

Folio Gold boosted by Bravo = powerful, systemic, early-season protection

This month Syngenta Crop Protection releases their latest innovation, a combination of systemic and protectant fungicide chemistry.



Folio Gold® is a specially formulated mixture containing two of the company's flagship active ingredients. The mix of Mefenoxam™ and chlorothalonil effectively combines the strengths of both Ridomil® and Bravo® to deliver powerful, systemic, early-season protection in potatoes, tomatoes, cane fruit and grapes.



A wide range of diseases are controlled – early and late blight in potatoes and tomatoes; black spot, *Botrytis*, downy and powdery mildew in grapes; *Botrytis*, dry-berry and cane-spot in blackberries, boysenberries and other brambles.

Folio Gold is rapidly absorbed by all green plant tissue and transported upwards (and to a lesser degree downwards) within the plant, says horticulture portfolio manager Craig Thompson.

"This gives unrivalled systemic activity on target crops to provide protection of existing and new growth. The Bravo component also ensures the product is highly persistent on plant surfaces, giving strong and long-lasting preventative disease control."

Mefenoxam is the systemic component of Folio Gold and unique to Syngenta. Being the more active isomer of metalaxyl it is twice as active as generic metalaxyl, and therefore has the same biological activity when used at half the rate.

"Mefenoxam's activity offers several advantages, ranging from lower use rates to reduced or nil residues in crops at harvest and an improved environmental profile," says Craig.

"A significant point of difference to many vegetable fungicides on the market is that Folio Gold does not contain mancozeb. This means it will be a key product for those growers needing to reduce total mancozeb use on their crops, in line with the directives emerging from some European produce retailers."

Growers will get maximum benefit by using Folio Gold early in the season or during periods of rapid vegetative growth of the crop and it should always be used preventatively.

Folio Gold is an easy-to-use liquid formulation, available in five-litre plastic containers. Contact your local Fruitfed representative for further details. ➔

FOLIO GOLD BEST USE GUIDELINES

Utilise the key strengths of Folio Gold and get the best results from your spray programme by:

- Always applying Folio Gold preventatively before disease symptoms appear;
- Using it early in the season or during periods of rapid vegetative growth of the crop;
- Limiting the number of applications to three per season for potatoes, tomatoes and grapes;
- Ensuring the application interval does not exceed 14 days and, under high disease pressure, is reduced to ten days.

CROP	DISEASE	RATE	WITHHOLDING PERIOD
Potatoes, tomatoes	Early blight, late blight	2.5l/ha	4 days
Grapes	Black spot, <i>Botrytis</i> , downy mildew, powdery mildew	375ml/100l water	28 days
Cane fruit: blackberries, boysenberries and other brambles	<i>Botrytis</i> , dry-berry, cane-spot	375ml/100l water	14 days

Fruitfed Supplies PGG Wrightson

FRUITFED SUPPLIES MOVES IN CHRISTCHURCH

The Fruitfed Supplies branch in Christchurch has combined with the PGG Wrightson rural supplies store and the full range of horticultural products and services can be found at 411 Blenheim Road.

The telephone and facsimile numbers remain the same, 03 349 9948 and 03 344 0094 respectively, and any queries re the change can be directed to the horticulture area sales manager Jason Fraser, mob: 027 435 3276 or jfraser@fruitfedsupplies.co.nz.

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New DuPont insect control welcome in Nelson

A leading Nelson horticulturist used the new DuPont™ Coragen® insecticide last season and welcomes the addition to his pest control armoury.

John Ewers has a large operation just out of Richmond with ten hectares under glass growing a variety of crops – tomatoes, cucumbers, capsicum and eggplant – as well as growing around 120 hectares of outdoor crops including cabbage, lettuces, broccoli, cauliflower, leeks, silverbeet and watermelons. He sends his high quality product all over New Zealand.

Coragen was launched in New Zealand late in 2008 for the control of caterpillars in vegetable brassica crops. John used it last season with what he says are very good results.

"We noted very good control of a variety of pests including diamondback moth, a significant problem pest here, and cabbage white butterfly. We're also very happy with the IPM-friendly nature of Coragen," says John.

John adds that new and effective products are just what this industry needs at present as he's very concerned that, without more new pest control developments, vegetable growers could be headed for a crisis.

"We'll definitely use more Coragen this season, making sure that it and other insect control products are used in a manner that minimise any chance of resistance build-up."

In the case of Coragen, this means no more than two consecutive sprays on a block before a different chemistry group is used, and then only one more application for a maximum of three applications per crop.

"It is essential that we look after the new chemistry so that we can have good options for continuing control of pests – insects are getting harder to kill."

Growers need to work in a united fashion, he says, because of the insects' ability to over-winter or build up in outlying districts then invade intensive growing areas.

