



Tree Fruit and Grape Industry NEWS



Ministry of Agriculture and Food

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Production Guide Meetings – March 2000

Monday, March 13 - 1:30 pm Cawston Hall

Monday, March 13 – 7:00 pm Elks Hall, Oliver

Tuesday, March 14 – 7:00 pm Summerland Pacific Agri -Food Research Centre, Main Conference room

*Wednesday, March 15 – 9:30 am Creekside Theatre
10241 Bottom Lake Road, Winfield*

Wednesday, March 15 – 1:00 pm East Kelowna Hall

Thursday, April 6 - 7:00 pm Downtowner Motel, Creston

The new 2000-2001 Tree Fruit Production Guide will be available for sale at these meetings. The new guide has significant changes and updated spray information. Plan on buying the new one as the old one is out of date.

Pesticide applicators credits (for those eligible) are expected to be available to growers attending these meetings

Agenda includes the updates to the guide and SIR information that you need for the upcoming season.

Plan to attend! ▲

Tree Fruit and Grape Management Guides being revised

Both the tree fruit and grape management guides are in the process of being revised and will be available for sale in March. These guides are significantly different from the 1998-99 editions and growers are urged to buy the new versions which will be available through the BCFGA (mid March) and the BC Wine Institute in April.

The old guides are out of date and you must keep current with new spray information! ▲

Editor:

Jim Campbell

Prov. Tree Fruit & Grape Industry Specialist

Phone: (250) 498-5254

Fax: (250) 498-4952

Email: Jim.Campbell@gems1.gov.bc.ca

**BC Ministry of
Agriculture and Food**

Oliver District Office

Bag 5000, 9971 350th Avenue

Oliver, BC V0H 1T0

Orchard Replant/ Tree Fruit Industry Revitalization Plan

The following is an extract from the Report on the Recommendations of the Industry Roundtable (January 28, 2000) of Robin Junger, Facilitator

In September 1999, the Honourable Corky Evans, Minister of Agriculture and Food, announced an intention to extend the orchard replant program for five years (\$25 million) and to establish a \$2 million industry development trust fund. Final approval of these funds is contingent upon industry developing a revitalization plan that will ensure the funds are used to the most effective and productive ends possible.

To facilitate the development of the revitalization plan, I was hired by the Ministry to engage in broad consultations with participants involved with and interested in the BC tree fruit industry. I was asked to document and report on the various issues, ideas and suggestions raised during the consultations, and to facilitate an industry roundtable discussion where recommendations and action plans could be developed to enhance the strength and sustainability of the BC tree fruit industry.

Consultations took place throughout the Okanagan – Similkameen and Creston areas during the months of October – December 1999, and a consultation report was presented to the Ministry of Agriculture and Food on January 6, 2000. It was circulated to over 150 parties including all those who had spoken with or written to me during the consultation process. The report was sent to growers, industry organizations, packinghouses, marketing

agencies, local governments, federal officials, educational institutions, nurseries, other orchard suppliers, tourism officials, irrigation districts, financial institutions, and private companies with an interest in the tree fruit industry. The cover letter noted that an industry roundtable would be held on January 22, 2000 to discuss the report, and it invited all interested parties to attend.

Roundtable

The industry roundtable was held on Saturday, January 22, 2000 in Naramata.

It was attended by approximately 50 people. This included the Honourable Corky Evans, Minister of Agriculture and Food, ministry staff and participants in the industry (e.g. growers, grower organizations, packinghouses, fieldmen, BC Tree Fruits etc.). One participant was from an educational institution and two represented a museum with an interest in promoting awareness of the tree fruit industry.

Issues considered

The roundtable participants were asked to consider nearly 50 issues identified in the Consultation Report as affecting the replant program and the strength and sustainability of the tree fruit industry generally. They were also invited to identify other issues that they considered worthy of consideration.

To facilitate the discussion, participants were broken into five

working groups for the morning session. The five groups dealt with issues within the following broad groupings:

- Replant terms and conditions,
- Research, education and dissemination of horticultural / farm management information,
- Market information / marketing,
- Safety net, taxation and regulatory issues, and
- Industry cooperation, cohesion and public perception.

Each working group was asked to identify priority issues and to develop recommendations for consideration by the full roundtable as to how the strength and sustainability of the BC tree fruit industry could be furthered in respect of those issues. The groups were also asked to, where possible, specify who might take the lead for implementing a recommendation and how follow up assessment should occur.

In the afternoon session, each working group presented a report of its work. Given time constraints, not every issue discussed by a working group was able to be considered by the full roundtable, but most of the issues identified as high priority were so considered.

Recommendations

27 recommendations were developed during the roundtable meeting and can be read in the *Report*

(Cont'd on page 3...)

Revitalization Plan continued...

on the *Recommendations of the Industry Roundtable* which can be obtained on the Ministry of Agriculture and Food website (www.agf.gov.bc.ca) or from BC Ministry of Agriculture and Food offices in Oliver, Kelowna, Vernon, Creston or Abbotsford.

