



HORTGRO Science Technical Symposium 2014



Bracing bitterly cold winter weather more than 350 producers, technical advisers, researchers and various stakeholders in the deciduous fruit industry gathered in June for the annual HORTGRO Science Technical Symposium that was held at Allée Bleue Conference Centre near Franschhoek, and also included field days in Grabouw and Simondium.

The symposium provided food for thought about the status quo and the future of the deciduous fruit industry not only in South Africa, but also in the rest of the world. International experts, Prof Karen Lewis from Washington State University and Dr Stuart Tustin from New Zealand, shared their wealth of knowledge. Hot topics on the agenda were the growth of the African market, the possible impact of climate change, sustainable farming and social responsibility. Keynote speakers, Prof Jonathan Jansen, Prof Marius Ungerer, Frans van Wyk and Ismael Motlala, tackled difficult issues, land restitution, social inequality, poverty and the urgent need for exemplary leadership and ethical behaviour in South Africa.

Journey with us through the Symposium highlights and the HORTGRO Science team hopes to see you at the annual symposium in 2015.

Visionary Leadership Needed

Exemplary leadership is the most powerful case for change leadership, believes Prof Jonathan Jansen, vice chancellor of the University of the Free State. It's the type of leadership that makes someone willing to stand up against racist remarks, for instance, even if it is in the most difficult of social situations.

He deems a lack of moral and ethical leadership to be at the core of what is wrong in South Africa's dysfunctional society – from the political and the corporate sphere to family life and the religious sector. "We don't have a lack of expertise or resources, but a lack of leadership," he stated unequivocally.

"We need ethical, conciliatory and strong leaders," says Prof Jansen, who believes that rage and violence is the default reaction of most South African men.

"What story about leadership does your life tell," this outspoken educationist asked in his opening address at the annual HORGRO Science Technical Symposium.

According to Prof Jansen, South Africa has become a country where "everything is grey". "We live in a deeply divided society where mediocrity is becoming institutionalised in schools and society," he said in reference among others to poor educational standards and work ethics. "Stealing has become normative, even if it just means not showing up for work or doing the job you were assigned to do."

"People should check their moral compasses," he emphasised. "It's not a white or black thing, but a right or wrong thing. And we must insist on it."

He believes that education is the key to whether South Africa can still be a country that works.



“There are no better service you can render than to give children a quality education,” he pleaded and asked that people support the educational needs of their employees’ children. “Without quality education for the poorest children our society will fail.”

He challenged the attendees to pay the salary of a retired teacher to work in their local communities and to make a difference in the lives of children.

Prof Jansen quoted the Indian leader Mahatma Gandhi who said that people’s true character is measured by how they treat those who work for them. “Merely tolerating people did not work in Ireland, Rwanda or Sudan; to heal our society and to earn respect we need to embrace people and become involved in their lives,” he said.

He says that leaders who lack influence tend to resort to harsh authoritarian measures to make their presence felt. “Those who are without influence can actually be a danger to an organisation,” he added in asking that people treat their employees with respect.

He challenging the attendees to ensure that their businesses or companies instil a true sense of transformation, and that they live lives through which their children can learn from their examples about what is right and wrong. “What do you do to embed a sense of transformation within your organisation?” he asked.

Leaders should know the difference between

- **right and wrong**
- **passing and excelling**
- **position and influence**
- **tolerance and embrace**
- **emotion and cognition**
- **social justice and transformation**
- **saying and doing**

- **Prof Jonathan Jansen**

Begin klein, mik groot

Die plan is groot, maar deur nou reeds klein te begin kan jy 'n verskil maak. Dis die gevoel van prof. Marius Ungerer van die Universiteit Stellenbosch se Bestuurskool, oor die Nasionale Ontwikkelingsplan (NOP).

Hy beskou dit as Suid-Afrika se bloudruk waarvolgens gemik word om armoede teen 2030 uit te wis en ongelukheid merkbaar te verminder. Die plan in die breë kyk na maniere hoe om volhoubare ekonomiese groei binne 'n omgewing van sosiale harmonie te verseker. Doelstellings word vir belangrike ekonomiese sektore soos die landbou gestel oor hoe elkeen kan meehelp om die NOP-mikpunte te bereik.

Prof. Ungerer ag die NOP as die beste, mees allesomvattende en deeglikste makroplan waarmee 'n ontwikkelende land sy geïntegreerde langtermyn nasionale ontwikkeling kan dryf.



Prof. Marius Ungerer moedig die gehoor aan om die regering se Nasionale Ontwikkelingsplan te ondersteun.

Hy waarsku egter dat daar nie tot 2030 gewag moet word om aan die werk te spring nie. “Ons moet nou reeds maniere vind om inderwaarheid in die plan in te leef en tot aksie oor te gaan,” benadruk hy. “Dit moet nou al gestalte kry, dag vir dag, danksy baie mense wat saamwerk en dink aan maniere om dit te stimuleer en dit op tasbare wyses ‘n werklikheid te maak.”

Besighede moet hul markte, dienste en produkte uitbrei, en hande vat met die regering om hindernisse te oorkom wat groei belemmer. Produsente en agribesighede moet daarby hul maatskappye se visies en besigheidsplanne opstel in lyn met die NOP en die Millennium Ontwikkelingsdoelstellings.

Prof. Ungerer onderstreep dat dit belangrik vir die landbousektor is om die NOP te ondersteun. “Dit gaan oor die uitbou van kapasiteit, en die verbetering van menselewens, en veral dié van ons jeug,” voeg hy by. Daarom is die ontwikkeling van vaardighede en die aanbod van geleenthede tot vakmanskappe en leerlingskappe belangrik.

“Ons moet ons sinisme laat staan en doelbewuste keuses maak om leiers te wees in alledaagse situasies, sodat ons die lewensomstandighede van baie mense kan help verander,” is sy uitdaging.

Prof. Ungerer glo die NOP bied alle Suid-Afrikaners ‘n kans om betrokke burgers en leiers te wees. Daarby glo hy die ideale is haalbaar, aangesien Suid-Afrika en haar burgers reeds geseënd is met ‘n wye reeks vaardighede, bates en hulpbronne. “Al word net die helfte van die nasionale plan in die volgende tien jaar geïmplimenteer, sal dit steeds die land ‘n beter plek maak.”

Die NOP se 9 fokuspunte

- **Werkseeping**
- **Vereniging van die nasie**
- **Uitbreiding van infrastruktuur**
- **Doeltreffende gebruik van hulpbronne**
- **Kwaliteit gesondheidsorg**
- **Inklusiewe beplanning**
- **Kwaliteit onderwys**
- **Uitbou van ‘n bekwame staat**
- **Bekamping van korrupsie**

Vir meer inligting oor die NOP gaan na <http://www.npconline.co.za/>

Rethink equity schemes

A rethink is needed of the current models and equity schemes that rely on state grant funding to develop black ownership in agriculture, as these are not bearing fruits. This was the call from Ismail Motala, interim chair of the Western Cape branch of the African Farmers' Association of South Africa (AFASA-WC) and board member of the Deciduous Fruit Development Chamber of South Africa (DFDC-SA).

