

## Skeltons expands into spraying equipment



Skeltons ran field days in February to launch the new Silvan range at its Hastings orchard site.

**Skeltons and Farmlands have negotiated a partnership with one of New Zealand's leading spraying equipment manufacturers, Silvan.**

"Skeltons aim is to help growers achieve the best quality crops they can, as profitably as they are able. Having top quality spraying equipment helps growers to achieve this so it makes sense that we stock a market leading brand," says Ian Gold, Skeltons General Manager. "This move strengthens the range of solutions Skeltons and Farmlands offer our horticultural shareholders."

Silvan has been at the forefront of spraying technology in Australia and New Zealand for over 48 years, and is renowned for the ongoing development of its orchard and vineyard equipment.

Last year Silvan released the Supaflo G2 'Next Generation' orchard / vineyard sprayer. This was a three-year \$1million project that is arguably the most significant improvement to and enhancement in orchard spraying technology for the last two decades.

The most talked about features of the new Supaflo G2, aside from its superior spray coverage, are the health and safety features including a chemical induction drawer that pulls out at waist height and locks neatly away during operation.

*Continued overleaf*

## Challenges reveal depth and value of relationships

The strong relationships Skeltons Technical Advisors and Farmlands staff have with our customers was never more evident than during the Psa discovery in kiwifruit crops in November last year.

As soon as the problem was identified a huge range of emotions swept through all those closely associated with the industry. The initial shock soon turned to disbelief, dread, fear, anger and a fair bit of frustration. Knowing the devastation the disease caused to the Italian gold kiwifruit industry, the question became "what could it do to the New Zealand crop?"

With media hyping up the issue, the focus came onto the industry and those within it, before anyone had come to grips with the situation.

While industry leaders tried to get their heads around the problem and formulate ways of dealing with it, many growers were left in the dark.

That is when relationships were tested and found to be strong. Our Skeltons / Farmlands people became sounding boards and 'counsellors' to the many individuals who needed to discuss the situation.

Our team quickly realised people needed reassurance and support and they all put a huge amount of effort in to supplying that to their customers, friends and colleagues. This effort took a personal toll on many of them and there were several instances of 'recovery time' required once it all settled down.

Now the hype has diminished and the focus is more on how we can manage and live with the problem, there is less emotion and more practicality around the discussions. However to me, the experience has shown that we are more than just 'sellers' to the industry we work in; we are part of it, our passion for it is no less than those more directly involved and we have a vital role to play in its success.

I applaud all of you, growers and colleagues alike, who have ridden the Psa roller coaster and can now see the way forward.

IAN GOLD Skeltons General Manager



## Organic post options

**Skeltons and Farmlands are now able to supply Biogro organically certified alternatives to tannalised timber posts for the wine, pipfruit and kiwifruit industries. The two options available are galvanised steel or wood / plastic composite posts.**

Industrial Tube Manufacturing (ITM), manufacturers of steel posts, offers a complete trellising structure that is designed for load-bearing structures in the kiwifruit industry. The ITM Agbeam system easily joins together saving time and labour over conventional timber pergola structures. It includes a deadman end assembly system, strainer post, two intermediate post options, fruiting and tucking wire clips, plastic caps for the top of strainer and intermediate posts, and irrigation clips to fit frost sprinkler heads to the top of posts.

Advanced Plastic Recycling (APR) produces recycled timber / plastic composite posts and strainers. The posts are 100 percent recycled and hollow with a 15mm thick wall. The plastic is UV stabilised and has added strength given the timber composition.

**For further information regarding these products, contact your Skeltons Technical Advisor.**

*James Cropper, Skeltons Technical Advisor, Hawke's Bay*

*From front page*

## Skeltons and Silvan sprayers

There is now no need to climb onto the sprayer for any of the functions as everything can be accessed from ground level at the Operator Station.

Skeltons hosted spraying field days in February to launch this range, as the first official release of the G2 Sprayer within New Zealand. It will initially be available in Bay of Plenty and Hawke's Bay Farmlands stores and the Skeltons' Hastings store.

**Contact Skeltons or Farmlands in these regions for a demonstration or more information.**

## Retiring organic pioneer reflects

**Malcolm Crawford, an acknowledged leader in pest and disease control for the organic growing industry, has retired as a Skeltons Technical Advisor in Hawke's Bay after almost 21 years.**

Reflecting on the industry both past and future, Malcolm believes that many of the challenges coming up for horticulturists will be caused by changing climatic conditions.