Conclusion

The revitalization plan developed at the industry roundtable contains a number of positive elements which can reasonably be expected to contribute to the strength and sustainability of the tree fruit industry in some measure. This includes specific proposed changes to the terms of the replant program, as well as a variety of other recommendations related to developing and marketing new BC apple varieties, enhancements in dissemination of horticultural knowledge and information, promoting awareness of

the tree fruit industry, better coordination of and response to regulatory issues, review of regulatory impediments such as leasing and taxation restrictions, and review of the relationship between the terms and conditions of safety net programs and the circumstances of tree fruit growers.

Although it was not possible to deal with every issue raised in the consultation report at the full roundtable session, these issues have now been clearly articulated and circulated among participants in the tree fruit industry. To the extent that this contributes to ongoing discussions within the industry, it is fair to suggest that this may be considered another positive aspect of the consultation and roundtable process which will contribute in some way to the

strength and sustainability of the industry over the long term.

It is however also important to note that, even if each of the parties noted above agree to accept and act upon the recommendations of the roundtable, there is still much work to be done. There were a number of issues raised in this process that were not fully addressed at the industry roundtable. Similarly, there will no doubt be issues that arise in the practical implementation of the recommendations, given that it was impossible for the roundtable participants to define in precise detail the manner in which they are to be pursued and effected. It will therefore be incumbent upon all industry participants to work constructively through such issues if the maximum potential of this process is to be realized. ▲

Tree Fruit Award Winners

Awards Presented at the Annual BCFGA Horticultural Forum, Penticton Trade and Convention Center, November 12, 1999.

Compact Orchard Award

Winners: *Peter and Claire Waterman*

Sponsor: *Rohm and Haas Canada*

Peter is a graduate of Horticulture (UBC) in the late 1960's. He was a technical representative for Niagara Chemicals in the early 1970's and an extension Horticulturist for the BC Ministry of Agriculture and Food through the 70's, 80's and the early 1990's and currently is the Horticulturist for the Okanagan Similkameen Coop Growers Association. Claire is a full time teacher in the Kelowna School district, an active participant in the orchard as well as a mother of three.

In 1989, Peter and Claire purchased a small orchard and immediately planted a nursery and started replanting. Plantings range from Gala, Fuji and Jonagold on M9 at 4.5x9 feet to the current super spindle Galas planted at 1.5x9 feet. After a new super spindle that will be planted in the spring of 2000, there will be almost 20,000 trees on 11 acres. The whole family including Sarah, Geoff, and Erin have had to learn nursery work, tree training, thinning and have also learned to appreciate the beauty of multiple picks.

(Cont'd on page 4...)

Tree Fruit Award Winners continued...

Soft Fruit Award

Winners: *Chris and Betty Jentsch, Oliver, BC*

Sponsor: *United Agri Products*

Chris and Betty Jentsch started farming by renting orchards in 1987 along with the operation of a small packing plant that packed and marketed apples and soft fruit. Chris took over his parents orchard in 1994 after his father's death. His father was a compact Orchard award winner in 1978.

The Jentsch's have replanted much of the orchard in recent years to Galas and Fujis (25 acres) and 30 acres of Sweetheart and Lapins cherries. They pack their own cherries on the farm and market the apples to the Okanagan Similkameen Coop.

Chris is a third generation grower in the South Okanagan. They have 3 daughters.

Golden Apple Award

Winners: *Armando and Rosa Lopes, Cawston, BC*

Sponsor: *Uniroyal Canada*

The Lopes operate 18 acres of apples, cherries and nectarines on their orchard in Cawston. They have 8 acres of Galas, 3 acres of Fuji, and 5 acres of Granny Smith, Red and Golden Delicious along with 2 acres of Nectarines and .5 acres Cherries.

The Lopes immigrated to Canada from Portugal in 1978 and bought their current farm in 1982. They started to replant almost right away, as the orchard was old and unprofitable. They have 4 children.

Other Hort Forum awards:

Orchard Innovation award – Bruce Currie, Peachland

Best Display at the Forum – Zeller and Sons, Naramata.

Hort Forum Report

Jim Campbell,

Tree Fruit and Grape Industry Specialist,

BCMAF, Oliver, BC

The 1999 Horticultural Forum and Trade Show was well attended on November 12, 1999 by 400 people. The theme of last year's forum was *Growing in the New Millennium*. Speakers from the Okanagan, Washington State and Agassiz were key to the program's success. The key note speaker was from Italy and many growers

expressed appreciation for the effort required to bring such a well respected speaker to the Okanagan. Kurt Werth, a long time Horticultural Advisor from Tyrolia, Italy was enjoyed by all. Many growers also participated in the tours on the Saturday and Monday following with Kurt as the main speaker.

The key points of Kurt's presentation and tours are outlined below:

- Italian growers plant the majority of their apple plantings 3m x 1m (1400 t/a).
- Fuji (Kiku 8) and Braeburn (Hillwell) are the main varieties being planted now with strong interest in Pink Lady.

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Hort Forum Report continued...