He describes it as “disastrous” that just a few hectares of stone and pome fruit orchards are fully owned by black farmers.

“Our leaders need to account for the major crisis in which the agricultural sector is in, twenty years after democracy,” said Motala, who called for ‘an agricultural Codesa’ of sorts in line with the political talks of the early 1990s.

“If we want to ensure a South Africa that our grandchildren can call home, the time has come for real and true transformation of the entire industry,” he added.

He believes the industry should seek solutions from within. “We are easy to rubbish the policies government comes up with, but no one in industry has yet come up with alternative developmental models,” he added. “The time has come for us to take the lead and to come up with solutions, not the government or the National Development Plan.”

According to Motala, access to funding is one of the major problems faced by black farmers. He believes that joint business venture models between white and black farmers could help bring the latter to a level of commercial



success. It will provide the latter with the surety it needs to access funding, and also keep inputs lower through the sharing of business systems and service providers.

Motala added that he also believes that the agricultural sector has not yet adequately acknowledged how government has provided a stable environment in which the industry could grow and prosper over the past few years.



Strong messages! Prof Marius Ungerer, University Stellenbosch Business School, Frans van Wyk, Agrifusion, Prof Jonathan Jansen, Vice-Chancellor of the University of the Free State and Hugh Campbell, General Manager HORTGRO Science.

Work towards the future

A few words of advice from Frans van Wyk of Agrifusion, on how agribusiness owners and farmers should tackle the next few years:

- Know the preferences of your clients.
- Take control of your supply chain.
- Invest in technical innovations such as renewable energy.
- Engage with unions.
- Have a social contract in place.
- Train the women living on farms.
- Stop ignoring the plight of the people by ensuring proper housing for pensioners, getting housing standards in place and providing retirement funds for workers.
- Be aware of the current legislation and opportunities applicable to water, export markets, the development of infrastructure and

“Social unrest is the biggest concern of most business leaders worldwide.” – Frans van Wyk.

“South African CEOs not only recognise social unrest as the threat most likely to occur (68%), but also as the one likely to have the greatest negative impact (86%) on their organisations.”

– Picewaterhouse Coopers.

Solutions in Nature – Artificial Spur Extinction



Examples of floral bud distribution in full bloom. The tree on the left with spur extinction and the one on the right – unmodified. Photographs courtesy Dr Stuart Tustin.

“Future gains in orchard productivity and production efficiency will require profound advances to the practical control of flowering, fruiting and crop load control in apple orchards,” this was the message from Dr Stuart Tustin, from the New Zealand Institute for Plant & Food Limited.

“Setting the crop load is the most critical element of orchard management and our present reality lack certain control. Modern apple trees typically produce about 4000+ flowers per tree. A full crop only needs between 250 and 300 fruit.”

Tustin highlighted common dilemmas: Chemical thinning is unpredictable and environmental variables are difficult to control; Hand thinning is expensive and intensive to manage; Biennial bearing still regularly occurs despite best practices.

“If 50 years of research and best practices cannot provide precise and reliable load control, something has to change – that’s the challenge.”

Tustin urged growers to “take control of the process”. He explained how spur extinction – getting rid of bud loads - is a natural occurring process in Granny Smith. “They die out naturally in front of your eyes.”

Tustin explained the concept of Artificial Spur Extinction (ASE) – a new crop load management technique by trying to replicate what Granny Smith is doing naturally.

- Control flowering by reducing the number of flower buds to approximately the required number of fruit per tree
- Set bud numbers according to branch size; remove portions of flowers just before or around bud breaks
- Maximise fruit set by minimising flower numbers
- Optimise fruit development
- No chemical thinning

With ASE a large proportion of buds are removed before bud breaks so trees commence spring growth in a “partially-thinned” state; therefore resources are available to fewer and better buds; there is less competition and the outcome is better sized fruit of better quality and less drop.

“With ASE we have no resting buds, yet excellent return bloom and no bienniality.”



Dr Stuart Tustin, New Zealand Plant & Food

“Because we can”

“Horticulture, economy and technology go together. We can’t have the one without the other. It is a multi-disciplinary team. But, technology must make you money, either through increased productivity or lower unit cost, or increase quality to have higher returns. If it doesn’t make you money, it is just a toy.”



This was the message from Prof Karen Lewis, extension specialist: Centre for Precision and Automated Agricultural Systems Washington State University.

“Our number one problem in any fruit production industry is that we don’t have enough people. Therefore we need technology and innovation. Since 1939 we are still picking apples the same way; using people, ladders and a bag.”

“Ladders are the leading cause of injuries – and we have far too many of those. The bottom line is – ladders cost time and money. In a five-year period in the USA a total of 13 068 claims were filed with a pay-out cost of \$20m.



Production-wise ladders and pickers did not make sense. “Almost 30 – 40% of the time pickers are going up and down ladders and walking around trees to get to the bins.”

“We have to bring the bins closer to the pickers. One way of doing that is by getting the workers off ladders and onto platforms.” Lewis explained how they innovatively used ‘old’ tractors and trailers to create automated platforms for picking and pruning.

“For production efficiency it is clear that platforms are the better choice, saving time and money. We see increased worker productivity, increased worker safety, ease of operation. However, the use of platforms did not take off as we expected.”

Some of the reasons are the fact that it involves people and therefore management issues; the initial purchasing costs and maintenance and reparation costs are high; limited availability; orchard architecture is not suitable for platform use.

“In terms of picking we have also learned that we need to teach pickers the correct technique and nowadays we mostly pick at night when we see apples better.”

Lewis described many other automation options like the robotic picking hand, the “Darwin” mechanical pruning device, ‘localised shaking’, cameras for apple vision identification – not only to identify apples on trees but also for branch identified pruning, the use of drones and mechanical pollination.

“Our job is to increase apple consumption across all social and income groups and make apples affordable for everyone to eat. Technology can help us do that. So, why should we use technology? Because we can,” she said.



Enjoying South African hospitality! Dr Stuart Tustin, New Zealand Plant & Food, and Prof Karen Lewis, Extension Specialist from Washington State University warming up during the symposium.

Read about their future fruit industry perspectives for New Zealand and the USA respectively.



Intensive, precise and productive

“The Pacific Northwest tree fruit industry is an industry in full expansion mode. New plantings are taking advantage of new genetics, new chemistries, decision support systems, engineering, precise execution of sound horticultural practices, strong returns and expanding markets. In short, we’re intensive, precise and productive.”

