



Three years on, exciting future ahead in Australia



By Trevor Dennis
Managing Director

HAIFA's Australian office has now chalked up three years and we are looking forward to a promising future in the local market.

Whilst we are quietly celebrating some of our developments and achievements in the Australian industry in this short time, we also recognise there is much progress to be made, including increasing our levels of support to growers and distributors.

Haifa has made a strong commitment to Australian growers. In addition to supplying the highest quality water soluble fertilisers and establishing the local office, the company also has two agronomists servicing the industry.

The team is looking to continue its regional training events with growers and distributors as well to discuss the

most effective use of our high quality products and to highlight some of the latest systems for fertiliser application.

On the global scene, the supply of water soluble fertilisers has been struggling to meet demand. This, in turn, has caused some regional supply issues.

Haifa is working closely with its distribution network to ensure Australian growers have access to our complete fertiliser range.

As we head into 2012, it's good to see the future for most growers in the industry is looking bright

Dams are full and the broader consumer market is becoming increasingly healthy conscious, which is generating solid demand for fresh fruit and vegetables.

Haifa values its role as a key member of the supply chain, helping ensure growers can achieve high quality, nutritious produce.

If there are any queries on the supply or use of the Haifa fertiliser range, don't hesitate to contact one of our team. If any growers or distributors are keen to attend a regional seminar on the latest in nutrition products and application methods, also please let us know.

We would like to wish all growers and distributors a happy and safe festive season, and we look forward to working with you in 2012.

WA growers choose Haifa for quality fertilisers



THE high quality of Haifa's water soluble fertilisers has made them very popular with Western Australian growers, according to John Jambanis of Mirco Bros at Neerabup.

"Their major plus is that they dissolve extremely well and so pose no problems through growers' pumps and irrigation systems," John said.

"Some growers don't know what they are going to get with some other products – and that's why they choose Haifa. The brand is renowned for supplying excellent products.

"Various growers say they can see the difference in the quality when using Haifa fertilisers."

He said the Haifa range was particularly popular with vegetable growers.

Haifa's Multi-K potassium nitrate, Multi-Cal calcium nitrate and Poly-Feed nitrogen, phosphorus and potassium soluble fertilisers were highly demanded at the Neerabup store.



Mirco Bros
Neerabup
Salesman John Jambanis, Manager Johny Mirco and Assistant Manager Phil Rogers at the Neerabup store north of Perth.



Haifa fertilisers help produce WA's top strawberries ... story page 3

Pioneering products



Top quality fertilisers for a wide variety of applications

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- Controlled release nutrition

www.haifa-group.com

Haifa Australia

Unit 14, 328 Reserve Road
Cheltenham
Melbourne Victoria 3192

T: 03 9583 4691

E: info@haifa-group.com



Your Haifa team

Trevor Dennis, Managing Director
E: trevor@haifa-group.com

0400 119 852

Shaul Gilan, Southern Agronomist
E: shaul.gilan@haifa-group.com

0419 675 503

Jason Teng, Customer Service/Logistics
E: jason.teng@haifa-group.com

0400 124 155

Strict program delivers WA's top strawberries



WESTERN Australian grower Chi Lieu is renowned for producing some of the best strawberries in the State and he puts this success down to a stringent watering, fertilising and monitoring program.

Chi grows tomatoes and strawberries over about 12 hectares at Neerabup, north of Perth.

Strawberries have been one of his main crops for 25-30 years, while he also previously grew export vegetables, including Chinese cabbage.

Chi arrived in Australia from Vietnam in 1979 and was earlier involved in a share-farming arrangement.

He sells his produce through the Canning Vale Markets.

"The quality of our strawberries is the best in WA – a lot of buyers come to ask to buy our strawberries," Chi said.

He said strict watering, fertilising and monitoring had helped to reduce input costs by about 30 per cent while increasing yields by around 10pc and improving produce quality on the property.

"We previously ran a spreader between the plants to fertilise and watered through overhead reticulation."

"We now drip irrigate and this means we don't waste water and we don't waste fertiliser around or underneath the plants.

John Jambanis, Mirco Bros, and Neerabup strawberry and tomato grower Chi Lieu with some of Chi's tomato production.

"Overhead watering also helped the weeds grow and caused more disease due to the wet leaves, allowing fungi to grow.

"This is where there was an immediate benefit in the quality, especially with the strawberries, from the reduced disease.

"We still do a little bit of overhead watering when plants are young to keep them cool, but then we stop it."