John has a really strong relationship with his local Fruitfed Supplies representative Rod French. The pair works closely together to keep on top of the various pest and fungal issues at the Ewers' growing sites, and John rates Rod highly for his all-round knowledge "... which is essential in this operation." ⇨

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Much to learn about tomato/potato psyllid

Tim Herman, Fruitfed Supplies regional technical advisor, provides an update on the tomato/potato psyllid.

One of the key things highlighted for growers at the well-run PotatoesNZ road-shows are that we have a lot to learn about the tomato/potato psyllid (TPP) and the liberibacter and phytoplasma disease complexes. Lifecycle studies from 50-plus years ago provide some insight into the impact of temperature on TPP:

- Between 15°C and 30°C is preferred (26 to 27°C optimum);
- Below 15°C, adults stop moving and laying eggs, and the growth and development of nymphs slows right down;
- Over 30°C, egg laying and hatching stops and nymph survival drops;
- Over 35°C for an hour or two, nymphs and eggs die, but remember the air temperature inside the canopy is lower than above it during the heat of the day.

Some say TPP have hosts across 20 plant families. This is unlikely. TPP is primarily a pest of the potato family, Solanaceae. The other 'hosts' are likely to be refuges for adult TPP in winter or other periods when common hosts are absent. Some Solanaceae members are present year-round and may be key over-wintering refuges, e.g. woolly nightshade in northern regions. A Lycium species was reported as an important alternate host in mid-USA. Boxthorn is also in this genus and can be common in hedgerows. Poroporo is a New Zealand native, but we are currently unsure of its host status. Please contribute to the host plant database by passing on confirmed host plant records.

Growers need to monitor their crops closely and thoroughly this season. Insecticides are probably required on a tight 7-10 day schedule with careful



The obvious symptoms of TPP infestation

rotation between insecticide groups. Resistance management guidelines recommend each insecticide group be exposed to one generation then substituted by another group for at least another generation. TPP cycles through a generation in 35 days at 26 to 27°C, therefore the break between successive uses of an insecticide group should be at least five weeks mid-summer and longer, 6 to 7 weeks, earlier and later in the season.

We're still learning about TPP involvement with liberibacter and phytoplasmas. While the zebra chip symptom was well associated with TPP, New Zealand scientists identified the pathogen, *Candidatus liberibacter solanacearum*, which the Americans subsequently confirmed. *Candidatus phytoplasma australiense* is responsible for our own cabbage tree sudden decline, which also infects other plants such as strawberry, flax and coprosma.

TPP's link to phytoplasmas has been a real curveball! Leaf and plant hoppers are common vectors of phytoplasmas and also found in potato fields. But why has it suddenly popped up in relation to TPP and liberibacter? Our scientists have found TPP adults from sticky traps to have phytoplasma on/in them, but they struggle to get TPP to transmit the phytoplasma from plant to plant.

To sum up, there is much to learn and a lot of science to develop before we get our heads around the long-term management of TPP and associated diseases in our crops. We suggest growers continue to share information with other growers and support scientists in their endeavours to expand our knowledge. ⇨



A TPP adult
Photo: Shaun Bennett, Biosecurity NZ

Prodigy is ideal for application after codling moth BIOFIX date in pipfruit

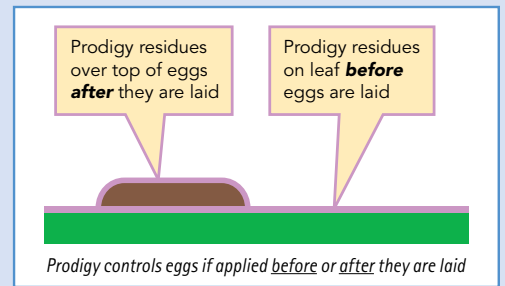
Prodigy™ is ideally suited to be the first post-petal-fall insecticide applied after the codling moth biofix date in apples, says Dow AgroSciences' technical specialist Bernard Harris.

"This is because Prodigy has activity against both eggs (ovicidal) and caterpillars (larvicidal) of codling moth and leaf roller. Another key advantage over other products is that the ovicidal activity occurs either when Prodigy is sprayed directly onto eggs or when eggs are laid on top of Prodigy residues," says Bernard.

"The direct and residual activity of Prodigy has also been extensively tested overseas and in New Zealand. In 2004, Borchert et al. showed that Prodigy was 5.3 times more active than its predecessor Mimic™ (tebufenozide) when applied directly onto codling moth eggs and 4.5 times more active than Mimic when codling moth eggs were laid on treated fruit."

New Zealand studies have shown that Prodigy is equally effective against codling moth eggs and caterpillars when applied either as a dilute solution or a five-time concentrated spray, adds Bernard.

Further New Zealand trials showed improved codling moth control as well as increased control of leaf roller in pipfruit, kiwifruit and grapes



compared to Mimic. The results showed Prodigy is residual on leaves and fruit and provides control of codling moth for 21-28 days and leaf roller for at least as long.

