensitive. She also did phylogenetic analyses of isolates of these viruses whereby she compared local and international isolates of the viruses. A series of articles on her results will be published in this and the next issue of this journal.

Pale to bright yellow spot symptoms of ApMV infection on apple leaves.

by mature leaves, flower petals, dormant buds and bark phloem (80 times less than young leaves) (Svoboda & Polak, 2010). The implication for the producer is that, should he/she wishes to have their orchards tested, collection of leaf material in spring is the best option for testing.

Family trees

Phylogenetic trees, which is similar to a human family tree indicating all the ancestors and their relationships, can be constructed for viruses such as ApMV. This is useful to determine where and possibly when, viruses originated from and can indicate whether a virus is mutating fast or slow and thus causing more or less severe disease symptoms. To this end leaf samples were collected from all over South Africa. The ApMV extracted from the leaves were compared and family (phylogenetic) trees were constructed. It was found that the ApMV is highly similar with similarities of between 96% to 100% (Malan, 2014). Despite the high similarity, from the differences that were observed, it was possible to predict that ApMV was imported to South Africa from at least two different sources overseas or that a mutation occurred within South Africa, leading to a unique South African group, differing from the group imported from overseas. There was no indication that the symptom severity differed between the two groups or that it has changed over time with the current data.

It was further evident that the majority of South African isolates are not fruit group specific and that cross-infection between pome- and stone fruit is thus possible. The important implication of this is that sanitation of equipment between fruit groups is essential to prevent spread of the viruses and that one fruit group can serve as a source of infection of another fruit group.

Management

Viruses cannot be removed from infected plants chemically, thus the best management practice for infection with ApMV, is the planting of certified trees with blue/candidate labels obtained from a Plant Improvement Organization such as SAPO Trust or a nursery providing such blue/candidate label trees. Such trees have been tested and found free from ApMV. In addition, sanitation of equipment between trees and between fruit groups is also very important to prevent spread of viruses.

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SAPO TRUST ISO 9001: 2008 External Audit

F G H VAN ZYL

Business Unit Manager, Pathology & Registration

The ISO audit took place on Monday, November 3rd, 2014. The objective of the audit was to verify conformance to SAPO Trust Management system on Fleurbaix and associated procedures at outside locations as were specified according to the standard.

Two auditors visited SAPO Trust and the audit was twofold i.e.:

a. SAPO Trust's head office was audited for Standard Quality Management and Operational systems and functions and,

b. SAPO Trust foundation premises at Riebeeck Kasteel was audited for operational activities such as the evaluation of stone fruit varieties and the collection and checking of graftwood from such sites.

The recommendation from this audit by both auditors was that the audit was successful and that it will be recommended that SAPO Trust's ISO 9001:2008 certification continues.

EPN - our Biological Superweapon?

ELISE-MARIE STEENKAMP

When Matthew Addison originally started thinking about using entomopathogenic nematodes (EPN) to treat codling moth infested wooden fruit bins, he never dreamed that it could possibly turn out to be a Biological Superweapon that could potentially save the deciduous industry millions of rands and in the process spawn a vast scientific research network.

Ten years ago, Addison, Crop Protection Manager at HORTGRO Science, had R30 000 funding but no one to take the research further. A great believer in biological control as a fundamental aspect of integrated pest management he realised the potential, but was at a loss as to how to proceed.

Dr Antoinette Malan, then Principal Plant and Quality Officer at the National Department of Agriculture, stepped in. Malan had at that stage, in an attempt to continue Nematology at the Stellenbosch University, replace retired Nematologist, Prof. Bertus Meyer.

"Even though I am a Nematologist, I didn't know anything about EPN. Nobody knew anything about them as it was a totally different concept. I had no one to ask, no one to train me. It was new to us all," says Malan.

Nematodes are among the most ubiquitous organisms on earth. They occur in virtually every possible environment, either as free-living nematodes or as parasites of vertebrates and invertebrates. There are many different kinds of nematodes, but the ones creating the buzz are the insect-parasitic or entomopathogenic nematode or just EPN for short. EPN attack and feed only on insects.

EPN infective juveniles.

Malan was fascinated. She got on the Internet and started researching the matter. She read almost every paper she could find and connected with international researchers. She soon found herself on a plane heading for the University of Florida, USA, to train and learn with Dr Khuong Nguyen. "He taught me everything: how to identify them, how to find them in the soil, and all the other research techniques." Another big help was Prof. Ralf-Udo Ehlers, then based at the Christiaan Alberts University of Kiel, in Germany.

Back in Stellenbosch Malan found an enthusiastic student, Jeanne de Waal, who was willing to take on EPN and eventually completed her MSc and PhD under Antoinette's guidance. "Together we did research and taught ourselves."

It helped that EPNs are what Malan calls "model organisms". "I previously worked with plant-parasitic nematodes – notoriously difficult to study. EPN are exciting and highly satisfactory to work with. We were very motivated."

EPN exiting from a Codling Moth pupae.

In 2003, the industry funded a survey of local EPN. The survey was important as nothing of the local EPN occurrence and distribution was known. The survey was successful and during the following year a project was launched that investigated the use of EPN for controlling codling moth larvae in fruit bins. During this time Citrus Research International also came on board and research was expanded to include false codling moth, mealy bug, and the banded fruit weevil. These positive results made it possible to develop culture methods for local EPN species and launch investigations into their physiology and temperature tolerances.

What is Biological Pest Control?

Biological pest control is the reduction of pest populations by using natural enemies. It is important because crop pests become resistant to chemical pesticides. It thus forms an integral part of the integrated pest management (IPM) approach.

How are bio-control agents found?

The first step is a survey of the natural enemies of the target pest. Researchers observe the natural cycle to make sure that the biological control agent does no other damage. Then it can be reared and released in large numbers.

What are EPNs?

Entomopathogenic nematodes are a group of nematodes (round worms) that kill insects. The term *entomopathogenic* has a Greek origin *entomon*, refers to insect, and *pathogenic,* which denotes causing disease. Although many other parasitic round worms cause diseases in living organisms, entomopathogenic nematodes are specific in only infecting insects. EPN live parasitically inside the infected insect host, and are therefore described as endoparasitic. They infect many different types of insects of which some stages are in contact with the soil, like the larval forms of moths, butterflies, flies and beetles as well as adult forms of grasshoppers and crickets. EPN have been found all over the world in a range of ecologically diverse habitats. The most commonly studied EPN are those that are used as biological control agents *Steinernematidae* and *Heterorhabditidae.*

HORTGRO science
the technology collective

Left: ***Dr Antoinette Malan*** *our local EPN expert. Right:* ***Matthew Addison*** *– HORTGRO Science Crop Protection Manager who believes in the value of integrated pest management.*

Today the development of effective biological control agents for use in the deciduous fruit industry is regarded as a priority, says Addison. "Pest management cannot rely on a single method of control. It is imperative that we expand the management options available."

Implications for growers?

• Currently scientists are investigating the application of EPN to the soil and directly onto trees.
• EPN cannot be treated the same as chemical applications – they are little animals and sensitive to environmental conditions.
• Knowledge of handling nematodes is imperative for their success – especially a full understanding of their life cycle.
• There are major differences between aerial and soil applications.
• When applying EPNs aerially onto trees certain considerations apply: Insects such as codling moth and mealy bugs are highly susceptible; there is only a short window period for application; temperature and humidity remain the main problems – as trees must stay wet before and after application.

The Big Challenge - Grower Education

In an effort to produce more and better fruit, growers worldwide prefer pesticides as a means of pest control. It' s not an easy task to convince growers to adopt a systems approach to pest management and make greater use of biological control agents. Once a good natural enemy has been found, it is important to train the extension service and farmers in its use. There is a big attitudinal barrier that needs to be broken down before growers will opt for biological control agents. Future pest management will depend strongly on biological control because is the most sustainable, environmentally safest, although not the cheapest system of pest management. Biological control is expected to account for a significant increased proportion of all crop protection methods by the year 2050 (Bale, Van Lenteren & Bigler, 2009).

For Addison a good analogy is that of a table that cannot stand on one leg. "The more legs - the more sustainable the object. The same with pest management.

"The integration of biological control agents supplements existing management methods. They are stable over time and can be highly effective. EPN are an attractive natural option with the added benefits that they have adapted to local conditions and are generalists. Their positive effect on the environment cannot be measured in monetary terms," says Addison.

To date the deciduous fruit industry has invested R 2.74 million and the citrus industry 1.2 million in the EPN research effort. Altogether 10 post graduate students have completed their studies, and a 38 peer reviewed publications have been published along with numerous popular articles. The programme has drawn the attention of the pest management community, and a huge government grant was recently awarded to a development company, which will allow for the full commercialization of local EPN species.

This grant will allow for commercial outdoor application of EPN in the different industries such as deciduous, citrus and grapevine. The research programme is still active and proposed research includes the integration of EPN with fungi that attack insects. If history is anything to go by, it will be an interesting and productive process.

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Trends and Future Possibilities in Biological Control

• The advantages and limitations of biological control are viewed in comparison with chemical pesticides. Natural predators are usually very specific in their range of prey. Natural enemies actively seek out their prey and can increase the level of control over time. The arguments against chemical pesticides are that they not only kill the pest, but also other species, including natural predators. Furthermore chemical control is limited to area application, frequent application may be required which are costly.
• The main limitation of biological control agents is that it is a slow process which requires the predators to establish themselves.
• EPNs as biological control measure have had excellent results in closed orchards.
• Future research will focus on applying EPNs in local "open" orchard conditions.
• 50% reduction in a given pest population can be expected
• Elimination of pest individuals with possible chemical resistance
• Seeding of orchard soil with nematodes
• Secondary control against insects in soil such as fruit fly and weevils

Did you know?

• The use of biological control for the management of pest insects pre-dates the modern pesticide era. The first historical record of biological control dates back to around AD 300 when predatory ants were used to control pests in citrus orchards. In the modern era an imported ladybird was widely used to control cottony-cushion scale on American citrus crops in California in the 1880s.
• There are about 120 EPN species worldwide with a total of 26 EPN species on the African continent – of which 13 are new discoveries. In South Africa 7 new species have been described.
• Also read Antoinette Malan's article in this edition, *A Rose by any other Name,* about a new EPN species that was recently discovered.

FRUIT FLY SYMPOSIUM THAILAND

Report on the Ninth International Symposium on Fruit Flies of Economic Importance held in Bangkok Thailand in May 2014

It is always difficult deciding on what aspects of a symposium to report on, not due to lack of choice but rather the sheer volume of information that one is exposed to, writes Matthew Addison, Crop Protection Manager at HORTGRO Science. I have selected a number of presentations and discussions - all relevant to agriculture in southern Africa and specifically to fruit producers in the South Western Cape - on which to report.

One of my motivations for attending the symposium was to gather information on *Bactrocera invadens,* the new invasive fruit fly that poses a significant threat to fruit production in southern Africa. The taxonomic status of *B. invadens* has drawn a lot of attention recently, the question being whether or not *B. invadens* is a separate species from the oriental fruit fly *B. dorsalis.*

Prof. Tony Clarke (School of Earth, Environmental and Biological Sciences, Queensland University of Technology, Brisbane, Australia) presented research findings that confirm that *B. invadens* and a number of other sibling species are in fact part of the same species, namely *B. dorsalis.* This is significant as the African fly is no longer regarded as a new species. The reclassification of *B. invadens* simplifies quarantine and other measures as there is no longer a need to develop information on a "new" species. The finding also allows for the application of current research findings to be applied locally in southern Africa, for example the development of sterile insect technique on *B. dorsalis* is advanced and could be applied locally.

The rapid invasion of Africa by *B. dorsalis* and the economic impact of the fly on agriculture were discussed extensively. A number of delegates expressed their alarm at the sudden range expansion of the fly. South American entomologists were concerned and it was noted that if the fly established in South America it would be devastating for agriculture on the continent. I had the opportunity to talk to Prof. Clarke and asked him if *B. dorsalis* would pose a threat to the South Western Cape. He noted that the insect is able to survive in a wide variety of environments, that it is highly mobile and has a very wide host range. He predicted that it could establish in the South Western Cape, and if it did so it would pose a significant economic threat. Australia has had an incursion of *B. dorsalis* and managed to eradicate it. The eradication program was extensive and cost a significant amount. The discussion turned to *B. tryonii,* the Queensland fruit fly. Prof. Clarke noted that *B. tryonii* had moved into southern Australia and was having a significant impact on deciduous fruit production. He noted that the production of low chill stone fruit near Brisbane had declined due to the fly and orchards were being removed.

Closer to home was a presentation on the population genetics of Natal fruit fly by **Minette Karstens** (Ph. D student in the Department of Conservation Ecology and Entomology, University of Stellenbosch) and others. The industry funded research allowed for the detailed analysis of the genetics of Natal and Mediterranean fruit fly and the mobility of the flies within South Africa. The study revealed that there was little genetic structure within the country thus indicating that flies move around or are moved around the country. This has implications for any control program as the program would have to be applied on a much larger scale than originally thought.

Shanmugam Vijaysegaran (Queensland University of Technology, School of Earth, Environmental and Biological Sciences, Brisbane Australia) addressed the meeting on the subject of small-scale production of fruit fly bait from waste brewer's yeast. The method involves the heating of waste yeast to remove water and alcohol and then treating the yeast with enzymes. The mixture is then stabilized with a preservative to ensure shelf life. The bait contains 12 – 18 % protein and 18 – 25 % sugars. The method has been developed and is now being used in Malaysia, Cambodia and other countries to produce low volume fruit fly bait with good effect. In addition, the bait is also being applied in commercial orchards in conjunction with male annihilation technique. The use of locally produced bait by small-scale farmers is appealing as the method is effective and removes the need for cover sprays. The equipment needed for the manufacturing process is relatively simple and low cost.

The control of *Bactrocera* in Africa using male annihilation technique was presented by **Dr Aruna Manrakhan** (Citrus Research International, Nelspruit) and others. She reported that *Bactrocera* populations can be effectively suppressed by using a method known as male annihilation technique (MAT). The method involves the use of small absorbent blocks containing an attractant (methyl eugenol) and a toxin. It was reported that the use of MAT in combination with conventional (protein) bait applications and strict orchard sanitation effectively controlled *B. dorsalis* populations in the north of the country. It was noted that other MAT technologies are becoming available within South Africa.