This was the message from Prof Karen Lewis, extension specialist: Centre for Precision and Automated Agricultural Systems, Washington State University. According to Lewis, “all of this, plus a few important invasive pest species has led to a shift in research and extension priorities.”

In the past ten years US scientists have leveraged over \$40m in competitive federal funding. “Our main priorities are plant breeding, genetics, genomics, automation and mechanisation, information technology and crop health.”

The industry

“When we look at the fruit industry in Washington State alone there are over 90 000 ha of fruit trees; of which 67,000 are apple; 16,000 cherry; and 9,000 pear; making it a \$10b industry for those three fruits.”

According to Lewis their biggest money spinners are sweet cherries and Honeycrisp apples – “which is a breakthrough cultivar for us”.

Honeycrisp has an ultra-crisp texture, yet is juicy with a pleasing flavour. It was introduced

in 1991 and took off in popularity. Lewis said they have high hopes concerning three new apple cultivar releases: RubyFrost, SnapDragon and Cosmic Crisp.

“In general, per capita consumption is stagnant or decreasing. Therefore consumer demands are one of our biggest challenges. We have to adhere to consumer preference and consistently meet and exceed consumer demands for quality. We have got to get them to eat apples.”

Lewis attributed the stagnation to the general eating habits of the US public and their obsession with convenience. “Most Americans buy their groceries at the gas station or the corner store.”

“On top of that, when we look at apples in terms of retail consumer demands we have to compete internationally; it’s a global market but local prices. We have serious issues regarding food safety, the use of pesticides, water and labour.”

She highlighted labour as their number one problem. “Over the last 5 years our seasonal employment increased from 44,000 in 2008 to 70,000 in 2013 for cherries and apples.” Most migrant workers are from either Mexico or South America. We just don’t have enough people for this industry.”

“Having said that, we have to train our workforce better and manage their capabilities. They have to understand where

the apples are going and why we do certain things the way we do.”

Lewis emphasized that the most effective ways to improve orchard profitability is to increase the price, improve the yields and cut production costs.

Over a 2 year period we are looking at costs of around \$20- 35k for planting and establishing.

To successfully compete in a global marketplace and maintain profitability and sustainability, we need to assess:

- Climate and capability to produce premium quality fruit
- Infrastructure for production, storage, packing, shipping
- Commitment to research and technological innovation

About Production Systems

The advantages of fruiting walls are many, Lewis said. “It’s accessible for pruning, thinning and harvesting. It help improves the quality of the fruit by having more exposure to sunlight and sprays. The procedure is simplistic, which facilitates training and mechanization. About orchard establishment, Lewis said that whether to fumigate or not, is not an issue anymore. “It’s not a comparison really – we can already see the advantages of fumigation after the first season.”

Lewis said that in Washington State crop load management entails strategic pruning, post bloom thinning, bloom thinning and smart hand thinning.

We have started using reflective fabrics, like Extenday and Mylar, in between orchard rows and we have seen improved fruit colour, harvest timing and yield.

The next big step is to net or not? Should it be closed or open, fixed or retractable? Different growers are using different configurations, but I think we cannot get away from this one. Netting has huge advantages. Lewis showed a picture of the Auvil Fruit Company in Washington State – a huge fruit orchard completely under closed netting.



Auvil Fruit Company – Washington State

About Crop Protection

According to Lewis organophosphate (OP) has dominated Crop Protection for forty years. The OP era ended in 2010 when secondary pests, like aphids and leafhoppers, developed resistance to OP insecticides. "Key pests are still controlled by OP's because of slow expression of resistance that provided some stability. Therefore the biological control of some pests (mites, leafhoppers, leaf miners) was possible. There are however, high risks to farm workers and the environment. Lewis explained that more than 90% of fruit farms are being treated with Pheromone technology and IPM.

"Like with all pests there are always new ones lurking about. The Brown Marmorated Stink Bug is seriously threatening IPM. And we have seen these new threats in transition; Stink bug on apples, corn, soy, peaches, cherries and grapes. Then there is also the Spotted wing Drosophila.

Lewis explained the value of internet based decision assist systems about weather data and online spray guides.

"You may ask, 'why do we care'? We care because we want the best quality apples. The difference between a good and a poor quality tray is \$12 – and that's a lot of money."

Lewis's Truths:

- Your employees can be a source not just a resource and worth the investment.
- Execution is where most plans fail.
- Nursery tree quality matters.
- It's easier to stop a tree than to get it to grow.
- Early years matter.
- Uniformity in canopy and crop is good for machines and people.
- Visibility of crop improves everything.
- Knowing your management capabilities is essential.
- Water is precious and should be intensively managed and optimized.
- Crop load management starts at genetic selection and site selection.
- Always know your numbers.
- Alert growers are more fun.
- You cannot manage what you do not measure; therefore measure, manage, and if all possible model.

Quantum shifts and hot games

"In New Zealand - everything that we do is dominated by the fact that we have to export and everything that we do is because we intend to export," this was the message from Dr Stuart Tustin, New Zealand Institute for Plant & Food Limited, about current and future trends in apple production in New Zealand.

Tustin gave an overview of the last twelve years in the New Zealand Pip fruit Industry marketing system, where dismantling resulted in some major trend changes and new developments.

In 2001 the fruit industry in New Zealand consisted of a large number of uncoordinated sellers - the Fragmentation Model – where everything is going in all directions at once, he said.

“The 2000’s was a period of challenging international trade for the NZ apple industry; it was a decade of very subdued economic activity characterised by currency headwinds, a lack of industry discipline, cooperation and competition.”

Forces of change in the fruit industry were not only inevitable but also necessary for survival, concluded Tustin. “Industry trends changed at enterprise level – from proprietorship to agribusiness to corporate.”

“There was basically a greater vertical integration, which was reflected by the following: In 2009 we had 1006 registered farms with 545 export growers; in 2013 the picture has changed to 953 registered orchards and 327 export growers. Investment capacity sprouted from scale and scale gives marketing presence.

“We have seen quantum shifts in terms of market trends over the last 5 years.”

Hot game

According to Tustin, Asia is without a doubt the ‘hot game’ in town. “Asia presents with high-returning markets but with very different taste preferences from many traditional markets. We have also seen differences in the way we trade and in the way we do business.” He said that there were also some market access issues, “but it is a solid market that is growing steadily”.

As far as the Middle East goes, we have seen a steady increase in exports, said Tustin. “In contrast the European market and the UK market now have to compete with new markets for their traditional volumes – there is a definite shift in the supplier-receiver relationship.”

