

EastPack Update

Operational Update

The continuing trend of GREEN fruit loss trending lower than last year and the previous four years is extremely pleasing. This is shown in the table below.

Green	2013	2012	2011	2010
Packed	18.957m	12.605m	12.600m	10.670m
Shipped	18.696m	12.296m	11.702m	10.505m
% Shipped	98.6%	97.5%	92.5%	98.4%
Losses	309,670	309,742	375,000	370,000
% Lost/packed	1.8%	2.45%	2.96%	3.46%
Industry Losses	1.3%	2.03%	3.46%	3.83%

The trend of lower fruit loss is also evident offshore, which anecdotally we understand is due to better quality fruit, lower stock levels held offshore, lower customer complaints and increasing demand for our high quality fruit.

It is also very pleasing to see the continued upward lift in Green OGRs. Two years ago EastPack had a stated objective of achieving an OGR average of \$5/ tray or greater. EastPack assisted this by being the first to significantly reduce its packing charges which most other post-harvest operators followed this year. The combination of lowering post-harvest charges and lower onshore and offshore fruit loss is a significant contributor to the lift in Green growers' OGRs.

Capital Investment – EastPack Invests in the Future

At the EastPack Board of Directors' meeting last month, the Directors have approved significant capital expenditure at both our Katikati and Edgecumbe sites. Whilst Psa is still very prevalent and a part of our lives, we believe there is enough evidence now that Green and G3 do have sufficient resistance to Psa to resume investing in high quality plant and equipment. The investment on both

these sites involves the installation of the latest photo-grading technology from our supplier Compac Limited. At the Katikati site it also involves a complete revamp of the bin infeed systems. Expenditure on just these two projects totals \$3m and both show excellent return on investment.

EastPack has a solid track record of investing in the most modern and efficient plant and equipment and is all part of our "growing excellence" culture which has seen EastPack reduce its packing charges while at the same time improving quality outcomes.

Also at the October meeting the Directors agreed to continue to pay a minimum of 20 cents per tray rebate to all transactor shareholders with no transactor share calls to those growers who are not fully paid up transactor shareholders. However, for the 2015 season the policy of issuing transactor shares from rebates will recommence – exact details are yet to be finalised.

Joint Venture to Australia

A thorough review of EastPack's involvement in Class 2 fruit has been undertaken over the past six months. As a result of this review, EastPack has agreed to join DMS, OPAC and Trevelyan's in

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signing a Heads of Agreement to form a 50-50 joint venture company to market all of our Class 2 and 46 count Green fruit to Zespri and to Australia for the 2014 season. Currently there are 16 exporters to Australia and as most of us know, they lack co-ordination and discipline resulting in sub-optimal returns back to New Zealand kiwifruit growers.

The joint venture company represents approximately 50% of the fruit currently sold into Australia. Governance will be representatives from EastPack, DMS, Opac and Trevelyan's with an independent Chairman. Formation of this new company, as well as completing recruitment for the General Manager, is well underway.

A further update of this initiative will be given at the forthcoming round of grower meetings and/or grower Xmas parties.



Tony Hawken
CHIEF EXECUTIVE

Technically Speaking

Hayward pollination

Hayward pollination best practice summary

- Use a contract for your beekeeper.
- Use at least eight hives per hectare or one hive per 1,000 trays.
- Introduce hives in two or more drops.
- Introduce first hives with at least 20% female flowers open.
- Introduce more hives as bee activity in the orchard drops off or more than 50% of female flowers are open.
- Place hives in several sites around the orchard.
- Place hives in sites that get early morning sun.
- Place hives where they will be warm and sheltered.
- Provide water for the bees.
- Feed the bees sugar syrup at least every second day.
- Mow the orchard to reduce the number of other flowers the bees might visit.
- Use some supplementary pollen to add value and stimulate bees.



Good pollination adds value to the crop by:

- Maximising fruit size
- Increasing the number of trays
- Improving fruit shape
- Increasing the dry matter of the fruit

Pollination – the process

Pollination and the setting of seed is a key process in the production of kiwifruit. It determines the potential size of individual fruit pieces, can influence the shape of the fruit and is implicated in the accumulation of dry matter in the fruit.

So what is Pollination?

What we think of as pollination is the process of combining pollen from male kiwifruit flowers with female kiwifruit flowers to form seeds and set fruit.

This is really two processes, pollination and then fertilisation.

Pollination is simply the transfer of pollen from the anther of a stamen in the male flower, to the stigma of the pistil in the female flower.

Fertilisation is the combining of male cells from the pollen with the female cells in the ovary of the female flower to produce seeds.

When the pollen grain is deposited on the stigma it starts to germinate and the pollen tube grows up through the pistil of the female flower until it reaches the ovary and fertilisation occurs. There is a delay between the pollen grain arriving on the stigma and the fertilisation process of 24-48 hours.

Recent research shows that these processes are influenced by temperature. Table one plots the daily temperature in a kiwifruit orchard where there were no male plants present and pollination was achieved by manually applying pollen to the female flowers each day.

Table 1 – the effect of temperature on pollination
Mark Goodwin P&FNZ 2008

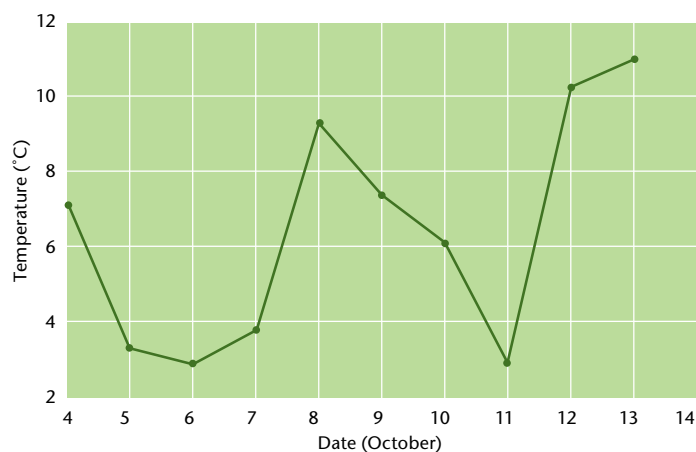


Table 2

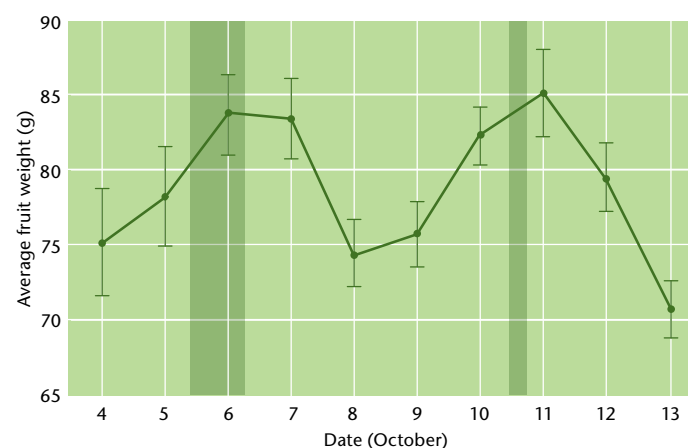


Table 2 shows the average weight of the fruit pollinated on each day. What is apparent from this data is that the fruit pollinated on the very cold day, 6 October is relatively large and fruit pollinated on the 8th, a warm day is smaller. This is not what we would have expected. However if we look at the temperatures 48 hours after pollination, about when the fertilisation process is occurring, we see that the fruit pollinated on a cold day, the 6th, is achieving fertilisation in the warmth of the 8th. Similarly the fruit pollinated on the 8th, in the warm achieved fertilisation in the cool of the 10th and is subsequently smaller.