The early detection and rapid eradication of *B. dorsalis* is the ultimate aim of any entomologist working on the insect. **Preeaduth Sookar** (Ministry of Agro Industry and Food

Figure 1. *A range of topical fruit grown south of Bankok. The production area was under an integrated* Bactrocera dorsalis *management programme. The fruits are rambutan:* Nephelium lappaceum *(top left), mangosteen:* Garcinia mangostana *(top centre) sala fruit:* Couroupita guianensis *(top left) and logan:* Euphoria longan *(bottom).*

Security, Republic of Mauritius) and a number of co-authors reported on the success of a fruit fly surveillance and eradication programme on Mauritius. *B. dorsalis* has been detected on Mauritius a number of times, and has been successfully eradicated. Their surveillance programme has been in place since 1994 and consists of the imposition of a strict eradication protocol along with an ongoing monitoring programme. On detection of *B. dorsalis* a quarantine area (5 km radius) is declared, numerous traps are deployed within the quarantine area, protein baits are applied along with MAT and extensive fruit stripping and sanitation methods are applied. The eradication measures are maintained for four months after the detection, this is due to the extended mango harvesting season. To date the eradication methods have been successful and B. *dorsalis* has been prevented from establishing on Mauritius.

The area wide management of Med fly *(Ceratitis capitata)* in Israel was presented by **Miriam Silberstein** (Northern R&D / MIGAL, Pardess-Hanna, Israel). Details of the need for an area-wide programme were presented, and included the decrease in the use of organophosphates that has resulted in higher fruit fly populations in Israel. Of interest was the upgrading of their area-wide sterile fruit fly programme and the integration of a computer based information delivery system. The system allows farmers to optimize their management actions and includes information on fruit fly trap catch, fruit maturity and phenology, and weather data. The information is submitted and collated; the resultant data is made available on line. Silberstein noted that the accepted management information is often not sufficient to allow for effective fruit fly control. In addition the relationship between trap catch and actual fruit damage in orchards was being re-evaluated along with the methods used to treat so-called "hot spots". The programme is extensive and includes the release of sterile flies in 8 000 Ha of mixed agriculture. The author summed up the research surrounding fruit fly management and the development of effective management programmes as a " long, but necessary process".

Allied to the above was a presentation on the use of sterile insect technique on a small scale known as micro- SIT for Med fly in Israel by **Gal Yaacobi** and **Yoav Gazit** (Biobee, Mayanot Valley, Israel). They reported that micro-SIT is being applied in four areas in Israel ranging from 300 -1 500 Ha, the crops treated include deciduous fruit, citrus and table grapes. The authors noted that the application of SIT on small areas requires intensive monitoring of fruit flies, the differential application of sterile flies depending on wild populations, intensive fruit damage assessments and a dedicated sanitation programme during and after harvest. The use of baits is confined to outbreak situations only. They reported that after 5 years the micro-SIT programme had yielded good results in that there had been a significant reduction in pesticide use and that fruit fly populations were well managed and harvested fruit was damage free.

A presentation on the development of biological control of CONTINUED ON PAGE 48

Figure 2. Bactrocera dorsalsis *trap with an example of the methyl eugenol used as an attractant. The photograph was taken at a field day south of Bangkok within an area under an integrated fruit fly management programme. Note the male* B. dorsalis *on the methyl eugenol label.*

Fruitfly Africa moves in the right direction

As South African deciduous fruit producers enter a new harvest season, and with it a rise in fruit fly population levels in production areas, it is perhaps time to evaluate past successes in population control programs and take stock of what has been learnt.

In November 2014 FruitFly Africa (FFA) compiled a progress report of the past four seasons. From this it seems that the program is moving in the right direction and that producers can rest assured that all their efforts to make population control of fruit flies in their area a success have not been in vain.

The mean FTD's (Flies per Trap per Day) for all areas under the full control program, including SIT, have decreased considerably since the 2010/2011 season.

Changes in mean FTD's for the period 2010/2011 to 2013/2014 per region were as follows:

- Hex River Valley 4.5 to 3 (-33.3%)
- EGVV 0.4 to 0.2 (-50%)
- Ceres area 1.0 to 0.3 (-70%)

Of course the main objective of the area-wide integrated pest management program is to ensure continued access to existing markets, and to enable exporters to gain access to new markets, through creating areas of low pest prevalence. For this reason one should also consider the impact of the program on the number of rejections for fruit fly infestation by PPECB in areas under the program. When comparing the number of rejections during the 2013/14 season to the highest number of rejections in previous years, the decreases are as follows:

- Hex River Valley 84% decrease
- EGVV 58% decrease
- Ceres area 100% decrease (no rejections the previous season)

There are a number of factors influencing these successes over the past couple of years, one of which is the fact that sterile male (steriles) production and release has grown substantially. In 2010 the weekly production of steriles was 15 million during summer, with production being cut down to 8 million in winter months. The rearing facility in Stellenbosch now produces 25 million flies per week year round. This allows for high sterile to wild ratios during periods where wild populations are naturally suppressed by cold conditions. Areas thus enter the harvesting season with a low population base that is easier to control later on as fruit starts to ripen.

Due to technical changes to the production process, after visits to international Medfly rearing facilities in Valencia and El Pino, production is now more stable than ever and

CONTINUED FROM PAGE 47

B. dorsalis using fungal based biopesticides was authored by **Sunday Ekesi** (International Centre of Insect Physiology and Ecology (ICIPE), Nairobi, Kenya) and others. The main aim of the research was to evaluate the practicality of using fungi in a device which attracts fruit flies. The flies are thus exposed to the fungal spores and then disseminate the fungi in the environment and to other fruit flies. The research revealed that the fungus *Metarhizium anisopliae* is effective and that it significantly reduced fruit fly populations in mango orchards in Kenya. In addition it was found that a high proportion of flies in the mango orchards were contaminated with the fungus, this indicates that the fungus can be transmitted horizontally (from fly to fly). The technique is very attractive and would be a great interest to us as it supplements other control strategies and it can be easily integrated into control programmes.

The "take home message" from the symposium was that *Bactrocera dorsalis* represents a significant threat to us. Having said that, there is help available as there are a number of active research programmes under way. For example, fruit fly researchers from a number of sub-Saharan countries met during the symposium to coordinate research and monitoring programmes.

There are several challenges associated with the regional approach to pest management, but none of us are alone in this and co-operative programmes are needed. In addition to that there are other *Bactrocera* species within Africa that pose a threat to us, and due attention needs to be paid to the problem. I still

New bubbling system has increased efficacy in production by an average of 1.5-2%.

Starter packs for seeding colony eggs have resulted in better quality pupae.

New lighting in adult room has increased egg production per cage to such an extent that fewer flies per cage lay the same amount of eggs as before lighting was changed. Fewer flies per cage translates into better quality offspring.

runs at a far lower cost per million flies produced than previously expected. Quality of the flies produced is on par with international standards and for some quality control parameters even exceeds these standards.

As part of the more aggressive winter strategy FFA also utilized more M3 attract-and-kill baiting stations during the winter months the past couple of seasons. The rationale behind this is the same as for the increase in sterile releases during these periods.

The amount of aerial applications of GF-120 in all areas also increased from 2010 until present. It has undoubtedly made a substantial contribution to the lower population levels that now prevail within these areas. It is however worth mentioning that these applications are far more effective in areas where the whole area is covered. Full producer participation within an area is thus of utmost importance. Producers should also remember that to get the best results from aerial baiting, the right ground baiting program should also be in place. Please consult your chemical agent or FFA area coordinator in this regard.

Orchard sanitation and fruit fly control within urban areas most certainly also played a big role in successfully bringing down population levels in most areas. Area-wide coordination, communication, education projects and the dissemination of fruit fly counts are the factors that play the biggest part in accomplishing the above mentioned.

Area-wide population control of mobile pests can never be a success without the support and cooperation of all individual producers within the area. The results shown at the beginning of this text highlight the fact that producers are mostly doing what needs to be done. Moving forward to even greater fruit fly suppression, let's keep the successes of the past in mind, but remember that continuous improvement is needed to further enhance population control and make it more cost effective.

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believe that exclusion of exotic pests is the best solution but there are a number of hurdles to overcome if the philosophy is to be applied locally. The advent of sophisticated area-wide pest management programmes was evident as was the effective application of SIT. Aspects such as real time decision support systems and the integration of research, technical support and farm pest management are all needed. There is a need to reassess our approach to area-wide pest management; we need an open debate regarding fruit fly management and research on the subject.

Finally I would like to thank Hortgro for allowing me to attend the symposium, I would also like to thank the South Africans who attended and contributed to the symposium.

Can you afford NOT to have protection?

Protect your tree crops from damage caused by hail, wind, sun and other damaging natural elements.

Drape Net is a physical crop protection system that provides effective protection for a range of tree crops without the need to invest in costly permanent structures.

Drape Net has proven to be successful and has been used in Australia for 12 years.

Advantages of Drape Net

It can be deployed and removed with ease, especially when using the Drape Net tractor attachment, proudly built in South Africa.

Drape Net can be ordered in a range of widths, weights to suit the specified purpose, the tree size, age, and the extent of coverage needed.

Drape Net is economical as it costs but a fraction of the price of permanent structures. It is also not susceptible to damage caused by the weight of hail or snow dumped in a major weather event.

Drape Net will last a number of seasons (10 or more) even though it is of the same grade than the netting used for permanent structures. The net is not used the whole year and therefore it is less likely to deteriorate as quickly.

As **Drape Net** is physically draped over the trees it acts as a tree growth regulator, dramatically reducing the summer growth.

When to use Drape Net

Drape Net is usually applied after blossom and then removed again immediately before harvest. However, it can be deployed and removed at any time according to the needs of the grower and the nature of the threat to the crop.

All spray treatments can be applied through the net, and trials have shown a better wetting due to a swirling effect inside the net. (**Drape Net** SA does not recommend having any changes made to the spray programmes, and recommend internal tests done on the farm as the nozzle, spray particles and spray towers differ from farm to farm).

Fruit grown beneath the net is likely to return the same or better pack out than fruit grown without the net.

It is important that fruit grown beneath **Drape Net** be monitored and sprayed in the same way as fruit grown without the net. **Drape Net** acts as a diffuser for harsh sunlight and mitigates its damaging effect.

Deployment and removing Drape Net

Drape Net can be quickly and easily deployed and removed with the cost effective **Drape Net** machine, proudly manufactured locally. The high lift auto tension machine runs off a tractor's hydraulic system and attaches to a 3 point linkage. The Drape Net machine winds the net tightly onto removable and reusable spindles. Well trained staff could deploy 5 hectares per day.

Removing **Drape Net** is at least 10% to 20% quicker than deploying it and the operation is likely to require less human resource input than the deployment operation. The deployment effort required will also depend on the orchard layout and terrain. Clearly many long straight rows on flat ground will make for a quicker and easier job. No foreign construction staff is on the farm for long periods of time.

Drape Net is versatile

Drape Net can be made to measure in a variety of widths, weights, lengths (6 to 12 meters) and with various hole sizes. This means a suitable type of Drape Net can be manufactured for almost all tree crops.

Heavier net will tend to last longer than lighter net. Orchardists have been using 55 grams per square metre (g/m^2) for 8 years with minimal maintenance. Trials have shown that 60 g/m^2 net provide the best balance between weight and durability.

Drape Net has been successfully used on apples, cherries, pears and citrus. Growers of other tree crops such as summer fruit and avocados and mangos may also find Drape Net a useful and economical protection against a range of threats. To date trials and usage have shown Drape Net to be an excellent protector of apples and citrus.

There is a high level of optimism that trials will show that virtually any cropping trees can be covered to protect trees from any of the major weather elements.

Growers' experience of Drape Net

For most growers the motivation to buy net is to protect their fruit against the physical damage caused by hail, wind, sunburns and other major threats without the expenditure of the much larger sums required to erect permanent netting structures and the fear of it failing in major weather storms.

Want to know more

Contact **Jan Le Roux** of **Drape Net** SA
+27 74 104 6880 or kwamvelo@iafrica.com or drapenet@gmail.com

Building at SAPO's new offices commenced at Fleurbaix farm in Stellenbosch

DR PHILLIP C FOURIE & ELSA MULLER *info@saplant.co.za*

The building contractors commenced with the new SAPO offices on 1 October 2014 and the offices will be ready for occupation on 30 June 2015.

Since 1 January 2014 some of SAPO's personnel are accommodated in temporary offices and others are in open spaces in the existing store. Currently all the personnel are trying to acclimatize to the noise and disruptions, but everybody is positive that within the next eight months a peaceful and comfortable environment will be established.

Alterations at the outside of the existing store.

The new first floor inside the existing store.

The temporary offices outside on the terrain.

First Stone Fruit Exhibition of the 2014/15 season

RUDI VOS

On the seventh of November the South African Plant Improvement Organisation (SAPO Trust) together with four other exhibitors held their first stone fruit exhibition of the new season. The exhibition was attended by thirty eight people whom all have an interest in new stone fruit varieties. Everybody attending the exhibition had the opportunity to see, feel and taste the newest stone fruit varieties on offer. SAPO proudly showcased their new imported low chill varieties from the University of Florida in the USA. The varieties on display, all peaches, were UF Sun, UF Beauty, UF Blaze, UF One, Flordabest and a variety from Mexico, Aztec Delight. These varieties all have non-melting flesh with an attractive red skin colour which ripens as early as week 44. Every visitor is asked to fill in a simple scorecard of their findings of each variety. This gives the exhibitor an idea of the potential market opinions of the varieties. The overall opinion was encouraging and the varieties were well received.

The venue where the exhibition is held every fortnight is at the Infruitec campus on the Agricultural Research Council's premises in Stellenbosch. The dates and more information about the exhibitions, or if you want to be on the distribution list, please contact Rudi Vos per e-mail at rudi@saplant.co.za

International Horticultural Society Congress BRISBANE 2014

Every four years horticulturists from around the globe gather for the International Horticultural Society Congress (IHC). This year (17 – 22 August 2014) it was held in Brisbane, Australia. A group of well-known South African industry role players were there, as well as HORTGRO Science's Richard Hurndall and Wiehann Steyn.

RICHARD HURNDALL *HORTGRO Science Research and Development Manager (right) compiled this report.*

The IHC congress is a series of horticultural symposia (52 product and theme symposia, as well as several workshops) comprising of around 3 400 delegates. One of the challenges of such a large event is the dashing from venue to venue in the large and impressive Brisbane convention centre to accommodate topics of interest. On the other hand, one can fill in the gaps by attending lectures of peripheral interest that one would not otherwise have an opportunity to do.

