

## Growing practices defined and clarified



What will be the dominant growing practice in the future?

There is much confusion around organics, sustainability, conventional growing, and biological growing systems. Malcolm Crawford, Skeltons biological specialist, defines the terminology and suggests how the concepts may be applied in the future.

**Sustainable** growing practices can be defined as the use of horticultural systems and practices which maintain or enhance:

- the economic viability of the enterprise
- the natural resource base
- other ecosystems which are influenced by these systems and practices.

**Conventional** growing practices are pretty much what most producers have always done. However, we are now facing searching questions about how conventional methods fit with the definition above.

We hear more and more how fertiliser and pesticide inputs need to increase to maintain normal production levels, how many practices are detrimental to soil health, and how other ecosystems, especially lakes and rivers, are adversely affected by conventional systems and practices.

Maybe conventional growing has been sustainable in economic terms on average over many years, but at what cost?

**Organic** growing aims to achieve the sustainable growing practices described above. However, compliance with certification rules dominate the way activities can be managed, with little or no tolerance for non-compliance.

*Continued overleaf*

## Flexibility, innovation, perseverance and positivity: keys for future viability

Just as seasons are cyclic, so too are the fortunes of the horticulture industry. Mother Nature has been less than kind during the 2009 / 2010 growing season with a variety of challenges leveled at the regions: a cool spring affecting early growth in many areas; followed by hail in Hawke's Bay, late frosts in Wairarapa, very wet conditions in Manawatu and Horowhenua, and floods in Gisborne.

Add to this the high NZ dollar and general malaise of the markets and it would be easy to be negative about horticultural businesses.

However the cycle may well have hit the bottom and be on the way up. With the emerging Asian markets on our doorstep and the rest of the world demanding high quality, safe foods, we must be in a perfect position to supply.

New Zealand growers have proven their adaptability and their ability to stay at the forefront of technology adoption over the years, and this keeps our horticultural industry viable. As long as we keep focused on what the customer wants, and adapt our growing systems to achieve that, then we can be sure our produce will be in demand.

Then all we have to do is control the international monetary system to ensure we get an economic and sustainable return for that produce. Any volunteers for that job!



IAN GOLD Skeltons General Manager

From front page

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Organics by default, i.e. no spraying and seriously reduced inputs, is not sustainable. This is organics by neglect.

For some growers, to keep organic horticultural production at economic levels, a regime of 'substitute organics' has evolved, meaning conventional practices have by and large continued through the use of organically-acceptable input products as replacements.

Pest and disease pressures have hindered the ability of some growers to achieve what could be termed 'true organics'; that is, strong or complete reliance on natural systems such as the use of beneficial insects and fungi, and promoting soil and plant health.

True organic growing in the commercial world is perhaps something of an oxymoron; unnatural intensive monocultural plantings, inviting high pest and disease pressure, while trying to produce quality fruit and vegetables with market acceptability.

The missing link is the biodiversity that occurs in nature.

**Biological** growing practices can be described as 'combining the best of conventional and organic primary production systems'.

This allows producers, advisors and input suppliers, the freedom to use basic soil, plant and animal correction inputs in conjunction with biological management techniques, often without the restrictions such as those imposed by organic certifiers.

Biological growing practices have a good fit with our 'sustainable' definition and are greatly influenced by the appropriateness of the production enterprise to the location and environment.

Sustainable growing practices can be greatly assisted by correctly matching the crop grown to the natural environment and resource, building soil organic matter and therefore carbon, which can lead to reduced inputs, and utilising biological control methods such as Integrated Pest Management practices.

Perhaps this is the way of the future and may satisfy our needs to be caretakers of the land and environment, as well as satisfy our economic requirements.

## Carpophilus beetle: Strawberry growers embrace new control option



Brett Turner, Skeltons technical advisor in the Waikato, says growers are responding positively to a new *Carpophilus* Beetle A&K system.

**Waikato strawberry growers have been impressed with an Attract and Kill (A&K) system that Skeltons has helped to develop. Some have even suggested that in future orchard signage won't read 'spraying in progress' but more like 'beetle juice in action'!**

After Hawke's Bay strawberry growers reported success with the system, Skeltons Technical Manager, Chris Herries gave a demonstration of trap assembly and management advice to a Waikato Berryfruit Growers' discussion group.

The nil-withholding period A&K system relies on a co-attractant of a combination of pheromones and a mixture of 'Beetle Juices', with the killing activity achieved by way of an impregnated chemical strip within the trap. This provides Integrated Pest Management with a focus on environmentally friendly, low residue fruit at time of harvest.

Although not all Waikato growers attended the discussion group, from the 11 who did, 10 adopted the trapping system at various times throughout the harvest period. Growers

reported overwhelming enthusiasm towards the results they found.