Temperature affects the rate of growth of the pollen tube, it is faster when it is warm and slower when the temperature is cooler. Cooler temperatures appear to interfere with the process of fertilisation and the subsequent setting of seeds.

Other key findings showed:

- There is no negative influence on fruit size from over pollination.
- Hayward flowers are receptive to pollen for up to eight days.
- That kiwifruit flowers are receptive to pollen right through the length of the day.
- When dry pollen is applied in the orchard there can be significant transfer of pollen between flowers.
- When dry pollen is applied in the orchard there can be significant transfer of pollen within flowers.
- There is a size effect, the earlier a flower is pollinated the larger it will be.
- Subsequent applications of pollen are cumulative.

Supplementary Pollination

Pollination success is a key element in the production of kiwifruit. We rely heavily on bees to perform the pollen transfer process in the orchard, which is essentially a process that we have little direct control of. Supplementing the bee transfer manually has now become widely accepted.

Some key understandings are:

- Pollen landing directly on the stigma of a flower will result in pollination and subsequent fertilisation.
- Bees will transfer dry pollen within flowers.
- Bees will transfer dry pollen between flowers.
- The presence of pollen will excite bees and stimulate their activity.
- A bee needs to visit both male and then female flowers to successfully transfer pollen unless there is viable pollen available on the female flowers.
- Bee activity is reduced in cold weather.
- Bees will forage for pollen from other sources outside the orchard.
- Bees could pollinate your whole orchard in one day under hypothetically perfect conditions.
- It would only take 70g of pollen to fully pollinate 10,000 trays of Hayward under hypothetically perfect conditions.
- Hayward flowers are receptive to pollen for 6-8 days.
- Pollen transfer occurring at any time of the day (or night?) can lead to successful fertilisation.
- Dry pollen applied to flowers can stay viable for 24-36 hours.

Artificial pollination and supplementary pollination are powerful tools to improve pollination, particularly in Hayward, and to add significant value to the crop, help us manage our bee activity and to provide for some direct pollen transfer independently of bee activity.

Wet pollen application is the main method of artificial pollination and is particularly useful if there are no bees active in the orchard. It provides direct transfer of pollen to the stigma.

The pollen grains have already started the germination process and so are not available for transfer by bees.

Application of wet pollen is best targeted directly at the female flower.

Approximate rates required per hectare are as follows:

250-350g of pollen per hectare per pass

- 4 grams of pollen per litre of mix
- 20mls Pollen Assist per litre (1.2 litres per hectare per pass)
- 5mls of Pollen Assist Marker Dye per litre (300mls per hectare per pass)
- 1 litre of deionised water (60 litres per hectare per pass)
- 1 person will cover 1/8th to 1/6th of a Ha per day
- The pollen solution should be discarded after 40 minutes

Apply at 60% and then again at 95%-100% flowering or apply 500-700g of pollen once at 95% flowering.

Wet pollen is a good fit where there are no male flowers or bees in the orchard or where bee activity is significantly reduced. It can be very useful if there are prolonged periods of wet and cold weather severely limiting bee activity.

Pollen rollers ("Polli") are useful method of achieving artificial pollination using dry pollen.

Dry pollen application is a useful tool to help manage the bees in your orchard and can add significant value to the crop. It can provide some transfer of pollen directly to the stigma and provide some artificial pollination as well.

Dry pollen applied in the orchard is available for bees to redistribute within and between female flowers and doesn't require the bee to have visited a male flower before visiting female flowers.

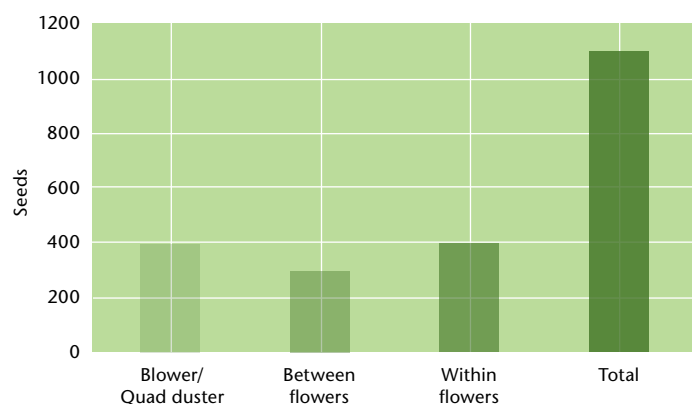
The general presence of pollen will excite the bees and stimulate their level of activity. They will stay where they are finding the pollen and will be less likely to rove widely looking for sources of pollen outside your orchard. Applying dry pollen will encourage bees into your orchard from outside sources as well.

Results of research recently published in the Kiwifruit Journal and presented at a round of Zespri grower field days show that the number of seeds in fruit from orchards dusted with dry pollen is greater than the sum of the combined effects of either bees or applied pollen alone there is some real synergy able to be gained.

Continued over

Technically Speaking continued

Hayward pollination, continued



Timing of application of dry pollen

Hayward kiwifruit flowers are receptive throughout the day but in order to maximise the positive effects of bees redistributing the pollen and the stimulus effect on bees themselves the best time of the day to apply dry pollen is before midday.

Current recommendations are to apply dry pollen as two applications of 250-350 g/ha at 80-85% and again at 90-100% flowers open. Alternatively if flowering is very compact, one application of 400-500 g/ha at 90-100% of flowers open.

An alternative strategy is to apply much smaller amounts of dry pollen much more frequently on fine warm days.

Temperature

Dry pollen is best applied in warm dry conditions. Cool temperatures affect bee activity, pollen tube growth rates and the actual fertilisation process. Timing of pollen applications to coincide with warm temperatures, especially lasting at least 24 hours will help to maximise the benefits.

Dry pollen can be applied with a hand held modified leaf blower or a specialist quad bike mounted applicator. Both of these services are available commercially.