The scene was set with an excellent opening presentation by Julian Cribb, an author, journalist, editor and science communicator. He explored the question whether horticulture could feed the world in the years ahead. The conundrum is to feed the worlds' population which is expected to increase by 1 billion people in the next 12 years, given that climate change can have a negative impact on production levels (demand versus scarcity). Of this population growth, 7,7 people will be concentrated in mega cities and cities. He noted that the potential of a food shortfall is not well understood by governments and consumers. They have not grasped the impact of climate change. There is currently competition for available resources. Cities are devouring farmers' water. Vehicles are consuming fossil fuels. At the same time there was unacceptable food waste and diet related disorders. The R & D on food research was low in relation to, say, defence spending.

Possible solutions to resource limitations and feeding the world population include:

- Recycling (water, packaging and food waste)
- Innovative intensive high rise and rooftop vegetable greening of cities
- Floating greenhouses
- Desert farms
- Boom in fish farming
- Algae production and harvesting for feed, fuel, textiles, chemicals etc.
- Novel edible plants
- Cultured meat
- Biocultured products
- Adoption of weird foods (insects, reptiles etc)

In summary, the age of food has arrived. This, in a world where 800 million people are hungry every day while more than 1 billion are obese. It was noted that the nutrient density of fruit and vegetables had declined over time, whilst there has been a dramatic increase in energy-dense snack foods.

A strong theme that emerged in the conference was the focus on nutrient content of fruit and vegetables, and specifically phytonutrients. In Australia and New Zealand there is a particularly strong focus on consumer studies. A brief summary of selected presentations follow.

Consumers' changing perceptions of quality: revisiting the science of fruit and vegetable cultivation for improved health benefits

PATIL

Global health imperatives to reduce chronic diseases, and shifting consumer preferences, require us to address the health benefits of fruit and vegetable crops. Current market trends have shifted based on consumers' perceptions of health-promoting qualities of fruits, vegetables and nuts. Consumers base these perceptions on the phytonutrients present in these foods. Emerging knowledge on the effect of phytonutrients in the prevention of chronic disease requires that we re-visit the crop management strategies that affect

PROF. WIEHANN STEYN, *HORTGRO Science Crop Production Manager*

"It certainly was one of the best symposiums in a long time and a valuable networking opportunity," said Prof. Wiehann Steyn, Crop Production Manager, at HORTGRO Science.

"There were excellent sessions on plant physiology and consumer studies, but the Smart Farms presentation by Prof. Salah Sukkarieh, Sidney University, Mechanisation, Precision Horticulture and Robotics (http://www.acfr.usyd.edu.au/) was inspirational.

Their technology, spatial tools and remote sensing machines were most impressive. This requires a complete mind shift for the grower about future agricultural practices. Prof. Luca Corelli-Grappadelli an Italian researcher from the University of Bologna presented an interesting session on: how fruit grow and how fruit is affected by climate stress, yield optimisation and how sugar is deposited in apples and pears.

"Also under discussion was the new pear variety from New Zealand, the Picaboo. This pear is edible from the tree or after storage. It's a good looking pear with excellent all-round quality and the aroma of an European pear, but without the finicky ripening process. It sure is a most impressive product."

Both Wiehann and Prof. Karen Theron from the University of Stellenbosch presented electronic posters.

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phytonutrient quality. Cultivation practices such as fertilisation, season, soil fertility and irrigation have a profound effect on phytonutrient levels and profiles. Similarly, post-harvest factors such as packaging and processing techniques can affect phytonutrients and also impact the consumer's willingness to pay more. We must critically evaluate the importance consumers place on these quality parameters and attributes to derive constructive policies for addressing future nutritional sustainability. In the USA, healthy dining finder http://www.healthydiningfinder.com/ is all the rage to find nutritional information for healthy dining. Visit http://postharvest.ucdavis.edu/ and http://postharvest.ucdavis.edu/Most_Useful_Postharvest_Websites/

Perfect pears for the next generation of consumers

TURPIN

Blushed pears are being bred in Australia in order to address low consumption in pears. ANP-0131 branded Deliza is reported to be better than Packham's Triumph, and consumer evaluations showed that it could be priced at AUD 3.50 versus AUD 2.90 for Packham's Triumph. This variety can be stored for 10 months in controlled atmosphere. ANP-0118 branded Lanya is a pear that ripens to a crisp texture on the tree. It was reported that 45% of Australians like crisp pears. Based on this preference, these consumers would marginally prefer the variety over Bon Chretien.

PROF. KAREN THERON

senior researcher from the Department of Horticultural Sciences at Stellenbosch University, had this to say:

"It was definitely worth going, with excellent presentations all-round. Some of the most important international role players were there and the interaction during tea time was stimulating and thought-provoking. One of the highlights was the session on abscission (a process by which a plant drops one or more of its parts) and related theories, was fascinating. The session on mechanisation and robotics was a wake-up call for us, as to how far ahead the Aussies are in this field.

Increasing consumer demand for fresh stone fruit through market research in Australia

HALE

Consumers in the Melbourne area exhibited a preference for high acid peaches and low acid nectarines. Firmness was the driver for acceptance and purchase, and there was a strong preference for softer fruit.

Stone fruit value chain: a system approach for improved consumer satisfaction

STEFANELLI

The supply chain for the Australian stone fruit industry is characterised by a series of operational problems that affect the entire sector.The large number of stone fruit varieties makes it difficult to develop general protocols to manage fruit quality, which results in variable eating quality and consumer dissatisfaction. Also there is insufficient information flow in the value chain from grower to consumer. The Australian industry is developing a more integrated approach that allows better flow of information in the handling chain by use non-destructive sensor technologies such as the Index of Adsorbance Difference (IAD). This relatively new technology determines the physiological maturity of fruit enabling the effect of each step in the supply chain on fruit maturity to be measured.

Identifying elements of an ideal peach experience: a consumer-centred approach

OLMSTEAD

Consumer surveys conducted in Florida, USA showed the top four elements that consumers desired were 1) fruit that were sweet with good acid balance, 2) full of juice, 3) plump and round, and 4) freestone. Young consumers preferred firm peaches.

Production of the high anthocyanin plum variety, Queen Garnet, as a new ingredient for the functional food market

BERECRY

This dark-skinned red plum has been developed by the Queensland Department of Agriculture. Apart from good flavour and high Brix, the plum has a high anthocyanin content of 150 – 280 mg/100 g, which puts it in the same category as berries as far as anthocyanin content is concerned. The anthocyanin content in other plums is usually less than 30 mg/100 g. The plums are processed into anthocyanin and flavonol- rich juices, natural colourants, pulp, concentrates and powder for the functional food market. Production processes are geared to produce nutrient density and the highest anthocyanin content. Health properties of the plum are being investigated in animal and human trials.

ANTON MÜLLER, *technical advisor from KROMCO, shared his thoughts:*

"The Congress was a fantastic opportunity to network and we were exposed to so much new information. It was also an opportunity for us to compare our way of doing things with theirs, and to see what we do right and where we need to tweak our workings. I was most impressed with the research projects, especially the user-friendly technological innovations by the University of Sidney that takes orchard management to a whole new level. The growers impressed me with their labourer-friendly orchards, which makes their input costs just double that of ours, even though the average daily wage is twenty times higher than in South Africa."

Orchard factors and postharvest handling of fruit and nuts influence on consumer quality

CRISOSTOS

Store prunes at -1.1 °C. 10% decay was found after 6 weeks with prunes stored at + 0,5 °C.

The orchard productivity and consumer appeal of the new 'Kalei' scab resistant apple

MIDDLETON

Delegates were provided samples of the apples at registration. After 4,5 months of regular atmosphere storage, these full-coloured red apples were crisp and sweet, with a low acid. Apart from being scab resistant, the apples produced 80 - 100 tons/hectare with a class 1 packout of 80 – 90%. The apples retain their firmness during shelf-life and do not develop much oxidation browning when cut.

Sensory-instrumental relationships that have transformed the concept of fruit quality in the fruit sector

HARKER

The key to improving quality standards in the fruit sector has been the development of sensory-instrumental relationships e.g., those which define crispness and firmness, and sweet and acid taste. This has led to the successful implementation of consumer-centric quality standards by the New Zealand apple and kiwifruit industry. The determination of dry matter content of apple is a good predictor of apple quality.

Sensory and non-sensory factors of product experience. A consumer-centric perspective

JAEGER

Traditional new product development focuses primarily on the sensory attributes of the product. Non-sensory aspects involving the consumer should also be taken into account. These include branding, packaging, health and well-being, price (value for money), convenience, production technology and political/ethical factors. To take one example, price can vary according to the occasion. It is therefore necessary to understand the consumer to fully capture the product / consumer relationship.

Understanding infection pathways and tree factors for integrated disease management of brown rot and grey mould in sweet cherry

BARRY

In this instance in Tasmania, no chemicals are applied after petal fall. Studies showed that 95% of the decay was due to *botrytis,* and no incidence of *monilinia* was found. Although infection increases toward harvest, substantial *botrytis* infection was found prior to 53 days before harvest.

Using data from in-situ fruit assessment to inform pre- and postharvest management decisions

ZUDE-SASSE

It was noted that 'farming is easier with sensors'. Examples were shown of self-driven platforms and aerial drones. Data is collected by wireless sensor networks and analysed in geographical information systems, which in turn provides management information.

Decision support tools that include models of fruit quality variability: from biological age, measurement uncertainty and other factors

JORDAN

The difficulty with prediction models is that they do not always address sample variability. By using factors such biological ageing rate and hue angle (colour), the harvest of KiwiGold can be predicted 50 days in advance. Near infrared (NIR) instruments can have significant uncertainties that add to the overall variability within a set of sample measurements. This allows a decision support system to determine fractions of the population meeting specifications (e.g. percentage of fruit above or below target).

Recent innovations on postharvest diseases control: an overview

DROBY

Postharvest pathogens either attack produce through surface wounds or intact / cracked surfaces of produce. Synthetic chemicals are still widely used for control despite consumer resistance to residues. While there are new products such as pyrimethanil (Philabuster) and fludioxonil (Scholar), older products such as iprodione are being phased out in several countries. Extensive research has been conducted on biological products such as yeast and bacteria, but their application remains limited. The reason for this is their inconsistency and low control. A combination of multisystem approach incorporating two or more treatments, such as using a biological product together with heat treatment, which have a direct or indirect effect on the pathogen, yields better results. A recent trend is that the multinationals are acquiring companies developing biological products. The focus in the future will increasingly be on molecular tools and mechanisms, with the development of resistant lines for breeding.

SPA 365, a McIntosh-like apple with improved postharvest qualities

TOIVONEN

The Canadian breeding focuses on improving existing cultivars due to the high cost

The next Congress will be held in 2018 in Turkey and four years later France will be the host country

of establishing new varieties. SPA 365 has replaced McIntosh as it has the same flavour and less bruising. Aurora Golden Gala (Splendour/Gala cross) was rated the best tasting apple. It has good firmness retention with only slight bruising.

Pre and postharvest inhibition of ethylene production and action by 1-mcp on the quality of apples and other horticultural products

WATKINS

Currently 70% of USA CA stored fruit is treated with 1-Methylcyclopropene (1-MCP). Harvista (pre-harvest 1-MCP) is almost as good in controlling ethylene as the postharvest 1-MCP treatment. Harvista reduced soft scald on Honeycrisp apples, but can increase CO_2 damage. Both Harvista and Retain reduce internal ethylene concentrations. It is best to apply Harvista close to harvest to minimise its impact on colour inhibition.

1 MCP:

- reduces senescent breakdown in apples
- reduces senescence in pears
- increases woolliness and internal breakdown in peaches and nectarines
- reduces core flush of apples and pears
- increases CA disorders such as:
  - CO_2 injuries of apples
  - flesh browning of apples and pears

Advances in the development of ethyl formate + carbon dioxide to control pests of horticultural commodities

JAMIESON

Ethyl formate (16,7% in 83,3% CO_2) is regarded as a GRAS product which can be applied as a fumigant to disinfest fresh produce. Ethyl formate (0,8 – 1%) exhibited 100% mortality of thrips on apricots. Lepidopterans are more tolerant to ethyl formate. Codling moth on apples were successfully treated, though internal browning can occur at concentrations > 1% over 1 hour. No browning occurs if the apples are first stored for 6 weeks before treatment. There were no sensory differences between treated and untreated fruit.

Sex pheromones offer an elegant future for pest control

SUCKLING

When light brown apple moth was discovered in Auckland, authorities conducted 40 aerial bt sprays. This could only be achieved by spending one third of the budget on communication with the public. Pheromones are good for surveillance, but an attractant is required for eradication, and chemicals need to be applied before sterile insect release. When conducting eradication, sixteen pheromone traps per hectare provide good results.

Advances in application of high pressure washing for market access

WOOLF

High pressure washing can be used to remove surface pests. The most widely used high pressure washing system was developed in South Africa by L.J.K. Theron in 1979. This system uses multiple rows of manifolds (7-10), with multiple nozzles on each manifold pointing downwards onto rotating brushes. Systems developed in New Zealand involve a three-nozzle treatment system (side and top nozzles), while another employs a high speed spinning rotor (1 000 rpm) with four inward pointing nozzles. Low level water blasting at 80 – 100 PSI removes woolly apple aphid. For good control for other insects 800+ PSI is required. While insect removal is the primary aim, they have found other significant benefits such as improved visual appearance, reduced disease development, and reduced chemical residues. Equipment requires a high capital cost.

Nitric oxide as a fumigant for postharvest pest control and its safety to postharvest quality of fresh products

LIU

Nitric oxide (NO), is a potent fumigant against insects under ultralow oxygen conditions. Nitric oxide inhibits bacterial growth and enhances postharvest life of fruit and vegetables. It is effective against insects such as thrips, codling moth and mealy bug on apples. Nitric oxide reacts with oxygen to produce nitrogen dioxide (NO_2) and may cause damage to fumigated products. When fumigation chamber was flushed with nitrogen to dilute nitric oxide at the end of fumigation before opening fumigation chamber to ambient air, the fumigation did not cause any injury to fresh fruit and vegetables. Nitric oxide treatments are currently unregistered, and require a high capital cost.