Chi uses A and B tanks to effectively fertigate crops with a mix of nutrients through the drip system and he said high quality fertilisers were critical to the process.

He said this was why he relied on Haifa's Multi-K for the important supply of potassium nitrate, delivered through local agent, Mirco Bros.

"The Multi-K fertiliser is very good in water."

"Some other product made in China also can go very hard in the bag."

Chi uses his own unique fertiliser blend for his strawberry crops.

"You have to be very careful with the fertiliser mix for strawberries to get the right quality of fruit and sugar levels," he said.

"I mix up my own to bring the levels up to what I want."

Sap testing is performed through a specialist laboratory in Queensland every two weeks during production and then Chi adjusts his fertiliser blend according to the test results to meet the desired quality.

John Jambanis at Mirco Bros assists with the Lieu's fertiliser requirements.

Watering through the drip irrigation system also is closely monitored.

"We wet only down to about 40 centimetres from the top (of the soil), otherwise we waste water and fertiliser," Chi said.

"During summer the system can be watering for 1 hour in the morning and a couple of hours in the afternoon every day."





Ben Grubb, Elders Rural Services, and Gunns Ltd Breeding, Nursery and Research Manager Chris Dare inspect one of the Multicote-treated trees in the company's Controlled Release Fertiliser (CRF) product trial.

Gunns set to reap input, production, operational benefits with Multicote fertiliser for seedlings

AUSTRALIA's largest integrated hardwood and softwood forest products company, Gunns Limited, is looking forward to input savings as well as production and operational benefits in its plantations following the successful trial of a Controlled Release Fertiliser (CRF) with young seedlings.

Gunns manages about 160,000 hectares of plantations in Tasmania. It also operates one of the largest nurseries in the country, with a capacity of 21 million seedlings, at Somerset on the Tasmanian north coast.

Breeding, Nursery and Research Manager Chris Dare said the nursery previously comprised mostly Eucalyptus nitens and globulus species, however

today the focus has broadened to include radiata pine.

Chris said the company had traditionally applied 100-200 grams of Di-Ammonium Phosphate (DAP) 15 centimetres away from seedlings at planting, but began considering CRF products for the starter application following positive reports in Chile several years ago.

He said the company was initially sceptical about the performance of CRF products, but was reassured following several internal research trials testing a broad range of brands up until its use of a polymer coated CRF product in July 2009. In subsequent trials of various polymer coated CRFs,

including the Multicote product from Haifa, Multicote was the equal best performer in two different trials.

The Multicote products are based on fertiliser granules with a soluble nutrient core, surrounded by a polymer coating which can be adjusted during the manufacturing process to give longer or shorter release of the nutrients. Typical release periods range from two months to 16 months.

Haifa's CRFs also differ from many others because their release rate is governed by temperature, not moisture. This is important in ensuring the nutrient being supplied to the plant is not lost during periods of high rainfall or over-watering.

Assisted by Ben Grubb of Elders Rural Services, Gunns implemented replicated plot trials comprising 30 trees per treatment, with more than 900 trees in each trial at low and high elevation sites. These compared the Multicote with a range of other CRF

brands as well as the traditional DAP treatment.

"We trialed the Multicote NP and NPK and the NP product came out really well," Chris said.

"We found at the low elevation site that the trees responded well and even though the growth at the high elevation site wasn't the same, the Multicote was still the best – also against the DAP.

"The trees all responded positively from the treatments, but those that received the Multicote kept going. The Multicote had more N and P than the other products and its controlled release spectrum seemed to be very good – it was releasing at the right time for our conditions.

"The sooner we can get our seedlings established the better. It helps reduce the impact of browsing from rabbits, wallabies, hares and possums, which also means less browsing control and impact on the ecology.

"The Multicote is also easy and uniform to apply and there is not the threat of burning seedlings as with the previous DAP treatment. Survivability is much better with the Multicote."

Due to the significantly reduced fertiliser volume being handled compared with the DAP, Chris also anticipates logistical and occupational health and safety benefits, as well as reduced risk of nutrient leaching.

"There will also be less reason to spray herbicides for weed control and the quick and more even tree growth results in a more homogenous plantation, meaning less supplementary planting later."

With the support of internal research, Gunns has confidently made a transition to the use of Multicote through Elders Rural Services for Tasmanian plantations.

Chris said the company had recently collected 12-month measurements from the trials and the Multicote plots were still performing well.

Meanwhile, the success of Multicote has now prompted Gunns to trial Haifa's Poly-Feed (Greenhouse Grade) NPK water soluble fertiliser for fertigating in its nursery.