- M9-337 is the main rootstock
- Nursery tree quality is of primary concern and trees must be 180cm high with 10-12 feathers to be acceptable quality in Italy
- BA and Promalin are used to encourage feathering in the nursery.
- By planting such large trees, early production is realized even in old apple soils.
- Average yields of 50 bins/acre are produced under Italian conditions.
- Most Italian growers practice Integrated Fruit Production techniques (IFP) and follow prescribed pest and nutrition management procedures. They do not fumigate their soils prior to replanting. The sprayer must be calibrated every 5 years; soils must be tested every 5 years; spray records must be submitted annually to the packinghouse. The grower receives an extra 2- 21/2 cents per lb under the program.
- Grower advisory service is funded 50:50 by growers and government. Each district has an advisory board and about 3-5 advisors in each district.
- Italian farmers do not receive direct subsidies but only pay minimal income and property taxes as stewards of the land
- Kurt Werth's visit to Canada was partially funded by the IRAP program ▲

Plum Pox Virus Found in Pennsylvania Import Permits Suspended to Keep Canada Free of Plum Pox Virus

*Gayle Jespersen
Plant Pathologist, Kelowna*

The Canadian Food Inspection Agency (CFIA) has suspended all import permits for *Prunus* propagative plant material (including nursery trees, scionwood, seed and rootstocks of peach, apricot, plum, prune and nectarine) from the United States. The suspension does not apply to cherry trees or cherry propagative material and does not affect imports of fresh fruit into Canada.

The suspension was implemented after U.S. scientists confirmed the finding of plum pox virus (PPV) in peach, apricot and plum trees in Adams County, Pennsylvania. PPV is a serious disease infecting stone fruit species, as well as some ornamental *Prunus* species. The strain of PPV (D strain) found in Pennsylvania does not infect cherries. The suspension is a measure to protect the Canadian stone fruit industry from introduction of PPV.

Plum Pox Virus has the potential to devastate stone fruit production. The fruit from infected trees becomes severely blemished and unmarketable. It can take several years before infected trees start to show symptoms, which complicates survey and eradication programs. The disease is spread by several species of aphids as well as infected propagative material.

The Pennsylvania Secretary of Agriculture has placed quarantine around two townships prohibiting movement of any *Prunus* plant material. U.S. officials are tracing the origins of the infected trees, and an eradication program will begin in the spring.

Why BC Growers should be concerned about PPV in the US

Prevention of the introduction of plum pox virus is critical for the survival of the stone fruit industry in BC. Currently the virus is not known to occur in Canada. However there is a concern that PPV may have already spread into Canada from the United States, especially considering that the disease may have been present in Pennsylvania for at least 5 to 7 years. Tracebacks indicate that BC did not receive any imports of susceptible trees directly from Pennsylvania within the last 3 years, however over 3000 trees were imported into Eastern Canada.

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Plum Pox Virus continued...

A Canadian National Task Force of scientists, provincial advisors and industry representatives has been established to make recommendations to the CFIA and to collaborate on activities to keep Canada free of plum pox virus. BCMAF and BCFGa are represented on the committee. Short and long term response plans are under development, and will include testing of all *Prunus* imports from Pennsylvania that can be located, along with testing of any suspicious trees.

Growers should be on the look-out for Plum Pox Virus symptoms.

Symptoms of PPV are variable depending on the strain of virus, the host species and even the host cultivar, and may take several years to develop. On plum, leaf symptoms include pale green spots, rings and lines. Usually only some of the leaves on a tree are affected. Fruit symptoms include rings and blotches which

become harder to detect as the fruit ripens, as well as sunken lesions. The pit may also be marked with rings or spots. Affected fruit have poor flavour due to low sugar content. Infected trees have a tendency to drop much of their fruit prematurely, resulting in a "blue carpet" of fruit on the ground.

Symptoms on peach include chlorotic vein clearing and banding, along with leaf twisting or distortion. Fruit symptoms include rings, lines and spots, which may disappear at ripening. Apricot leaf symptoms are less conspicuous, but fruit of some cultivars are severely marked and may be misshapen, with poor flavour. The pit is often marked with rings or spots.

Prevention and Control

Only virus-free propagative material from approved sources

should be used to establish orchards or nursery blocks. Once PPV is introduced to an area, it is very difficult to control. There are no treatments that can cure virus-infected trees. Control measures include removal of infected trees and orchards, along with spray programs to control the aphid vectors. It is very important to catch infestations at an early stage, or eradication will not be possible.

More Information

If you think you have seen symptoms of PPV in British Columbia, or want more information, please contact Gayle Jespersen, BCMAF Plant Pathologist, Kelowna. Also, visit the BCMAF website at: <http://www.agf.gov.bc.ca/croplive/cropprot/plumpox.htm> for photos, updates and links to other plum pox resources. ▲

Mating Disruption and the SIR Program

Adrian McCluskey
SIR Information Officer

Central Okanagan growers (Zone 2, Peachland to Duck Lake) will receive additional support this year to help control codling moth.

SIR will work with growers and industry to ensure that mating disruption is applied in all central Okanagan apple and pear

orchards this season. Mating disruption (hand-applied Isomate C+ is the only registered form of mating disruption in Canada) is a proven approach to help lower wild moth populations especially when combined with other technologies. It has been used to great affect by many growers in the Similkameen and is used in

over 60,000 acres of apple and pear production throughout California, Oregon and Washington State.