Recommendations

The following IHC congress will be held in Turkey in 2018. Apart from picking up new trends and ideas in horticulture, as well as valuable information, the IHC congress offers a wonderful networking opportunity.

Programme managers and researchers are encouraged to attend the following congress. Turkey has a strong production and technical capability in our smaller industries such as cherries, apricots, figs and pomegranates, and for members of these industries, it will be insightful to arrange a tour to their production regions in conjunction with the symposium.

- We should place a higher priority on consumer studies in our industry.
- Make anthocyanin content a focus in our breeding programme.
- Investigate the relevance of Index of Adsorbance Difference (IAD) for stone fruit.
- Should researchers require more information on specific presentations, they can contact me for the contact details of the presenter. Seeing as we are commencing with a project for disinfestation of grain chinch bug using ethyl formate, we can learn from the New Zealand researchers' experience with this fumigant.

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Poland apple industry in crisis

HUGH CAMPBELL AND PETER DALL

A group of six intrepid South Africans and one Zimbabwean under the leadership of Peter Dall, undertook a technical tour to the apple production areas of Poland, Bodensee (Germany), Switzerland and South Tyrol (Italy). This article will mostly focus on Poland.

Poland, the fourth largest producer of apples in the world and by far the largest producer of apples in Europe, was in a state of shock when we arrived there in early October 2014. Many of the growers had lost their primary market overnight. The ban on imports of fruit and vegetables from EU Countries, Norway and Australia imposed by Russia meant that Polish growers had to find alternative markets for their 2014 apple crop estimated at 3,5 million tons as around 70% of their fresh apples (50% of the production processed) were traditionally marketed in Russia.

The main apple growing area in Poland around Skierniewice is basically very flat and is a patchwork of production blocks of 10 hectares. The average farm size of an apple producer is 10 hectares with no farms greater than 50 hectares in size. About one third of the apple production is seen to be highly productive producing around 80 tons per hectare with an average fruit size of in excess of 80 mm. The general orchard design was similar to what one saw in South Tyrol and Germany.

We visited numerous brand-new, state-of-the-art packsheds paid for by 75% subsidies (EU and Polish Government). These cooperative packsheds supported around 350 hectares of production and had packaging and storage capacity (with DCA) way beyond the present demand implying that there is huge scope for expansion.

Observations and lessons learnt

- One needs to diversify one's markets. It is very dangerous to rely on one market – no matter how successful one has been in the past. In a South African context, the need for access to a diversity of markets is critical.
- One must plant the best and newest commercially successful varieties that are in demand in a variety of markets. We visited the biggest nursery in Poland producing in excess of one million apple trees where the main varieties being made were focused on the Russian market and are not varieties demanded in Western Europe and other markets.
- One must always produce top quality fruit. Good quality fruit is always easier to sell.
- Often we require major catastrophes to catalyse change. After the 1987 freeze Poland lost 30% of their trees to winter damage. This created the opportunity to establish high density orchards on M9 Rootstock which helped the industry greatly. We need to be proactive and make the changes that are required timeously.
- Virtually all the apple plantings viewed in the countries visited were high density plantings (3 000 and more trees / hectare) on M9 rootstock. The fruit size, precocity and tree size benefits of M9 are very evident. South Africa needs to select the right apple rootstocks and develop these as fast as possible. We need to select no more than three main rootstocks.
- Mechanisation and the use of harvesting platforms. Self-propelled platforms were seen on all operations visited.
- Orchard floor management. Orchards are designed to accommodate machinery and are therefore very level allowing for platforms and spray rigs to spray at 8 – 10 km/h.

Pieter de Wet, Larry Whitfield and Peter Dall outside one of the many new packsheds with extensive cold storage facilities including DCA built in Poland (75% subsidy from the EU and Polish Government).

Adam Lajitjé, a large scale Polish farmer who farms on 50 ha and vice president of the Coop in a young apple block. Christo de Wet diligently recording in the background.

- Tree height is at 100 – 120% of row width. Platforms have allowed for the optimisation of tree height.
- Hail and shade netting. The general trend is to cover orchards for hail. All structures viewed were able to open and the structures were rather over-designed than under-designed.
- Subsidies are not always good. They often overcapitalise in one area at the expense of another.

Tafeldruiwe toediening

Tafeldruifprodusente moet deur die seisoen baie plantgroeireguleerders en chemiese produkte spuit om 'n mooi gesonde tros druiwe te kan bemark.

Die eweredige ontwikkeling van bot aan die begin van die seisoen, korreluitdunning, korrelvergroting asook kleurontwikkeling deur die seisoen, dra baie by tot 'n suksesvolle oes.

'n Groot deel van die sukses om die goeie reguleerders en chemie op die teiken te plaas, is om ook 'n goeie spuitpomp te gebruik.

RovicLeers het die afgelope 4 jaar baie navorsing in tafeldruiwe gedoen om die produkte wat gespuit moet word suksesvol op die teiken te spuit.

Vanuit die Oranjerivier, Olifantrivier, Bergrivier en De Doorns is gewys dat die Cima spuitpomp van RovicLeers aan die behoefte voldoen.

Die Cima met die sentrifugale waaier kan voorsien word met verstelbare "fishtails" wat dit baie maklik maak om produkte op die regte teiken wat gespuit moet word te rig. Die "fishtails" kan verstel word om of op die blare of op die trosse gerig te word.

Proewe wat op tafeldruiwe in die Noord - en Wes-Kaap gespuit is, het bewys dat die Cima in staat is om tot baie lae volumes die produk op die teiken te kan plaas. Om die optimale werking van goeie produkte op tafeldruiwe te verseker, behoort produsente die produkte ook goed aan te wend.

Toediening met kleurstof teen 500L per hektaar. Wys egalige herwinning van aktief wat onder UV ligte in die aand afgeneem is.

Cima met verstelbare spuitkoppe (fishtails) gebruik in kleurstof toets.

A rose by any other name?

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A new EPN and its associated bacteria named and described for South Africa: *Heterorhabditis noenieputensis* and *Photorhabdus luminescens* subsp. *noenieputensis*

ANTOINETTE MALAN

Entomophilic, which literally means 'insect-loving', has previously been used to describe nematodes associated with insects. As nematodes are often parasites of insects that lead to the death of the insects concerned, the name entomophilic seems bizarrely inappropriate. The descriptor for these nematodes was changed to 'entomogenous', in an attempt to include the parasitic nematodes within the nomenclature. This term, which is generally used in Mycology, means 'growing on insects'. Later, the term 'entomoparasitic' was used to describe the parasitic nematodes. However, as, in the case of steinernematids and heterorhabditids, they kill the insect by transmitting a disease, rather than killing the insect directly themselves, the term 'entomopathogenic nematodes' has been adopted as the appropriate descriptor. The acronym for this name, i.e. EPN, has been universally adopted to refer to the nematodes involved (Nguyen & Hunt, 2007).

Few people may, as yet, have heard of Noenieput, a little settlement in the Northern Cape Province, close to the south-eastern portion of the Namibian border. Elma Carstens, of Citrus Research International, took a soil sample underneath a garden fig tree on their farm which is close to Noenieput, which seems to be located in the middle of nowhere (Fig. 1 right). The soil was trapped with insects at the Department of Conservation Ecology and Entomology at Stellenbosch University for the presence of EPN, and, surprisingly enough, a new species of insect pathogenic nematode was discovered. Not only was the nematode new to science, but so, too, were the symbiotic bacteria associated with it.

Fig. 1. *Origin of* Heterorhabditis noenieputensis, *at the settlement of Noenieput close to the Namibian border.*

During the process of describing this new species, it seemed fit to give it the impressive name of *Heterorhabditis noenieputensis.* Overseas reviewers of the scientific paper expressed their dissatisfaction with the name, as they found it to be unpronounceable, but, despite such negative criticism, the paper was published with the name as such. The symbiotic bacteria associated with the nematode were then described in collaboration with the Department of Microbiology, and, so as to ease up on the situation, the scientific name of *Photorhabdus luminescens* subsp. *noenieputensis* was given.

During the study of the nematode and its associated bacteria, an interesting phenomenon was found to occur, notably that, when an insect is infected with the nematode, the bacteria cause it to glow in the dark. Bioluminescence is the production of light by a living organism and refer to in the 'luminescens' part of the name of the bacterium. This bioluminescence can only be observed with the naked eye after sitting in absolute darkness for a length of time, or by means of a special microscope (Fig. 2, left).

To conclude, even though the nature of things is more important than what they are called, in the case EPN and our new nematode, naming is also of extreme importance.

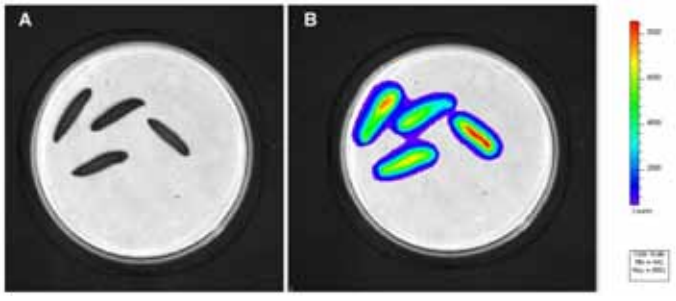

Fig. 2. *A. Nematode and bacteria infected wax moth larvae as seen with the naked eye. B. The same larvae photographed by a special microscope, showing their glow in the dark capability.*
(Photo: The IVIS bioluminescence and fluorescence in vivo imaging system of the Department of Microbiology).

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Advances and opportunities in olive production: PART 1

CARLO COSTA *ARC Infruitec-Nietvoorbij, Stellenbosch | costac@arc.agric.za*

Olives and olive oil have been an integral and basic part of the diet of the peoples around the Mediterranean Sea for thousands of years. A better understanding of the health benefits of both olive oil and table olives, as attested by an abundance of scientific and popular publications over the past 25 years, has led to growing consumer awareness and increasing demand for olive products. The olive industry worldwide and also in South Africa has, as a result, expanded dramatically in recent years.

South Africa is currently a small player on the international olive stage, with a total production of about 10 000 tons of fresh olive fruit in 2013 compared to a total world production of over 15 million tons. Spain, Italy, Greece and Turkey are the leading producers. Around 90% of world production goes towards extraction of olive oil and about 10% into table olive processing, whereas in South Africa around 60% goes into olive oil production. About 6 tons of fresh olives are required to produce 1 ton of olive oil. Local production is estimated to be around 1 000 tons of olive oil per year valued at R50m and 3 000 tons of table olives valued at about R50m, giving a total local olive production value around R100m. Over 95% of South African olive production is marketed locally with exports only just at the initial "testing the water" stage. The local market is still dominated by cheap, subsidised, usually sub-standard imports valued at around R100m sold annually.

Food security and health

A food crop like olives which can be grown relatively easily and efficiently for the production of high energy and high health value, will have an increasingly important role to play regarding food security. Naturally cured table olives are a convenient source of olive oil and are in fact an even richer source of the beneficial anti-oxidants like oleuropein and hydoxytrosol. Olive oil contains on average over 70% mono-unsaturated oleic acid which is known to have numerous positive effects on human health. Naturally cured table olives have an additional pro-biotic advantage.

The health and flavour benefits from olive products, especially extra virgin olive oil, are largely derived from fresh, sound, good quality fruit, extracted and handled with care, and sold while still fresh, while oil made from over-ripe, rancid, fruit-fly infested, oxidised fruit, and stored for a number of seasons, has lost those benefits. Much of the oil produced around the Mediterranean Sea unfortunately falls into the latter category and has to be chemically refined and blended. Once consumers have been exposed to the wonderful flavours of fresh, good quality, genuine extra virgin olive oil the cheaper alternatives lose much of their appeal. As people are becoming more health conscious and environmentally aware, demand for high quality naturally produced olive products will increase.

The Table olive cultivar 'Mission' at the beginning of the colour change stage, Tulbagh.

Moving from imports to exports

South Africa has built an excellent reputation as a producer of top quality extra virgin olive oils, with locally produced oils consistently performing very well in international competitions. The discerning South African consumer is slowly learning to appreciate the fact that in the case of olive oil, cheapest is not the best and that quality costs a little more. Local demand for such products is however limited and so producers will have to seriously look at the export market where informed consumers are prepared to pay premium prices for genuine, fresh, high quality olive oil.

Hand harvesting of ultra-high density 'Maurino' oil olives onto nets, facilitated by plastic rakes. Oakhurst, Tulbagh.

The cultivar 'Nocellara del Belice' at the green stage, used for flavourful top quality olive oil or green table olives.

Growers in Europe and some other major producing countries are subsidised to keep them on the farms, but changes in policies in Europe should result in opportunities for olive growers in South Africa. Although the current poor economic situation has increased input costs of all local [MN1] agricultural production, our weak rand provides opportunities to local growers and processors for the export of standardised high quality olive products. Imports are also becoming more expensive resulting in local olive products being more competitively priced. However, labour-related political challenges are not encouraging long-term investments into agricultural projects with high labour demands. Growers see the solution as moving to increased mechanisation, which is becoming more attainable with advances in technology.

By applying the latest technology, from the choice of cultivars through more intensive orchard planting systems and by improving production efficiency, South African olive oil can be more price-competitive in the market and thus not only replace imports significantly but allow competitive exports of high quality products. Australia and Chile are young producers whose industries have expanded rapidly over the last decade and are now actively exporting into new consuming countries such as Japan and Canada respectively.

South Africa therefore has the potential to expand production of both high quality olive oil and table olives and capture selective export markets especially if supported by a strong marketing drive to inform and educate consumers, and supported by national and provincial government.

Climate change, water scarcity and water use efficiency

Olives are one of the most efficient crops regarding utilisation of water and conversion into high energy foodstuff and this hardy evergreen permanent crop can make a significant contribution to alleviate the impact of climate change.

Olives are adapted to the kind of climatic conditions envisioned to occur in future in the greater parts of the traditional fruit growing regions of the Western Cape. Because of its leaf structure and physiological adaptations, the olive tree is able to function at higher temperatures than most other fruit kinds. The olive tree, being evergreen and a long-lived

The oil cultivar, 'Frantoio' harvested by hand into bulk bins. Bonnievale area.

crop, is able to fix atmospheric carbon very efficiently into its permanent structure. It is also able to cope with water shortages and recover more readily from such drought periods compared to other fruit trees. It is able to tolerate strong winds without much damage or loss to fruit yields or quality easier than most fruit. The olive has a low chilling requirement for dormancy release and so a slight increase in mean winter temperature will allow olives to be grown in areas which have become too warm for traditional deciduous fruit crops. [MN2] A shift in rainfall patterns, with autumn rainfall occurring much later than normal, will give olive growers the opportu-

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nity to complete the harvesting of their crop much sooner, with much lower risk of fruit spoilage from fungal disease infection.