"I think that new pests and diseases and those not common now, will become more prevalent and keep growers and their advisors on their toes. The recent Psa episode in Bay of Plenty is a classic example," Malcolm reflects. "I think the progression into biological growing will provide many of the answers, it has a big future. I regret that I won't be part of that progression."

Malcolm, himself a former orchardist, acknowledges that the growth in environmental awareness across the board within the industry is the most significant development he has seen over his career. "Growers and suppliers have become extremely conscious of their responsibility to the land, the crops, and the ultimate consumer, in everything they do. When growers stopped using organophosphates it became the catalyst for a change in mindset."

Malcolm was part of a small core group of growers and scientists who between 1995 and 1997, worked together to develop an effective commercially viable organic strategy for pest and disease control to meet the stringent criteria of BioGro standards. The rest, they say, is history, but Malcolm has huge respect for the pioneering growers who displayed tenacity in the face of a large degree of industry cynicism. "It was a pretty interesting time."

He believes that establishing trust is the key to a successful relationship between a grower and advisor, and the move away from family



**Malcolm Crawford**

orchards to corporate-owned entities, the other significant change he has seen occur, has not altered this. "These days it is the manager that is the grower but they still have to trust that you have their best interests at heart. They need to understand that you are doing your best to help them get the crop to market with a good result."

He acknowledges that the current trend of orchard amalgamation to create larger blocks was one necessary for the industry to survive, that larger entities have more "grunt" to manage the increasingly competitive and challenging business environment.

As to his future, Malcolm will remain true to his roots; he's looking forward to farming his animals, running chooks, catching fish, and growing vegetables, organically of course.

## Top hort students awarded



**Skeltons was proud to award scholarships to two Hawke's Bay pipfruit cadets studying through Eastern Institute of Technology at the end of their 2010 studies.**

Pictured from left are Epere Epere, Skeltons Excellence Award Year 2 winner with Ian Gold, Skeltons General Manager, Neemia Neemia, Skeltons Excellence Award Year 3 winner, who also took out the Year 2 award in 2009, and Lachlan McKay, Skeltons Hawke's Bay Field Manager.

# Post harvest orchard hygiene on deciduous fruit trees

**Diseases carried over harvest need to be addressed to minimise bacterial and fungal inoculums prior to plants coming into leaf next season. Although pruning out diseased tissue is one remedy, sprays are also required to help reduce total inoculums.**

Copper applications on stonefruit should commence at about 20 percent leaf fall to reduce the carryover of bacterial spot. One or two further applications should be made in rapid succession during the leaf fall period, as this disease enters through the fresh leaf scars initially left during the leaf fall period.

Winter copper sprays help prevent bacterial blast on a number of crops. Avoid applying copper to stonefruit trees too early, as soft growth may suffer from copper burn and increase disease susceptibility.

Brown rot has been troublesome on stonefruit with significant dieback on some trees and mummified fruit hanging in trees. Dead twigs and branches can be pruned out and mummified fruit should be removed so it does not become buried by vehicles travelling through the orchard, becoming a source of spore release at flowering time.

Black spot is a dangerous disease for apple growers. The key to reducing overwintering inoculums is to prevent leaves surviving into spring. A dilute foliar spray of urea at 100kg per hectare at leaf senescence to encourage leaf drop is the most effective method. This

also provides a fungicidal effect on the black spot present on infected leaves.

Where powdery mildew is an issue, a dormant application of lime sulphur at seven percent will greatly reduce overwintering and assist in early season control. If applied in the late dormant period and about 10 to 14 days prior to the first oil and insecticide, scale insect management can also be improved.

For pip and stonefruit orchards, firewood stacks stored in the open or close to orchards, are a major source of inoculums for the silver leaf fungi. Ideally firewood should be stored in covered areas.

Any significant winter pruning cuts should be made in dry weather conditions and the cuts painted immediately with an approved wound dressing.

Where fireblight infection has been an issue, high rates of copper applied later in winter will help with control in the coming spring, although other measures will still be required during spring.