Isomate C+ uses the insect's own communication system to its detriment. In the orchard, female codling moth release a sex

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Mating Disruption and the SIR Program continued...

pheromone into the air to attract male moths. Males detect the "scent" and follow it upwind to locate and then mate with the female. Isomate C+ dispensers contain a synthetic pheromone that is similar to the natural pheromone of codling moth females. The dispensers are made of a porous plastic that slowly release pheromone over a period of months. In orchards treated with Isomate C+, the air is saturated with pheromone so males cannot locate females and mating is suppressed. With repeated yearly use, mating disruption can greatly reduce the population density of codling moth in the orchard.

However, it is vital for growers to realize that while the area-wide use of mating disruption will be a major step forward in controlling codling moth, it is not a "panacea" or "silver bullet" that will magically make the moth immediately disappear by itself. The 200 dispensers per acre of Isomate C+ to be applied is an excellent basis for a control

program, but at least initially, mating disruption will not give adequate coverage as a stand-alone control. The high wild moth counts throughout the majority of Zone 2 require an overwhelming majority of growers to apply a minimum of two well-timed first brood cover sprays (preferably Guthion, APM or Sniper) and depending on the individual block, possibly one or two second brood sprays in order to have the most effective area-wide control. It is estimated that a minimum of two-three cover sprays in conjunction with the Isomate C+ will be needed for at least the next year or two in most Zone 2 orchards.

Isomate C+ is non-toxic to humans and beneficial predators, relatively easy to apply and possibly as early as 2002 will be available in a formulation for codling moth and leaf roller combined in one dispenser.

The cost of purchasing and hanging the mating disruption is included in the 2000 SIR parcel tax.

Most conventional growers are just becoming familiar with mating

disruption and although it is relatively easy to use, there are specific methods that have to be followed in order for it to work efficiently. For instance, the application timing is critical. To be effective, mating disruption must be correctly applied to the trees prior to first brood flight. SIR field staff, in conjunction with local field service and BC Ministry of Agriculture and Food will run a series of information sessions in various locations for local growers prior to the upcoming season. The seminars will cover all the information growers will need to use mating disruption as part of their pest control program. The dates, times and locations of the seminars will be published later in the spring and will also be available toll free at 1-888-601-1112.

Any growers who are interested in hanging their own mating disruption can contact Bob Fugger, SIR Zone 2 Manager at 491-3016 for more details of what will be happening this season. ▲

Guthion (Azinphos - Methyl) Label Changes

Supplied by Don Bertoia

Pest Management Regulatory Agency, Kelowna, B.C.

The Organophosphates are under evaluation in the USA by the EPA and in Canada by the Pest Management Regulatory Agency (PMRA), Health Canada. This is the result of the Food Quality Protection Act, in the USA.

The first change will be the Guthion label starting in the year 2000 but likely not mandatory in Canada until the year 2001, since there will be a mix of new and old labels. More comments on this later.

The current changes are the result of the Bayer Co., registrant of Guthion, to reduce exposure to azinphos-methyl. These Canadian label changes by Bayer were accepted by PMRA, which are very similar to the US label.

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Guthion Label Changes continued...

Please note there may be further changes to the Guthion label when the PMRA finishes their reviews.

Some of the changes to the new labels are:

- 1) Reduce maximum yearly rates for tree fruits, depending on the crop. It appears that these reduced rates are in line with the IPM practices and will have little effect on the Okanagan growers.
- 2) Re-entry intervals on the old labels were two-day re-entry interval for all crops within the treated area. The changes to the new label are:

Tree Fruits

- Crop maintenance and harvesting cannot take place without

protective equipment until “14 days” which includes hand thinning and hand harvesting.

- Field maintenance including mowing, irrigating, scouting, propping remains at 48 hours.
- Days to harvest are increased from 7 days to 14 days between last application and harvest.
- See label for other changes to days to harvest for individual tree fruit crops.

Grapes

- Re-entry for girdling, cane throwing, leaf pulling cane cutting, bunch thinning, and hand harvesting with out protective equipment is 21

days. Other activities are 48 hours.

- Days to harvest are 21 days between last application and harvest.

The maximum residue limit for apples is 2ppm but note that the USA had been reduced to 1.5ppm.

In general, the new changes are within the regular practices, with the noticeable change in the re-entry times.

The new proposed Bayer label is available from your local Fieldman, Provincial Government, Consultants or PMRA (250 470-4890) ▲

Sovran Registered on Apple

*Gayle Jespersen,
Plant Pathologist, Kelowna*

Sovran fungicide (kresoxim-methyl 50% WG) was recently approved for use in Canada for the control of apple scab and powdery mildew on apple.

Sovran is “new chemistry” for apple scab control. It belongs to the strobilurin class of fungicides, and is not cross-resistant with other currently registered fungicides. It is a locally systemic product that is resistant to rain wash-off after absorption.

Sovran will be an excellent fungicide for apple scab programs. It provides both protective and

curative activity, and a high level of fruit scab control. Sovran is also a good mildew fungicide, but local trials suggest that Nova provides slightly stronger mildew control. Note that Sovran requires a higher rate for powdery mildew than it does for scab.