Whatever the speculated climate change scenario, there can be no denying that water for agriculture is becoming a scarcer commodity and will raise input costs to growers.

Although olives can survive in very dry conditions, it was found that irrigation has economic advantages and improves yield, quality and regularity of production. Over 90% of the world's olive oil is produced in the drier countries around the Mediterranean Sea, where many of the orchards are managed according to traditional farming practices. Trees are generally planted extensively in arid conditions without irrigation and crops are generally poor. By comparison, most olive orchards in South Africa are recently planted, irrigated and managed more intensively.

Modern methods of irrigation using computerised programmes, linked to capacitance probes and real time continuous dataloggers, long-term weather forecasts and the use of regulated deficit technology at specific critical phenological stages have been applied with success on olives helping use water most efficiently, reduce water usage, reduce pumping time and electricity costs and maintain yields and improve fruit and oil quality. Combined with a well-planned fertiliser application programme, fertigation through such an irrigation system and foliar sprays when necessary, optimises nutrient uptake and allocation.[MN3]

Reducing the labour headache – mechanisation, job creation or both?

Harvesting of olives is labour intensive and this has some advantages in terms of local job creation. In many overseas countries it is no longer economically viable to harvest the old traditional orchards.

Although the timing of olive harvesting is more flexible than that of deciduous fruit, labour of harvesting table olives by hand remains the biggest input cost. In order for this industry to survive, these costs have to be reduced by facilitating the harvesting actions. However, if the arduous tasks can be replaced by jobs requiring skill, through application of technology, meaningful and more efficient jobs can be created.

The most efficient method of harvesting oil olives is the "superintensive" system developed in Spain, which requires more capital and skill initially, but in the long run is more viable. Here specifically adapted cultivars and planting systems are integrated with the over-the-row modified wine grape harvesting machine. This system is gaining popularity worldwide and also successfully implemented locally. At present mechanical harvesting of table olives is under development in Europe and shows promise. Cultivars being developed for mechanical harvesting require a combination of many characteristics and need to be adapted to more efficient planting and training systems. These include smaller, less woody, low vigour trees, with softer growth and bearing habit, large, firm fruit resistant to bruising, ripening uniformly, and having a low fruit removal force for easy detachment.

In the meanwhile, until table olives can be mechanically harvested, hand harvesting must be made easier and more cost effective by improved olive genotypes. Each of the characteristics sought in combination for mechanical harvesting, can also individually contribute to facilitate hand harvesting. A cultivar development programme with these goals will therefore have both short and long term advantages. The possible use of trailed or self-driven picking /pruning platforms as is being assessed by the deciduous fruit in-

The high quality Table Olive cultivar ' Kalamata', shortly before harvest, Lemoendrif, Tulbagh.

over-the-row equipment will become far more efficient, less wasteful and less harmful to the environment by eliminating drift. More disease resistant genotypes currently under development will contribute to more sustainable olive production.

Reducing the alternate bearing tendency

The modern orchard systems as described above entails a sound integration of genotypes, intensive planting system, early and continual tree training, regular selective light summer pruning, programmed fertigation linked to development stage and age of tree, and efficient pest and disease control. Alternate bearing is a survival mechanism. In nature or in poorly managed orchards, fruit development takes place at the expense of shoot growth. During spring, the developing fruit load competes with shoot growth on an increasing scale until the fruit get the upper hand. This results in no or very few sites being available for flowering the next season. Floral initiation occurs by the middle of summer (end of December). This is the time of stone-hardening of the developing fruit-

lets. In order to provide the necessary sites for the following year's flowers, shoot growth needs to be of sufficient length at this time. This can only happen under a regime of good orchard management.

Smaller cuts done at the right time in the growing season will eliminate alternate bearing to a large extent, while large pruning cuts into old wood especially if done after harvest, stimulate vigorous unproductive shoot growth.

Before a heavy bloom of an "on-year", shoot growth should be encouraged as early as possible in spring, while a portion of dense flowering trusses should be removed. In table olive production, it is important to obtain high yields of large sized fruit regularly every year. In order to obtain regular cropping there must be sufficient shoot growth during spring to serve as flowering sites for the following year. These bearers should be distributed over the entire tree and must not be excessively vigorous.

A certain number of fruit of optimum size can be borne on a year old shoot of a specific ideal length. By managing the number of such shoots on each central leader, yield, fruit quality and ripening uniformity can be more predictable. Since individual fruit is currently harvested by hand, it is worthwhile giving much more attention to optimising fruit load and so reduce harvesting cost and effort. Small fruit complicates the harvesting of premium priced larger fruit, they are likely to soften or become infected by fungal diseases before they size up and have to be diverted to the oil mill. Harvesting such fruit individually by hand is most uneconomical. It is far more prudent to manage crop load by managing shoot growth.

Conclusion

The South African olive industry is very small compared to that in the rest of the world, but it is built on sound principles, modern technology and good infrastructure. Technology should be developed further to allow increasing competitiveness and growth in the industry in order that South Africa reaches its potential of becoming a significant player on the world olive stage.

EXTENSION BRIEFS FOR FEB & MARCH 2015

H.F. LE ROUX & J.J. BESTER Citrus Research International

INTEGRATED PEST MANAGEMENT

Mealybug S.D. MOORE

Growers should be scouting for mealybug regularly, by inspecting underneath calyces and thereby determining percentage of fruit infested. The most effective way of doing this is to break the fruit off from the calyx. Both the fruit and the underside of the calyx should then be inspected. Where mealybug is under good biocontrol, infestation should peak during December in the northern production areas and during January in the Cape production areas. If mealybug infestation does not decline during January and February, respectively, suppression with a chemical treatment is advisable on early maturing cultivars. Trial results have demonstrated that buprofezin (Applaud) is by far the most effective corrective option for mealybug control. It is imperative that any application of buprofezin be targeted against the younger stages of mealybug, i.e. eggs, crawlers and second instars. Where buprofezin cannot be used, methomyl and chlorpyrifos can be used if preharvest intervals allow.

This is also a good time to determine which species of mealybug are present. This is important, as it appears that the biocontrol complexes of oleander mealybug and longtailed mealybug, in particular, might not be as effective as those of citrus mealybug. Therefore, treatments can be applied more readily when either of these species is identified as the dominant species in a particular orchard. The phytosanitary status of certain species must also be borne in mind.

False codling moth S.D. MOORE

Effective false codling moth (FCM) control begins in November or even October with diligent orchard sanitation and the application of a registered control treatment. Follow up treatments should be applied as often as necessary, bearing in mind that there is zero tolerance for FCM by certain markets, making the decision a phytosanitary one rather than an economic one. It is also imperative to refrain from using broad-spectrum long-residual pesticides (most often used for thrips control) as early as possible in the season. Naturally occurring egg parasitoids can be extremely effective in reducing FCM levels and one should therefore conserve them.

Granulovirus products (Cryptogran, Cryptex and Gratham), Delegate and Broadband (a new registration *(Beauveria bassiana)*) are the only pesticide sprays for FCM, which are permitted in all markets. The granuloviruses can be used up until the day of harvesting, whereas Delegate has a 7-day withholding period. A virus application should be applied shortly after a peak in FCM activity, determined by the use of a pheromone trap. However, this may be difficult to determine late in the season when FCM levels are low and generations are overlapping. Note that due to high levels of UV irradiation in the Clanwilliam and Piketberg magisterial districts of the Western Cape and in the Northern Cape, problems may be experienced with the efficacy of virus applied in these areas during February and March. The use of Cryptogran should therefore ideally be used in these areas before the beginning of December and again after March. This problem does not exist in the rest of the country and therefore the caution is limited to the abovementioned areas.

Delegate is registered as a double-application, 8 and 4 weeks before harvest. However, even a single application will have a good effect. Coragen (Rynaxypyr) also has a 7-day withholding period for most markets, bar Japan and Taiwan, where 90% petal drop applies, albeit only for Mandarins in the case of Japan. Coragen is recommended to be applied once or twice, from as early as 16 weeks before harvest and never at more than 8 500 L per hectare. Runner is registered to be applied not more than twice in a season and has a withholding period of 30 days for all markets except Taiwan. Bear in mind that the use of triflumuron (Alsystin) and teflubenzuron (Nomolt) is restricted to not later than 90% petal fall for several important markets, making them relatively ineffective for protection of the in-season crop. Also note that the withholding period for fenpropathrin (Meothrin), which is 28 days for most markets, is 185 days for certain markets and cultivars. Cypermethrin (other than alpha- and zeta-cypermethrin) is not allowed on fruit destined for the USA market, but is permitted in other markets with a withholding period of 28 days.

Broadband is registered to be sprayed no fewer than three times in a season. It is suggested that if growers wish to use this product, that they should only do so within an integrated programme, as the efficacy of the product alone may not be sufficient.

In addition to the insecticides, there are two mating disruption products – Isomate and Checkmate – and an attract and kill product, namely Last-Call FCM. However, all of these products are most effective when their use is initiated early in the season while FCM levels are still low. If this has not been done, initiation of their use late in the season is not recommended. Additionally, as the weather cools towards autumn, these pheromone-based products may become less effective due to a reduction in release rate. In such a case it may be necessary to follow up these treatments with a spray for FCM.

Early maturing mandarins, such as Satsumas, which will be harvested during March, should be strongly considered for a registered spray treatment for FCM during February, i.e. approximately four weeks before harvest. An effective treatment at this

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time should reduce post-harvest risks associated with FCM.

Bud mite T.G. GROUT

The period February to May is the optimal time for bud mite sprays and Mitigate (fenpyroximate) can be used during this period at 150 ml per 100 L water. The preharvest interval for most countries is 28 days but for Canada and for citrus types other than mandarins going to South Korea the preharvest interval is 150 days, or no applications after the end of October. Orchards with fruit going to markets that do not have an MRL can be sprayed immediately after removing all fruit in winter. In trials with Mitigate, this product was found to have similar efficacy to Acarol against bud mite so although a spray after harvest is not at the optimal time it will still have more impact against this pest than other unregistered options. Mitigate will also suppress citrus red mite when sprayed during autumn for bud mite and CRI research has shown that it is also effective against citrus grey mite.

Fruit fly A. MANRAKHAN

Fruit flies are pests of phytosanitary concern. There is a zero tolerance of fruit fly larvae and eggs in fruit consignments for export. Prior to 2013, fruit fly management practices focused on two indigenous pests of citrus: *Ceratitis capitata* (Mediterranean fruit fly or Medfly) and *Ceratitis rosa* (Natal fly). In 2013, a new invasive fruit fly pest - *Bactrocera invadens* recently synonymised with *Bactrocera dorsalis* (Oriental fruit fly) was declared present in the Vhembe district in the Limpopo Province of South Africa. Throughout most of 2013 and 2014, *Bactrocera dorsalis* specimens were continuously detected also in the remaining districts of Limpopo Province as well as in some districts of the other Provinces in the north of South Africa: North-West (Ngaka Modiri Molema & Platinum districts), Mpumalanga (Ehlanzeni district), KwaZulu-Natal (ilembe, Harry Gwala, Ugu, uMkhanyakude, uThungulu districts) and Gauteng (City of Tshwane Metropolitan district). All affected areas were placed under quarantine and the Department of Agriculture, Forestry and Fisheries (DAFF) have been conducting delimiting surveys and control actions in these areas in accordance with the South African *Bactrocera invadens* Action Plan. In areas affected by *B. dorsalis,* additional control practices would have to be implemented in the fruit fly management programme.

Fruit fly management practices should be initiated two months before the earliest expected harvest date. However for farms either with mixed fruit crops (such as mangoes or deciduous fruit) or near fruit types prone to high fruit fly infestation, fruit fly management practices should be implemented even earlier in line with the ripening and harvesting of the other fruit types. The fruit fly management package consists of two components: monitoring and control.

Monitoring of Medfly and Natal fly should be carried out using Capilure and Questlure baited Sensus traps. Monitoring of *B. dorsalis* per Production Unit Code (PUC) is a requirement for phytosanitary registration of citrus, deciduous and subtropical fruit for export to the special markets (USA, Japan, South Korea, China and the European Union - EU). Monitoring of *B. dorsalis* is conducted using bucket type traps such as Chempac Bucket trap, Moroccan trap and Lynfield trap baited with Methyl Eugenol (ME). Each PUC should have at least one ME baited trap for monitoring of *B. dorsalis.* Trapping guidelines for surveillance of *B. dorsalis* in fruit production areas should be followed. Guidelines are available at http://www.daff.gov.za under Plant Health Division or at http://www.citrusres.com/market-access. Trap details and trap servicing should be recorded as per trapping guidelines. All trapping results should be supplied to Early Warning Systems (e-mail: janhendrikv@daff.gov.za) at the end of each export season. Trapping density should be between 2 and 5 traps per 100 ha in areas where *B. dorsalis* is considered present or where *B. dorsalis* specimens were detected. All fruit fly traps must be checked weekly and trapping records should be documented. Lures and insecticides inside traps must be replaced every 6-8 weeks. Traps are used to determine the presence/absence of a fruit fly pest and to indicate whether the control strategy is adequate. Detection of suspect *B. dorsalis* specimens in areas considered free of this pest should be reported immediately to the relevant surveillance co-ordinator or to DAFF (Citrus- Aruna Manrakhan: aruna@cri.co.za, 013 759 8000; Deciduous- Leslie Brown: Leslie@hortgro.co.za, 082 853 1471; DAFF- Jan Hendrik Venter: janhendrikv@daff.gov.za, 012 319 6384). Trap thresholds should be adhered to. For Medfly, the threshold in a Capilure baited trap is 4 males per week. For Natal fly, the threshold in a Capilure baited trap is 2 males per week. When using Questlure in a Sensus trap, the threshold is one female fly per trap per week for both Medfly and Natal fly. In areas affected by *B. dorsalis,* catches should preferably be kept below 7 flies per trap per week. If trap thresholds are exceeded, control actions must be increased.