"Prodigy will not harm beneficial insects that assist in control of woolly apple aphid, leaf roller, other insect pests and mites," says Bernard. "Honey bees are not affected by rates 140 times greater than the label rate, which means Prodigy can also be safely applied during kiwifruit flowering in order to avoid residues on kiwifruit at harvest." ➡

™ trademarks of Dow AgroSciences. Registered pursuant to the ACVM Act 1997 No. P7154 Reference: Borchert, DM et al, 2004. Toxicity and residual activity of methoxyfenozide and tebufenozide to codling moth (Lepidoptera: Tortricidae) and Oriental Fruit Moth (Lepidoptera: Tortricidae). Journal of Economic Entomology, Vol 97, Number 4, August 2004, pp. 1342-1352(11)

Adjuvants – are they thoroughly tested?

An adjuvant does not require registration in New Zealand and peer reviews of product efficacy are not undertaken. Whether or not the product is crop-safe and how well it works is a "grower beware" situation, says Elliott Technologies' Pete de Jong.

Always ask for comparative trial data to back up claims made by chemical company reps, says Pete. "If they can't provide New Zealand or overseas studies about the specific adjuvant, avoid purchasing it. We believe the risk to your crop and your livelihood is too high. Most respectable companies will have supporting data for their products, so ask for it. You need to know the facts."

The team at Elliott Technologies Ltd has specialised in adjuvant products for nearly 20 years and ensures that all adjuvants sold to New Zealand growers are well tested both here and overseas.

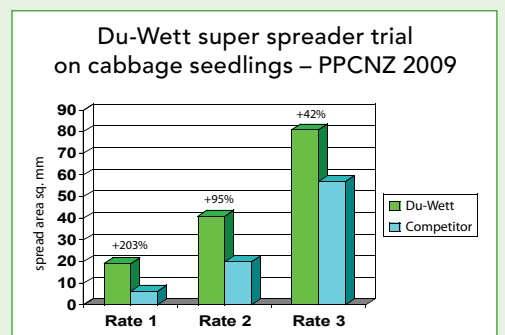
"Our principal adjuvant suppliers are US manufacturers Loveland Products and Momentive Performance Materials, which are both leaders in adjuvant development and research," says Pete. "Independent crop trials in New Zealand are done with a range of contract researchers, including the globally-respected laboratory PPC_{NZ} in Rotorua."

Elliott's range of 'super-spreaders' – Du-Wett®, Bond Xtra® and Du-Wett RainMaster® – are backed by more than 13 years of dedicated crop research and laboratory studies, with these independent trials costing well over \$1 million.

This year these 'super-spreaders' are being launched into pipfruit and avocados. "We have spent nine years trialling these adjuvants in pipfruit and six years in avocados before launching our 'super-spreaders' to growers of these important crops."

Due to Du-Wett's recognised success for low water volume spraying regimes, untested 'copies' of these products have now appeared on the New Zealand market. The label instructions are generally vague and growers are verbally told "...use the Du-Wett rates," says Pete. "We want growers to be aware that these products differ greatly in their spreading and deposition abilities compared to the genuine Du-Wett products. Therefore the Du-Wett rates for various crops will not work with these other products, causing over-spreading, under-spreading or poor adhesion. Du-Wett's effectiveness has been repeatedly proven by comparative PPC_{NZ} lab studies as shown in the accompanying graph."

Pete concludes: "Always ask for comparative, independent trial data to prove what is claimed. If none is provided, beware." ➡



Du-Wett® is a registered trademark of Elliott Chemicals Ltd. Bond Xtra® is a registered trademark of Loveland Products.

Control the three major grape fungal diseases with Pristine



While Pristine® also controls a range of diseases in apples, pears, stonefruit and kiwifruit, perhaps its most suitable fit is in the grape market where the product controls all three of the major diseases at once: Botrytis, powdery mildew and downy mildew.

Pristine gives growers a powerful yet cost-effective option when planning this year's vineyard spray programme, says BASF's crop protection marketing manager Tim Loughnane.

"The key to Pristine's effectiveness in grapes is its combination of two unique active ingredients: F500®, the latest generation strobilurin, and boscalid, a new anilide molecule from BASF. These two active ingredients work in very different ways to produce a truly unique fungicide.

"F500 provides fast-acting, long-lasting disease control by blocking the energy production of the fungal cell at the Complex 3 enzyme in the fungal respiration chain, while boscalid inhibits the Complex 2 enzyme of the respiration chain. In this manner, boscalid not only stops energy production but also stops synthesis of the amino acids and lipids that are critical for fungal growth.

"A major benefit of Pristine is that because boscalid works on a different

site of action than F500, there is little risk of cross-resistance to Pristine, which gives growers a built-in resistance management strategy."