Sovran Application Rates for Apple

Disease Controlled	Rate Per Hectare
Apple scab	180 - 360 grams
Powdery mildew	240 - 450 grams

Use the higher rates for high disease pressure. If Sovran is applied as a concentrate spray, do

not apply at less than 160 g/ha or loss of control may occur. For protective programs, Sovran is recommended at 10 to 14 day intervals. For curative programs, Sovran has 96 hours (4 days) of post-infection activity, or “kick-back” from the beginning of the infection period.

Sovran should not be applied more than 2 times in a row. Alternate with other fungicides to help prevent the development of resistance problems. Do not apply more than 4 Sovran sprays

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Sovran Registered on Apple continued...

per season. Do not apply within 30 days of harvest.

Be cautious using Sovran near cherries because some varieties, including Van, can be injured by this fungicide. Symptoms observed on Van in 1999 (Kelowna) included severe leaf burn and defoliation.

Sovran was given a temporary registration of one year. More data must be submitted by the registrant (BASF) before full registration will be given. Typically temporary registrations can be renewed on an annual basis until they become fully registered, but temporary products are not eligible for minor use label expansions. ▲

The Health of Canadian Grapevines and Tree Fruit

*Dr. Bill Lanterman, Director
Centre for Plant Health
Canadian Food Inspection Agency*

Among many issues, there are two current pressures affecting the grapevine industry: virus diseases and world trade regulations.

1. Canada has been relatively free from important virus diseases due to its foresight in having had a long history of high quality regulatory control programs. The diseases infecting grapevines around the world have a great economic impact and we need to prevent them from causing us any more harm than possible. World losses due to all grapevine viruses are over \$1 billion annually and viruses are not like other crop pests that can be sprayed or reduced in some way, prevention is the only cure for these diseases.
2. We are signatories to world trade agreements which affect us greatly and which we have to abide by. A system of legal structures and organizations has been set up around the world to help prevent the movement and spread of plant pests and diseases. The Food and Agriculture Organization of the United Nations (FAO) is the body that maintains the International Plant Protection Convention (IPPC). The North American Plant Protection Organization was mandated by the IPPC to implement and harmonize standards to protect plants and agriculture at the world regional level. NAPPO has three member countries: Canada, United States and Mexico.

The IPPC is concerned with assuring that countries have harmonized regulations governing the movement and testing of plant material. This document, which Canada has signed, states among other things, that member countries may require phytosanitary measures on imported plant material for quarantine pests and regulated non-quarantine pests, provided that such measures are no more stringent than measures applied to the same pests, if they can be found with plant material moving within the country. This basically means that when Canada finds certain pests such as viruses to be present, we can not regulate against these viruses in commercial shipments imported to our country, unless specific criteria are met. Because the present certification system, regulated by our Plant Health and Production Division in Ottawa, is not mandatory within Canada, it is not considered as official control.

In short, Canada uses the IPPC definition of quarantine pests, and because of this, when some serious viral pests of grapevines were found in several areas of Canada a few years ago, we de-regulated them because there was no "Official Control" as per the definition. Now, we

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The Health of Canadian Grapevines and Tree Fruit continued...

cannot do anything to prevent the import of plant material if it is contaminated with these pests, and any importations will increase the spread of these viruses in Canada. When you import vines from Europe, our experience has shown that there is a low level of infection by some of these serious, non-quarantine viruses. If we had a means of official control in place, we could again prevent their introduction.

A committee of NAPPO is spearheading the effort to do something about dealing with serious pests already established within a country which do not fit the definition of a quarantine pest and which will treat the three member countries and their industries equitably. The committee has developed three options for the NAPPO member countries:

1. De-regulation of established pests for which there are no official control programs;
2. Implementation of official controls to permit the regulation of non-quarantine pests;
3. Status quo (means no NAPPO standard, NAPPO countries continue to regulate individually).

Some US growers don't want to deregulate the viruses that are known to be present there, so they will have to prepare for challenges in a world court because of this unfair trade practice. The big difference now between the US and Canada with respect to the importation of grape plants, is that the US does not allow imports from anywhere but Canada. Therefore, they only have to battle their long-established domestic diseases

because they don't have any newly introduced ones.

The only way we can prevent the negative economic impact caused by the spread of imported non-quarantine pests, and control the level of pests already in Canada, is by putting in place an official program to prevent the entry and spread of these pests. We believe we have the legal mechanisms in place for growers to do this but it will require leadership, commitment and perseverance. We are consulting with the grapevine industry on this issue at the present time and will be consulting with the fruit tree industry in the future and hope that you will discuss this and pass your views on to your industry representatives. ▲

Whole Farm Insurance Program Update

Clint Ellison, P.Ag.