Summary

- Pollination and fertilisation are two separate processes. Both are necessary to form seed.
- Fertilisation can be stopped by cold weather.
- Pollen tube growth is faster when it is warm.
- Bees will transfer dry pollen within flowers.
- Bees will transfer dry pollen between flowers.
- Bee activity is reduced in cold weather.
- Bees will collect pollen from other sources outside the orchard.
- Bees could pollinate your whole orchard in one day under hypothetical perfect conditions.
- It would only take 70g of pollen to fully pollinate 10,000 trays of Hayward under hypothetical perfect conditions.
- Pollen transfer occurring at any time of the day (or night?) can lead to successful fertilisation.
- Hayward flowers are receptive to pollen for 6-8 days.
- Dry pollen applied to flowers can stay viable for 24-36 hours.

Supplementary pollination can be used to help manage your bees, dry pollen will:

- Excite and stimulate your bees.
- Encourage them to work in your orchard.
- Provide male pollen without them having to visit male flowers.

Applying pollen to flowers in your orchard will encourage bee activity, pollinate flowers directly and provide more pollen for bees to spread around your female flowers. Supplementary pollination can be a powerful tool to ensure the best possible pollination result.

Dry summer forecast

All of the weather forecasters are predicting a warm and dry summer for the North Island this summer.

It is already very dry with soil moisture levels at an all-time low in areas like Edgecumbe and Opotiki. Last year's drought and the lower than average rainfall over the winter are adding up to near record low levels of soil moisture reserves.

- Start your irrigation now if you haven't already.
- Aim to get at least 25-30mm on each week.

- Try to keep the soil moisture levels topped up rather than letting the soil get really dry.

Dry weather will be a help to defend our orchards against Psa, but may make it a challenge to optimise fruit size, especially in Hayward.

A long dry summer will also favour the build up of populations of PVH and may well lead to a bad year for sooty mould.

Both of these threats are best recognised early and dealt with before they become a problem.

Sizing Fruit

Fruit size is a combination of two factors, the number of cells in each fruitlet and the

growth and expansion of these cells.

New cells are produced in the fruitlet for a relatively short period after pollination. In Hayward this is thought to last about 30-35 days. The factors influencing this process are pollination and the setting of seeds in the fruit and the availability of nutrients and energy to fuel this process.

The nutrients and energy need for fruit growth are provided by the carbohydrates produced in the process of photosynthesis, the process of capturing the energy of the sun and carbon from the air by the leaves of all green plants.

So developing an efficient, productive kiwifruit canopy must be the essential focus during the late spring and summer.

Some key understandings are:

- Growing shoots are a carbohydrate deficit for 25-35 days.
- Carbohydrates move both ways in the kiwifruit plant.
- Optimum canopy density is approximately three leaf layers.
- Canopy establishment is a function of leaf numbers and leaf size.
- The size of the initial leaves is influenced by temperature.
- Canopy closure is the end of the canopy establishment phase.
- Different parts of the plant compete for carbohydrate reserves.
- Carbohydrates tend to be allocated to the actively growing parts of the plant.
- The fruit's ability to compete for carbohydrate reserves is proportional to the number of seeds in each individual fruit.

The solar panel

The solar panel is made up of the first leaves that develop from the winter framework. These are the most valuable leaves and management should be focused on making sure that they last right through the season until the crop has been harvested.

The solar panel should be about 2.5-3.5 leaf layers thick, have no significantly shaded leaves and provide the dappled light on the orchard floor that supports some grass growth.



Dappled light on the orchard floor

There are two key factors that considerably affect the establishment of the solar panel:

- Leaf size, the larger the initial leaf size, the fewer leaves are needed to achieve canopy closure. Initial leaf size is strongly influenced by temperature.

- Extension, being able to stop the extension growth once canopy closure has been achieved is one of the key skills to achieving a good result in kiwifruit.

Leaf size

Leaf size and numbers are influenced by:

- Temperature
- Nutrition
- Amount and rate of extension growth

Initial leaf size is important because the larger they are, the fewer of them that you need to achieve canopy closure. This uses up less stored reserves leaving more available for flower development, which will occur more quickly, and for root growth.

The key factor influencing the size of the first leaves is the temperature of the microclimate in the orchard. Quite simply the warmer it is the larger they will be.

Fertiliser levels need to be adequate but not excessive.

Extension

A low budburst leaves a lot of buds unbroken in the initial budburst. These buds, stimulated by the increase in temperatures later in the spring and early summer, subsequently burst as vegetative shoots. This surge of vegetative growth or summer flush can be responsible for the bulk of the need to summer prune canopies. Remove this vegetative growth as soon as it can be identified.

The rate of extension growth will increase with an increase in temperature.

Some extension growth is needed to hang fruit and leaves on and to be next year's fruiting wood, but that is all.

The rest of it is just a waste and management of the canopy must focus on ways to minimise this.

One of the most difficult skills is to establish the solar panel over as short a period as possible, using the minimum of stored reserves but then be able to stabilise it and stop the excess extension growth once there is enough wood to provide next year's fruiting framework.

A high crop load will help to hold back vegetative extension. Crop load must be appropriate to the vines ability to size the fruit.



Avoid excessive extension growth

The Tool Box

We have only a couple of tools that we can use to stabilise the canopy and stop excessive extension growth in the Psa environment.

They are:

- Crush tipping or squeeze tipping
- Shoot removal

Crush tipping or squeeze tipping

This is a method of persuading the plant to terminate an actively growing shoot.

The growing tip of an actively growing shoot is gently squeezed between the thumb and forefinger until the cells in the growing tip collapse. This is felt as a gentle popping.

The collapse of the tissue where the cells are actively subdividing releases a growth hormone that effectively turns the shoot into a self terminator.



The cells in the growing tip collapse

Crush tipping should be done when you can see that the number of leaves that you want on a shoot are present, and even though some of these will be very small they will continue to expand and reach their full size.

Continued over

Technically Speaking continued

Dry summer forecast, continued

A shoot squeeze tipped when it is 30cm long will continue to extend until all of the leaves and internodes present have grown to full size and the shoot may be 90 or 100cm long at that point.

Crush tipping must be applied in anticipation of where that shoot will end up.

Crush tipping is a particularly useful tool to manage the establishment of fruit stalk shoots to form next year's fruiting framework.



More extension



Crush tipped sooner

Shoots at the end of a cane are generally crush tipped sooner than shoots near the leader as more extension growth is often required near the leader. Shoots at the ends of canes are often slightly more advanced than other shoots.

Crush tipping is often done as two, three or four quick rounds through the orchard as not all shoots are ready to be done at the same time.

Timing is critical.

Shoot removal

This is simply the removal of any shoots not required as part of the solar panel or the fruiting framework.