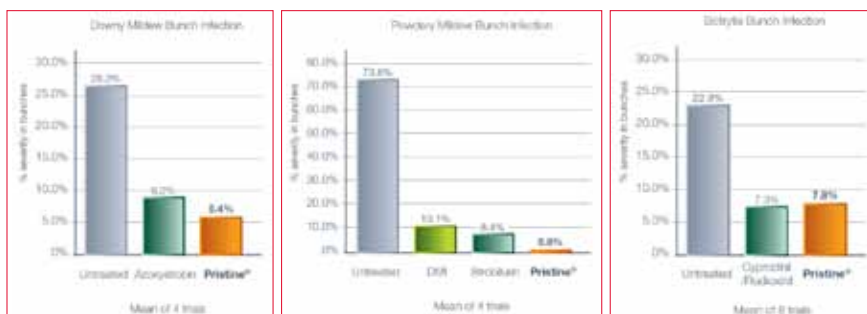
In terms of the mode of action of Pristine, F500 is translaminar and locally systemic while boscalid is translaminar and acropetally systemic, and these effects give a level of protection into new growth as well. This dual mode of action provides growers with rapid and reliable disease control in grapes at a time when they need it most.

"A large number of independent trials have shown that in grapes, Pristine matches the performance of the current market standard for the control of *Botrytis*. Pristine was also proven to exceed the performance of the current market standards in the control of powdery mildew and downy mildew.

"This eliminates the need to tank-mix that is common with other grape fungicides, although Pristine is able to be tank-mixed with a wide range of insecticides and does not require the use of an adjuvant, thereby saving growers further time and money," says Tim.

The launch of Pristine into the grape market adds to BASF's already impressive range of proven grape products such as the fungicides Kumulus®, Polyram®, Acrobat® and Delan® as well as the herbicide Stomp® Xtra. For more information on Pristine or any products in the BASF range, speak to your local Fruited Supplies representative. ♦♦

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Quintec + Systhane 200EW – perfect partners in squash and wine grapes

Since registration three years ago, the tank-mix of Quintec™ and Systhane™ 200EW fungicides has offered unparalleled control of both strains of powdery mildew in squash.

The now familiar 'squash pack' has been well accepted by growers, says Dow AgroSciences technical specialist Bernard Harris. "Due to demand from larger growers and contract applicators, a larger pack is now available which contains five litres of both Quintec and Systhane 200EW fungicides and is sufficient to treat 25ha of squash."

The five-litre packs of Quintec and Systhane 200EW will also be of value to larger grape growers, offering greater convenience and less packaging waste.

"Grape growers will now be aware of the earlier pre-harvest interval specified for Systhane 200EW in order to achieve nil detectable residues for the New Zealand Winegrowers Export Spray Schedule," says Bernard. "The 80% cap-fall cut-off date means many growers may need to make applications of Systhane 200EW a week or two earlier than previously. For

certainly, it is recommended that growers discuss their fungicide use with their export winery."

After the 80% cap-fall timing, Quintec should be used for robust protection against powdery mildew. Quintec has a unique vapour action which allows the fungicide to re-distribute through the wine grape canopy. Both field trials and grower experience have shown that this vapour action provides outstanding mid-to-late season control of powdery mildew on bunches. The 14-day interval between application for Quintec plus a 35-day WHP means that powdery mildew control can be maintained right up to veraison. ♦♦

™ trademarks of Dow AgroSciences. Registered pursuant to the ACVM Act 1997 Quintec No. P7296; Systhane No. P3459.





Mit é mec – November critical timing

Use Mit é mec this month to control mites on pipfruit and avocados, advises Fruited Supplies technical manager Richard Bawden.

Mit é mec® is a very effective miticide from the chemical group macrocyclic lactones produced by the fermentation of the soil actinomycetes bacteria *Streptomyces hygroscopicus*.

Richard says Mit é mec is unique with proven activity on all stages of the mite's development – larva, nymph and adult but, most importantly, the egg.

"However this compound should not be confused with abamectin, also a macrocyclic lactone, produced by another soil actinomycetes: *Streptomyces avermitilis*. Abamectin has a similar mode of action on the nervous system, but only controls the active mite stages, not the egg, as it is not an ovicide."

Adding spraying oil or surfactant aids the uptake of these macrocyclic lactone products into leaves. Mit é mec penetrates rapidly into the cuticle of the leaf due to its translaminar activity, forming a reservoir of active ingredient providing residual activity unaffected by subsequent rainfall. Research demonstrates that Mit é mec sprayed only on the upper leaf surface will control mite feeding on the lower surface via this translaminar activity.

Mites become immobilised shortly after ingestion or contact, ceasing feeding and remaining inactive for a number of days before mortality. When residual levels fall below the lethal dose, mites are able to survive but fail to lay as many eggs.

"These features, combined with Mit é mec's ability to control all lifecycle stages, contribute to the long residual mite control obtained in the field, often from a single application.