“These new markets drive a change in our cultivar mix,” said Tustin. In 2013, for instance, the top four apple cultivars were Royal Gala 34.4%, Braeburn 20.8%, Jazz 11% and Fuji 9.1%.

Export markets destinations

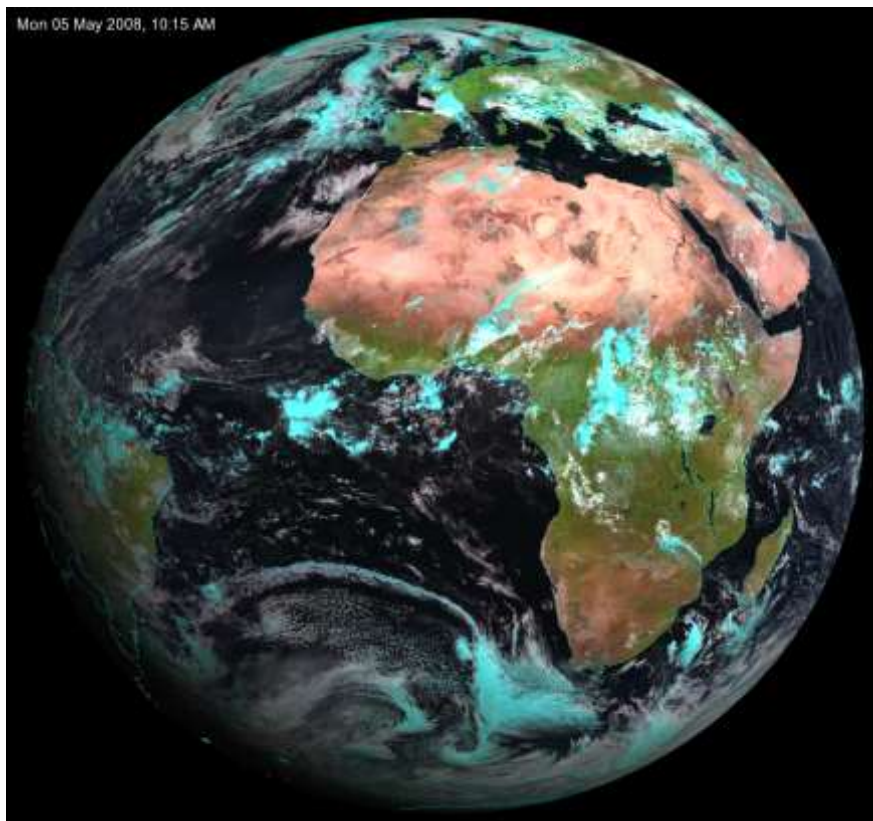
In 2013, the New Zealand export market destinations were as follows: Asia 32.62%; Continental Europe 28.78%; North America 15.26%; UK & Ireland 14.44%; Middle East 6.4%; Pacific 2.3%; Caribbean 0.13%

Future

According to Tustin the drivers of future trends will be very specific aiming to push industry strategy goal to \$1b per annum by 2022. “We are going to align our strategy with our research and development goals; we have to solve problems with market access and phytosanitary issues; increase productivity and fruit quality and activate our new product pipeline, like Piqa pears, for instance.”

Let's talk about.... the weather.

It's not a religion and it has changed the game plan for ever. It is influenced by something as discrete as a water pump and if we don't adapt, the future looks bleak indeed. This was, in a nutshell, the message from speakers during the Climate session of the HORTGRO Science Technical Symposium. Let's unpack what each one said...



“It’s not a religion”

“Believing in climate change is not a religion. We have scientific evidence supporting it and you either have to accept or reject it. When I speak to apple farmers they say that we have seen some changes but it is not really afflicting us. Fine, but one day it might.”

Climate change myths, facts and fiction were addressed by Dr Peter Johnston from the Climate Systems Analysis Group at the University of Cape Town. “It is important to know how much you know and how much is misunderstood. Ultimately you are not planting apple trees for next year, but for the future generation.”

Johnston stated that by using climate models they have established that: Global temperatures were rising; high carbon dioxide levels in the atmosphere were due to humans; that by 2050 temperatures will be 2 – 2,5°C warmer in the Western Cape.

“We are seeing more days warmer than 30 and 40 °C; and less colder nights below zero or even below 5°C. With climate change the potential evaporation is projected to increase by 10 to 20%. The implications are that dam evaporation losses will be enhanced and there will be an increase in irrigation demands. The soils are projected to become drier more often which will result in reduced runoff per mm rainfall. There will be a change in the usage of land, reduced crop yields and higher demands for irrigation.



Johnston pointed out that the South African fruit farming industry is strong and competitive, but climate change will have very specific impacts. “We could see shifts in growing seasons, problems with crop suitability, yield and quality issues, and temperature and rainfall changes.”

Inevitably the effects of climate change will spread wider than the farm gate, as it could also have a huge impact on labour and other industry -related sectors, said Johnston.

“Are you prepared? Are you planting the right cultivars? Do you have more efficient irrigation systems? Are you utilising green energy? We have to adapt, because the impact of climate change will affect us all,” he said.

BOX: Climate Change Risks for the Fruit Industry

- Increased evaporation – dry soils
- More frequent drought
- Heatstroke/sunburn
- Increased fire risk
- Yield reduction modelling uncertain

- Intense rainfall events
- Higher irrigation demand
- Pests
- Chill units

Climate – a game changer



“The influence of the weather on agricultural risk management has always been a serious issue for fruit growers, but climate change is a ‘game changer’.”

This was the message from Ebbe Rabie, senior account executive from Jardine Lloyd Thompson SA.

“Weather data is critical in assessing risks. We are seeing more insurance claims for extreme-weather conditions. Growers should not neglect their risk management programmes.”

Climate change has brought about change in the insurance industry, said Rabie. “Over the last decade forecasting has improved and underwriters in Europe and elsewhere in the world are aware of local conditions. The effects of climate change are no longer disputed and are now included in the modelling of risk scenarios. In the insurance industry we expect an increase in frequency and severity of weather events. We therefore encourage growers to plan early and budget for weather risk management.”

According to Rabie the last two years saw poor underwriting results in all markets. “In the insurance industry we can therefore expect reduced capacity, premium increases and selective underwriting.” The only way to remedy the situation, he said, would be to follow collective buying programs for grower groups and better risk management - for instance the use of hail nets.

Traditional crop insurance relies on principle of indemnity, where losses are measured in the orchard after specific event. In contrast index-based insurance indemnifies farmers based on changes in an index rather than an assessment of the damage.

“Crop Insurance capacity and the products available are restricted in South Africa and the advancement of weather based index products and bespoke designed solutions are the future to sustainable risk management against climate change,” said Rabie. “Choose an intermediary that understands the risks and has access to markets not readily available over the co-op or bank counter.