The shoots are simply broken out by hand as soon as they can be identified and like crush tipping it is likely that several quick rounds of the orchard are required as there will be a continuation of shoot initiation from spring right through the early part of the summer.

Trunk girdling

Trunk girdling is an important tool that ensures that the fruit have the maximum amount of resources during the critical times for fruit development at cell division (21 days for fruit set), cell growth and dry matter accumulation (February through to mid-March).



Timing

- Spring trunk girdle should be approx 21 days after fruit set.

Benefits – spring trunk girdling can:

- Increase dry matter.
- Give a significant increase in fresh weight.
- Reduce the variation.
- Reduce vigour.

Risks and cautions

Generally trunk girdling has proved to be a reasonably safe and reliable technique when applied correctly.

However it makes sense to observe some cautions:

- Do not trunk girdle young vines until they have achieved a full canopy.
- The trunk girdle should be applied with a girdling knife rather than a chain.
- Sterilise all girdling tools by soaking them in a suitable sanitiser. This should be done after every plant. Consider using two tools, with one soaking in a bucket of sanitiser and swapping after every plant.
- Girdle the rootstock and not the scion of recently grafted plants.
- Protect the grafting cut with a suitable protectant spray immediately after girdling.
- Only girdle on dry vines in fine dry weather.



A nicely healing trunk girdle

Male pruning

- Only prune males on fine dry days, preferably with at least one fine dry day after finishing.
- Remove large dense growths with a saw or chainsaw.
- Mark these first with bright paint and have someone else follow along making the big cuts.
- Paint the cuts with a sealant paint. Consider using a different colour where the cut wood includes obvious cankers.
- Remove all spent flowering wood.
- Where practical cut back to the last piece of green tissue on each piece of wood originating from the leader.
- Leave all the spur wood and terminated shoots that you can.
- In particular, reduce the height of the



Newly pruned strip male

pruned male canopy as much as can be reasonably achieved.

- Breakout any vigorous green shoots.
- Repeat this as necessary through the rest of the season.
- Prunings should be kicked out into the alleyway where they can be mulched up.
- The pruned male must have at least some leaf every 150-200mm along the length of the leader.

- Clean all tools with a suitable disinfectant at least once every plant.
- Re-apply your Psa protectant spray on finishing each block.

Psa high risk weather events

We are hearing this term all the time, high risk weather event nowadays, but what is the nature of the risk from Psa due to weather?

It seems to me that there are three separate areas of risk to kiwifruit, relating to weather events.

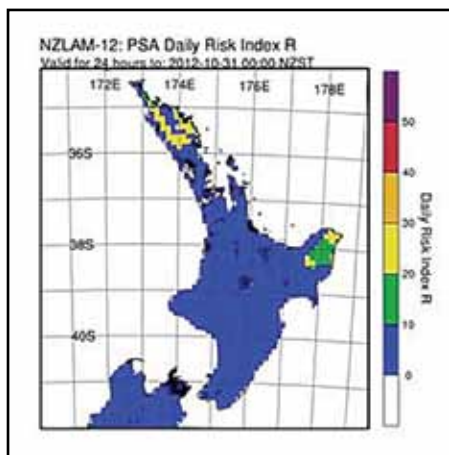
These are:

1. **Wet weather** – this is where the weather event produces continued leaf wetness for a period of 24 hours or more.

The nature of the risk, is that numbers of Psa bacterium build up in the wet conditions, to the point where they start to exert severe disease pressure leading to the establishment of a systemic infection in the kiwifruit plants.

This can be countered by applying an effective protective spray such as a suitable copper product, immediately prior to the weather event starting.

2. **Extended wet weather** – this is where the weather event produces continued



leaf wetness for a much more extended period during which time there is significant continued growth in the expansion of leaves and new extension growth. This may produce the situation where the new growth is not able to be protected by a re-application of the protective cover spray and so is vulnerable to Psa infection. This is more of a risk in spring, when leaf and shoot growth is still quite rapid.

This is a more difficult risk to counter and needs an effective protective spray to have been applied prior to the start

of the weather event and followed up immediately after with a product that has significant knock down effect, for example *Streptomycin* (if still allowed to be applied) or Serenade Max.

3. **Gusty rough windy weather** – that produces conditions that physically damage the kiwifruit tissue. This fresh tissue damage can provide an entry point for the Psa.

This risk can be relatively easily countered by the re-application of an effective protective spray, such as a suitable copper product.

There is a possible fourth type of high risk weather event for orchards or regions where Psa is not yet established. This is where the weather conditions, a combination of wind and rain, produce an aerosol plume. An aerosol is where the water droplets formed are so small that they have no trajectory of their own in the atmosphere. If this aerosol plume then contains Psa bacteria then they can be carried for long distances to start infections on unprotected kiwifruit many kilometres away from the nearest known disease symptoms.

Sooty mould – passion vine hopper

Sooty mould is a complex problem. It is a fungus that grows on the sugary residue deposited onto fruit by insects feeding on the sap of the kiwifruit plant. The most significant of these insects is the passion vine hopper (*Scolypopa australis*).



Sooty mould on Hayward fruit

Because the problem occurs some time after the cause, the control strategy must be one of prevention. Once the sooty mould is present there is no really successful way of dealing with it except for thinning the fruit to waste on the ground.

Sooty mould – the problem

Sooty mould is the growth of a group of fungi on the sugary honeydew secreted by the feeding PVH (and other insects). A black

sooty stain, made up of the dark fungal mycelium, appears as the fungi grow on the honeydew.

The presence, or absence, of the sooty mould is not directly related to the presence of the PVH. They simply need to have been there and left their calling card and the fungi will begin to grow at some later stage.

PVH and sooty mould are separated in time. Sooty mould can still be there and growing

after you have exterminated the population of PVH.

Passion Vine Hopper (PVH) – the cause

PVH has one life cycle per year. In the Bay of Plenty overwintering eggs hatch from late October through to the end of November or early January. The emerging nymphs are about 1mm long and grow to be 5-6mm long before beginning to emerge as adults in early January.

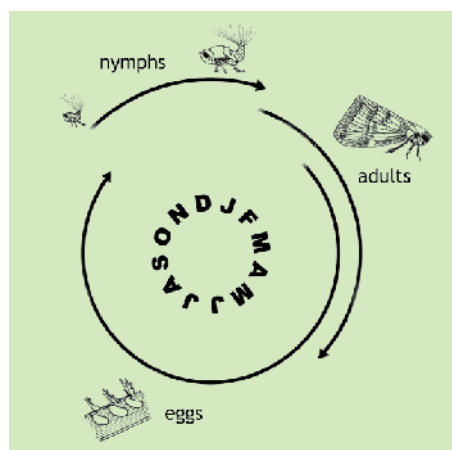
Eggs are laid in a row on dead plant stems 2-3mm in diameter, commonly ferns, bracken or blackberry and many other plants found in the orchard vicinity. Sometimes eggs are found on the edges of sawn timber or splinters of kiwifruit poles.