European canker management is necessary in warm moist climates. During the leaf fall period, applications of Captan should be made immediately prior to expected wet periods to cover cankers. Usually at least two applications are required, three or more may be necessary in extremely wet autumns.

Olives should also receive copper applications to reduce the carryover of Peacock spot,

cercospora and anthracnose, after the crop has been harvested.

For grapes pre-bud burst, an application of lime sulphur at 7L per 100L is useful as a pre-season clean up and to reduce blister mite populations.

On kiwifruit, post-harvest hygiene may be helpful in reducing overwintering inoculums. Where bud rot and pseudomonas are a serious problem, winter copper applications may be beneficial.

If copper applications are made to any crop, at least 21 days should elapse before grazing sheep on treated areas. In dry winters this period should be extended, to reduce copper residues on the grass and to allow for greater grass growth to further dilute the copper residues.

With many insect pests it is often best to let nature take its course after harvest as beneficial insects (predators) can survive under organic or IFP programmes.

However, if control measures resulting in little or no predator survival are used, autumn control measures may be necessary for some of these pests, and in particular mite eggs and woolly apple aphid.

**Talk to your Skeltons Technical Advisor for information specific to your situation.**

*Martin Taylor, Skeltons Technical Advisor, Hawke's Bay*





## Improving grape machinery cultural practices



**'The Leafinator': a new option in cultural practices**

**While grape growers understand the importance of well-timed leaf plucking, trimming, and trash-blowing of grape bunches to reduce disease pressure and improve spray coverage for quality wines, the challenge for many is limited time and money to undertake these important cultural practices.**

New ideas for the operation of suck or blow machinery for leaf and trash removal are constantly being developed as growers look for mechanical machinery that does the best job with the least grape bunch damage.

Two Hawke's Bay growers, Neal Cave and

George Sandbrook, both vineyard owners and growers, have combined a Colombardo leaf plucker with a Collard Pulsed Air System to create the Leafinator. It was built by John Patrick from Moteo Ridge Vineyard, with some professional technical input and engineering.

The idea was to maximise the separate mechanical suck and leaf pluck removal with blown bunch trash, all in one operation. Observations showed that first removing exterior leaves with sucking before using a pulsed air system through grape bunches, significantly reduced the amount of berry damage and potential for botrytis development.

While there was a significant capital input, the trade-off was having independence and flexibility to do two to three leaf plucks throughout the growing season, says Neal Cave. The results are paying back with much less disease pressure, and savings in time and money.

With two years' experience, Neal is comfortable adapting the way he operates the Leafinator for each different grape variety and canopy growing system.

*Blake Herbison, Skeltons Technical Advisor, Hawke's Bay*

## Lettuce 're-invented' - choice and quality now key

**If there is one vegetable crop that has 're-invented' itself over the last decade it is lettuce.**

The humble 'ice-berg' lettuce that once dominated, has now been challenged by a proliferation of other types: green and red 'frills', cos, red and green butterhead, and varied 'one-cut' non-hearting varieties.

Consumer demand is now being met by a huge choice with the non-hearting or loose-leaf lettuces more popular due to the less-waste factor and a wider colour range.

Mesculin mixes have herbs and lettuce now included, all adding to the variety experience.

However pest and disease issues are something that hasn't changed. Growers still battle sclerotinia, ring spot, xanthomonas, green peach aphid, looper caterpillar, and thrips, amongst many. Weather still plays a part but risk is minimised with new quicker maturing varieties (60 days over summer).

The lettuce aphid, nasanova discovered in New Zealand in 2004, forced the quick release

of new Nas-resistant varieties as hearting types and fancy varieties were more affected by aphid because of difficulties with spray coverage.

Crop protection companies recognised the increased size of the 'salad' market and have registered products accordingly. Coragen is an example for lepidoptera pests. There are bacillus options like Clarity for the softer approach. Confidor was registered for nursery use and is still used today by those growing larger-sized varieties.

Crop monitoring is more the norm and growers are very much aware the public eye is on them for justified spray applications. This is especially important in a crop where every part of the plant is eaten.