“Do not take the risk on your own balance sheet, it is just not worth it as cost effective solutions are available.”

“Check your pumps”

“The pumping of water, not cold storage, houses or offices, is the largest source of farm-level carbon emissions. It is without a doubt a farming ‘hot spot’ - due to the water pump’s high electricity consumption that is again linked to the predominantly coal based South African electricity grid,” said Koos Bouwer, Energy Consultant.

Bouwer unpacked energy efficiency trends and attempts to reduce carbon footprint since 2008. “To compete with international markets we have to reduce our carbon emissions and carbon footprint. The ‘simple’ water pump is one of the best places to start.”

In the agriculture sector water pumps account for a whopping 82% of the electricity balance, followed by houses (7%), stores and offices (7%) and cold storage (4%).

“Can you imagine what happens when a water pump does not function at its *best efficiency point*?” According to Bouwer power costs account for 90% of the Life Cycle Costs of a typical water pump – which in general are robust and can operate over a wide range of duties. “But they waste power and gradually destroy themselves if not operated close to their design *best efficiency point*.”

Pumping inefficiencies are not always visible to operators. Regular inspection, sound maintenance protocol, and refurbishing of parts will optimise pumping systems. This will result in saving costs, carbon reduction and improved sustainability.

Carbon intensity levels

- Carbon intensity at farm level is related to electricity consumption for the pumping of water (linked to irrigation intensity of the crop and the pumping “head” of the farm), followed by nitrogen based synthetic fertiliser usage and diesel consumption.
- Carbon intensity at pack house level is related to the use of packaging material (particularly virgin plastic and virgin cardboard materials), followed by electricity usage for onsite machinery.
- Carbon intensity at CA store and cold store level is related to the amount of time spent in storage as a direct link to the electricity consumption needed to maintain the cooling activities. As fruit is stored in CA storage for extensive periods of time and at low temperatures, the electricity requirement and therefore the carbon emissions are higher in cold (RA) storage units.

Bouwer’s message to growers is clear: “Check your water pumps!”



Conservation through ethical farming

The conservation of our fauna and flora is not only for conservation groups. Farmers, growers and agricultural managers are the real custodians of biodiversity and our natural resources – without their efforts conservation groups will fail. This was the message from WWF's Senior Manager: Sustainable Agriculture, Ingrid Kotze.



Kotze said that sustainable farming requires more than just food production, but in essence it is about the conservation of freshwater, biodiversity and healthy soils.

"It is however in the production landscape where our biggest challenges lie. We need better and more efficient production practices, water yield protection, protected area expansion, biodiversity stewardship, building extension capacity and better training for the small scale grower. Farmers must produce more food per unit of land, water and agrochemicals, because future challenges are huge," she said. "Over the next 40 years we have to produce more food than was produced in the last 8000 years."

Kotze also said that instead of just producing "more" growers needed to address the increasing demand via better production practices, better food systems – like better nutrition, and how and where we grow our food. "Consumerism and the growth of the middle class with its increased income place a bigger demand for protein and empty calories."

Other challenges for sustainable farming are:

- 33% of the Earth's surface is being utilised for crops or grazing, when only 55% are habitable;
- Current consumption rates of water will lead to demand outstripping supply;
- South Africa is facing energy crises;
- 50% of South Africa's population does not have enough food;
- 98% of South Africa's water supply is already allocated;
- Climate change will increase intensity and occurrence of extreme events;
- The physical scarcity of limited available arable land and water;
- The need to reduce land degradation and biodiversity loss.

Kotze urged growers to adapt to the changing climate and prepare for the challenges that it brings. "If we can climate proof our farmlands and catchments, we'd be managing our natural resource effectively."

She pointed out that by facilitating industry self-regulation and market convergence (industry, importers and retailers), fruit production would be in line with internationally accepted labour and environmental standards as set out under the ethical production codes and "SIZA" principles.

Kotze also referred to the Sustainable Fruit Initiative (SFI) - a grower self-assessment and management tool that will have multiple benefits for producers. The SFI recognises the auditing fatigue that is prevalent in the industry and seeks to act as a "one-stop-shop" for all environmental audit requirements.

SFI benefits will include:

- Reflect SA law and requirements
- Identify areas of risk
- Reduce duplication of audits; therefore reducing time and costs
- Be a one system meets all requirements
- Have implementation support (extension support at farm level)
- Data system provides accurate picture of business and industry: better management of risk
- Potential for single solution for all assurance requirements

Current and Future Outlooks:

- Over 11 million South Africans are food insecure
- 9% of households do not have access to clean water
- About 34% of all available food is wasted
- The biggest 'waste culprit' is in agriculture production, followed by processing and packaging, handling and storage, distribution and lastly, consumption
- Between 30-40% of food waste occur throughout the agricultural supply chain
- Currently coal still accounts for 86% of our electricity generation
- By 2030 coal will still account for 65% of our electricity generation - according to the Department of Energy
- By 2030 our population will grow to 60 million people – with that the population of hungry people
- The NDP vision for 2030 is that more than 50% of farmland should be irrigated

Agri-revolution – choose wisely!

Stick to your core businesses, and be exceptionally good at what you do. Yes, this might seem boring, but from a business perspective you will make money by being the best in what you do and by keeping at it.

This was the advice from Norman Celliers, chief executive officer of Zeder Investments Limited, who gave attendees a snapshot of what Zeder looks at when investing in the agribusiness sector. Zeder focuses on industries in the food, beverage, timber, textiles and biofuels sector, and is among others the controlling shareholder of Pioneer, Kaap Agri, Overberg Agri, Chayton, Zaad and Capespan.

He believes that businesses should also identify and serve their target customers well, and rather scale up their existing ventures than to start new ones.



Celliers sees absolute growth in South Africa as being limited, but not so for other African markets. The ever-expanding growth of the continent's population can provide valuable markets to South African produce and service providers – if they play their cards right.

“Maintain your developed markets and grow access to other markets,” was his tip.

He cautioned agribusinesses wanting to be part of the expected African “agri-revolution to choose the countries and the markets wisely in which they want to operate. They need to consider the

relevant regulatory and legislative frameworks, the investment opportunities available and whether aspects such as property ownership by foreign entities are allowed.

“If you want to go fast, go alone. If you want to go far, go together,” he quoted an Africa proverb in underlining the value of having the right partnerships in place and a long-term view to business.

Celliers used the example of the seed market to show the opportunities that lie in wait outside of South Africa. The existing African seed market is estimated to be US\$ 1 billion strong, of which 25% (or US\$ 250 million) is earned in South Africa as the biggest seed producer on the continent. However, our country only has 14,5 million hectares of arable land available. Other countries such as Tanzania and Zambia currently only earn US\$ 10 million and US\$ 18 million respectively in the

market, but up to 34,2 million hectares and 25,6 million hectares of arable land are available in these countries. Countries such as Angola, Zimbabwe and Mozambique are still underdeveloped when it comes to this market.