Continued over

Technically Speaking continued

Sooty mould – passion vine hopper, continued

After nymphs emerge, they feed on the phloem sap of host plants and start secreting sugary honeydew. Survival of the nymphs to adulthood is better on some plants than others. For example mahoe and pigeonwood are better than kawakawa or blackberry.



Life cycle of the passion vine hopper

Nymphs often feed in clusters on the underside of leaves and towards the growing tips of plants. Nymphs do not fly so do not spread widely from where they emerge. They move with a characteristic hop when they are disturbed. From emergence until adulthood in the Bay of Plenty takes about eight weeks.



Adults of the passion vine hopper

Adult PVH begin to become apparent in early January and like the nymphs, feed on the phloem sap of host plants secreting sugary honeydew. Adult PVH can fly limited distances but can disperse over several tens of metres over time. Favourable winds or positions overlooking the orchard can assist the adults spread even further.

It is most likely that populations of PVH will be concentrated in areas of adjacent

bush, scrub and wasteland so that the PVH concentrations will be greatest in the orchard closest to these areas.

Control strategy – prevention, the answer

Preventing the establishment of PVH in the orchard will likely be the most successful strategy.

Key steps are:

- Removal of host plants inside and outside the orchard
- Elimination of PVH within the orchard preferably at the nymph stage
- Elimination of PVH outside the orchard preferably at the nymph stage
- Defending the borders.



Removal of host plants inside the orchard.

Removing host plants

The removal of known host plants has been effective in helping to control PVH. Creepers, blackberry, barberry, ferns and bracken growing in shelter belts or waste areas inside the orchard should be removed. A buffer zone cleared of host plants in the boundary shelter and immediately outside the orchard that the PVH nymphs and the adults have to cross will help to prevent invasion of the orchard.

A cleared track outside the orchard boundary will also make it easier to spray boundary shelters and buffer zones.

Control of nymphs inside the orchard

PVH nymphs will start hatching early in November and be present right through until early January when they will start to emerge as adults.

PVH nymphs should be aggressively targeted as they are much less mobile than adults and are easier to kill. We also have more options in the period up until flowering in Hayward and most of our



Passion vine hopper nymphs showing typical anal wax filaments

pre-flowering scale sprays have at least some activity against the nymphs.

Post-blossom oil sprays are also likely to have a level of activity against PVH nymphs.

There is also the option of spraying shelters inside the orchard up until the New Year, though a JA must be obtained before you do this. After New Year spraying with pyrethrum products is the only option inside the orchard.

Control of PVH outside the orchard

In situations of high pest pressure from PVH, the establishment of a buffer zone outside the orchard boundary can help prevent the spread of adults into the orchard.

Spraying to eliminate the nymphs will delay the adults becoming established close to the orchard and will help in creating a zone that you can defend against possible invasion. The advantage of doing this outside the orchard is that we have a lot more options of sprays that we can use.

When spraying, especially outside the orchard, be discreet. None of us will be best served by practices which alienate our neighbours.

Defending the borders

Think of your orchard as a country at war. The enemy is PVH, intent on over-running your territories and subverting your population.

Declare war now. Eliminate the enemy from within your country. Define your borders and establish lines of defence against invasion.

Set up your intelligence gathering network and identify the presence of the enemy.

Take the fight to the enemy and conduct the battle where you have the greatest range of weapons.

Vigorously defend your borders.

Sooty mould – dealing with the problem

Once you have sooty mould in the orchard the only practical method of dealing with it is to remove the affected fruit prior to harvest. The sooty mould is growing on the honey dew that is already there. Elimination of PVH at this stage will not get rid of the sooty mould or even stop it from spreading on the honey dew that is already there.

Products for the removal of the honey dew from the fruit in the orchard have not been successful to date but trial work is continuing.

Rain over late January and February can both limit the amount of honey dew that settles on the fruit and limit the spread of PVH in the environment.

Anecdotal observations have implicated the feeding activities of both wasps and bees

on honeydew as it is being deposited by PVH. Wasp nests and populations of bees may well be a positive asset in your orchard environment over the height of summer

Summary

The Battle Plan

- Remove host plants from within the orchard and establish a clear buffer zone between the orchard and the areas of high pest pressure.
- Choose your pre-blossom scale sprays for activity against PVH nymphs. Consider using Calypso immediately before flowering.
- Use oil sprays immediately post-blossom.
- Monitor for the presence of PVH nymphs.
- When PVH nymphs are present spray your boundary shelters and your internal shelters. After flowering you will need a JA up until New Year. (After New Year,

pyrethrum is the only spray you can use inside the orchard.)

- Where possible spray outside the orchard boundary to prevent PVH getting into the orchard. You have a much wider range of options.
- Prevention is much more successful than dealing PVH adults within the orchard.
- Prevention is much more successful than dealing with sooty mould within the orchard.



Thanks to Tim Torr for his technical contribution this month.

Orchard Operations Reminder – November 2013



November

- Flower thinning in Hayward, remove misshapen flowers.
- More canopy work in Gold, going through the canopy lots of times and just taking out the obvious stuff each time.
- Continuing the canopy work in Hayward, working at stabilising the canopy and minimising the amount of vegetative growth in the canopy.

- Little and often with the canopy work. Remember try to do it without needing to use secateurs.
- Pollination in Hayward.

MORE POLLINATION = MORE DRY MATTER

- Fill in and return your pest monitoring contract.
- Finish male pruning in Gold.

December

- Trunk girdle Gold, 21 days after fruit set.
- Finish male pruning in Hayward.
- Trunk girdle in Hayward 21 days after fruit set.
- Fruit thinning.
- Fruit counts.
- Start pest monitoring for scale.
- Finish last round of early canopy control before mid December in Gold.

- Stop the growing points at the appropriate length of your replacement canes.
- Take leaf samples for analysis.

January

- Take a break!
- Start pest monitoring.
- Continue leader pruning in Hayward.
- Continue stopping growing points in Hayward canopy.
- Under vine weed control.
- Continue vigour control in Gold later in January.

All EastPack growers are invited to a Xmas Party!



