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Orchard Outlook Newsletter

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The technical information contained in this Orchard Outlook publication is the result of the combined professional opinions of personnel from AFHRC, AgraPoint and Industry.

Fire Blight

Given the past history of fire blight infection in Nova Scotia and the fire blight workshops held last winter, one would not have expected the difficulties that growers encountered with this disease in 2006. Apple trees have been grown commercially for over 100 years in Nova Scotia. Fire blight is native to North America and has been present in Nova Scotia prior to the 1970s, so why is it becoming a serious issue for producers in Nova Scotia now?

Is it because of a change in weather patterns (see weather data tables)?
We have had early and warm growing seasons in the past without serious fire blight. The five-year trend however has been for slightly warmer growing seasons.

Has the change in production systems been the cause for the increase in infections?
The planting of susceptible cultivars on susceptible rootstock is likely contributing to the problem, however, it is interesting to note that some of the most serious infections were in Golden Russets on semi-standard rootstock.

Has there been a gradual build up of fire blight bacteria in Nova Scotia orchards to the point where the probability of infection has increased?
There is likely no one reason but a combination of factors that are contributing to the increase in fire blight infections. Given that fire blight was found in most areas of the Valley, growers should be implementing a strategy to prevent major fire blight problems in 2007.

A prevention program should start with the pruning out of fire blight cankers during the winter of 2007. It is not advisable to prune out fire blight cankers at this time of year because there is still a risk of spreading the bacteria. Depending on weather conditions the pruning should be held off until late January at the earliest. Pruning in December, once the leaves are off the trees, would not likely spread the disease but there is a high risk that the pruning could contribute to winter

damage. Pruning out the bacterial cankers will help to reduce the amount of bacterial ooze in the orchard next spring and this ooze is the source of bacteria which results in blossom infections. Many growers should be prepared to use streptomycin sprays during the bloom period. The timing will need to be based on prediction models which will be run once again by the industry. The biggest challenge here is to find a method to get the information out in a timely fashion to the whole industry. The risk of a fire blight infection during bloom is a day-to-day thing and is weather dependent, thus there is a need to advise producers within a very short period of the risk of an infection.

I still have copies of the *Integrated Management of Fire Blight on Apple and Pear in Canada* fact sheets and CDs. This CD also contains the Cougarblight prediction model for the timing of streptomycin sprays. These can be picked up from my office (Bill Craig, AgraPoint) located in the Kentville Town Square, or from the NSFGA Office. The CDs contain both English and French and there is a limited number of the fact sheets available in French.

Winterizing Your Orchard

Orchard visits on Oct. 31 indicated that most growers had finished harvesting or would be done in a few more days. I only noticed a few orchard blocks that still had fruit hanging on the trees. It was interesting to note that by the end of September it appeared that many growers would have finished harvesting by the middle of October but it appears the pace of harvesting slowed in October.

Although it may feel like it, harvesting is not the last step in the yearly production cycle. I would consider the last step is winterizing your orchard. The main issue here is the prevention of mouse damage to trees. Fortunately, in the past couple of years there have not been any significant tree losses to mouse feeding. Mice tend to be more of a problem during winters with prolonged snow cover, but at this time of the year one never knows how much snow we will have to endure. The best program for mouse control is a preventive program. How well you manage ground vegetation during the growing season will influence the rodent populations already existing in the orchard. Mowing the orchard to reduce vegetation to less than 10 cm following harvest reduces suitable habitat for mice and exposes them to predators. In many cases it is mice that move into the orchard in the fall and winter that cause the problem, particularly in blocks that have good season-long vegetation control.

To help prevent the movement of rodents into the orchard it is recommended that the borders of the orchard be kept as clean as possible. One should not assume that good vegetation control is all that is required. Prior to snow accumulation the whole orchard should be checked for signs of rodent activity (mouse tunnels, droppings and chewed apples) because populations can vary from one part of the orchard to another. If rodent activity is observed, consider the use of poison bait to reduce the mouse population. When using poison bait, growers are strongly urged to use bait stations. Broadcasting poison baits such as zinc phosphide and Ramik Brown can end up poisoning non-target species. Bait stations will reduce the risk of this happening, as well as providing a longer period of control. The inverted-T bait station is an effective station and can be made from 1½ inch ABS pipe. The recommended number of stations is 25 per hectare. Where there is not a resident population of mice within the orchard, you may wish to place bait stations

on the perimeter of the orchard where there is a risk of mice moving into the orchard from bordering fields, fence lines or ditches. Bait stations are the recommended means of using poison under IFP guidelines.

Mouse damage can be quite severe in young plantings and it is advisable to place tree guards on young trees. The plastic spiral tree guards should cover the whole trunk and extend 5 cm into the soil. If the guard has not been installed properly, or the tree is too large for a spiral guard, rodents will feed on the exposed bark. The spiral guards will need to be removed in the spring to reduce the risk of canker infections.

Fall Lime and Fertilizer Applications

If the fall weather pattern is similar to the past couple of years, growers should have an opportunity to apply lime to orchards that require a pH adjustment. Check this year's soil reports, or those from the past year, to see which orchard blocks have a pH below 6.0. The recommended pH range for tree fruit is 5.5 to 6.5 however I would recommended that growers try to keep the soil pH between 6.0 and 6.5 which will make soil nutrients more available for uptake. Your soil report will provide the rate of lime required to raise the pH to 6.5. This report will also indicate which type of limestone you should be applying, dolomitic or calcitic. To assist with calcium uptake by fruit trees, high levels of magnesium should be avoided and the ratio of calcium to magnesium in the soil should be in the 10 to 1 range. Dolomitic limestone contains both calcium and magnesium and is the product of choice when soil magnesium levels are low. Calcitic limestone on the other hand contains very little magnesium and, given the high levels of magnesium in many Valley orchard blocks, should be the product used. The rate of limestone applied is limited by the method of application. In established orchards the limestone is applied to the soil surface and hopefully more is directed under the tree canopy than into the grass alleyway. The soil pH tends to be lower under the tree canopy because of the application of fertilizer and herbicides to this area as these products have a tendency to lower pH. Surface applied lime has to work its way down into the soil thus it may take a couple of years before a change in pH is noted. The maximum amount of lime applied as a surface application should be no more than 6 to 8 metric tons per hectare even though the soil report may indicate a higher rate. Applying lime at a higher rate can result in loss of the limestone through runoff before it can work its way into the soil. Therefore, if higher rates are required, split the applications over several years. When preparing a site for planting, the higher rate can be applied because it will be worked into the soil.