Four growing markets that provide opportunities in Africa:

- *Oil exporters* include countries such as Libya, Equatorial Guinea, Nigeria, Algeria, Gabon, Angola, the Republic of the Congo and Chad
- *Diversified economies* include Egypt, Namibia, Tunisia, South Africa, Morocco and Cote d'Ivoire
- *Countries in transition* include Cameroon, Ghana, Zambia, Senegal, Tanzania, Kenya, Mozambique and Uganda.
- *Pre-transition* countries include Sierra Leone, the DRC, Ethiopia and Mali.

These countries all either had a GDP of \$10 billion or greater in 2008, or experienced a real GDP growth rate of more than 7% between 2000 and 2009.

Source: Organisation for Economic Co-operation and Development, World Bank Development Indicators; McKinsey Global Institute

Nuwe markte hou van handelsmerke, sê Dall oor Pink Lady®-appels

Suid-Afrika het verlede jaar 12% van die wêreldwye oes van 520 000 ton Pink Lady®-appels gelever. Dit beteken dat 57 000 ton appels gelever is vanaf die 2060 hektaar wat plaaslik met Cripps' Pink en sy mutasies beplant is.

So vertel konsultant Peter Dall, voorsitter van Pink Lady® Development, 'n maatskappy wat gestig is om die hoogs suksesvolle Pink Lady®-handelsmerk ook in ontwikkelende lande uit te brei.

Om hierdie uitbreidings aan te help, is die Pink Lady®-lisensievoorwaardes effens verslap. Uitvoerders na Afrika hoef vir minstens nog die volgende twee jaar ook nie tantieme per opbrengs (sogenaamde "royalties") te betaal nie.

Daar word vanjaar veral gepoog om nuwe markte en netwerkgeleenthede te ontwikkel in gebiede soos Suidoos-Asië, die Midde-Ooste, Brasilië, China en Kanada. Dit word gedoen deur onder meer marknavorsing onder moontlike kliënte te doen oor die vraag na die produk, en gekoördineerde bemerkingsveldtogte en die bywoning van handelskoue.

"Ons is opgewonde oor die vooruitsigte, want dit blyk dat die appel die smaakprofiel van die nuwe markte pas," sê Dall. "Daarby hou hierdie markte besonders baie van handelsmerke."

Dall het benadruk dat die verskaffing van 'n kwaliteit produk waarvan die gehalte deurlopend verseker word uiters belangrik is om 'n gehalte kliëntervaring te verseker. "Dis waarom gereelde inspeksies van produsente vir ons so belangrik is," het hy genoem.

Het jy geweet?

- In 2013 was daar 17 000 hektaar boorde wêreldwyd met Cripps' Pink en Cripps' Pink mutasies. Hiervan is 2060 hektaar in Suid-Afrika.
- 520 000 ton Pink Lady-appels is laasjaar geoes.
- Apples and Pears Australia Limited het die Pink Lady-handelsmerk in 80 jurisdiksies wêreldwyd geregistreer. Dit sluit onder meer Suid-Afrika, Zimbabwe, Algerië, Egipte, Morokko en Tunisië in.
- 13 territoriale meesterlisensies is uitgereik.
- Wêreldwyd is daar 80 uitvoerders en sub-lisensiehouers – en omtrent net soveel invoerders en sub-lisensiehouers daarby.



Did you know about Africa?

- Its 1.1 billion people account for 15% of the world population.
- There are 54 countries in Africa, in which 2000 languages are spoken.
- 50% of its population is younger than 19 years old – the youngest population on earth.
 - The African population is expected to reach ... billion people by ...
 - By 2050, 60% of the population of Sub-Saharan Africa will be city dwellers.
- Six of the world's fastest growing economies are in Africa (2000-2010 figures).

Carefully consider African consumer segments, says experts



If everyone living in Africa only eats three apples a year, no South African apple needs to be exported to other markets.

This is how Dr Mias Pretorius of Two-a-Day sums up the growing potential of exporting South African pome fruit to especially Sub-Saharan African countries. He believes that South Africa – ranked 8th among the world's apple exporters - needs to capture this market and establish brand identities before supermarkets groups can do so. This, however, will need a collective industry effort, and even the help of Northern Hemisphere partners to ensure successful produce supplies.

Production is very low in other African countries such as Algeria, Morocco, Egypt and Tunisia where apples are planted, with almost nothing being exported. South Africa, on the other hand, is in a strong position and exports up to 358 457 tonnes annually. At the moment, up to 60% go to European countries, the UK and Russia, with 13% (145 000 tons in 2012) being exported to African countries. Almost 47% of exports to Africa go to so-called West African ECOWAS countries such as Benin, the Ivory Coast, Ghana, Liberia, Nigeria, Mali and Senegal. A further 39% is exported to countries in the South African Development Community.

Pretorius noted that other apple producing countries such as Italy and France already successfully focus their export efforts in especially Northern African countries. "We should not take them on," he advised.

He advised exporters to look at the GDP of a country before deciding where to send produce. "Purchasing power is important," he noted.

Chris van den Berg of Afrigistics says that there are many challenges to overcome when operating in Africa. Companies can only operate within these realities. He therefore believes that the right partners, the right markets and an efficient supply chain can make or break any endeavour.

Exporters need to be up to date with INCOTERMS agreements about the purchase and shipping of goods internationally, and carefully consider the impact of trade agreements. He warns that government policies, so-called "red tape", weather, accessibility and issues with logistics and the supply chain can throw a spanner in the works of even the most carefully laid plans. "Carefully plan

for realities such as delays at border posts, and know what your logistics partner can offer you by way of cold storage facilities,” van den Berg advised. “Use cellphone technology to track your produce, and be adaptable with a Plan B and C at hand to react quickly and to not loose produce.”

“Get to know the food culture of your intended customer,” is van den Berg’s friendly warning about the value of market research. “Don’t export green apples to a country where no one eats them.”

He sees the value in tailoring different products for different consumer segments. For instance, the so-called poorer “basic survivors” are the biggest market (50-60%), but can only afford single purchases or small package sizes. Members of the “working families” sector – the second largest consumer section - only have money to spend on the basic needs of their family and children. They value stability and routine, and make purchasing decisions based on security, convenience and consistency. They are the first to start valuing the healthy products.