Dates and venues below

XMAS PARTY DATE	REGION	LOCATION	START TIME	RSVP DATE	RSVP TO
Thur 28 Nov	Northland	Glenbervie Packhouse	5.00pm	Mon 25 Nov	Deb Meyer – Ph 09-437 3003 or debbie.meyer@eastpack.co.nz
Tue 3 Dec	Opotiki	Brett Wotton's 206 Tablelands Rd, Opotiki	5.00pm	Fri 29 Nov	Adele Roberson – Ph 07-315 5226 or adele.roberson@eastpack.co.nz
Wed 4 Dec	Edgumbe	Edgumbe Packhouse	5.00pm	Fri 29 Nov	Diane Byres – Ph 07-304 8226 or diane.byres@eastpack.co.nz
Thur 5 Dec	Te Puke	Washer Road Canteen	5.00pm	Fri 29 Nov	Nicky Bird – Ph 07-573 0942 or nicky.bird@eastpack.co.nz
Wed 11 Dec	Waikato	Viligrad Winery 702 Rukuhia Road, Ohaupo	12.00pm	Fri 6 Dec	Raewyn Anderson – Ph 07-549 0008 or raewyn.anderson@eastpack.co.nz
Thur 12 Dec	Katikati	Marshall Road Packhouse	5.00pm	Fri 6 Dec	Raewyn Anderson – Ph 07-549 0008 or raewyn.anderson@eastpack.co.nz
Fri 13 Dec	Auckland	Prego Restaurant 226 Ponsonby Rd	12.30pm	Fri 6 Dec	Nicky Bird – Ph 07-573 0942 or nicky.bird@eastpack.co.nz
Tue 17 Dec	Hawkes Bay	Derek Barnes 445 Ngatarawa Road, Hastings	5.00pm	Fri 6 Dec	Nicky Bird – Ph 07-573 0942 or nicky.bird@eastpack.co.nz

For catering purposes please ensure you RSVP to the appropriate person by the date shown.

Look forward to seeing you all there

Staff Profiles

EDGE CUMBE GROWER SERVICES/EKO TEAM

Introducing the Edgecumbe Grower Services/EKO team: From left to right: Tony Hooper, Robin Simmons, Marty Robinson, Kristine Savage, Grant Allen, Craig Wotten, Whatu Brown.



GRANT ALLEN GROWER SERVICES REPRESENTATIVE EDGE CUMBE



Prior to joining EastPack Grant worked for Satara. For 16 years he was a Packhouse Manager/ Orchard Manager and for the last five years was also a Grower Services Representative.

When he is not at work, Grant enjoys fishing, hunting, rugby and water skiing. He is married to Jo and they have three children.

Grant has been a Grower Service Rep for the past three years, looking after growers in both the Te Puke and Edgecumbe areas. He also oversees a number of our EKO orchards.

KRISTINE SAVAGE EKO ORCHARD MANAGER EDGE CUMBE



Kristine started out as an Orchard Supervisor and over the last couple of months has moved into a new role of EKO Orchard Manager. Prior to that she worked as an Orchard Supervisor for a couple of our EastPack growers. Kristine's role involves delegating canopy

work to contractors or staff and helping to produce great size fruit for our number one customer, the grower.

Kristine has one daughter aged 11 and has four older sisters and two brothers. In her spare time she enjoys watching her daughter, Tina, play sports and she loves fishing, netball, tennis and music.

In her younger days Kristine represented the Bay of Plenty in both tennis and netball.

Kristine was born in Matata and loves the close knit community. She moved back over the last five years to look after her Dad.

Health & Safety — AGRICHEMICALS

There are many chemicals on an orchard and some of them can be dangerous. Common agricultural chemicals include fuels, pesticides, herbicides, fertilisers, fungicides and pest and vermin poisons. You need to take care when storing, transporting, using and disposing of chemicals to ensure your own safety and that of the environment.

Any chemicals should be treated with extreme caution and only ever used according to the instructions. The effects of chemical exposure depend on the type of chemical and the degree of exposure. If chemicals are swallowed, absorbed through the skin or inhaled as a mist, vapour or dust, some of the immediate and long-term effects can include headache, poisoning, nausea, skin rashes and irritation, chemical burns, breathing problems and cancer.

Hazardous materials are required by law to include a Material Safety Data Sheet (MSDS) and label. The MSDS gives valuable information on how to safely handle the chemical. Before using

any chemical, you should read the label, understand the MSDS, do a chemical users course (such as Grow Safe), and follow usage instructions.

To further reduce the risks, it is worth remembering that hazardous chemicals can occasionally be replaced with less toxic options. Sometimes, a safer form of the product is available. For example, pellets may be used instead of powder.

You can find more information on Agrichemicals in the following documents:

NZS 8409:1995 – *Agrichemical Users' Code of Practice*

MBIE Publication – *The Farmers' and Growers' Guide to the Health and Safety in Employment Act*

MBIE Publication – *Working with Organic Solvents*

Agcarm booklet – *A Guide with Pesticides in NZ*

NZ Agrichemical Education Trust – *Code of Practice*

Cuttings

Spray Notification



Orchardists and Contractors

If your orchard is having sprays applied or you are the person applying them **please ensure** you notify **all** potential visitors, contractors, staff and neighbours. This notification is when applying sprays and also notifying others of the re-entry period.

Staff

Make sure you are aware if sprays are being applied and have been told of the re-entry period. If the orchardist is aware that you will be coming onto their orchard it is their responsibility to let you know this information.

Cuttings

KiwiGreen Reminder

With Christmas just around the corner, it is now time to be thinking about your orchard's KiwiGreen requirements for this season.

Accompanying this edition of EP Prunings is your KiwiGreen contract. Your Grower Services Representative will work through a Risk Assessment with you and help to fill in this contract.

It would be great to have all G3 /G9/ G14 contracts returned before the end of November and Hayward/Hort16A returned prior to the Christmas break.



E-Text Facility

EastPack runs a facility where we use the E-text system to remind growers about upcoming field days and meetings and lets them know of frost warnings in their area.

If any of our growers haven't been getting these or would like their Orchard Managers to receive them also please contact Kyra on 07-573 0942 or kyra@eastpack.co.nz with name, mobile number and growing region so I make sure you are getting the correct information for your area.

Mango, Pineapple and Kiwifruit Salad



Ingredients

- 2 ripe mangoes, peeled and cut into 1/2-inch pieces
- 2 kiwifruit, peeled and sliced 1/4-inch thick, cut in half
- 1 fresh pineapple, peeled, cored, and cut into 3/4-inch pieces
- 2 tablespoons chopped coriander
- 1 tablespoon fresh lime juice
- 2 teaspoons freshly grated lime peel
- 1 teaspoon finely chopped fresh garlic
- 1 teaspoon chopped seeded red chilli pepper

Method

- 1 Place mangoes, kiwifruit and pineapple in a large bowl. Toss gently.
- 2 Add remaining ingredients. Stir to coat.
- 3 Let stand 10 minutes.
- 4 Serve at room temperature or refrigerate until serving time.

Unwanted swarms of bees?

Do you have bee swarms on your property that you want to get rid of in the immediate Te Puke area?

Ph Andrew on 027-289 9308 or Chris on 027-484 4025

EP Prunings Deadline

For articles and advertising 1st of each month. Please also advise when your adverts are to be removed.