### Comments included:

*"Insecticide use was stopped on 25 November and 5 December in each of two blocks, and although trap catches were not extremely high, we had virtually no crop damage. The traps also worked well in our spring raspberries where no chemical was used!"* **Stewart Broomhall.**

*"From my 45 years involved in fruit and vegetable production (pip, stone, berries, outdoor vegetables) nothing has been as convincing in control. Results are so visual and on high activity days, beetles could be seen flying into the traps resulting in reduced fruit loss."* **Roger Whyte.**

*"During our thirteen years of growing strawberries, the beetle has become an increasing problem and regardless of chemical applications, we had continued to get fruit loss. This first year of trapping has given us confidence that the traps are contributing to less fruit damage and we will use them again next season."* **John Rhodes.**

## Skeltons supports hort winners



Chris Herries, Skeltons technical manager (left) with Norm Miller at the Hawke's Bay Fruitgrowers' Awards with the Joe Bell Trophy for services to the horticulture industry.

**Skeltons' commitment to the growing industry was evident at the recent Hawke's Bay Fruitgrowers Awards, when an industry stalwart and two new entrants were presented with awards.**

Norm Miller was awarded the Skeltons sponsored Joe Bell Trophy for his contributions to the fruit growing industry. Described by HBBG president Leon Stallard as a "mentor, guardian and motivator of individuals in study", Norm combines his

passions for ongoing learning and the pipfruit industry in his current role with HITO, where he is fully committed to upskilling individuals.

Industry new entrants, Terezia (Terri) Kocurova and Mia Neemia were the winners of 2009 Skeltons Excellence Awards. Each year, Skeltons provides grants to top HB Fruitgrower cadets in Year 2 and 3 of the Eastern Institute of Technology's National Certificate in Horticulture. Terri won the Year 3 award, and Mia the Year 2 award.

## Olives well suited to NZ conditions

**Olives have been planted widely in New Zealand, from North Cape to Central Otago. With a significant number of trees now reaching 12 to 14 years of age, experience is showing that some regions are better suited to certain varieties.**

Groves range in size from domestic garden plantings to 30,000 trees, and tree yield varies widely with some trees yet to fruit while others produce crops as high as 50kg per tree.

### Alternate bearing measures

Planted in our young soils with maritime rainfall, olives can flourish. The size of the tree and its fruiting potential are closely related to the environmental conditions. The olive is an alternate bearer under all growing conditions and needs management intervention to minimise or prevent this.

Trunk and branch girdling can reduce alternate bearing. Winter girdling has been shown to increase both flower bud numbers and fruit set, however, the main cultural practice for reducing alternate bearing is pruning.

The olive tree requires high light intensity for flower-bud differentiation and shoot development. Flowering in the olive tree occurs nearly exclusively on shoots that have developed vegetatively in the previous season. This is controlled with good pruning practice.

### Maintaining healthy trees

In New Zealand, olives are susceptible to at least two leaf diseases, Peacock Spot and Cercospora. They are also susceptible to at least two bacteria, Olive Knot and Bacterial Blast.

During flowering high numbers of stone fruit thrip can infest flowers, while leaf roller and cicada can damage juvenile trees.

While there are a limited number of agrichemicals registered for use on olive trees in New Zealand, there is a range of products that are available to protect and/or eradicate these issues.

**For more information about the important factors to understand and consider, speak to your Skeltons technical advisor.**

## Viticulture Grant research update

A variety of research projects funded by the Skeltons Viticulture Development Grant in 2009 are coming to conclusion. A summary of the projects follows:

### Giberelic acid for sour rot control in grapes

A trial conducted by Lewis Wright Valuation & Consultancy of Gisborne has shown that the use of GA3 in Botrytis control has had minimal effect in New Zealand conditions. Further assessment at harvest may improve results.

### Frost protection using light bulbs

A second year of funding has been used by MinusSix Ltd to enhance and test its frost protection units. Likely electricity consumption costs have been clarified but the units have not been sufficiently robust to withstand knocks from machine harvesting. A new design is being developed.

### Mealy bug control using non-host cover crops

Lincoln PhD researcher, David Reid has found from his research that Mealybug numbers in the vineyard are substantially reduced if host weeds are removed. He also suggests that under-vine ant control is probably counter-productive. This is due to the fact that ants farm mealybugs and scales for honeydew. However the ant species in the canopy are different from those on the ground and in fact, these canopy ants protect mealybugs and scales and seek out and kill mealybug parasitoids. He also suggests that use of compost mulch under the vines is useful for ant control in the canopy and on the ground.