Van den Berg believes that marketers should aim for the “rising strivers”. This segment comprises 10 to 16% of the market, and is the primary drivers behind consumer growth in Sub-Saharan Africa. These working families will be the middle class of the future and have more expendable cash and access to credit. Their buying patterns are based on convenience and quality,

The professional cosmopolitan sector is typically made up of city dwellers. This sector holds 2 to 3% of the market, shops in supermarkets and malls and is brand conscious. They will demand the same quality that they experienced in the Sainsbury’s or Tesco’s they bought from while working and studying abroad. The affluent sector, while only 1-2 % of the consumer market, has a disproportionally high purchasing power. They are well travelled and extremely wealthy, and only value top quality produce.



Into the future... Pome and Stone Road Map

Fruit farming is not for sissies. This challenging industry can be compared to open air factories and are therefore exposed to the vagaries of weather, operational and human issues that are inherent to any production plant. In future things will not become easier.

Four leading experts in fruit production, soil and water management, and pest control gave their 'crystal ball view' of the most pressing issues that producers will face in future. This is what they had to say...

Passion and Innovation - Dr Mias Pretorius

"The South African fruit industry has unique challenges; some are under our control, others are not, but with innovation and passion, we will overcome any challenge." This was the message from Dr Mias Pretorius, Two-a-Day.

What is happening in South Africa has to be seen in the context of global changes, he warned. "Economically we have seen a slowdown of developed economies and a shift in power from the West to the East, whilst developing countries continue to grow steadily. Climate change is a reality that cannot be ignored and has huge cost impacts on transport, storage and packaging. Furthermore, the increase in global yield

continue to drive global supply and this brought about a shift to developing countries, which is influenced by the rapid development of energy efficient storage technologies. As far as global consumption goes, we have seen a stabilisation in developed countries, strong growth in developing countries and supermarket chains controlling trade in fresh products.

SA Future

So does the industry have a future, Pretorius challenged? He said that there are key factors that need to be sorted out locally in order for the fruit industry to flourish and survive. "We need a stable government and address private land ownership, inclusive rural economy, and BEE rating. Our economy has to grow in order to develop a strong middle class and stable currency. Without it we will not have access to finance. On a social level we need to sort out inequality, land restitution, civil unrest and crime. Our access to energy and developed infrastructure (roads and harbours) are fragile and there are questions about water availability and quality."

Under control

Pretorius said that growers have to start acting like there is a future and embrace

sustainable farming principles. "There are key factors under our control that we have to work on, like increase our yield and support continuous research and development. Training our workforce and community upliftment, are essentials that should be addressed by everyone in the industry. Where markets are concerned we have to ensure worldwide market access, strong branding and a strong local market."

Pretorius further said that the industry needs variety in planting system choices. "It's not a one size fits all; what works on your farm will not necessarily work on your neighbour's

farm. Therefore, match your variety to your conditions and spread your risk. Also, start thinking about netting and more dwarfing rootstocks and the value of technical innovation and extension experts."

"Our industry has changed markedly in the last ten years, but will change even more in the next five years," concluded Pretorius. "We need to adapt to the things we cannot change and facilitate the change we need in order to survive."

Boord van die Toekoms – Hoe lyk grond- en wortelbestuur?

Hoe lyk die boord van die toekoms? En hoe sal mens die ondergrondse deel van so 'n boord moet bestuur? Dit was van die vrae wat Nelius Kapp van Prophyta onder die soeklig geplaas het.

Kapp het dit kortom soos volg saamgevat: Vrugbaarder onderstam genetica moet betrek word; waterbestuur moet geoptimaliseer word; om 'n boord optimaal te bestuur moet jy die boom se omgewing meet en interpreteer.

"Hierdie metings moet egter boordspesifiek wees," het Kapp beklemtoon. "Mens kan nie op gevoel werk nie. Ons het datastelsels soos FruitLook beskikbaar, gebruik dit." Volgens Kapp is daar verskeie faktore wat wortel funksionering beïnvloed, soos grondwaterstatus, suurstof, grondsiektes, grondtemperatuur, gronddigtheid en grondchemie. Hierdie faktore moet in ag geneem en fyn bestuur word.

Oor toekomstige appelaanplantings, het Kapp, gesê dat mens boorde van 2000 tot 2500 bome/ha met vrugbare, dwergende onderstamme kan verwag.

Die groot vraag op almal in die Wes-Kaap se lippe is, is ons gronde geskik vir hierdie dwergende onderstamme? "Ja en nee," sê Kapp. "Die grond moet geëvalueer word deur te kyk na die grondopname. Die helling, asook die grondtemperatuur moet in ag geneem word. Baie winderige areas, asook vlak duplekse, swaar nat, growwe gebleikte sande, en liggetekstuurde klipperige gronde (>70%) is problematies vir dwergende onderstamme. Die groot variasie in ons gronde maak die bestuur van dwergende aanplantings moeilik en veroorsaak ook variasie in boomgroei en produksie in die boord. Om dwergende onderstamme effektief te laat groei moet deklare en grondwatermeetinstrumente (kapasitansie probes) baie noukeuring en effektief gebruik word."

Nou hoe maak om grond te manipuleer vir hoë digtheid aanplantings?

Operding verskaf uniformiteit en gronddiepte sodat grond vinniger afdroog in die lente. In jaar 1 moet die grond bedek word met 'n geskikte deklaag. Teen jaar 2 wil ons eenjarige onkruid laat begin groei wat meer suurstof in die grond sit en grondtemperatuur help bestuur. Dit verminder ook afloop. Dit is ook baie belangrik om vir voldoende dreineringsvoorsiening te maak. Grondwaterstatus moet uiters noukeurig bestuur word omdat dwergende onderstamme gevoelig is vir stres. Gebruik hiervoor 'n geskikte grondwatermeetinstrument. Ruimtelike data van 'n hulpmiddel soos FruitLook kan help om probleme vroegtydig op te spoor.

Wat hou die toekoms in vir besproeiingstelsel vir vrugte produksie?

Die stelsel wat die beste is, is die een wat die boom se waterstatus optimaliseer vir jou

spesifieke klimaatsomstandighede, sê Kapp. Daar moet ingedagte gehou word dat hoë produserende blokke meer water gebruik en dat besproeiingstelsels nie altyd die kapasiteit het om tydig in blokke te besproei nie.” Stelselontwerp moet voorsiening maak vir ekstra besproeiing tydens hittegolwe.

Nette

Die gebruik van nette is as vorm van risiko bestuur nuttig vir boorde van die toekoms, meen Kapp. “Hael bly maar die groot risiko en mens moet maar kyk hoeveel keer mens haelskade kry, voor mens 'n besluit neem.” Nette kan egter die aanpasbaarheid van 'n kultivar verbeter, soos wat byvoorbeeld die geval met Granny Smith is. “Set kan egter 'n probleem raak onder nette en benodig fyn bestuur.”



Kristalbalvisie... Neli Kapp, dr. Mias Pretorius, Charl Stander en Bekker Wessel het die HORTGRO Science Tegniese Simposium afgesluit met 'n toekomsblik oor tegniese aspekte van die vrugtebedryf.