**Contact your Skeltons Technical Advisor for help to keep your lettuce market supplied with the highest quality, minimum-residue produce the consumer now demands.**

*Erin Kyle, Skeltons Technical Advisor, Manawatu*



## Plant nutrition: having a balanced diet

**Like all living things, crops require a balanced diet of nutrients to maximise the yield and quality of the produce.**

Soil or plant analysis done through a certified laboratory can ascertain if a nutrient deficiency exists and if so, whether it is a macro or micro nutrient.

**Macro nutrients** are elements the crop requires in large amounts and include nitrogen, phosphate, potassium, calcium, magnesium and sulphur. Remedial doses are usually applied in kilograms per hectare.

**Micro nutrients** are just as important for healthy plant growth but are required in much smaller amounts and are normally applied in grams per hectare. Micro nutrients include boron, zinc, manganese, iron, copper, and molybdenum.

To rectify a nutrient deficiency it is necessary to decide whether to apply fertiliser to the soil or as a foliar application. This will depend greatly on the situation and the crop being grown. Expert advice should be sought to get the best solution, but remember to come back to the

issue of the amount required i.e. kilos or grams per hectare.

As a general rule it is more efficient to apply micro nutrients as a foliar application as it can be difficult to apply a few grams per hectare on the ground evenly to achieve the desired effect.

It is also necessary to consider the form of fertiliser to be applied and how plant-available the nutrient is as this will determine the amount of nutrient applied per hectare. For example, in the case of a foliar application of magnesium, a nitrate or oxide form could be used; magnesium nitrate penetrates easily into the foliage so therefore a high percentage of the kilograms applied will be taken into the plant whereas magnesium oxide has relatively poor plant penetration into the leaf so very little of the magnesium will be taken up.

There are a large number of companies selling fertiliser in New Zealand, and an endless list of claims being made about their products. When given a recommendation it is important to consider the aspects outlined

above to make sure the advice is correct.

**Skeltons Technical Advisors are available to advise on nutrient requirements specifically for your property and crop to ensure the overall aim of getting the maximum production and financial return per hectare.**

*Chris Herries, Technical Manager, Hawke's Bay*



## Seaweed in horticulture

**Using seaweed products alongside a good fertiliser regime will lead to healthier plants and increased yields. Seaweed offers a natural way to increase fruit size, improve dry matter, storage characteristics and increase resistance to environmental stress across a wide range of horticultural crops.**

The first record of seaweed being processed dates back to China 2700BC. Today seaweed is commercially grown and harvested throughout the world. Seaweed contains a multitude of naturally occurring plant growth promoting substances as well as a matrix of plant nutrients, amino acids, carbohydrates and vitamins necessary for overall plant health, nutrition and quality. Nutrient content can vary on species and the environment in which the seaweed grows.

### Better fruit quality

Research shows seaweed enhances the ability of plant cells to differentiate, divide and elongate. This promotes cell vigour leading to improved fruit uniformity, size and firmness.

### Plant health

Years of laboratory and field research proves seaweed's contribution as a natural source of complex carbohydrates including alginic acid and mannitol. Unlike synthetic chelates, these compounds hold plant nutrients in a softer bond, increasing nutrient uptake and bioavailability in plant tissue.

### Stronger growth

Another benefit of using seaweed is that it stimulates strong healthy growth, not the rapid soft growth associated with high nitrogen applications. Vigorous root systems are particularly noticeable, giving the plant better access to nutrient and water supplies.

### Pest and disease resistance

Research suggests that constituents of seaweed extracts, in particular the betaines, induce systemic acquired resistance (SAR) to various stress situations including pest attack. Betaines help plants ward off attack from certain pests. Seaweed extracts have also been proven to suppress mites and inhibit powdery mildew, stem rust, sclerotinia and botrytis.

*Andrew McIntosh, Skeltons Technical Advisor, Bay of Plenty*





## 27 years' service to industry awarded

**Stewart Horne has been involved in growing fruit all his life. He has served the industry in Hawke's Bay for 27 years and his contributions were acknowledged with the awarding of the Skeltons-sponsored Joe Bell Trophy at this year's Hawke's Bay Fruitgrowers' Awards.**

"Stewart's knowledge and understanding of the issues facing the region and local body regulations has been invaluable in developing a good relationship with the regional and district councils," says Chris Herries, Skeltons Technical Manger. "He has been instrumental in gaining better outcomes for fruitgrowers in the district. He has always been willing to stand up for what he believes in."