## Removing virus vines essential

**In the current climate, growers need to be producing quality fruit in order to retain contracts. Removing virus vines from vineyards is essential to help maintain the necessary high standard quality crops.**

Grapevine Leafroll Virus Type 3 (GLRa V-3) has a destructive and debilitating impact on grape yield and quality in affected blocks. The virus seriously compromises vine growth and the vines' ability to photosynthesise, therefore affecting yield, fruit colour, and brix at harvest.

The spread of the virus is magnified by its vector mealy bug. Symptoms are seen in red varieties (red / purple coloured leaves with green / yellow veins and downward curling leaf margins), but much harder to see

in white varieties. It is often confused with potassium deficiency.

To help prevent spread and hold the issue at bay, best practice at present is to remove the infected vines as well as the two 'healthy' vines on either side. There is a high chance that these 'healthy' looking vines also have the virus but are not displaying symptoms.

It may be beneficial to remove the infected vines before harvest or as soon as symptoms appear and then returning after harvest to remove the 'healthy' vine on either side. The vine can be pulled out completely or the trunk cut at ground level and the stump immediately painted with glyphosate.

It is important to kill the infected vines as mealy bug and the virus will remain on any living tissue.

## Nutrients in autumn will bear fruit next season

**Post harvest applications of some nutrients can be extremely beneficial for established perennial crops. Inputs should be based on plant tissue samples or historical knowledge of the block.**

Root development is extensive through autumn and good levels of nutrients that are stored in buds, young wood, and roots through winter will give rise to greater tree health and new tissue development next spring. This in turn may help fruit set and fruit size for the coming crop.

Nitrogen, boron and zinc inputs in autumn are beneficial if levels are low or deficient. However, autumn magnesium, manganese, iron and calcium is not recommended as these minerals are not stored in the plant (magnesium can be considered to prolong leaf photosynthesis if obviously deficient). Applications of these minerals should therefore be made during the growing season as deemed necessary.

Trace element (micro nutrients) should not be applied to crops if levels are adequate or unknown, as toxic levels can result in serious damage to plants and/or fruit.

May, June or July are considered the optimum months for taking soil tests. Ideally samples should be taken from blocks at the same month each year due to temperature and/or soil moisture seasonal fluctuations. If soil conditions are unseasonably very wet or dry for this time of the year, avoid taking samples until soil conditions are more typical for your soil type.

It is important to take at least 15 soil cores to the appropriate depth for each test sample: pasture is to 75mm, grassed down orchards and vineyards to 150mm, and cultivated land and crops to 225mm depth for each core.

**For more information on the most appropriate post harvest and nutritional applications for your crop speak to your Skeltons technical advisor.**



## Skeltons expands into Bay of Plenty

**Skeltons can now be found in Bay of Plenty with the appointment of Dean Gower and Dwayne Farrington as Skeltons Technical Advisors.**

Both previously worked as Farmlands horticulture specialists in the region, and are now part of the Skeltons team and backed by the 15-strong technical team based around the North Island, with access to the research and collective expertise built up over many years.

"The Skeltons team of advisors is hugely experienced in the growing industry," says Ian Gold, Skeltons General Manager. "All of our advisors have had extensive practical experience, many of them on their own horticultural properties, and most have industry tertiary qualifications. Our pool of knowledge, networks, and access to research and other experts is unrivalled."

Dean Gower, who has recently been appointed as Bay of Plenty field manager, has over two decades of experience within the horticultural industry with hands-on roles in kiwifruit

and citrus orchards, technical advisory services to growers, and management

expertise. He is based at the Farmlands Te Puke store.

As a technical advisor, Dean covers the northern Bay of Plenty area, while in his field manager role, he is responsible for other technical advisors in Bay of Plenty, Waikato, and Poverty Bay.

Dwayne Farrington has practical and technical knowledge built up over many years in the industry since graduating from Massey University with a degree in horticulture. Based at the Farmlands Opotoki store and covering the eastern Bay of Plenty region, Dwayne has a broad knowledge of fertiliser and chemical requirements to gain best results in many crops.

While the Skeltons team will give growers valuable in-field technical service, the Farmlands branches in the regions will stock, supply and transact the sales. Skeltons service is available to all Farmlands commercial horticultural shareholders.



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**Dwayne Farrington**  
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## Psyllid - the responsibility of all



Adult tomato/potato psyllid with moulted 'skin' of nymph and yellow eggs on stalks.

Photo courtesy of Plant & Food Research

**This could be a make or break year for potato and tomato growers after the widespread devastation created last season by psyllid.**

Although too early at the time of going to print to say if the season has been generally successful, there are encouraging signs to be seen.

Apart from a cold start to the season, the weather has been favourable in slowing the spread of psyllid, giving plants an opportunity to fulfil potential yield. In addition, the good soil moisture has meant furrow-applied insecticide has generally worked well.