Elders Virginia Sales Agronomist Luc Di Manno and Branch Manager Mark Egarr inspect a crop of tomatoes growing in one of the many greenhouses in the Virginia region.

Poly-Feed popular with SA's greenhouse industry

AS production of greenhouse vegetables on the Adelaide Plains in South Australia continues to grow, so to does the demand for Haifa fertilisers.

Located among the largest concentration of protected cropping operations in the country, Elders Virginia is experiencing the upswing in greenhouse horticulture on numerous fronts.

Branch Manager Mark Egarr estimates that some 700-800 hectares in the region is now under a controlled cropping environment, including hot houses, with the area expanding rapidly.

Mark said tomatoes, cucumbers and capsicums were the main crops grown, and while greenhouses were becoming the more dominant horticulture production in the area, the store also assisted other open crop growers of potatoes, carrots, onions, cabbage and cauliflower.

He said many of the greenhouses use drip irrigation regimes and Haifa fertilisers were increasingly demanded for these systems due to their high quality. It is now the strongest brand in the market.

"We have been selling Haifa Poly-Feed (Greenhouse Grade) and Multi-K potassium nitrate for a number of years," Mark said.

"We also have other brands, but the Haifa brand is now well recognised. Growers will come in and ask for Poly-Feed.

"They will choose a different Poly-Feed product depending on what stage their crops are at, with higher potassium fertilisers generally applied towards the end of production," he said.

Elders Virginia can be contacted on (08) 8380 9324.



Poly-Feed The greenhouse specialist

Premium grade, soluble NPK fertiliser, perfectly suitable for greenhouses, based on high quality ingredients.

- Available in various formulae, specially designed for different growth stages.
- Enriched with micronutrients and suitable for Nutrigation™ and foliar feeding.
- Suitable for all crops and for use with water of varied quality.





Elders Virginia Sales Agronomist Luc Di Manno, Branch Manager Mark Egarr (right) and local grower Charlie Nguyen among one of the family's capsicum crops.

Efficient Virginia operation delivers quality cucumber, capsicum, zucchini

VIRGINIA hot house growers Charlie and Thanh Nguyen have steadily grown their enterprise over 4 hectares (10 acres) in the past 15 years.

A noticeably clean and efficient operation, the Nguyens are today mainly growing Lebanese and Continental cucumbers, as well as capsicum and zucchini.

All crops are fed via drip irrigation and Charlie said it was his father, Thanh, who implemented their fertiliser and chemicals program.

The family uses a range of fertilisers for its production, including Haifa's high quality products. Elders Virginia assists with the fertiliser requirements.

The Nguyens have used Haifa MKP and MAP during early crop production, as well as Multi-K potassium nitrate and Multi-Cal

calcium nitrate, and, like many growers in the region, Poly-Feed (Greenhouse Grade) also has been regularly applied through the irrigation system.

Poly-Feed applications typically increase toward the end of crop production and have helped improve cucumber quality in particular.

Charlie said one of the main challenges in the high production operation was constantly facing the cost-price squeeze in the industry and the subsequent pressure this applied on making careful input decisions.

Tired soils and the presence of nematodes also demand strategic management and regular fumigation, while insect control is critical as well, especially from October onwards.



Haifa's Poly-Feed (Greenhouse Grade) fertiliser is regularly applied through the Nguyen's irrigation system.



Nutrigation of crops via irrigation machines

By Shaul Gilan
Southern Agronomist

AN irrigation machine is designed to apply the required irrigation volume on a certain area via multiple sets of emitters and continued steady movement over the area.

As such, their water flow is constant and is derived from the peak irrigation requirements, area size and the hydraulic design of the machine.

Different application of water volumes per certain area can be achieved by higher or lower speed of movement of the machine.

As the water flow is constant, when the machine moves faster the irrigation application is lower – and vice versa when it moves at slower pace.

Most of the advanced machines are controlled by user-friendly, but sophisticated computerised controllers and GPS systems, which allow constant rate of movement, correction of any speed deviations or slippages, calculation, monitoring and control of the pre-program area for irrigation, water application and fertigation.

The above helps to achieve high irrigation uniformity, which is standard in today's design and performance of irrigation machines.

In combination with the appropriate set of emitters, the actual irrigation uniformity achieved is 90-95 per cent.

With these features, the irrigation

machines are an excellent and simple way to apply chemicals, together with fertilisers.