Fruit fly baiting and good orchard sanitation form the core of fruit fly control practices. For fruit fly baiting, the use of either one or a combination of the following methods are recommended: weekly protein hydrolysate bait sprays, weekly GF-120 sprays and M3 bait stations. For the use of malathion in bait sprays, there is a pre-harvest interval of 28 days. For Medfly and Natal fly, Last Call FF is also available as an additional control method. In areas affected by *B. dorsalis,* the Male Annihilation Technique (MAT) must be used to control *B. dorsalis* males in addition to normal baiting. In MAT, *B. dorsalis* males are targeted using ME and killed by an insecticide incorporated with ME. With high levels of male kills, the number of matings

and therefore viable offspring are reduced. A number of male annihilation methods such as wooden fibre blocks impregnated with ME and malathion (e.g. Invader-b-Lok, B.i ToolKit), SPLAT technology containing ME and spinosad such as STATIC Spinosad ME and gels containing ME and permethrin (e.g. Last Call B.i) have been registered for *B. dorsalis* control in South Africa. All fruit fly control products have to be applied correctly. Instructions provided in labels of control products must be followed strictly. Fruit fly control must always be combined with proper management of insect pests such as FCM, which also damages mature fruit.

In all *B. dorsalis* quarantine areas a removal permit is required for movement of fruit outside those areas. Applications for removal permits should be made through DAFF. The contact person at DAFF is: Mercia Rossouw. Tel: 012 319 6333/6081. Email: MerciaR@nda.agric.za or DebraM@daff.gov.za.

GRONDGEDRAAGDE SIEKTES

M.C. PRETORIUS

Grond en wortelmonsters behoort elke drie jaar geneem te word om sodoende die sitrusaalwurm en Phytophthora status in sitrusboorde te bepaal. Resultate sal dien as `n bestuurshulpmiddel wat gebruik kan word om grondpatogene effektief te beheer.

Phytophthora bruinvrot/wortelvrot

Weens die gevaar van fitotoksisiteit op gevoelige sitruskultivars tydens hoë temperature, wat gedurende Februarie / Maart kan voorkom, moet die gebruik van fosfonaatblaarbespuiting streng volgens die etiket geskied (***geen sagtesitrus kultivars*** - behoort weens hul gevoelige skille gedurende hierdie tyd van die jaar en met die produkte gespuit te word nie). Hoë dag temperature, tydelike vogstremming en warm bergwinde kan veroorsaak dat fosfonate swart stippeltjies soortgelyk aan koperskade op vrugte veroorsaak. Bome moet daarom nie gespuit word as toestande nie optimaal is nie. 'n Wortelvrot beheerprogram (blaarbespuiting) sal bruinvrot ook effektief kan beheer.

Bruinvrot ontwikkel slegs wanneer die klimaatstoestande gunstig is vir die patogeen *(Phytophthora)* om te infekteer en te ontwikkel. ***Indien dit dus 'n droë najaar is en geen of slegs ligte reënbuie voorkom, is voorkomende fosfonaatblaarbespuitings nie nodig nie.*** Indien dit egter 'n nat najaar is kan bome met kontakmiddels soos koper of mancozeb (let op beperkings na markte) asook sistemiese produkte soos fosfonate (let op etiket aanbevelings vir weerhoudingstydperk en waarskuwings), gespuit word om bruinvrot te beheer. Bo en behalwe droogte en hitte kan 'n oormaat vogtige toestande (baie reën) ook bome onder tydelike verwelkte toestande plaas wat 'n gevaar inhou vir blaarbespuitings. Bome moet dus nie tydens of kort na sulke toestande gespuit word nie. Laastens beïnvloed drag ook 'n boom se gevoeligheid vir droogtespanning. Hoe hoër die drag, hoe gevoeliger is die boom vir uitdroging en hoe groter is die risiko vir fitotoksisiteit.

Sitrusaalwurm

Wortelmonsters kan enige tyd van die jaar getrek word om die status van die sitrusaalwurmpopulasies in boorde te bepaal. Wyfietellings word gebruik om te bepaal of die toediening van 'n aalwurmdoder geregverdig is. Die drempelwaarde voordat 'n aalwurmdoder oorweeg word is 1 000 wyfies/10 g wortels. Daar word aanbeveel dat aalwurmdodertoedienings 'n aanvang neem tydens die begin van die reënseisoen. Dit sou daarom die regte tyd wees vir produsente in die Wes-Kaap om hulle aalwurmmonsters in Maart te trek sodat hulle weet watter boorde om te behandel wanneer winterreëns begin. Residu-weerhoudingstydperke moet in ag geneem word. Dit is belangrik om 'n aalwurmbeheer**program** te volg aangesien 'n ***enkele aalwumdodertoediening*** nie effektief genoeg is nie en het geen noemenswaardige onderdrukking van die aalwurmpopulasies op die lang duur nie. Meermalige toedienings twee maande uit mekaar verseker dat die larfies wat uitbroei gedood word voordat hulle volwasse wyfies kan raak wat weer eiertjies kan lê.

Tydens die toediening van aalwurmdoders is dit ***uiters belangrik dat ten minste 40 mm besproeiing t***oegedien word nadat produkte toegedien is om te verseker dat die middels in die grondprofiel ingewas word. Die meeste aalwurmdoders loog baie stadig. Die effektiwiteit van die doders word dus belemmer indien hulle nie behoorlik deur die wortelsone versprei word nie. Geen aalwurmdoder behoort deur drupbesproeiingstelsels toegedien te word nie. Indien toedienings in boorde met druptoediening gedoen moet word behoort die middels as 'n bandplasing (half meter aan beide kante van die drupperlyn) oor die drupperlyn gedoen te word. Dit kan wel deur mikro-besproeiingstelsels toegedien word.

Indien beplan word om 'n boord te verwyder behoort 'n aalwurmmonster geneem te word voordat die boord verwyder word sodat bepaal kan word of sitrusaalwurms teenwoordig is. Dit dien as 'n bestuursriglyn om 'n geskikte onderstam te kies in gevalle waar 'n herplantstrategie uitgewerk moet word.

HORTICULTURE

Fruit production and quality

P.J.R. CRONJE, O.P.J. STANDER

Internal quality: If properly timed, regulated deficit irrigation can result in increased total soluble solids (TSS) and an increase or no response in titratable acidity. Deficit irrigation retards the breakdown of acid and can influence the solids:acid ratio at harvest for better or worse, depending on cultivar characteristics. It is mainly aimed at early cultivars like Satsuma, but other early maturing cultivars with low internal quality could benefit. Less

water is applied, and at longer intervals. Therefore, irrigation is continued but at a reduced level. Trees should be irrigated lightly two weeks prior to harvest. No water stress should be imposed during the initial growth phase of the fruit, i.e., during and after flowering, but only during the final maturation phase, i.e., the last two months prior to harvest (January for Satsuma). Any water stress earlier than the end of January could lead to reduced fruit size and loss of rind integrity. In high rainfall areas, regulated deficit irrigation may not be successful. The deficit should be imposed slowly, so that the trees can adjust without symptoms of drought. Severe water stress can have adverse effects on tree health, fruit size and fruit quality. High nitrogen is antagonistic to the effect of deficit irrigation. Management of this technique is much easier when trees are planted on ridges and when the right scheduling equipment is used. Additionally, regulated deficit irrigation imposed the last two months prior to harvest also enhances the rate of colour development. Selective harvest of outside fruit and delaying harvest of inside fruit will result in a higher proportion of fruit with higher TSS and better colour.

Maturity indexing on early cultivars like Satsuma should commence. Maturity indexing is done to predict the rate of change in fruit maturity in order to harvest fruit at optimal maturity, to maintain acceptable commercial shelf life. The aim is to define changes or rate of change in acids and sugars and to build up a data base over a number of years for comparison. Random sampling of fruit every week from each of ten representative trees should start 4 to 6 weeks before the expected harvest date. Titratable acidity is determined by titration with sodium hydroxide, sugar content (Brix) is determined using a refractometer, the sugar:acid ratio calculated and fruit colour should be read from a colour chart. All the parameters mentioned above should be plotted on a graph over time. Once plotted, trends will become apparent, harvest dates can be estimated and problem areas in internal and external quality parameters can be identified and manipulated.

Fruit growth and size

Fruit growth during this time is important to achieve optimum size at harvest. Ensure optimal irrigation and try to avoid stress conditions, as this might have an adverse effect on fruit size. Fruit thinning plays a critical role in fruit size. Correct pruning practices are the most effective way to manipulate the number of fruit per canopy volume and the eventual fruit size.

Regrowth control should be done, especially after heavy pruning earlier in the season. A lot of regrowth adversely affects fruit size and is antagonistic to fruit colour development, especially for early maturing cultivars.

Oleocellosis: Late summer vegetative growth of bearing trees should be kept to a minimum as excessive vegetative vigour during this period is associated with high incidence of oleo at harvest.

Rind colour development: Late nitrogen application and the use of heavy summer oil sprays should be avoided as these treatments are antagonistic to rind colour development.

GEÏNTEGREERDE BEMESTING

T. VAHRMEIJER

Blaar- en grondontledings

By sitrus word blaar- en grondmonsters gedurende Februarie tot Mei geneem maar die periode kan tot Julie verleng word. Die enigste probleem met monsters wat in Julie geneem word, is die beperkte tyd om die resultate betyds te verskaf sodat met bemesting in Julie/Augustus begin kan word.

Geen ontleding, hoe gesofistikeerd ookal, kan die kwaliteit van die monster verbeter nie. Bestee dus tyd, energie en aandag aan die monsternemingsproses. Op grond van die resultate van dié monsters word baie geld aan kunsmis bestee, terwyl die oes ook benadeel kan word. Monster elke jaar dieselfde groep bome (Indeksbome) en hou by dieselfde prosedure en tyd. Soos by enige monster moet dit die eenheid wat gemonster word, in alle opsigte verteenwoordig.

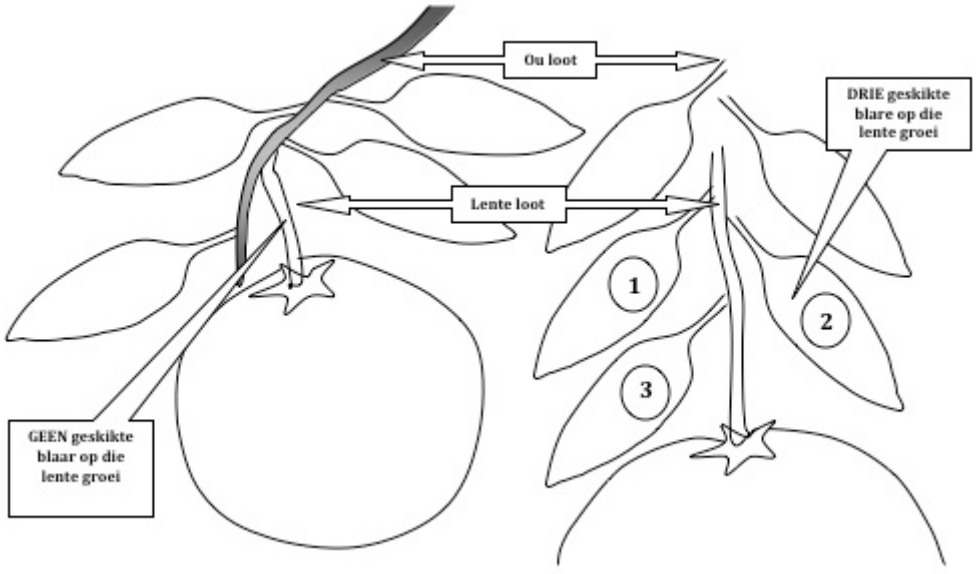
Leaf analyses

Leaf analyses are an indicator of the nutritional status of the trees. During the research into this method a relationship was established between the concentration of the nutrient elements in the leaves and production. This relationship was developed for almost every nutrient element. For some like chloride and sodium only the maximum tolerable concentration was determined.

Let ook op die volgende spesifieke vereistes:

- Verdeel die boorde in monster-eenhede, verkieslik nie groter as 5 ha nie.
- Kies twee of vier INDEKS-RYE wat die monster-eenheid in alle opsigte verteenwoordig en merk die rye.
- Gebruik elke jaar dieselfde indeksrye om blaar- en grondmonsters te neem.
- Pluk sowat 50 tot 75 blare per monster deur aan die linker- en regterkant (son- en skadukant) tussen heup- en kophoogte, blare te pluk.
- Pluk blare van agter 'n vrug, wat op dieselfde takkie as die vrug, en in die lente gevorm is (Figuur 1).
- Pluk die blaarmonsters gedurende Februarie tot Mei.
- Plaas die blare in 'n skoon plastiek sakkie, druk die lug uit en knoop toe.
- Merk die monsters deur 'n etiket op die sakkie te plak of aan die sakkie te bind.

Ensure that the correct leaf is picked from the trees in the index rows or blocks. The correct leaf is one that was formed during the previous spring and situated behind a fruit on



Figuur 1. *Voorstelling van die soort blaar wat vir blaarontleding geneem moet word.*

the same twig as the fruit. Collect 50 to 100 leaves per sample. Take the soil sample at the same index trees. Collect 15 to 20 subsamples, mix and submit 500 g of the composite samples for analyses.

If the soil was sampled, prepared and fertilized properly before planting, it is not necessary to take leaf samples from non-bearing trees. However it is never too early to monitor the nutritional status.

Grondmonsters

Grondontledings verskaf inligting wat help om te besluit watter stappe geneem kan word om tekorte, wanbalanse en oormate in die voedingstatus van die bome reg te stel. Met 'n grondontleding word gepoog om binne sekondes of minute 'n massa van die voedingstowwe uit die grond te ekstraheer, wat die bome in 8 - 10 maande sal opneem. Elke metode wat gebruik word, het dus net waarde indien dit gekalibreer is en presies so uitgevoer word, soos wat dit in die kalibrasie gebruik is.

Neem van grondmonsters vir bemestingsadvies

Die grondmonsters word in dieselfde indeksrye as die blaarmonsters soos volg geneem.

Monsterneming by mikrospuite

- Neem 'n submonster vanaf die oppervlak (verwyder slegs die blare, maar geen grond nie) tot 30 cm diep onder die blaarkap. Gebruik 'n graaf of monsterboor.
- Neem sowat 15 tot 20 submonsters by die bome in die indeksrye. Plaas dit in 'n plastiekemmer, meng deeglik en neem ±400 g en verpak vir versending na die laboratorium.
- Merk die monster met die boordnaam (u verwysing) of boordkode plus u besonderhede.