"Early applications when leaves are young have been demonstrated to optimise Mit é mec absorption, providing longer residual activity. This gives Mit é mec a strong fit in pipfruit and avocado mite control programmes in spring, while new flush is present on the trees," advises Richard.

Mit é mec is compatible in IPM programmes due to the rapid leaf uptake and photo-degradation of remaining deposits on the leaf surface, reducing the effect on predator insects. There is no cross-resistance with other miticides, however, due to the close relationship chemically with abamectin, alternating Mit é mec with abamectin products is not an acceptable resistance management strategy.

Timing for effective mite control is vital. Monitor blocks in late winter and spring for pest mite species numbers. Neither Mit é mec nor abamectin should be applied during flowering, as surface deposits are toxic to bees until photo-degradation has taken place.

Mit é mec is classified as a 'reduced risk pesticide' by the US Environmental Protection Agency due to the low mammalian toxicity, both acute and dermal. It is registered for mite control on apples, pears, avocado, stonefruit, citrus, strawberries and ornamentals. ➔

®Mit é mec is a registered trademark of Sankyo Agro Co. Ltd., Tokyo, Japan. Registered pursuant to ACVM act 1997, No. P5994

TECH-KNOW TIPS

ASPARAGUS



Reminders for November:

- ✓ **Inspect** asparagus beds regularly for pests and diseases.
- ✓ Take a **root sample** from young (2-3 year old) crops to determine carbohydrate levels. Enter information in Plant and Food Research's AspireNZ model to determine date of close-up.

AVOCADOS



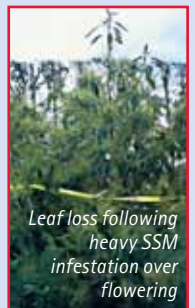
Reminders for November:

- ✓ **Leaf roller control** is a priority for avocado fruitlets as pressure is usually high over spring. Once leaf roller become established among mature fruit, control is extremely difficult. Monitor blocks and, if thresholds are exceeded, control as necessary. Success Naturalyte offers excellent efficacy on leaf roller, short PHI and has little effect on non-target organisms. Proclaim is now also registered for leaf roller control offering a new option.
- ✓ Get the best information for crop management decisions with structured **crop monitoring**. Please contact your local branch for information on Fruited Supplies Crop Monitoring Service.
- ✓ Consider regular applications of formulated seaweed products such as **Calibra**, particularly on stressed trees.
- ✓ Heavy fruit-set may also require feeding to ensure fruitlets are retained;

apply **Fruited Supplies Avocado Fertiliser** as recommended. **Fertigation grades** are also available.

- ✓ Monitor soil moisture and maintain **irrigation** to ensure trees are not under stress at this important growth stage. Our irrigation designers can assist with scheme design – ask in-store for further details.

Numbers of **six-spotted mite** have been higher than average on a number of blocks this season, particularly in the Far North (see photo). If this pest was an issue in your block during flowering, control with Mit é mec plus DC Tron Plus as soon as flowering is finished. Uptake of avermectin chemistry such as Mit é mec is best into young newly-developed leaves, maintaining a reservoir of active ingredient on the plant and increasing longevity of control. This helps to ensure leaves are retained as long as possible to assist fruit-set and early fruitlet growth.



Leaf loss following heavy SSM infestation over flowering

BRASSICAS



Reminders for November:

- ✓ **Monitor** crops for emerging populations of pests and diseases. Spring flights of aphids will be peaking, and cutworm, wireworm and springtails may damage young transplants.
- ✓ If **diamond back moth** and **white butterfly** numbers exceed action thresholds, apply a selective insecticide from the resistance

management strategy's first window, i.e. Delfin, Coragen or Success Naturalyte. Remember to use a selective insecticide, Chess or Pirimor, if only aphid control is needed.

CITRUS

Reminders for November:

- ✓ Research presented by Dr. Lisa Jamieson showed adult **citrus whitefly** start flying in October and laying eggs. Controlling adults reduces egg numbers and therefore summer populations. The most susceptible life stages (crawlers and nymphs) begin to appear in numbers in November, giving an opportunity for improved control of this damaging pest. For further information, please contact your local Fruitfed Supplies branch.
- ✓ Keep an eye out for **Kelly's citrus thrips** on developing fruitlets.
- ✓ **Armoured scale** insects may also appear at this time.
- ✓ **Monitoring** for these pests helps determine control requirements with justified use of agrichemicals and less risk of unnecessary applications. For further details on crop monitoring, contact your nearest Fruitfed Supplies branch.
- ✓ Maintain the **fungicide** programme up to and post-flowering to protect against scab and melanose infection of young shoots and fruitlets. Through petal-fall and early fruitlet growth, tangelos and tangors are susceptible to **Alternaria** infection. For these varieties, an application of Rovral Gold or Rovral Flo is indicated at petal-fall.
- ✓ With cool spring weather limiting nutrient uptake, foliar fertilisers such as Citrac should be considered to promote strong flowering and fruit-set. Citrac is very well suited to citrus, supplying magnesium, zinc and manganese, all of which are often lacking in citrus crops. Timing is critical, so please check with your Fruitfed Supplies representative.