Irrigation machines

There are many variations of irrigation machines, but the most common are Centre Pivots (CP) and Linear Moves (LM) machines.

They are mostly run with 3-phase electrical drive with 12-volt or 24V control systems. A few models are hydrostatically driven, but still have 12V control systems.

All machines are designed with constant flows, with CP covering a circle field area and LM covering a rectangular area.

An important difference between CP and LM is the water source location, which is static in the case of CP and semi-static or moving in the case of LM.

Major differences that may affect Nutrigation

CP – the control tower is always static and it is the point of water feeding to the machine that is rotating around the main tower (hence CP). This makes it very simple to inject fertilisers at this static point at any required rate, according to the irrigated area and applied water, as well as required nutrients.

LM – there are two major types: one is fed from a main line hydrant located on the main path of the machine every 300-500 metres, while the second one is channel feeding.

In both cases the main tower is moving, so any Nutrigation system injects the fertilisers into the main flow at the tower. In case one it can be static at the water hydrant or moving attached to the main tower. In case two it can only move with the main tower.

Irrigation uniformity

The overall water flow through any irrigation machine is constant per machine as per its design.

It is regulated by the main valve at each machine and by individual flow regulators located at each emitter.

There is a major difference between CP, where the flow per emitter is lower close to the centre and higher as one goes further out, and LM, where all emitters are with the same flow. However, in both cases proportional Nutrigation will maintain constant fertiliser concentration in every drop of water applied.

Sprinklers types

There are two main sprinkler types for all machines: static spreader or rotators. Both are suitable for fertigation, with static spreaders more sensitive to wind drifts.

In principle, the application of water is very high per unit area and time, which prevents any high EC damage to leaves because the water hits the plants for a short period and falls off to the ground.

Above canopy and below canopy

There are different sprinkler systems that can be used to work above and below the canopy of certain crops. The below canopy systems are less sensitive to wind drifts and high EC influences when Nutrigating and allow almost any amount of fertiliser to be applied at one time with minimal water volume. The above canopy systems are more sensitive to wind drifts and high EC and therefore have some limitations on the applied fertilisers in one application.

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LEPA (Low Energy Precise Application) under canopy irrigation.

Nutrigation considerations

The flow through irrigation machines (CP or LM) is constant.

The area covered per run, as well as the volume of water applied, is known.

The quantity of fertilisers to inject per run is now very simple to calculate and practice.

The following points should be considered:

- Static or movable Nutrigation system.
- Stock tank size to supply full run at peak demand.
- Proportional injection pump flow rate to suit the total machine flow rate, peak demand of nutrients and the injection time length per run.
- EC levels of the irrigation water when injecting the required amount of fertiliser per run and per the relevant crop and application system (above, below canopy and LEPA systems).
- The general rule is it is always better to split the fertiliser application into any of the machine irrigation runs and apply smaller fertiliser volume per run.
- Channel fed LM can be covering a large area of 130-640 hectares per machine with flows of 38-75 litres per second. This may require large stock tanks, which, in case of Channel fed LM, will have to move with the machine. It is recommended, therefore, to split the nutrient applications into as many as possible applications. It also is important to get the machine manufacturer recommendations on the allowed size of stock tank that the main tower can carry on itself or pull behind on a trailer.
- Pre-set the Nutrigation unit to start fertiliser injection whenever you start your water (when fertilisers are required) and before the machine starts to move.

- Select your injection pump type that can be electric or water driven, but with ability to pre-set precise proportional injection rates as required.
- Allow a mechanical mixing unit on the stock tank to allow quick, easy mix of fertilisers. An electrically driven unit is most common.

Calculation examples:

A) Centre Pivot – 285m length, covering 25.5ha (64 acres), flow rate of 62.5L/s. This flow rate allows applying 36 millimetres/ha of irrigation per 7 days in two applications of 20 hours each, 18mm/ha per application.

B) Let's say that during this week we need to apply 50kg of N, 5kg of P (11.6kg P2O5) and 60kg of K (72.2kg K2O)/ha .

We will need to apply 1,975kg of PN, 236kg of MAP and 750kg of Urea/ha per run. This can be mixed in 10,000-12,000L of water volume, temp dependant.

	Kg (25ha/run)	N	P	K
PN	1,975	266.7		750
MAP	236	28.3	64	
Urea	750	345		
Total		640	64	750
Total kg/ha/run		25.6	2.56	30

The above quantities are for one run. We will apply two runs per week.