Soil sampling at drippers (Figure 2)

- Remove the top 5 cm of soil plus debris.
- Take the sub-sample from 5 to 30 cm deep.
- Take the sample between the dripper and the perimeter of the wetted zone. If the wetted zones of two adjacent drippers overlap, take the sub-sample between the two drippers.
- Collect 15 to 20 sub-samples at the index trees. Put the sub-samples in a plastic bucket, mix properly and retain ± 500 g for sending to the laboratory.
- Mark the samples with your name and that of the orchard plus all relevant information on a label and stick or tie it to the outside of the container.

Dit word sterk aanbeveel dat 'n submonster, 30 tot 60 cm diep, elke twee tot drie jaar geneem word om die grond-pH en opbouing van soute in die wortelsone te monitor.

POSTHARVEST PATHOLOGY – WASTE PREVENTION CHECKLIST

K.H. LESAR & ARNO ERASMUS

Sanitation: NB: For reducing fungal spore load, as well as keeping FCM and fruit fly under control – remove all fallen fruit and decayed fruit **from the orchard.** Bury or macerate fallen fruit and allow to dry in the sun away from the orchards. Remove dead wood from all citrus trees to reduce the spore load of the latent citrus pathogens.

Good fruit fly control: Use traps and bait regularly.

FCM: Apply preharvest treatments where trap counts and fruit drop due to FCM are high.

Skirt trees for brown rot control: Ensure that trees are adequately skirted, preventing low hanging fruit, especially in heavily laden trees, and thereby reducing the risk of *Phytophthora* brown rot infection during the rainfall season.

DO NOT PACK ANY FALLEN FRUIT THAT COULD BE INFECTED

Swaar reënval – *Phytophthora* bruinvrot waarskuwing!!!!

Phytophthora bruinvrot word versprei wanneer *Phytophthora nicotianae* of *P. citrophthora* spore tydens reën vanaf besmette grond op vrugte spat. Infeksie vind plaas en die vrug vrot na 'n tydperk van 4-6 dae. Dit gebeur dus dat geïnfekteerde vrugte gepluk en gepak kan word en tydens versending bruinvrot kan ontwikkel. 'n Enkele vrot vrug kan die hele karton vrugte besmet. Die swam penetreer die skil binne drie ure, dus is dit belangrik dat bruinvrot voorkomend in die boord, voór pluk, behandel word.

Prevent injuries: Test for injuries. "Indigo-Carmine" should be used for this purpose. Test both in the orchard and the packhouse.

NB: Ensure that proper picking practices are adopted. There are far too many injuries every season, resulting in unnecessary high waste levels.

Let Wel: Sorg dat gepaste plukpraktyke toegepas word. Plukbeserings veroorsaak elke seisoen onnodig hoë vlakke van bederf.

Apply packhouse fungicides with care and proper management: Check the mixing / application rates.

Packhouse sanitation:

- Never allow any fruit, and more importantly any fungicide-treated fruit, to lie around in

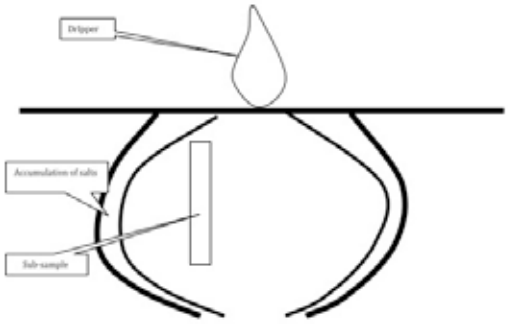


Figure 2. *Taking soil samples.*

the packhouse and develop spores.

• Constantly monitor concentrations of sanitisers in dump tanks, descaler water, rinses, etc.

• Spray the packhouse with sanitisers regularly and immediately after finding a single mouldy fruit.

• Spray trailers/picking bins with a suitable sanitiser before they leave for the orchard.

• Transport cartons to the ports as soon as possible and prevent packed fruit standing on the packhouse floor where it is hot. Green mould develops faster at 10°C than at 4.5°C.

• Store retention samples for each consignment and check regularly for waste and other developing factors.

The control of postharvest diseases on export citrus using the postharvest fungicide thiabendazole:

There seems to be a general reduction in the use of thiabendazole within the SA citrus industry. This is particularly alarming since latent pathogen infections have been observed in abundance during recent citrus production seasons.

Why use thiabendazole (TBZ)?

TBZ was the first fungicide registered (1960s) for the control of the Penicillium moulds and the latent pathogens, Diplodia stem-end rot, Phomopsis stem-end rot and Anthracnose on citrus fruit. TBZ and benomyl belong to the benzimidazole group of fungicides.

The benzimidazoles are distinguished from other traditional fungicides in that they control diseases both by contact and systemic action.

Due to the extensive preharvest application of benomyl for the control of citrus black spot and the postharvest application of TBZ for control of Penicillium, populations of Penicillium that were resistant to the benzimidazoles developed rapidly. There is therefore an unfortunate perception in the industry that TBZ is of no value in controlling important postharvest pathogens.

However, TBZ is still effective in controlling the latent pathogens on citrus: Diplodia stem-end rot, Phomopsis stem-end rot and Anthracnose. All export citrus should therefore be treated with TBZ.

Application of TBZ in the wax to fruit also reduces the risk of some physiological rind conditions developing on sensitive cultivars during storage and export, e.g. Chilling injury, pitting etc.

Guidelines for reducing the risk of chilling injury on grapefruit exported under extended cold sterilisation conditions:

Citrus in general is known to be sensitive to cold damage (chilling injury) during shipping and storage, but certain cultivars, with light or yellowish pigmentation (some soft citrus cultivars, lemons and grapefruit varieties), are particularly prone to chilling injury, especially when exposed to "cold sterilisation" temperatures. It is especially the yellow pigmented citrus cultivars viz. lemons, Marsh grapefruit, and even the yellow areas of Star Ruby and Rose grapefruit which are the most sensitive, as they do not contain the carotenoids which act as anti-oxidants that protect the fruit against chilling injury. The extended cold sterilisation treatment, as recently adopted by China (24d at -0.6°C), is particularly problematic. It is generally accepted that it is not feasible to export lemons under these conditions. Though grapefruit is also highly sensitive to chilling injury, the application of TBZ can reduce the risk of chilling injury.

Picking window

The South African grapefruit season, in the traditional production areas, extends from the middle of March to the end of June. The picking window for grapefruit is often manipulated in an attempt to access markets early or to extend the season. However, harvesting grapefruit too early in the season, when the fruit rind is still "immature" and also at or beyond the end of the season when the fruit is well coloured and "very mature", is when grapefruit is most sensitive to cold injury. It is a major risk to export such sensitive fruit to markets where cold sterilisation is a requirement.

Thorough maturity indexing is essential to determine the ideal harvesting window. Commencing 5 weeks before anticipated harvest, pick samples of grapefruit (20-25 fruit). Mark the representative trees (data trees from different rootstocks, selections, tree ages or microclimates). Evaluate and record average fruit colour and full internal quality assessments. Repeat every week until optimal harvest date, ensuring that the samples are drawn similarly for comparison. Plot the results on a graph to determine whether the season is early or late compared to the previous year, thereby determining the optimal picking window for the specific cultivar.

Commencement of export packing of grapefruit to "cold steri" markets should start 14 days later, as the rinds will still be too cold sensitive at the beginning of the normal optimal picking window. Harvesting of grapefruit for "cold-steri" markets should also not be extended beyond the end of the optimal picking window.

Post-harvest wilt conditioning

Conditioning (wilting) trials where Marsh grapefruit (exported to Japan) was "conditioned" for 2, 4 and 6 days at 16°C and 20°C prior to cold treatment, showed a dramatic reduction in the incidence of chilling injury relative to the non-conditioned control fruit. Unfortunately extending the time between packing and introduction into the cold chain can also increase the incidence of postharvest rind pitting and decay in sensitive fruit. Nonetheless, wilting at ambient for 7 days

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is part of the standard handling procedure for grapefruit exported to Japan and should be implemented by anybody wishing to risk exporting grapefruit under an extended cold treatment regime.

Postharvest shock conditioning

Although not developed to the point of being a practical standard recommendation, exploratory trials have indicated that various shock treatments may also be useful in conditioning grapefruit such that sensitivity to chilling injury is reduced. In these trials Marsh grapefruit was shock-treated by exposure to a high temperature (35°C) or a high level of CO_2 (10%) for 3 days prior to cold treatment (-0.6°C for 22 days). The incidence of chilling injury was dramatically reduced relative to control fruit that was conditioned through wilting at ambient temperatures for 3d, but the incidence of decay was increased by the high temperature treatment.

The role of TBZ

It is known that inclusion of thiabendazole (TBZ) in citrus wax applied to grapefruit can significantly reduce the incidence of chilling injury. Inclusion of TBZ is also a good standard packhouse procedure and should be used if anybody wishes to risk exporting grapefruit under these extended cold sterilisation conditions.

Precooling and storage

A critical factor affecting the extent of chilling injury of grapefruit, is the duration of exposure to temperatures below 4.5°C. This exposure period is cumulative and can occur during precooling (the period prior to loading during which the temperature of the fruit is reduced to the cold sterilisation level), the cold sterilisation treatment itself and post-shipping storage. Precooling for 3d is a compulsory component of the disinfestation treatment, but any other pre-loading storage at temperatures below 4.5°C should be avoided. Storage of grapefruit after shipping should be at an "intermediate storage temperature" of 7 to 8°C and should be kept to the minimum necessary duration.

The role of waxes

The main purpose of a wax emulsion is to:

- Protect fruit against moisture loss, which results in longer shelf life and less weight loss of the fruit.
- To provide shine to the fruit at the point of sale. It is important to note that this shine needs to be sustained throughout the chain of distribution (some waxes break down more rapidly than others).
- Provide a barrier of protection against chilling injury and fungi.

The type of wax that you choose and the way in which you apply the wax will have a significant influence on the above points.

Choosing the right wax: The "lighter" waxes (e.g. lower solids or carnauba based waxes) offer less resistance to gas transfer (respiration) than "heavier" waxes (e.g. shellac or high solids polyethylene based waxes). Thus light wax emulsions will protect fruit with sensitive rinds far better than a heavier wax emulsion and will also allow for better colour development. On the other hand lighter waxes break down more quickly, and are therefore not suitable for long storage programs, especially cold sterilisation programs.

Research has indicated that "heavy waxes" that slow down breathing (respiration) and retain a high level of CO_2 (10%+) on the surface of the fruit, reduce the incidence of CI. Unfortunately the use of heavy waxes may increase the incidence of postharvest rind pitting on sensitive fruit. Nonetheless, the high risk of chilling injury on grapefruit under conditions of extended sterilisation, make it appropriate to consider preferentially using such waxes when exporting to markets that require such extended cold treatment.

Wax application: Uneven waxing, under-waxing and over-waxing all have a deleterious effect on fruit quality. The wax barrier need not be thick, and in fact a very thin barrier provides enough of an integral film to prevent most of the moisture loss without interfering with the respiration process.

NB: Adhere to the wax manufacturer's recommended application rate – ***adhere to the product label instructions.*** Please note:

- Fruit should be dry before waxing. Where possible the packhouse should use a hot water bath for fungicide application as this helps the drying of fruit before waxing.
- Fruit must move evenly through the waxing unit and flow of fruit entering the packing line must be consistent.
- When fruit leaves the waxing unit, all parts of the fruit needs to be covered with a film of wax. Examine fruit after the waxing unit regularly.
- Brushes in the wax applicator must be in good condition and should rotate at a speed of about 90 rpm. The last brush in the wax applicator should always be wet, so as not to remove wax from the fruit.

Over-application

- Inhibits the breathing (respiration) of the fruit.
- The movement of oxygen and CO_2 on the surface of the fruit is inhibited resulting in poor colour development and off-flavours caused by the process of an aerobic fermentation.
- Inhibits colour break.
- Encourages rind disorders on sensitive fruit.
- Unnecessary expense!!

Under-application

- Excessive weight loss and shrinkage of fruit.
- Poor shelf life / storage.
- Susceptibility to chilling injury.

Operational efficiency drastically improves at Betko's new cold storage facility

Villiersdorp's Betko, increases pallet storage capacity tenfold and triples operational efficiency after appointing GEA Project Solutions (a division of GEA Refrigeration Africa) to design and manage the construction of its new state-of-the-art cold storage facilities.

Situated in the heart of South Africa's pome fruit production area, Betko has grown exponentially over the past 25 years and has become a prominent name in the fruit export industry. Now, courtesy of their newly completed facility, specifically designed to improve operational efficiency, Betko can accommodate the cooling and distribution of more than 300 pallets per day.

To achieve this Betko entrusted the design and project management of fifteen new purpose-designed 44-pallet pull-down tunnels and two new holding stores with approximately 1 300 pallet positions per room to GEA Project Solutions. The facility includes dedicated dispatch facilities with three electro-hydraulic docking levellers, an additional loading platform and new management offices.

High efficiency pull-down tunnels with steri functionality.

GEA Refrigeration Africa designed a pump re-circulated liquid ammonia cooling system that was tied into the existing Plant Room #2. To cope with the added refrigeration load an additional Grasso screw compressor package, evaporative condenser and accumulator vessel were installed.

The new facility needed to be constructed on a site adjacent to Betko's existing facility, but could not interfere with existing flows and operations.

Wiekus Venter, Manager at GEA Project Solutions, comments: "The limited available space required careful planning and consideration. Optimising the costs of site works and maintaining existing product and traffic flows was critical. Since the electrical supply had to be drawn from two different Eskom sub-preventing punitive billing when one sub-station's supply is over-used".

GEA Projects strives to include as many "green" design attributes within their designs

View of docking bays and dispatch area.

as possible. Apart from optimal refrigeration design, various green design principles were implemented. Daniel Visser, Project Manager for GEA Projects, highlights a few areas: "The roofing structure has been designed to optimally utilise as much natural light and ventilation within the facility and office space. This was continued in the roof void where valves stations are situated and our service technicians require suitable working conditions. The building was also optimally orientated and designed for future solar panel installation as already proposed and planned. The two holding stores feature insulated floors to minimise energy losses through the 1 500m^2 floor space. Insulation thickness was increased in the walls and roof to improve thermal performance and reduce the infiltration loads on the refrigeration system.