Kelly's citrus thrips damage



GRAPES

Reminders for November:

- ✓ For good control of **powdery mildew** and **erinose mite**, maintain a tight application schedule of wettable sulphur or Organic JMS Stylet oil through till pre-bloom. For best results with wettable sulphur, apply only on warm days or during the warmest part of the day.
- ✓ Apply a DMI fungicide such as Systhane 200EW, or Quintec, at 10-14 days prebloom to protect from powdery mildew infection during this very susceptible growth stage when disease pressure is rapidly increasing. If using a DMI, try to time the application to co-incide with warm conditions and do not mix these products with sulphur.
- ✓ To protect vines from diseases like black spot and phomopsis, apply a suitable broad-spectrum protectant fungicide in anticipation of rainfall events. Ensure good coverage is achieved on foliage.

Downy mildew is a destructive disease of grapevines that can attack all green parts of the vine. If infections are severe around flowering, it can reduce harvestable yield considerably. Leaf infections can result in premature vine defoliation.

Prevention of the establishment of downy mildew's primary infection is vital. Be vigilant in watching weather conditions and monitoring for oil spots from 3-4 weeks after bud-burst, through flowering, until berries are pea-sized. This is particularly important if your block has a history of the disease.

When conditions suit the pathogen but oil spots are not detected, apply a broad-spectrum protectant fungicide (Fruitfed Captan, Dithane Rainshield or Kocide Opti all have activity) in anticipation of rain. If heavy and prolonged

rain is forecast, consider using a rain-fastening adjuvant (e.g. Du-Wett Rainmaster or Bond Xtra). These fungicides may be applied alone or tank-mixed with your regular sulphur sprays. If oil spots are detected, a protective/curative fungicide should be applied immediately, with successive applications made at 14-day intervals while conditions remain conducive to disease development (check PHIs). Contact your local Fruitfed Supplies branch for more information.



Downy mildew mycelium on lower leaf surface (Pinot Noir)

KIWIFRUIT

Reminders for November:

- ✓ From fruit-set to January is the most critical period for **leaf roller** control. Apply Prodigy during flowering to provide good early control and protect developing fruitlets. (See Prodigy story in this issue for its mode of action.) Washington State University studies show Prodigy provides ovicidal activity for more than four weeks, i.e. extended control compared to all other products. NB. Tebufenozide (Mimic, Comic) can no longer be used on Hayward under the Zespri crop protection programme. Follow Prodigy application with Proclaim or Success Naturalyte 4-5 weeks later, due on Hort 16A during November.
- ✓ **Sclerotinia** can be an issue if conditions are warm and wet during flowering/post-flowering. Apply Flint or Rovral Gold prior to wet periods to help maintain fruit yield and quality. Flint, in particular, provides excellent forward cover even when applied relatively early in the flowering period, i.e. 30% flowering. The active ingredient, trifloxystrobin, (a strobilurin) has excellent rainfastness properties. The chosen fungicide should be applied during flowering (in combination with Prodigy for leaf roller control), as the pathogen colonises dead and dying flower parts, then fruit.
- ✓ Please consider **bee safety** when spraying vines or shelterbelts near to or during flowering. Following a cold winter, bud-break was early this year and flowering may also be well advanced, so ensure pre-flower scale sprays are completed before flowering. Select the safest products to bees, mow sward so no flowers are present, beware of flowering shelterbelts and time applications for late in the day or at night when bees are not working. Both Calypso and Movento are proven to have high levels of bee safety, allowing their use up to the day before bees are introduced to the orchard.
- ✓ Foliar fertilisers such as **Tracel Plus** are often used before flowering, as cold spring soil temperatures suppress nutrient uptake by roots. Seaweed fertilisers such as **SM6 or Calibra** can be considered prior to, during and after flowering, to promote healthy leaf and fruit growth. **Pentaflo** has also been used after fruit-set to increase fruit calcium and assist with fruit quality and development.
- ✓ **Supplementary pollination** should be considered over flowering to improve fruit size and shape and reduce variability within a crop. Excellent results have been seen with this technology over the last few seasons on many blocks. Please contact your Fruitfed Supplies branch to discuss how this technology may best be used in your situation.



Sclerotinia infection destroying young Hayward fruitlets

Scale control is vital in the pre- and post-flower periods. After several years local research, **Movento** was launched last season for pre-flower scale control. Uniquely Movento has both phloem and xylem mobility within the plant and coupled with excellent efficacy on piercing and sucking insects such as scale, has given outstanding results in both field trials and commercial blocks to date.