To achieve the required application of fertiliser we will need to inject 2.6L of stock solution into each 1000L of irrigation flow, or a total injection rate of 585L/h of stock solution into

255m³/h flow. For this injection rate, one will need 12,000L of stock solution for an irrigation interval length of 20 hours. If the water temp and fertiliser usage allows higher stock solution mixing rates, the injection rates can be reduced accordingly.

This will add EC of 0.46dS/m, which is more than accepted and will cause no burning hazard.

C) Let's say that we will apply the irrigation in four runs per week, applying the same 36mm in total, 9mm per run and the same amount of fertiliser per week.

The machine will need to run quicker to finish the 25.5ha cycle in about 10 hours.

We can now split our fertiliser quantity into four mixing batches, with each run applying 988kg of PN, 118kg of MAP and 375kg of Urea, which can be mixed in 6000L of stock tank.

	Kg (25ha/run)	N Kg/ha/run	P Kg/ha/run	K Kg/ha/run
PN	988	133.4		375
MAP	118	14.2	32	
Urea	375	172.5		
Total		320.1	32	375
Total kg/ha/run		12.8	1.28	15
4 x run per week		51.2	5.12	60

The injection rate stays the same at 2.6L/1000L of flow and the EC delta is 0.46dS/m.

D) Let's say we will irrigate four times per week, applying 72mm and the same amount of fertiliser.



Electric driven proportional injection pump and mixing unit, including stock tank, attached to a Valley CP machine.

This requires four runs of 20 hours per week, but, as we are not changing the required fertiliser quantities, we need to prepare stock solution as in case C.

As we are applying more water, the fertiliser injection rate will be lower – 1.3L/1000L of flow. The EC Delta will be only 0.23dS/m.

Nutrigation equipment

A) Equipment considerations and choice

Calculate the peak demand of nutrients per unit of time (day, week, month etc), which derives the volume of water you will need to mix your fertiliser in.

Consider the relevant length in hours of an irrigation and fertigation cycle to calculate the required injection rate of the selected injection pump.

Always choose a pump with 10-20pc higher injection rate above your calculated rate.

The pump pressure at the required flow should be at least 10pc higher than the system pressure at the injection point.

The injection pump should have a simple mechanism that allows adjustable injection flow.

More sophisticated pumps can be fully proportional, which means they can be calibrated to inject a certain volume of stock solution into a certain volume of irrigation water. This will require a water meter with electric output located on the input of irrigation water into the machine.

As the machine flow is constant, a simple adjustable injection unit is sufficient, which will allow adjustment of injection flow when different nutrient levels are required.

B) Water driven pumps – those pumps driven by a side flow (bypass set up) to the main stream of irrigation water. The side stream water flow requires up to 10-15 PSI (0.66-1 bar) pressure loss for full rate of the injection pump activation.

Mixrite TF10 at 5pc – injection rate 50-500L/h.

Dosatron D20 – up to 450L/h.

Fertic Fertiliser Injector (Triangle Australia) – up to 500L/h

C) Electric driven pumps – there is a range of pumps suitable for injection of fertiliser. The injection rate in some of them is mechanically adjusted



Combined Nutrigation unit with 2000L stock tank, electric agitator and electric injection unit, and control board.

as a percentage of the full injection rate. Some of them are electronically adjusted via a PLC and variable speed mechanism. Flow rate can range from 100L/h to a few thousands. They can be single or 3-phase electric motor, which can draw power from the irrigation machine Genset or power supply (this requires consultation with the machine supplier).

Grundfos Pumps
Agri Inject

D) Stock tanks and mixing units

It is important to allow for a large enough stock tank to supply stock solution to at least one full run.

The stock tank is to be equipped with a proper agitation unit for quick and simple fertiliser mixing.

Full water stream should be allowed next to the stock tank to allow quick filling of the required water volume for preparation of the stock solution.

The stock solution tank can be located next to the head tower in case of CP, or somewhere at a central point on the farm which supplies pressurised water to a few machines.

In the case of LM with hose delivery, the stock tank can be located at a centre point or at the hydrant at each stand in the field.

Channel fed LM will require the stock tank to follow the machine either on a pulled trailer or on the main tower itself.

Installation

Water driven pumps require a certain installation scheme to create the hydraulic force that activate them.

Electric driven pumps are simpler as the driving force is the electric power, which needs to create higher pressure than the main line pressure at the required injection flow.



Combined unit with 1000L stock tank, electric agitator and Mixrite TF10 injection unit installed at a central farm point.



Haifa