Whole Farm Insurance Program Specialist

The Whole Farm Insurance Program is continued for the 1999 Taxation Year. Continuous filing is in place so Companies with non-calendar year end filing may apply at the time of tax filing. All other applications for 1999 must be received at the program office by July 31, 2000. Forms and program guidelines will be ready in February. There are some program refinements that are part of the 1999 Claim Form. Any continuous filing applicants that have already filed using 1998 forms

will be contacted for any differences. Reference year margins that are negative will now be zeroed when calculating the program support level. There is also an option available for growers for the reference period called the Olympic Average (it looks at the previous five years' margins, excludes the year with the highest margin and the year with the lowest margin to arrive at a 3 year average for the reference margin). The AIDA announcements that affect the Federal portion of the program (1998

and 1999) are in process. Please watch for newspaper and industry mail out advertisements and listen for radio advertisements for Whole Farm Insurance Program information sessions, form availability and program refinements.

1-888-576-FARM (3276) ▲

BC Ministry of Agriculture and Food
#200 - 1690 Powick Road
Kelowna, B.C. V1X 7G5
Phone: 250-861-7261
Fax: 250-861-7340

Integrated Pest Management of Leafrollers and Bud Moth

Hugh Philip, BCMAF Extension Entomologist

Reports of fruit damage due to eyespotted bud moth (ESBM), threelined (TLLR) and obliquebanded (OBLR) leafrollers have increased over the past 4 years or so in all fruit-growing areas of the southern Interior. Some of this has been blamed on the discontinued use of organophosphate (OP) insecticides to control summer generation of codling moth due to the Sterile Insect Release program. This same situation developed in parts of Washington State where area-wide codling moth projects were undertaken in the late 1990's. However, the problem cannot be totally blamed on the SIR program because fruit growers in non-SIR areas are also reporting significant increases in leafroller damage. Greater tolerance to OP insecticides such as azinphos-methyl (Guthion, Sniper) and diazinon may be a factor in some situations – fruittree leafroller (FTLR) in the Kelowna area is known to be resistant to OP's. However, until resistance is confirmed, growers will have to ensure they are doing all they can to prevent leafroller problems from developing, and when control is necessary, applying insecticides at the right time under the right conditions using properly maintained and calibrated sprayers to deliver the correct dosage.

This article summarizes the recommended integrated pest management program as presented in the latest Tree Fruit Production

Guide to minimize leafroller and bud moth damage. Consult the Guide for information on hosts, life history, appearance, damage, and on application rates of control products mentioned in this article.

Several species of leafroller attack pome and soft fruit throughout the Southern Interior and South Coastal regions of BC. The main leafroller pests include single-generation species (fruittree leafroller (FTLR) and European leafroller (ELR)) and two-generation species (obliquebanded leafroller (OBLR) and threelined leafroller (TLLR)). The distribution and abundance of these leafrollers varies from region to region and within regions, so it is important to know which species are present in your area. Eyespotted bud moth (ESBM) is very scarce in the south Okanagan and Similkameen valleys.

An essential, but often overlooked, component of IPM programs is prevention. That is, taking steps to prevent pest problems from developing. In the case of leafrollers and bud moth, spray or remove all nearby unmanaged host fruit trees to reduce immigration of leafroller moths and larvae into your orchard. An area-wide approach whereby all orchards are sprayed in a timely fashion is one way to reduce movement of leafroller moths and larvae between orchards. Cherry trees left unsprayed after harvest and adjacent to pome fruit blocks are a

source of summer-generation larvae. Where practical, thin fruit to singles because OBLR, TLLR and ESBM larvae like to feed where two fruit are in contact.

The next step in controlling leafrollers and bud moth is checking your blocks at the proper time for eggs, larvae, or larval feeding damage. For ESBM, look for damaged leaves and bud clusters in the spring. In late July and August examine fruit for surface feeding, usually in areas of red fruit where a leaf had been attached or where two adjacent fruit were touching. ESBM moth feeding damage closely resembles that of second-generation OBLR and TLLR larvae. In the south Okanagan and Similkameen valleys, where ESBM is very scarce, OBLR/TLLR damage is often mistaken for ESBM damage.

For FTLR and ELR, pruning will remove many egg masses. During pruning, mark at least 10 south-facing and 10 north-facing egg masses per orchard with surveyor tape and monitor egg hatch weekly. A small dark hole will appear in hatched eggs. Select only egg masses that do not have any dark spots. A degree-day model (base 5°C from February 1) is available to determine the proportion of FTLR eggs hatched (e.g. 50% egg hatch at 154 DD; 100% at 250 DD). Alternatively, limb taps and/or examination of fruit bud and blossom clusters on

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Integrated Pest Management continued...

a weekly basis can be done to monitor for the presence of young larvae.

For OBLR and TLLR, examine fruit bud and blossom clusters for larvae in the spring. In the summer examine terminals and look under leaves attached to fruit for young larvae and feeding damage. Beating trays can also be used to detect the presence of larvae.

Sex pheromone-baited traps are commercially available to monitor leafroller and bud moth adults, however no relationship between moth captures and subsequent larval abundance or fruit damage has been established. Pheromone-baited traps are needed to establish biofix for the purpose of timing application of sprays such as Confirm 240F against the first summer generation of OBLR larvae.

The key to minimizing leafroller and bud moth damage to fruit is to control the spring generation of larvae.