Daniel further notes that high-speed doors are used to prevent thermal losses and breaks in the cold chain. Mobile racking with four levels of storage ensures that the best use of available floor space is made while allowing maximum storage and packing flexibility. In addition, the overhead offices in the dispatch area have suspended walkways on both the marshalling yard and warehouse sides – this allows the management team to have a 360° view of operations and ensures quick intervention if needed".

When asked about operational improvements, Hein Langenhoven, Logistic Manager at Betko, explains: "We are saving substantially on labour and overtime costs in the new facility. For pre-cooling, we previously had to stack two rows of pallets in an unused controlled atmosphere (CA) room, have four or five workers cover the pallets with tarpaulins and staple these together, place probes and add a mobile fan at one end to draw cold air through the makeshift tunnel. This typically would take until 20:00 and thus required overtime wages to be paid.

"By comparison in the new facility, a forklift operator would place the pallets in a dedicated cooling tunnel, position the probes, drop an isolation sheet, close the door and switch on the cooling system by 13:00 or 14:00 – thus in a fraction of the time it used to take, and with significantly less labour involved." He added that cooling time has been reduced by using GEA's specific cooling tunnel design. With eight dedicated probes per tunnel, Betko has much better control over the cooling process, and cold sterilisation shipments can now be loaded significantly sooner. The improved product flow has improved general container loading times dramatically. "We can now, while maintaining the cold chain, load a container of 21 paletts within 15 minutes – an improvement by miles," says Mr Langenhoven. Cold storage capacity has increased to 2 600 pallets in the holding rooms, and this now allows Betko to accommodate shipping delays which occur quite frequently in peak season. Special shipment capacity has also increased dramatically from four containers per week to sixty – providing there are vessels available in port.

Amandla Civils commenced with the bulk earthworks in July 2013 as a separate contract while final design and tender of the main buildings was being completed. The platform was handed over to the principle building contractor, Isipani Construction, at the end of August 2013. Practical completion was achieved in April 2014.

The refrigeration systems for the Tunnels are based on GEA's tried-and-tested design that makes provision for a control valve assembly with associated evaporator coils for individual control of each individual Tunnel. The product and air temperature probes in the tunnels are connected to a monitoring system that allows operators to print graphs of historical data. The system also enables personnel to monitor the plant operating conditions and plant trips. Mr Langenhoven concluded by saying: "Any snag-issues we had were dealt with very quickly and professionally. We are extremely satisfied with the end-product and the GEA team".

40 Years in the citrus bug workshop

A short autobiography by Peter Stephen after working 40 years for the citrus industry as an entomological technician. Peter currently works for Citrus Research International in Nelspruit.

Right: Dr Mal Georgala and myself examining a fruit fly stick trap in about 1985.

After completing my National Military Service in 1974, I was to start working as a Pupil Technician with the Department of Agricultural Technical Services in Pretoria. However, before taking up the post, I heard of a vacancy at the Outspan Citrus Centre (OCC) in Nelspruit. I was interviewed by Dr Mal Georgala and was subsequently offered the post of Technical Assistant.

During my first few years at OCC I was privileged and fortunate to work with three legends of citrus research in South Africa, Dr Mal Georgala, Dr Carel Buitendag and Hendrik Hofmeyr. I worked on most of the important citrus pests and learned how to recognise them and how they could be killed with insecticides. My tutors impressed me with their passion for their work and unshakable integrity in searching for the truth. After the resignation of his technician, Johan Grobbelaar, I worked more closely with Mal Georgala and was appointed Senior Technician in June 1981. At the time, red scale and citrus thrips were the most important citrus pests and my work centred on their chemical control. We also conducted some trials on mealybug, fruit flies and powdery scale, a new citrus pest. We helped chemical companies develop many new insecticides including Hostathion and various pyrethroids for thrips, Applaud and Nemesis for red scale and Agrilure and Hymlure for fruit fly control. I also assisted Dr Georgala during the investigation of red scale resistance to organophosphates. I helped him to develop and conduct the red scale resistance tests that tracked the spread of resistance through southern Africa, and conducted many trials investigating the efficacy and safety of oil sprays.

Feeding laelapid predatory mites.

Changing times

In 1991 after Dr Georgala retired from active research, I began working with Dr Tim Grout. In the years to follow, many changes affecting the country, the citrus industry and me took place. The South African Co-operative Citrus Exchange became Outspan International Limited (1994) and all fruit industries in SA became deregulated (1997). In 1998 all Outspan staff were retrenched and Capespan was formed with only conditional employment for research workers. The formation of Citrus Research International in 2001, funded largely by a statutory levy on citrus exports, heralded a more stable environment for citrus research, but the challenges continue.

More attention has been given to natural enemies. Since the 1980's, considerable effort has gone into the development of rearing and testing techniques. My colleagues have successfully reared *Aphytis, Chilocorus nigritus* and *Lindorus sp.* for red scale control. Bruce Tate developed a successful mass rearing technique for the mealybug parasitoid *Coccidoxenoides perminutus,* and I have been involved in rearing *Orius thripoborus, Goetheana incerta,* lacewings and various predatory mite species for thrips control. These natural enemies, as well as various pests such as coffee bean weevil and woolly whitefly have also been reared for use in bioassays. Studies have been done to investigate the roles of various natural enemies of citrus pests. One that I had a special interest in was an attempt to understand the role of spiders in citrus orchards and the surveys conducted for this.

Recently fruit fly and false codling moth have become research priorities. A large project that I have been involved with, first under the leadership of Dr Tony Ware from about 2001, has been the large scale cold treatment of fruit fly in citrus fruit. Much of this work has been repeated and extended more recently under the leadership of Dr Tim Grout. Dr Aruna Manrakhan has recently taken over the important fruit fly programme and I was involved with her project to monitor the arrival and spread of Bactrocera invadens (now *B. dorsalis*) into South Africa. Dr Sean Moore shoulders the huge responsibility for false codling moth research and I have conducted several trials for him in Mpumalanga.

ELMARIE DE BRUYN
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AT THE KITCHEN TABLE 21: Summer

ROSEMARY FOR REMEMBRANCE

Rosemary is one of the best herbs around - we all know its culinary uses - with lamb, chicken, tomatoes, potatoes . . . and the fact that they are such thankful plants in the garden – a little love and attention and your rosemary bushes will thrive.

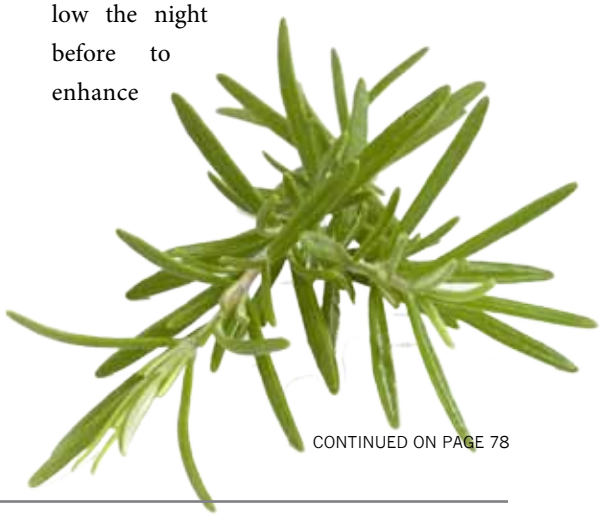
1. HISTORY

The name rosemary is derived from the Latin *"rosmarinus officinalis"*; *"ros"*, meaning dew, and *"marinus"*, meaning sea - probably stemming from the fact that the rosemary bush is native to the seaside regions of North Africa and the Mediterranean. One of its common names "dew of the sea", is a likely reference to the shimmering blue flowers that cover the rosemary bush in season.

The history of rosemary covers thousands of years. A story steeped in the myth and tradition of many a varied civilization. Hellenistic and Roman gardens almost always contained rosemary bushes. Moreover, rosemary was believed to grow only in the gardens of the righteous and protected one from evil spirits.

Brought to Britain with the Roman armies, rosemary over the centuries has spread its influence through Europe and eventually to the New World.

Students in ancient Greece wore garlands of rosemary around their necks, or braided it into their hair to improve their memory during exams. Others would place it in their pillow the night before to enhance



CONTINUED ON PAGE 78

Photography

In the early 1980s, Dr Georgala realised the impact of images in conveying messages. We made a concerted effort to build up a "photo library" of pests and natural enemies and even produced some information videos. With the arrival of digital cameras I was often requested to obtain photos of insects for various presentations. Digital cameras have enabled me to build up and update the library of digital photos of most of the insects and mites found on citrus.

A photo of the Citrus psylla adult female.

Tools of the trade

Working with insects and mites often requires specialised apparatus not always available "off the shelf". Equipment for collecting, observing and rearing must either be built from available plans or custom designed and built for the purpose. This aspect of entomological research, not always appreciated by "outsiders", has caused many to comment that "your laboratory looks more like a workshop than a lab".

The past 40 years in the citrus industry have been memorable to me for many reasons. My colleagues, both past and present, have all contributed to my knowledge and understanding. I am ever grateful to an industry that has endured turbulent times and enabled me to survive. I have enjoyed the occasional opportunities to follow the interests that have fascinated me from my youth.

Dr Carel Buitendag: lateral thinker, scientist, electrician, mechanic, musician and more.

memory during sleep. As the symbol of remembrance and fidelity rosemary has been used for centuries in courtship and weddings. According to English folklore, if a girl placed a plate of flour under a rosemary bush on midsummer's eve, her future husband's initials would be written in it. Other's believed that to see your true love in a dream one should put rosemary under your pillow. Rosemary has long held a prominent role in the wedding ceremony. Dried rosemary has been laid in the bed linen to ensure faithfulness and a bride who gave her groom a sprig of rosemary to hold on their wedding night would ensure that he remain faithful.

Medicinally and for purification rosemary was a mainstay in the practices of early medical and sterilization techniques. During the plaque of 1665 it was carried and sniffed to protect against contamination from the dreaded epidemic. Carried in either a pouch, handkerchief or perhaps in the head of a gentleman's walking stick. Rosemary has been burned for centuries in sick chambers to purify the air, specifically in French hospitals during war to kill germs - burned also in churches and courtrooms and other public arenas for its antiseptic properties.

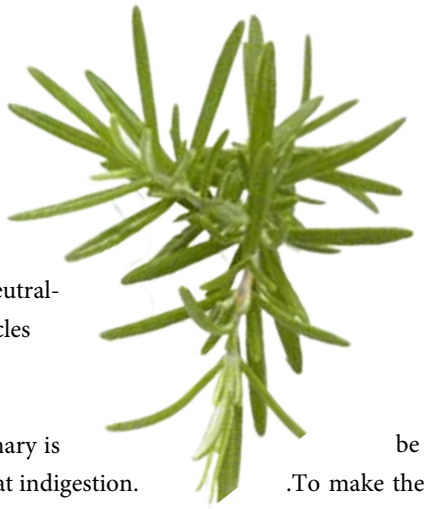
During the Middle Ages rosemary was spread on the floor at midnight on Christmas Eve so as people walked on it the fragrance would fill the air; and that those who smelled it would have a year of health and happiness.

As we discover more about the chemical structure of rosemary and its antioxidant properties, the myth of the past is quickly becoming the reality of the future and we are validating the many applications of rosemary that have been utilized for centuries.

2. MEDICINAL

Possible health benefits of rosemary:

• **Rich source of antioxidants** and anti-inflammatory compounds- these are thought to help boost the immune system and improve blood circulation. Rich in antioxidants, that play an important role in neutralizing harmful particles called free radicals.



• **Improving digestion** In Europe rosemary is often used to help treat indigestion.

• **Enhancing memory and concentration** Blood levels of rosemary oil components correlate with improved cognitive performance.

• **Neurological protection** Scientists have found that rosemary is also good for your brain - the carnosic acid is able to fight off free radical damage in the brain.

• **Prevent brain aging** Researchers in Japan believe it can significantly help prevent this.

• **Cancer** Research published found that crude ethanolic rosemary extract has differential anti-proliferative effects on human leukemia and breast carcinoma cells. An effective herbal anti-inflammatory and anti-tumour agent.

• **Protection against macular degeneration** A study revealed that a major component of rosemary, carnosic acid, can significantly promote eye health. This could have clinical applications for diseases affecting the outer retina, such as age-related macular degeneration - the most common eye disease.

• **Mood Elevator** A study found that smelling rosemary improved test subjects' quality of memory and that their mood was significantly improved compared to a control group.

• **Migraine Help** Rosemary has been a popular natural migraine remedy for centuries. Boil some rosemary in a large pot of water and pour it into a bowl. Place a towel over your head and lean over the pot to inhale the steam for about 10 minutes.

• **Pain Relief** It not only helps relieve the pain of migraines, but essential oil of rosemary can also be applied topically as a natural treatment for arthritis, sore muscles, and other joint and muscle pains.

• **Antibacterial** Studies have found that rosemary has powerful antibacterial properties against *H. pylori* (the bacteria that causes stomach ulcers) and Staph infections.

• **Fresh Breath** Rosemary can be used as a natural mouthwash .To make the mouthwash, steep fresh rosemary in a pint of heated water. Strain it and use it as a mouth rinse as often as you like. It will keep in the fridge if covered.

• **Diuretic Properties** Rosemary is a mild diuretic, which means that it can help get rid of bloating and water retention in the body. Used regularly, it may help in the increase of urine flow and help the kidneys function at optimal levels to help get rid of excess water.

• **Respiratory Health** Rosemary is a great natural remedy for respiratory problems. Breathing in the scent of the essential oil may help with congestion due to colds, allergies, respiratory infections, and the flu. You may also boil fresh rosemary in a pot of water, place it in a bowl, and breathe in the steam to help clear the lungs and throat. This will also help with any sinus or head pain.

• **Anti-Aging** Rosemary is a popular ingredient in anti-aging skin creams because it helps reduce puffiness, stimulates cell regeneration, increases firmness, and improves overall skin tone.

On a personal experience level:

Five years ago I started taking a cup of cold rosemary tea in the morning . . . hoping to improve my memory! I cannot honestly and objectively evaluate this, but I am five years older and my memory is fine.

I can also report that I have not had a cold since starting! I have since learned that the good health benefits are mostly due to the great antioxidant properties of rosmarinic and carnosic acid found in abundance in this herb.