Potash and phosphate fertilizer can be applied in the fall if tissue analysis and soil reports indicate that these nutrients are below the desired range. Fall applications of nitrogen, such as ammonium nitrate, calcium and urea, are not recommended. Apple trees are not able to pick up all the applied nitrogen which in turn is lost through soil leeching. On the other hand, fall application of manure can be made without significant loss of nitrogen, however, the application needs to go on before the ground freezes. Fall manure applications fit within the On-Farm Food Safety guidelines which state that non-composted manure should not be applied within four months of harvest.

Fall Herbicide Applications

There are fall applied herbicides registered for tree fruits but I am not aware of any Nova Scotia growers making use of them because of the cost and effectiveness of spring and summer herbicide treatments. However if you find yourself hard pressed for time in the spring, the use of a fall applied herbicide will remove one thing from your springtime "to do" list. Kerb 50WSP can be applied in the fall prior to soil temperature dropping below 0ºC to control quackgrass and annual grasses. The recommended rate is 4.5 kg/ha. Kerb primarily is effective on grasses and if broadleaf weed control is also required this would not be a good option. The herbicide Casoron 4G will control many annual grasses, broadleaf weeds and certain perennial weeds. This herbicide prevents the germination of weed seeds therefore should be applied to a weed-free surface. Casoron should not be applied to light, sandy soils or to fruit trees in the year of planting. Cost and the method of application are the main drawbacks to the use of Casoron. Casoron is a granular product and is applied with a hand spreader or tractor-mounted spreader which most producers are not accustomed to using. The recommended rate per hectare of ground area treated is 110-175 kg/ha. The higher rate is recommended where control of quack grass, Canada thistle, artemisia, dandelion, nutsedge, sheep sorrel, vetch and wild buckwheat are desired. I have seen producers obtain season long weed control with Casoron when it was applied properly.

2006 Growing Season

I have difficulty remembering what the weather was like a week ago let alone a year ago or 25 years ago. I have put the following tables together so that you might be able to compare the weather this growing season with last year's, the 5-year average and the 45-year average**.** It is interesting to note that in terms of overall heat, precipitation and sunlight, the 2006 and 2005 growing seasons were similar. On a month-to-month basis, there were differences which may help to account for some of the variability in this year's crop. Comparing heat units, precipitation and sunlight over the long run, the trend has been for slightly warmer and wetter growing seasons.

Weather Data for 2006 Growing Season April 1 - October 31

Month	Max Temp	Minimum Temp	Mean Temp	5 deg days	10 deg days	Rain mm	Sun hours
April	22.0	-2.6	6.2	51.1	8.0	86.7	149.1
May	25.7	0.5	13.1	251.0	102.9	75.3	178.4
June	28.9	9.8	18.1	393.8	243.8	221.5	136.9
July	32.1	12.4	21.5	512.1	357.1	129.4	225.6
August	29.0	6.2	17.8	397.3	242.3	64.6	247.8
September	27.6	3.1	15.2	305.0	156.7	31.7	183.4
October	24.7	-2.3	9.1	131.4	32.2	110.8	131
Total				**2041.7**	**1143.0**	**720.0**	**1252.2**

Weather Data for 2005 growing Season April 1 - October 31

Month	Max Temp	Minimum Temp	Mean Temp	5 deg days	10 deg days	Rain mm	Sun hours
April	20	-5.1	6.3	62	3.2	103.3	186.9
May	20.2	-1	8.9	119.7	9.4	180	87.4
June	31.9	2.3	17.1	364	216.6	39.2	199.7
July	31.1	8.3	17.1	447.3	292.3	67.5	205.4
August	31	8.8	20.1	468.3	313.3	29.5	233.9
September	28	3	16.6	347.6	199.6	78.5	214.2
October	25.3	0.1	11.2	194.3	76.6	224.5	137
Total				**2003.2**	**1111**	**722.5**	**1264.5**

45-Year Average

Month	Mean Temp	5 deg days	10 deg days	Rain mm	Sun hours
April	4.6	39	5.4	83.4	152.8
May	10.6	175.5	58.2	79.9	199
June	16	330.5	182.3	66.5	211.8
July	19.4	444.5	289.6	68.8	231.4
August	18.8	428	273.1	88.1	218
September	14.7	289.7	145	94.1	168.8
October	9.2	138.3	0	108.9	140.5
Total		**1845.5**	**953.6**	**589.7**	**1322.3**

5-Year Average

Month	Mean Temp	5 deg days	10 deg days	Rain mm	Sun hours
April	4.8	48	7	87.4	167.5
May	10.7	177.3	57.2	99.7	180.5
June	15.8	324.6	175.7	60.9	211
July	19.8	457.7	302.7	58.7	224.5
August	20.3	473.8	318.8	66.1	229.5
September	16	330.7	183	99.6	215.7
October	9.9	158.2	56.1	135	159
Total		**1970.3**	**1100.5**	**607.4**	**1387.7**

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