This is especially true for OBLR, TLLR and ESBM larvae that are also present in the summer when they can attack fruit to be harvested. FTLR and ELR only feed in the spring on young fruit, so any fruit they damage can be removed at thinning. Successful reduction of the spring generation of OBLR, TLLR and ESBM larvae will reduce the need to control the summer generations that are much more difficult to control (increased canopy density, spread out generation time, increased risk of some damage to harvestable fruit). Targeting the

larvae in the spring is also the most efficient use of sprays and labor because, depending on your situation, green fruitworms and Bruce spanworm could also be controlled along with the leafrollers and bud moth.

It is also essential that your sprayer is calibrated and operated properly to ensure optimal performance of pest control products. It is important that travel speed allow for sufficient displacement of air from the tree canopy to ensure thorough and uniform spray penetration and coverage.

For older, low-density trees, prune to open up the canopy to allow sufficient penetration of control sprays, especially into the upper canopy. This is very important because all the leafrollers and bud moth prefer to lay eggs and feed in the upper canopy of host trees. The poor performance of control products is often attributed to resistance when in fact the problem was due to poor coverage.

Spring Control: The following schedule of sprays is only a guide because all blocks are different with respect to species and abundance of caterpillar pests present. If significant leafroller damage was evident the previous season or if larval monitoring indicates a potentially serious problem, apply either azinphos-methyl (Guthion or Sniper 50%) or diazinon (Basudin or Diazinon 50% WP plus oil at pink. These products can also be applied

(less oil) at petal fall. They will control any fruitworm, Bruce spanworm and bud moth larvae present. Some cases of poor control of OBLR and TLLR by these organophosphate insecticides have been reported throughout the Okanagan Valley.

Alternatively, tebufenozide (Confirm 240 F) can be applied from pink through petal fall to control OBLR and TLLR in the spring. Thorough coverage is essential for effective control because the larvae must eat the product. This product is specific for caterpillars and will not harm beneficial insects and mites. OP-resistant populations of FTLR have been found to be resistant to the new insect growth regulator product tebufenozide (Confirm 240 F). Therefore tebufenozide should not be used if OP products no longer provide satisfactory control of leafrollers.

The bacteria *Bacillus thuringiensis* (Bt) (Dipel and Foray 48BA) can also be applied from bloom through petal fall. Bt produces a toxin once consumed by caterpillars. The toxin makes holes in the gut lining allowing other bacteria to enter the 'blood' system of the caterpillars and slowly kill them. Infested caterpillars will stop feeding and eventually die over the next 2 to 10 days. Caterpillars receiving a dose of Bt that does not kill them will resume feeding in about 10 days. This is the basis for the recommended interval of 10 days

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between Bt applications. Best results are obtained when Bt is applied during blossom or petal-fall. Research and field reports indicate that mixing Bt products with ATS for application to apple during bloom does not affect the performance of either product. Because caterpillars must eat the Bt to be most effective, thorough coverage, small spray droplets, correct timing, and no rain for 24 hours, are essential to ensure proper performance of Bt products. **It is important that travel speed allow for sufficient displacement of air from the tree canopy to ensure thorough and uniform spray penetration and coverage.**

Where leafroller and green fruitworm numbers are low to moderate, a single application of Bt in late bloom has given good control. However, where larval numbers are high, a bloom spray followed by a second spray 10 days later is recommended. It is advisable to combine a spreader-sticker with Dipel WP because residues are rapidly eroded by rain. Bt can be mixed with diazinon and applied at petal fall to control campylocoma, but do not delay application of the mixture to avoid degradation of the Bt.

Some success has been achieved against summer generations using Bt products, especially in cherry blocks within a few days of harvest. Repeat treatments at 10-day intervals may be necessary due to the extended length of time larvae are present.

Because Bt is sensitive to sunlight it is recommended that Bt products be applied in the very early morning or after 4:00 PM in the afternoon. Bt products can be applied during the day if partial or full cloud cover is present and there is no threat of rain for at least 24 hours. The optimum solution pH for Bt products is 6. Some breakdown occurs above that point and it is unstable above pH 8. To avoid possible degradation in the spray tank, apply the Bt immediately. Control is also improved if Bt is applied under warm (> 15°C) temperatures.

Summer Control: Be aware that foliage density and area will be greater than in the spring so adjustments may have to be made to sprayer operation to ensure thorough coverage. For suppression of summer generations of OBLR, apply tebufenozide (Confirm 240 F) about 10-14 days after biofix and repeat after 14 days if necessary. Or, using a degree-day model (base 10°C), once biofix is established, apply Confirm 240 F between 120 and 140 DD (corresponds to start of egg hatch) and again between 210 and 240 DD if necessary (corresponds to about 50% egg hatch). 1999 field reports indicate that an application at the second timing is essential for satisfactory reduction of feeding damage, regardless if an application was made at the first timing. Do not apply more than four times per season. Any TLLR and ESBM present may also be suppressed by Confirm. To prevent or delay the development of resistance to

tebufenozide, it is recommended that it not be applied against successive generations of leafroller larvae. Because larvae must eat tebufenozide for it to be effective, thorough coverage is essential. It is most effective against newly hatched larvae, and research has shown tebufenozide can also affect female moth reproduction. Azinphos-methyl (Guthion or Sniper 50% WP) or diazinon (Basudin or Diazinon 50% WP or EC) can be applied to control summer generations, but these products are more toxic to beneficial insects. ▲

