

Spray Programmes – The New Zealand Experience

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The industry spray programmes have three main drivers

1. Importing country MRLs
2. SummerGreen™ (IFP)
3. Cost

Pests and Diseases

The major pests include

Leaf Roller (3 sp)

- Light brown apple moth (*Epiphyas postvittana*)
- Green headed or Octo (*Planotortrix octo*)
- Brown headed (*Ctenopseustis obliquana*)

Black Cherry Aphid (*Myzus cerasi*)

Thrips (various including NZ native)

Cherry slug (*Caliroa cerasi*)

(Birds!)

A number of the pests are quarantine pests and therefore the product is required to be squeaky clean. The NZ native Leaf Roller and our native Thrip are a particular problem in this regard.

Major diseases

Brown rot (*Monilinia fructicola*)

Bacterial blast (*Pseudomonas syringae*)

The restrictions that the EU has in place for Brown Rot for late season shipments are causing particular heartache. Presently a system of fruit residue testing to confirm that pre harvest treatments have been applied plus block inspections are required for the completion of Additional Declarations as required by the EU.

Bacterial Blast is a significant problem both for tree health and in the worst-case scenario fruit cosmetics. Very high levels of resistance to both copper and Streptomycin have been detected and growers have a very small arsenal of control measures available. Research has shown very good results with Sulphur treatments on Nectarines in the field however when lab tested the Sulphur has no effect on the Blast organism. Research is continuing.

MRL's

The rapid changes happening with importing country's MRLs is challenging and scary. Some can be perceived to be trade barriers but whatever they may be, MRL's are the key driver of our pest and disease programmes.

The advancement in residue testing analysis has gone hand in hand with greater restrictions on available treatments. The only thing that we can be certain of as growers is that the MRL problem will become a greater issue. The introduction of residue-free treatments will be the way of the future

New materials with very short residue life are becoming available as well as greater opportunities to run biological control systems. Area wide mating disruption programmes such as the Codling Moth programme in British Columbia is successful and reduces the reliance on

chemicals with residue. Following a number of year's work with leaf roller in the Central Otago region in NZ a trial covering 240 ha will be commenced this season.

Some very clever chemistry has recently been introduced with extremely good efficacy but with very short residue life. This will provide excellent results where well targeted with an IFP programme or for pre harvest applications.

Heat treatment either using hot air or hot water has been successful. HortResearch have developed a prototype machine using hot water giving good results with leaf roller and thrips on apricots, peaches and nectarines. The hot water also reduced residue levels on the fruit as well as reduced the level of Brown Rot infection. I guess that the cherry stem will not enjoy being immersed for 2 minutes at 42 °C.

Summerfruit New Zealand develops for the NZ growers a chart showing the Withholding Periods (WHPs) (or Pre-Harvest Intervals) for each pesticide by fruit type and by country. The New Zealand Food Safety Authority is contracted to update the charts annually and as well, keep the industry advised of any changes as the season progresses. This exercise is worked around importing countries' MRLs and the decay curves of the various pesticides.

Where there are gaps as in no suitable pesticide being available for a particular country the industry then will negotiate with the authority in the importing country to obtain an extension. A case in point is with apricots to the US. Rovral has been on the "to be removed list for some time". The industry moved to work with the distributors to have an alternative (Folicur) registered in NZ as it was in the process of being registered in for apricots in the US (Folicur has registration for Cherries, Nectarines, Plums and Peaches). The Folicur registration has been delayed but the industry has been able to negotiate a continuance of acceptable MRL's for Rovral.

Summerfruit NZ also assists with funding for residue work on new materials that have been assessed to have the efficacy and as well as acceptable MRL's in the importing countries. Currently work is happening with a pre harvest Pyrethrum based material for pre harvest thrip control.

Packhouse QCs are required to check grower spray programmes against the industry provided WHP's to ensure that fruit destined for a particular market meets the WHP criteria. A grower may submit residue testing results that establish that the line does not exceed the importing country's MRLs if they have applied a material inside the WHP but for some reason do not expect the MRL to be exceeded.

SummerGreen™ (IFP)

The SummerGreen™ programme has been operating for 5 years. The programme is underpinned by a benchmarking review which precipitates out the gaps in the growing systems and therefore the R&D requirements.

SummerGreen™ also meets all the requirements of the "Food Safety" or production systems such as Eupre Gap that are demanded by Supermarkets internationally.

Integrated fruit production (IFP) can be defined as the economic production of market quality crops, giving priority to methods that are the safest possible to human health and the environment. IFP seeks to combine or 'integrate' the best aspects of orchard systems whether they are conventional, organic or something in between. It is a pragmatic approach that recognises that orchard practices must be safe, sustainable and profitable for growers.

IFP can also be defined as "Justified use". Being a sustainable system also refers to the growing system being financially sustainable.

IFP was developed from Integrated Pest Management (IPM) which focuses simply on pest control. IFP goes much further because it includes the whole fruit production system from the

selection of orchard sites to the disposal of waste products. IPM places the emphases for pest and disease control on natural mortality factors. Pest populations and disease levels are monitored, and control measures are applied only when necessary to prevent damage reaching economic levels. IFP is less restrictive than 'organics', however, because while it emphasises natural inputs, it does not prohibit synthetic inputs where these can be justified.

A key to SummerGreen™ is monitoring and then targeting any treatments to obtain the best results and the least harm to "beneficials".

Unfortunately the softest options are not always available to SummerGreen™ growers as the importing country's MRLs prevent that choice.

There is no such thing as an average programme however by way of example the below programme fits with the majority of our importing countries' MRL requirements for the 2004-05 season. Changes are already in the wind for the 2005-06 season therefore this table should not be adopted for use.

Growth Stage	Disease or Pest	Pesticide	Product name	Comment
Late Dormant	Bacterial blast	Copper	Various	Significant levels of resistance have developed against both Copper and Streptomycin
Bud Movement	Blast Aphid	Copper Oil Pirimicarb	Pirimor	Timing is critical
White tip	Brown rot	Carbendazim	Prolific Protek	Monitor weather
Full bloom	Brown rot	Iprodione	Rovral Defence	Monitor weather
Petal fall	Brown rot	Chlorothalonil	Bravo Daconil Elect	Monitor weather
Shuck fall	Brown rot Botrytis	Iprodione	Rovral Defence	Monitor weather
Cover spray	Aphid Leaf roller	Diazinon (not Japan) Spinosad	Basudin Diazinon Success	Monitor shoots Monitor traps Not for Canada, EU(except UK).
14 -21 days pre harvest	Brown rot	Tebucanazole	Folicur	Monitor weather
10-14 days pre harvest	Brown rot	Tebucanazole	Folicur	Monitor weather
7 days pre harvest	Brown rot	Tebucanazole	Folicur	Monitor weather
Post harvest	Cherry slug Bacterial blast	Diazinon Copper	Basudin	Only if severe or young trees Immediately prior to leaf fall Early leaf fall 90% leaf fall