Contact Kyra Ormsby: DDI 07-573 0942
kyra.ormsby@eastpack.co.nz

Upcoming Events

DATE	REGION	EVENT	LOCATION	TIME
Mon 18 Nov	Kaikati	Zespri OPC G3 Discussion Group	Middle Harbour Orchard, 269 Matahui Road	9.30am-11.30am
Mon 18 Nov	Kaikati	Zespri OPC G3 Discussion Group	Middle Harbour Orchard, 269 Matahui Road	2.00pm-4.00pm
Mon 18 Nov	Gisborne	Zespri OPC G3 Discussion Group	Riverton Orchard, 58 Riverpoint Road	10.00am-12.00pm
Tue 19 Nov	Te Puke	Zespri OPC G3 Discussion Group	Fourth Estate, 358 Maketu Road	9.30am-11.30am
Wed 20 Nov	Edgecumbe	Zespri OPC G3 Discussion Group	Harcourt Orchard, 30 Orchard Rd, Awakeri	10am-12pm
Wed 20 Nov	Opotiki	Zespri OPC G3 Discussion Group	Snellings Orchard, 387 Tablelands Road	2pm-4pm
Wed 20 Nov	Kerikeri	Zespri OPC G3 Discussion Group	Piper Orchard, (parking on Orangewood Rd) Meet at Orangewood Packhouse, Kapiro Rd	9.30am-11.30am
Wed 20 Nov	Whangarei	Zespri OPC G3 Discussion Group	Omakau Orchard, 52 Mannington Rd	2.00pm-4.00pm
Wed 20 Nov	Tauranga (Organic focus)	Zespri November Grower Meeting	Historic Village, 17th Ave West, Tauranga	5.30pm-7.30pm
Wed 27 Nov	Auckland	Zespri OPC G3 Discussion Group	Burnside Orchard 125 Takanini-Cleveland Rd, Papakura	10.00am-12.00pm
Fri 22 Nov	Kaikati	Zespri November Grower Meeting	Kaikati Rugby Club Moore Park, Fairview Road, Kaikati	9.30am-11.30am
Fri 22 Nov	Te Puke	Zespri November Grower Meeting	The Orchard Church 20 MacLoughlin Drive, Te Puke	2.00pm-4.00pm
Mon 25 Nov	Hawkes Bay	Zespri November Grower Meeting	The Duke of Gloucester 389 Gloucester Rd, Taradale	10.00am-12.00pm
Mon 25 Nov	Gisborne	Zespri November Grower Meeting	Bushmere Arms Hotel Main Road, Waerengahika	5.00pm-7.00pm
Tue 26 Nov	Opotiki	Zespri November Grower Meeting	Opotiki Golf Club, Fromow Road, Opotiki	10.00am-12.00pm
Tue 26 Nov	Edgecumbe	Zespri November Grower Meeting	Awakeri Events Centre, Edgecumbe	2.00pm-4.00pm
Wed 27 Nov	Waikato	Zespri November Grower Meeting	Prince Albert, Victoria Street, Cambridge	10.00am-12.00pm
Wed 27 Nov	Auckland	Zespri November Grower Meeting	Counties Inn, 17 Paerata Road, Pukekohe	3.30pm-5.30pm
Thur 28 Nov	Kerikeri	Zespri November Grower Meeting	The Centre at Kerikeri 43 Cobham Road, Kerikeri	10.00am-12.00pm
Thur 28 Nov	Whangarei	Zespri November Grower Meeting	A'Fare, 197 Lower Dent Street, Whangarei	2.30pm-4.30pm
Mon 2 Dec	Edgecumbe	Zespri FON Field Day	Harcourt Orchard, 30 Orchard Rd, Awakeri	2.00pm-4.00pm
Tue 3 Dec	Te Puke	Zespri FON Field Day	Te Puke Fruit Force Orchard 117 Gulliver Road	9.30am-11.30am
Tue 3 Dec	Gisborne	Zespri FON Field Day	Greens Orchard, 799 Matawai Road Visiting Paradise Orchard	9.30am-12.30pm
Wed 4 Dec	Kerikeri	Zespri FON Field Day	Mackay Orchard, 54A Orangewood Road	9.30am-11.30am
Wed 4 Dec	Tauranga	Zespri FON Field Day	Puketiro and KMS Orchards Starting at 388 Joyce Road	3.30pm
Wed 4 Dec	Whangarei	Zespri FON Field Day	Tanekaha Orchard, 311 Kerehunga Road	2.00pm-4.00pm
Thur 5 Dec	Kaikati	Zespri FON Field Day	Stewarts Orchard, 71 Wright Road	9.30am-11.30am
Wed 11 Dec	Sth Auckland	Zespri FON Field Day	Ward Orchard, 19 Bullens Road, Papakura	10.00am-12.30pm
Wed 11 Dec	Waihi	Zespri FON Field Day	TBC by Zespri	3.00pm-5.00pm

Classified

Wanted to Buy

Orchardised Tractor

In working condition – under \$4K
Phone Faye 07-549 5944

Fencing Posts

Suitable for fencing 1.8m
Phone Faye 07-549 5944

0.1 ha G3 licence

Phone Graham 021-935 879

300 Steel String Poles – 5m

Phone Kevin on 027-480 0506

Used AgBeam

Standard and heavy.
Phone John 027-216 9345

Hort 16A Gold Licence

Phone Andrew 027-222 1903

Courses

First Aid Courses

OSH, GAP, NZQA. Held monthly in Te Puke.

Phone Doug 021-108 1515

Email: dougallan@slingshot.co.nz

For Hire

Machinery for Hire

- D31 bulldozer 6 way blade/ winch
 - 10 tonne digger
 - 8 wheeler flat deck with hydraulic ramp and 9.5m deck
 - 5 tonne 4x4 tip truck
- Ph Barry Moys 07-929 7272

For Sale

Crop Spray 2000L

Good condition. \$4000.00
Phone Alan 027-485 9910

Bin Trailer

Good condition – Offers
Phone Alan 027-485 9910

Fertiliser Spreader

6 bag capacity, 6 point linkage. \$600.00
Phone Alan 027-485 9910

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- Twin Stack Arkal Spin Klin
 - Automatic Cleaning
- Offers
Phone 07-322 2566

4.34 ha Hort16A Licence

Contact Simon Dickie on 027-496 1350

Tearce 2000 Crop Sprayer

Good condition. \$7000
Phone 027-672 2044

2 sis Frost Machines

– Auto start
Ph Glenn 027-274 9790

For Sale

Cropliner Orchard Sprayer – 1500Litre

Good order. \$3000.00 ONO
Phone John on 07-533 1262 or 027-499 9179

2.4m Pine Kiwifruit Poles

Nail in one end.
Large quantity available. Offers
Contact Leighton 021-481 793

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Brand New. still in the box.
New price \$2,700.00 + GST– Offers
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For stringing. Use multiple times.
3m and 5.4m lengths ex Tauranga
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Cropline 20,000 litre Orchard Sprayer

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Quality Bruno Rootstock

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2000 x 500mm Spray Guards

Suitable for stumps up to 12 years old.
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Kiwifruit Kerf Cutter and Bud Wood Preparation Tool

- Cutters to make 4.5, 6 and 8.5mm slots.
- Fits on standard angle grinder.
- Can be fitted to bench grinder to make own bud wood scions. \$67.00 each.