Stewart's time on the HB Fruitgrowers' Association executive began in 1974 when he was in his mid-20s, the youngest-ever elected. He served until 1981 and after a few years off, he re-stood in 1985 and continued until 1995, and then again from 1997 until his retirement in 2008.

He was pipfruit sector chairman in 1986 and 87 and again between 1997 and 2000.

In 2008 he was awarded Life Membership of the Association.



**Chris Herries with Stewart Horne at the Hawke's Bay Fruitgrowers' awards.**

## Avocado - greenhouse thrips watch



**Avocado growers and monitors will be on the lookout for greenhouse thrips (*heliethrips haemorrhoidalis*) as the weather continues to warm up. Feeding damage takes place in the shade between fruit clusters so vigilance is needed to look between mature fruit and new fruit when they begin to touch.**

Adults have black bodies with cream coloured wings and legs. Interestingly, all the adults are females, reproducing without the need for males. These 1.25mm long adults can lay approximately 15 to 25 eggs in their 70-day lifetime.

The small kidney-shaped transparent eggs are laid inside the surface of plant tissue, both fruit and leaves, and hatch in 16 to 20 days. The small transparent larvae, after feeding on fruit for around five days, moult into a second larval stage.

They then feed for another four to five days before congregating in shady sheltered areas to pupate, a non-feeding and motionless stage. These areas are typically in between fruit or where fruit are against branches or leaves. Four days later they moult into adults. Time from egg to adulthood is around five weeks (35 days) depending on temperature.

Adult thrips are expected to cause approximately six times more damage than in the larval stages. Greenhouse thrips are unusual as they pupate on the host plant

rather than in the soil as do most other thrip species.

Traditionally control was with broad spectrum organophosphate and pyrethroid chemicals. Softer and less persistent chemistry is now preferred, such as Success, Calypso, Oils and Maldison.

Biological control options include *beauvaria bassiana* and the thripobius *semiluteus* wasp. The adult thripobius wasp lays individual eggs into first and early second stage thrips larvae. Wasp larvae feed inside the thrips larvae, taking over the entire body of the thrips, forming a black pupae (approximately 11 days into the thrips' lifecycle).

After another 11 days the tiny adult wasp emerges from the pupa and begins searching for more thrips larvae in which to lay its eggs. Adult wasps only live for three to four days and lay most of their 40 to 60 eggs on the second day of their life.

As the feeding and egg laying of thrips causes silvering and russetting of fruit, the damage is very obvious, resulting in significant downgrading of fruit at the packhouse.

Monitoring is critical to ensure the pest is controlled in the early stages - adults cause significantly more damage than larvae. Controls need to consider market access and relevant withholding periods.

**Contact your Skeltons Technical Advisor for more information.**

*John Lees, Skeltons Technical Advisor, Northland*



## Post-harvest irrigation

**In our warm autumn months a significant amount of carbohydrate (CHO) can be stored post-harvest due to continued photosynthesis, provided a functional canopy is maintained through irrigation and, to a lesser extent, nutrition.**

Deciduous plants such as grapevines and apple trees have two main root growth phases (or root flushes): one early in the spring and the other immediately post-harvest. Early apple varieties can have up to eight to 10 weeks of active canopy post-harvest, while for grapevines this active period of root growth and CHO storage can continue right up until two weeks before dormancy.

### **So how important is it to maintain an active canopy post harvest?**

The quality of the post-harvest root growth and maximised CHO storage determines the quality of the spring root growth, and the amount of carbon and nutrients partitioned into the key spring growing areas. Plants require a good supply of these stored reserves of CHO and nutrients when the roots become active again pre-spring.

The post-harvest period is the perfect time to correct any nutrient deficiencies as this is the first point that can influence next season's crop. Growers in the high yielding grape growing areas of the Riverina, Australia test nutrient and CHO reserve concentrations to determine how many weeks they need to retain a functional canopy and the nutritional

inputs required post-harvest.

This testing identified that water stress during the post-harvest period for one season had little impact on yield the following year as stored reserves were still adequate. However with successive seasons of poor post harvest conditions, yield and vine health declined.

The same can be seen in pipfruit, where successive years of post-harvest stress in Galaxy blocks in Hawke's Bay have resulted in tree defoliation in less than three weeks after harvest. The following spring these Galaxy blocks set low numbers of non-uniform blossom, resulting in a very poor crop load.