Sexual Harassment in the Okanagan

By Wendy Rogers, Penticton Womens Centre

The original survey undertaken by the Penticton Women's Centre was funded through the MWE's Safer Future For B.C. Women program

In 1998, the Penticton & Area Women's Centre surveyed women working in the agricultural sector of the South Okanagan and Similkameen about their experiences of violence and harassment in the workplace. Anecdotal reports had led us to believe that the threat of workplace violence and harassment for women in the agricultural sector was higher than the 23% which Canadian women working outside of the home experience overall¹. Our predictions turned out to be correct. 37% of the women we spoke to told us they had experienced sexual assault and harassment in the workplace. Every woman interviewed knew of victims and knew they themselves were at risk. The most commonly reported type of assault was sexual assault which includes fondling, touching and kissing. Many women spoke of frightening experiences such as being brought to remote areas at the end of orchards and sexually propositioned, fondled, touched and kissed.

What is Sexual harassment?

The Labour standards code defines sexual harassment as "any conduct, comment, gesture, or contact of a sexual nature that is likely to cause offence or humiliation to any employee or that might, on reasonable grounds, be perceived by that employee as placing a condition of a sexual nature on

employment or on any opportunity for training or promotion".

1/3 of Canadian women who work outside of the home report being sexually harassed².

- **Sexual harassment IS NOT about sex, it is about power.** When men use their power to treat women sexually in a non-sexual context, they interfere with a woman's right to work without fear and be treated as an equal.
- **Sexual harassment IS NOT mutual flirtation, chit-chat or good-natured jesting.** It is unwanted sexual behaviour, usually by someone in a position of formal authority or sexual jokes, remarks or pin-ups which create a hostile and intimidating environment.

A victim of sexual assault

- may be afraid to get help
- often feels that "giving in" is a job requirement
- may not speak up because the harasser can influence her employment future, including her chances for promotion and training.
- may be afraid that a service, such as a loan will be withheld if she doesn't comply.

The form of sexual harassment that women in our survey most

commonly identified was being promised work, alcohol and/or drugs, in exchange for sexual favours.

What can you do to make your workplace safe for women?

- Develop a buddy system for women working alone in isolated areas.
- Actively encourage employees who are being harassed by co-workers or supervisors to talk to you. Believe their stories.
- Develop a workplace reporting system for women being harassed by co-workers and take women's complaints seriously.
- Make it clear to employee's that **harassment will not be tolerated** in your workplace.
- Involve female employees in a workplace safety audit using guidelines available through the WCB or local women serving agencies such as women's centres. Where possible, make changes to areas which they identify as unsafe. These changes are often inexpensive alterations which will help your workplace to comply with Worker's Compensation Board (WCB) guidelines compelling employers to develop violence prevention measures.
- Develop a reporting policy and procedure within the employer's association for

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Sexual Harassment in the Okanagan continued...

women being harassed by agricultural employers which includes action when a report is made.

- Make it clear to colleagues that **harassment will not be tolerated** in your region or by your employer association.
- Make sure that other agricultural employers know the consequences of harassment and speak out if you think that one of your colleagues is harassing his female employees.
- Contact your local offices of the Worker's Compensation Board, Canadian Human Rights commission and local women serving agencies for more information and resources.
- If you are located in the South Okanagan-Similkameen, contact the Penticton & Area Women's Centre at 493-6822 to arrange for Worker's Compensation Board (WCB) funded sexual assault & harassment workshops to be held in your workplace during summer 2000.

1 *Gender-based Analysis Backgrounder*, Women's Bureau, Strategic Policy Branch, Human Resources and Development Canada, March 1997

2 *CACSW Fact Sheet: Sexual Harassment*, Canadian Advisory Council on the Status of Women, June 1993 ▲

Recent Study Completed on Replant Economics

George Geldart, P.Ag.
Business Management Specialist
BCMAF, Vernon

A recent study funded by the B.C. Ministry of Agriculture and Food, uses grower data to provide an updated establishment cost analysis to assess the profitability of different densities for apple and cherry blocks.

This analysis is based on grower information provided at two focus group sessions and on grower yield data from the Okanagan Valley Tree Fruit Authority's Yield and Price Survey report. The report analyzes apple plantings from 726 to 2,489 trees per acre for both nursery and benchgraft trees, and for cherries planted at 303 and 581 trees per acre.

Overall results indicate that densities for apple plantings between 1,500 – 2,000 trees per acre were most economic. Cherries showed good profit potential but with significant yield and price risk.

This information will be of assistance to growers looking at developing a financial assessment of various planting densities. As with any financial investment care should be used in applying this data to your specific farm. Differences in variety, site, tree quality, management and marketing will affect projections and expected outcomes.

Copies of this study can be obtained from Jim Campbell, George Geldart, your local Ministry of Agriculture & Food office or from the Internet at <http://fbminet.ca/bc> ▲