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Grundfos Pump: Model 100 x 65 - 200. Impeller diameter 198. Motor is a 2009 model 22Kw TECO high efficiency (93.5) 3 phase induction. Pump is attached to the motor.
Please ring Mike on 07-312 3198 evenings.

Trade Services

Do your water tanks need cleaning?

Ph Gavin 027-212 5599

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Complete with Tornado Ray Jets, 2 x 55 litres/hr
Per 5m bay 19mm, 16mm 13mm
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- Grooving equipment available from \$1,495.00 + GST

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- Fabrication and engineering repairs
 - Aluminium and stainless steel welding
 - Repairs and hardfacing of flails
 - Mowing and mulching
- Special rates for EastPack growers.
For enquiries phone Dave on 021-980 664

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Orchard Contracting Services

- Crop spraying
- Weed control
- Mowing and mulching requirements

Phone Matt 021-202 8520

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- Applying Taca will increase flail life by up to 4 or 5 times depending on conditions.
- We can supply all types of mulcher flails, complete with Taca.

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For all your fertiliser spreading requirements.

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- Competitive rates – Book now!
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SONICSPRAY Horticulture Spray Specialists

Experienced spray contractors for all your kiwifruit spraying requirements. Very high orchard hygiene standards for Psa control.
Phone Richard Alloway on 027-499 9459

Bay Sluicing, treat Armillaria naturally

We work to isolate and control the spread of Armillaria within orchards, by water blasting soil away from infected root systems. By doing this we are able to expose the Armillaria fungus to sunlight and air causing fungus to dissipate and vines to recover.

Free quotes and consultations available throughout the bay.

Call Karen Massey on 0800 877 566

BOP Trenching Services

- Irrigation systems for orchard or farm
- Frost and irrigation, bores, rivers or dam supply
- Diesel or power pumps
- Design, supply and install
- Free quotes.
- New systems or reinstate old systems

Phone Roger Johnson on 07-533 1517 or 027-452 5330

Superior Kiwifruit Vines

Needing to graft kiwifruit vines this winter?

Let us do the hard graft for you! Over 25 years grafting experience and a success rate of over 99%.

Call Stuart on 022-080 5669
Email: Superiorkiwifruitvines@gmail.com

Trade Services Wanted

Kiwifruit posts and wire to be removed

4.5 canopy hectare lot to be removed

Contact Tere 07-573 5356

Contacts

Edgecumbe

Phone 0800-722 554

Fax 07-304 8262

Tony Hawken

Chief Executive

027-497 1796

Matt Hill

General Manager – Grower Services/EKO

027-489 5088

Shelley Thompson

Eastern BOP Hub Manager

027-612 7453

Alex Fields

Site Manager

027-234 2503

Tony Hooper

Manager – Grower Services/EKO

(Edgecumbe)

027-292 4639

Marty Robinson

Grower Services/EKO

027-839 9249

Grant Allen

Grower Services/EKO (Edgecumbe/Te Puke)

027-203 4456

Whatu Brown

EKO Orchard Manager

027-242 6412

Kristine Savage

EKO Orchard Manager

027-212 5591

Robin Simmons

Orchard Manager

027-212 5616

Payments & Shares

Hannah Cleland

Payments

07-304 8226

Marie Stieller

Payments

07-573 0904

Glenbervie

Phone 09-437 3003

Fax 09-437 3013

Warren Herriott

Site Manager

027-212 5608

Geoff Carr

Grower Services (Whangarei)

027-212 5739

Alan Kale

Grower Services (Hawkes Bay)

027-286 4797

Te Puke – Collins Lane

Phone 07-573 8075

Fax 07-573 7853

Adrian Osterman

Site Manager

027-275 3293

Te Puke – Quarry Road

Phone 07-573 9309

Fax 07-573 9310

Janette Montgomery

Site Manager

027-229 3795

Te Puke – Washer Road

David Stephenson

Manager – EKO

027-258 9820

Toby Potter

Business Development Manager

027-703 3812

Braden Hungerford

Manager – Orchard Productivity

021-280 6600

Jacki McCormack

Technical Manager

027-346 8942

Bruce Lyford

Senior Relationships Manager

027-612 7450

Tim Torr

Technical Transfer Manager

027-205 7520

Anthony Pangborn

Technical Manager – Fruit Quality

027-245 7295

Peter Savory

Manager – Grower Services (Te Puke)

027-742 6778

Ivon Pilcher

Grower Services (Te Puke)

027-430 4074

Glenn Carter

Grower Services (Te Puke)

027-274 9790

Bryan Leach

Grower Services (Te Puke)

027-573 8346

Andrew Stephenson

EKO Orchard Manager (Te Puke)

027-289 9308

Andrew Stevenson (Herb)

Technical Transfer

027-212 5586

Geoff Signal

Manager – Grower Services/EKO

(Waikato/Auckland/Northland)

027-212 5600

Gavin Brown

Grower Services (BOP)

027-212 5599

Todd Hardie

Grower Services (BOP)

027-742 8624

Craig Wotten

Orchard Manager

027-212 5596

Quentin Francis

Grower Services (Te Puke)

027-212 5615

Katikati – Marshall Road

Phone 07-549 0008

Fax 07-549 1299

Bruce Youngman

Site Manager

027-212 5619

Roger Hoebers

Manager – Grower Services/EKO

(Katikati/Coromandel)

027-702 6221

Bruce Shepherd

Technical Transfer

027-212 5630

Rudi Nunes

Grower Services/EKO (Coromandel)

027-212 5593

David Shoosmith

Grower Services/EKO

027-224 0742

Greg Wild

Grower Services/EKO

027-742 8402

Geoff Munro

Grower Services/EKO

029-549 1422

Opotiki

Phone 07-315 5226

Fax 07-315 5224

Shelley Thompson

Eastern BOP Hub Manager

027-612 7453

Tony Beal

Manager Grower Services/EKO (Opotiki)

027-698 1264

Matt Bowker

Site Manager

027-205 7497

Daile McDonald

Grower Services/EKO Orchard Manager

(Opotiki)

027-453 2752

Margaret Miller

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