The voluntary contribution from all industry players to support vital ongoing research, and the collaboration from scientists, grower groups, and horticultural advisors such as Skeltons, to monitor is at a never-seen-before level.

The release from Bayer of its new product Movento, has seen positive uptake from growers alternating this product with other chemistry in tight programmes. Again the good growth of plants after planting has helped the movement of Movento and control of nymphs.

From information available, it appears that any longevity of control will depend on new chemistry with a unique mode of action. It is also apparent there is very little potato tolerance, if any, to bacteria-carrying psyllids, and that as an industry, all parties must appreciate the importance of having available clean seed, new chemistry, and ongoing vigilance.

## Durivo – the unique brassica insecticide



The time to apply Durivo is when seedlings are in trays.

**Brassica growers now have a novel way of controlling aphid and caterpillars in their crops. Durivo from Syngenta combines two highly systemic and relatively new insecticides that are applied to cell trays prior to transplanting.**

Durivo has shown to increase vigour in early growth stages, with a unique mechanism that can allow plants to cope with stressful conditions and can lead to increased yields (average trial results of 8.5 percent). A visual difference can be seen four weeks after transplant.

Used in the late window February to August, Durivo provides good resistance

management. However, as it contains the same active ingredient as Coregan (chlorantraniliprole). Coragen should not be used in the recommended early window in the same crop.

Key benefits include long-lasting control of aphids up to the entire crop length, four to six weeks caterpillar control, IPM compatibility, convenient application, and healthier more robust crops. Whitefly, a secondary pest is also controlled.

Normal insecticide practice currently revolves around the use of foliar options providing up to two weeks control in peak times, so this product and application method is a major step forward.

## Water quality impact on chemicals

**Water quality can have a huge effect on chemical performance. As well as being high tech, chemicals are often sensitive to water containing dissolved salts, sediments, and organic matter.**

These variables can often be corrected or compensated for by the addition of a suitable water conditioner to the spray mix.

Companion is a cost-effective tank mix adjuvant that can help overcome many problems associated with variable water quality. Companion is an acidifying agent, water softener and passive penetrant to assist in spray coverage. Because it utilises a weak organic acid it cannot be overdosed, hence the pH will not fall below 4. It naturally buffers the tank solution to pH 4 – 5, and this is the optimum pH for many herbicides, insecticides, and fungicides.

Some water can have a high level of dissolved salts, referred to as hardness. Water hardness is prevalent in areas where limestone is present and can result in significant levels of calcium, magnesium, iron, aluminium and sodium. Salt forms of herbicides cannot be absorbed by weeds and grasses which means that a significant proportion of herbicide is not available to kill weeds.

When added to the spray tank before the pesticide, Companion will complex with the dissolved salts and stop them interfering with the pesticide.

This product is made from safe environmentally-friendly components like propionic acid from the food industry, an oil based spreader from the food industry, and a surfactant derived from coconut oil.

## Skeltons supports Zespri Challenge

Skeltons and Farmlands teamed with Zespri, Marc Ellis and other industry supporters to reinstate the Zespri Challenge, a fun top town competition for kiwifruit postharvest operators that has been in abeyance for several years.

Five different challenges saw teams from local packhouses competing strongly. Held on a scorching Friday February 26, participants and audience were appreciative of the Skeltons tent, and the new season Hawke's Bay apples trucked up by the Skeltons Technical Advisors who joined their Bay of Plenty counterparts on the day.

Winners of the Farmlands / Skeltons 'Knock em off' race was the Satara Magics while the overall competition winners were a MPAC / APAC team.



## Squash research provides relief for growers

**There is light on the horizon for squash growers who are under pressure to produce fruit of a higher quality than ever in the face of growing unpredictably in weather around the regions.**

Over the past year new chemistry has been introduced to the existing stable, and extensive work carried out to determine squash nutritional requirements.

Data collected from growers and trial work conducted over five years by Skeltons in conjunction with GroChem, has resulted in some promising data and solutions to dealing with both adverse weather conditions and correcting nutritional deficiencies.

A number of trends were found in both the

way the plants use NPK and also trace elements. Issues with root development and plant structure were also identified. A range of products and application timings were trialed and the programme developed considers solid fertiliser rates, timing, and the type of solid used, as well other growing practices.

A number of products have now been developed specifically for squash such as GroChem's Squash Stage One and Squash Stage Two which contain specific nutrients and other ingredients.

It is important to note that no one product or combination of products can replace good groundwork, solid fertiliser, irrigation or fungicide practices and that recommendations need to be tailored to conditions.

**Raw data, results, and all further information is available on request, and growers wanting more information on the squash programme should contact a Skeltons technical advisor or Cath Redpath at GroChem.**



**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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