Steenvrugteboorde van die Toekoms

Innovasie, minder en duurder hulpbronne, en meer, beter en goedkoper produksie – dit is maar van die toekomsuitdagings wat steenvrugteprodusente in die gesig staar. Daarby het boerderymetodes van die verlede geen plek meer op plase nie, het Charl Stander, van Franschhoek Fruit Packers, gesê.

Stander het gewaarsku teen produsente wat wegstrem van nuwe tegnologie. “In die toekoms is daar nie meer plek vir kleinskaalse bestaansboerdery nie. Tegnologie is daar, gebruik dit tot jou voordeel.” So byvoorbeeld behoort hernieuwbare energiebronne, soos sonpanele, ‘n integrale deel van vrugteboere se toekomsvisie te wees.



Daar is altyd aspekte waaroor mens geen beheer het nie, het Stander bygevoeg. “Dit help nie om te wroeg oor regeringsbeleid, die uitruilkoers, voedselinflasie of deflasie, die kosteketting en die klimaat nie. Ons moet eerder strategies dink.”

Hy het vrugteprodusente aangemoedig om soos entrepreneurs te dink - innoverend en ondersoekend. “Vind die beste bestuurspraktyke en fokus op volhoubaarheid van hulpbronne en plant kultivars wat geskik is vir jou area en klimaat.”

Stander het verder daarop gewys dat daar verskeie operasionele aspekte van vrugteboerdery is, waarop produsente bedag behoort te wees.

“Hier sou ek die opleiding van arbeiders en die ontwikkeling van arbeidsvaardighede bo-aan stel. Gevolg deur hoë digtheidsaanplantings in boorde, die integrering van boordsisteme en meganisasie. Platforms is moontlik aanvanklik ‘n groot uitgawe, maar is uiteindelik volrond voordelig.”

Stander het ook gewys op die noodsaak dat produsente ingeskakel moet wees by kennisbronne sodat hulle op hoogte kan bly van nuutste tendense en tegnologie. “Gebruik die kundigheid beskikbaar in die bedryf om jou te ondersteun in die moeilike besluite wat jy moet neem.”



Future Crop Protection

We asked Bekker Wessels from ProCrop some pressing questions about the future of crop protection. This is what he said:

What is the current situation regarding phytosanitary organisms in the industry?

- Risk regarded as very high.
- Current situation regarding *Bactrocera invadens* is of great concern.
- It is a threat, already present in the Northern parts of our country, that have the potential to greatly damage our industry.
- There are research programs running aimed at developing management programs that will be effective and allow for the continued export of fruits.
- Phytosanitary risks associated with fruit export is also significant, for example the current situation with false codling moth in citrus.
- In order to expand our markets we will have to import fruit from an increasing number of countries – reciprocal marketing.
- This will expose us to an increasing risk of importing foreign pests/disease.
- To accommodate this risk the quality of inspection services will need to be very high.

What are the predictions regarding pesticide and fungicide resistance in the local deciduous fruit industry?

- This is a well-known phenomenon in our fruit industry which is a consequence of pesticide use.
- Several of the so called “easy chemistry” used in our industry has been depleted.
- To counter this threat the development of non chemical control methods should be seen as a priority as well as an increasing emphasis on the use of those already available to us.
- Integration of different strategies is known to delay the onset of pesticide/fungicide resistance and is the only sensible way to manage this problem over the longer term.

What are the future prospects for the use of biological control agents in the deciduous fruit industry with particular emphasis on entomopathogenic nematodes and fungi?

- The potential for use is great and very much needed as emphasised by the previous topic.
- The global pressure for reduction and even elimination of pesticide use is increasing.
- This will inevitably play an increasing role in market access in the future.
- Our industry has invested in research and development of entomopathogenic nematodes.
- Results of this research look promising.
- Initial research on entomopathogenic fungi should start in the coming season.
- Even multi National companies are now investing in the development of bio-pesticides while companies like Koppert in the Netherlands have been around for quite some time trading in bio-control organisms.

What are the effects of mulching on pest and disease management in orchards?

- The benefits of mulching in orchards speaks for itself and has become general practise in our industry.
- Not only do we see better performance of especially young trees but also has the increased biological control of pests like WAA in mulched soils been well documented.
- Mulching initially started off with the use of wheat straw but in recent years “mulched fruit trees” are increasingly been used.
- The benefits however does not come without risk.
- Research is on the way to determine the risk involved with the use of wood chips for the spread of so called stem cancer fungi.
- New techniques for apple scab sanitation such as leave shredding and removal is also a problem on mulched “bankies”.
- It is quite clear that long term research will be needed to optimize the use of this very usefull input in fruit tree production.

Does the deciduous fruit industry need highly trained taxonomists?

- Our industry along with other agricultural industries in the country needs the services of specialist taxonomists.
- This will allow for new species to be identified and for information to be shared.
- Reality is that trained taxonomists in SA are rare and new entrants are few if any.
- This applies to entomology, pathology and nematology.
- Access to overseas specialists are expensive and they seem to have the same problem with respect to enough trained people.
- This obviously is a problem area, not only in our industry but also in the rest of the country, which will need to be addressed in the near future.

What influence will global warming have on the current pest and disease complex in orchards?

- Global warming is the ultimate game changer.
- Small increases in average temperature will have very significant effects on pest and disease populations.
- In addition to this, associated climatic changes such as rainfall patterns will affect ecosystems.
- Predictions are almost impossible due to multiple factors involved.
- Some species will be favoured by increasing temperatures while it will be to the detriment of others.
- For example, WAA will be negatively influenced by increasing temperatures while it's natural enemy (*A.mali*) will benefit leading to a potential increase in bio-control of WAA.
- On the other hand higher temperatures may impose greater stress on fruit trees which might increase their susceptibility to mite pests.

Look who was there...



Friendly neighbours – Shingirai Kubare and Pierre de Wet, from Lonrho Fresh Exporters, in Zimbabwe, enjoyed the symposium and promised to be back again next year.

fresh NOTES

a technical update published by HORTGRO science



Sharing a laugh! Erin Morkel, HORTGRO Science, Prof Karen Lewis, Washington State University, Hugh Campbell, General Manager HORTGRO Science, Dr Stuart Tustin, New Zealand: Plant & Food and fruit grower, Keith Bradley.



Dr Wiehann Steyn (with the microphone) HORTGRO Science, and other delegates asking questions and sharing knowledge during the symposium.

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Fieldmans chitchat... This group of technical experts gathered in Grabouw during the Field Day that was held as part of the HORTGRO Science Technical Symposium 2014. During this session Anton Muller was chosen as the new chairman.

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