An alternative option for the pre-flower application is **Calypso**, which has xylem mobility only, moving systemically upwards and outwards in the

plant. While not as mobile or as effective as Movento, results over several years show Calypso offers increased scale control compared to older contact chemistry. Ensure complete coverage with Calypso. The addition of **Du-Wett**, a specialist adjuvant for greatly increasing spread of applied spray solution on the plant, even at low water rates, will help. For further information, please contact your local Fruitfed Supplies branch.

An application of **DC Tron Plus** is highly recommended from fruit-set to 14 days later (Hayward) or from fruit set to 21 days later (Hort 16A). This application is extremely important in Hort 16A as oils cannot currently be safely used mid-to-late-season. While this early use is relatively safe, label directions and best practice guidelines must be followed. Talk with your Fruitfed Supplies representative for further details.

LETTUCE



Reminders for November:

- ✓ Monitor crops for **lettuce aphid** and other pests and diseases. Record populations of natural enemies, such as lacewings, hoverflies and ladybirds, as these predators can maintain effective control of aphid populations in spring crops (Plant and Food Research).

ONIONS



Reminders for November:

- ✓ Monitor crops every week for **thrips** and apply an insecticide if more than five thrips are found on 50 plants. Follow the resistance management strategy and rotate insecticide use.
- ✓ Continue applications of Cereous™ for **white rot** control, at 3-4 week intervals (maximum of 2-3 applications per crop).
- ✓ Strategic **herbicide** applications can be made from 4th true leaf through to bulbing depending on the weed species present.
- ✓ Take a **leaf test** at 3-4 true leaves, prior to any fungicide applications starting. Side dress to correct any nutrient imbalances.

PIPFruit



Reminders for November:

- ✓ Following fruit-set, maintain regular fungicide protectant cover on rapidly-developing new leaves and fruitlets which are very susceptible to **black spot** infection. Apply Flint, Strobry (if less than four strobilurins have already been used) or Systhane plus a protectant (Polynam or Delan) early and mid-November.
- ✓ Effective **powdery mildew** control during this period of rapid growth is vital. Both Systhane and Flint, as applied for black spot control, are very effective against powdery mildew. Euparen Multi applications for mildew and black spot control can commence after 25 November.
- ✓ Novagib is proven to reduce **fruit russet** on susceptible fruit cultivars, greatly increasing marketable yield, when applied from late bloom with 2-3 follow-up applications at 10-day intervals. Novagib contains the purest form of GA4 and the least GA7 of any product on the New Zealand market. Globally, GA4 is proven to have the greatest effect on reducing russetting and increasing fruit size, while GA7 in high doses may adversely affect return bloom.
- ✓ If harvest monitoring picked up **scale**, apply Calypso in November. Crawlers of the first generation move onto fruit in November and December.
- ✓ Monitor for **European red mite** in late November and spray if the threshold is exceeded. Products such as Mit é mec move into leaf tissue giving extended control, but have best efficacy when leaf condition is optimum, i.e. early in the season.

Prodigy application just prior to **codling moth** egg hatch, 80 to 110 GDD from your regional biofix date, is highly recommended (check the PNZ website. See article this issue). Our research studies align with overseas research, showing no adverse effects on beneficial insects or bees, an important attribute in the early season when populations of beneficial invertebrates, e.g. *Typhlodromus pyri*, *Aphelinus mali* and *Platygaster demades*, are building. Altacor, from a new class of chemistry – the anthranilic diamides – is a more recently-registered insecticide for control of codling moth and leaf roller in apples, pears and nashi in New Zealand. Its novel mode of action sees it bind to the insect's ryanodine receptors (which play a critical role in muscle function), resulting in a rapid cessation of feeding, followed by death. In addition to a strong larvicidal activity Altacor also controls eggs. Altacor's resistance to photo-degradation, coupled with its translaminar movement into leaves, provides good residual protection and rainfastness. Fruitfed Supplies technical trials at both our North and South Island pipfruit research sites over the last five years have confirmed Altacor's excellent leaf roller and codling moth control, and its excellent safety to beneficial insects. Altacor has a 70 day PHI and could be used at either the first or second insecticide cover. For more information, please contact your local Fruitfed Supplies store.



Adult codling moth

POTATOES



Reminders for November:

- ✓ Magister® can be added to other **pre-emergence herbicides** to broaden the range of weeds controlled, particularly if cleavers are a problem.
- ✓ **Monitor** crops for pests and diseases, e.g. cutworm and Rhizoctonia.
- ✓ **Aphid** flights peak in mid-late spring, depending on the season, but so do populations of key aphid predators, e.g. ladybirds and lacewings. Monitor populations of both groups.
- ✓ If **late blight** is threatening early crops, Nautilé® has curative activity and can control late blight infections up to 48 hours after the fungus infected the plant.