If a block becomes stressed post harvest, especially in successive seasons, then depleted CHO and nutrient reserves will impact upon:

- Root growth
- Shoot growth and leaf area development
- Health and quality of the buds
- Reduced flower buds and therefore blossom
- Nutrient deficiencies
- Crop volume, uniformity and size

The post-harvest root flush may take several weeks to reach a maximum, so fertilisers do not necessarily need to be applied immediately. However irrigation does, especially if soil moisture levels are very low and no significant rainfall has occurred ( $\geq 50\text{mm}$ ).

### **Grapes**

If soil moisture levels are very dry, i.e. deficits equating to around 100 percent of readily available water (RAW), then in light soils apply 25mm followed by 10mm weekly for three to four weeks. In medium to heavy soils apply 40 to 50mm followed by 10mm weekly for three to four weeks.

If soil moisture levels are typical to dry, i.e. deficits equating to around 50 to 75 percent of RAW, then in light soils apply 10mm weekly for three to four weeks and in medium to heavy soils apply 25 to 30mm followed by 10mm weekly for three to four weeks.

### **Apples**

If soil moisture levels are very dry then apply about two thirds of the current week's potential evapotranspiration (PET) each week for three weeks. For example, standard Royal Gala  $36\text{mm} \times \frac{2}{3} = 24\text{mm}$ , mature dwarf = 18mm and from the fourth week onwards apply about one third of the current week's PET each week.

If soil moisture levels are low then apply about two-thirds of the current week's PET that week and about one-third each week thereafter for about eight weeks for the early harvested varieties and about four weeks for the mid / late-harvested varieties.

**For more information and advice, contact your Skeltons Technical Advisor.**

*Todd Whiffen, Skeltons Biological Unit Manager*



*This the first in a series of articles on biological growing prepared by Todd Whiffen, Skeltons Biological Unit Manager, that will appear in each issue of HortFocus.*

## Building the right environment for thriving soil biology is key

**For too long soil has been viewed as just dirt or the relative proportions of sand, silt, clay and organic matter that does a great job at anchoring our plants. Rather it is a living, breathing, inter-related entity that is comprised of a complex series of relationships between a range of diverse organisms, plants and nutrients, with a capability to repair and restore itself.**

These living organisms are not too dissimilar from us in that they require a comfortable home, food, water and oxygen and are affected by some of the same environmental pressures such as weather, temperature, disease and competition.

Establishing an environment conducive for the soil biology to survive and thrive is critical.

### So how do we build it?

Modern intensive agricultural and horticultural production systems are completely different to natural ecosystems that are in balance and dominated by diversity of every kind. Modified monocultural production systems inherently have a greater predisposition towards pest and disease pressure and nutritional disorders and this needs to be addressed first.

### 1. Lay the foundation

A comprehensive soil test and visual soil assessment is the first step to correct nutrient deficiencies, toxicities and ratio imbalances eg

calcium to magnesium. Some biological companies incorporate bio-stimulants (products that activate, stimulate and feed the native bacterial and fungal species) and / or inoculums (a blend of diverse or specific live beneficial organisms) into their fertiliser mixes. Good aggregation, aeration, drainage and humus levels are the four pillars of soil structural health and are foundational.

### 2. Encourage and feed the inhabitants

Encouraging existing populations of the soil food web that are native to soil is essential, especially if management practices have reduced their numbers and diversity.

Earth worms are a good indicator of biological and soil health. Earth worms will follow food and they love dead and decomposing organic matter such as cover crops, as well as fungi and protozoa. Protozoa love bacteria and can consume 10,000 a day, thereby recycling the nitrogen contained in the bacteria's body.

Bacteria like a diet of simple compounds such as fresh green material, molasses, nitrogen, fulvic acid and simple proteins. Fungi prefer more complex compounds such as woody, fibrous material, humic acid, kelp and fish oils.

Diversity is the key and a diverse work force requires a diverse food source.

**Contact Skeltons Biological Unit for further information.**



**Want more information?** Should you require further information on any articles in this newsletter, or on any other matter relating to horticulture, please contact us.

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The information contained in this publication is of a general nature and should not be relied upon as a substitute for professional advice in specific cases



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