SUMMERFRUIT



Reminders for November:

- ✓ The application of a suitable protectant fungicide for **brown rot** control is important to maintain effective cover while fruitlets are susceptible.
- ✓ Monitor for **leaf rollers** and apply Success Naturalyte if thresholds are exceeded. Check PHIs for export crops with your exporter.
- ✓ Continue to monitor for **aphid** infestations, as early season control of aphids is essential to prevent large population build-ups.

Mit é mec® has recently been registered for the control of **European red mite** and **two-spotted mite** in stonefruit. (See the article in this issue.) The Fruitfed Supplies technical team has carried out extensive research studies with this miticide, demonstrating its excellent efficacy and selectivity. It is benign to key mite natural enemies *Typhlodromus pyri* and *Phytoseiulus persimilis* making it suitable for IPM programmes. Mit é mec has a 14 day PHI for the NZ local market; check PHIs for export crops with your exporter. For more information, please contact your local Fruitfed Supplies store.



European red mite and egg

Fertigate with Kristalon and Mycorrcin for maximum affect

The Fruitfed Supplies team includes a number of specialists such as Jean Corona, the national nutrition advisor, who shares his knowledge of the science of fertigation with growers across the country.

The application of soluble fertiliser via irrigation systems to horticultural crops, i.e. fertigation, continues to be a popular practice due to its efficient use of both water and fertiliser, and the resulting improvements in crop uniformity, quality and yield.

Local knowledge of soil types, plant characteristics and nutrient requirements at different stages of growth all play a role in determining the effectiveness of any fertigation programme, says Jean, who works with Fruitfed Supplies representatives around the country to assist growers maximise potential yield from fertigation and other nutrition programmes.

"Nutrient availability, solubility and mobility in your soils, along with water quality, soil pH and CEC are additional factors to be considered," says Jean. (CEC stands for cation exchange capacity, which is used as a measure of the fertility and nutrient retention capacity.)

Jean's thorough understanding of the science behind the application of soluble fertilisers enables Fruitfed clients to access a high level of technical expertise, comments Rob Lamb, the company's nutrition category manager.

"The key to success with any planned fertigation programme is a detailed assessment of the block – soil type, current nutrient assessment, CEC, water quality and understanding the specific crop's nutrient demands and physiology," says Rob. "From this assessment, Jean can assist with the development of an efficient fertigation programme specifically to suit the grower's desired outcome."

Some of the benefits of fertigation include:

- Efficient use of nutrients by the plant because they are applied in a readily bio-available form;
- The flexibility to adjust nutrient mix to suit plant nutrient demand at different parts of the season;
- By feeding the plant the right nutrients at the right time, the plant's cropping potential is maximised.

Another important component in an effective fertigation programme is a source of quality plant nutrition products like the Kristalon soluble fertilisers from Yara available exclusively from Fruitfed Supplies.

Backed by extensive research, Kristalon fertilisers offer growers a range of complete blends including trace elements to suit a wide number of crops and growth stages. "The Kristalon blends are convenient and safe, reducing the risk of getting the exact fertigation recipe wrong. The product quality also makes it relatively cost efficient compared to lower standard products."

The Fruitfed Supplies plant nutrition team has also been working with the innovative researchers at BioStart New Zealand to explore the benefits of including a soil microbial stimulator like Mycorrcin in a fertigation programme.

"Combining the two gives you the best of both worlds," explains Geoff Warmouth, one of BioStart's horticultural territory managers. "Mycorrcin stimulates the soil's biological cycle while the fertigation product addresses the plant's nutritional requirements. We've seen an increase in new feeder roots and a change in the soil structure under the dripper with a bigger wetted zone as a result of adding Mycorrcin to the fertigation mix. In grapes, the lower leaves hang on longer when the summer stress comes on, which helps feed and develop the ripening berries." ❖❖



MYCORRCIN FOR IMPROVED SOIL HEALTH

- It activates beneficial soil microbes, including Mycorrhizal fungi;
- This improves soil structure and aeration, moisture infiltration and water-holding capacity;
- It also helps offset any negative impact of herbicides, fungicides and insecticides, which can suppress soil microbial activity and thus plant growth.



KRISTALON FOR EFFECTIVE PLANT NUTRITION

- Highly soluble and easy to use in any kind of irrigation/fertigation system;
- Colour-coded specific combinations of nitrogen, phosphorus and potassium with scientifically determined amounts of magnesium, sulphur and chelated trace elements.



Fruitfed Supplies

Facts is a monthly publication of Fruitfed Supplies, the horticultural division of PGG Wrightson Ltd. Feedback to the editor, Kate Gordon, is welcome (email kate@relishcomm.co.nz or mobile 021 587 227). For address updates, please advise your local Fruitfed Supplies branch (refer to Branch Location page on www.fruitfed.co.nz) or contact the Fruitfed Supplies national office (phone 09 448 0510 or email jayne.bosher@fruitfedsupplies.co.nz).

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