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Orchard Outlook Meetings

Today was the last meeting for 2007 Orchard Outlook meetings. Once again I would like to thank all those who attended the meetings faithfully throughout the month of May, June and July. We have reached that point in the growing season when disease and insect issue are dwindling therefore the news letter will be published periodically for the remainder of the year.

2007 Degree Day Accumulations

(Temperature data provided by Jeff Franklin, AFHRC, Kentville)

Table 1.0 Degree day accumulations as of July 16, 2007 taken from Kentville weather data. Degree day accumulations are calculated using the single sine method and are based on a start date of January 1, 2007.

Category	2004	2005	2006	2007	5 year average
Plant development (Base 5°C)	777.1	803.7	1034.1	819.5	862.4
Insect development (Base 10°)	395.3	405.0	573.1	434.0	449.4

Apple Scab

Two secondary scab infection periods were recorded at Kentville during the past week as a result of shower activity. The first infection occurred from a 19 hr wetting period beginning at 9am Thursday, July 12th and lasting until 10:00 am on Friday the 13th. There was a short drying period between 1 and 6 pm but not long enough to stop the infection period. The second infection period resulted from shower activity Saturday July 14th which started at 6:00pm and resulted in a wetting period lasting until 10 am on Sunday. That point in the growing season is approaching when fungicide application can stop. The decision to stop should be based upon how clean the orchard block is of scab. There are many orchard blocks where scab is easy to find thus weather during August will dictate the need to apply additional fungicide treatments. If August is wetter than normal it would be advisable to make at least one

fungicide application to those blocks. A fall application should also be made to fresh fruit cultivars that will be placed in storage. I have listed the infection periods for the 2007 growing season to date for information.

2007 infection periods

April 27-28	20hrs	April 29-May 1	44hrs	May 16-17	27hrs
May 18-20	27-39 hrs	May 28-29	23 hrs	June 1-2	17 hrs
June 4-5	24 hrs	June 6-7	12 hrs	June 11-12	18 hrs
June 17-18	11 hrs	June 21-22	12 hrs	June 22-24	47 hrs
June 27-28	13 hrs	July 4-6	48 hrs	July 12-13	19 hrs
July 14-15	15 hrs				

Fire Blight

Orchard blocks should be monitored during the remainder of the growing season and shoot infections removed when found. Orchard visits give me the impression that fire blight infections are not spreading as quickly as last year. This may be due to the cooler growing season. The increased use of streptomycin has also helped. Make sure to check blocks for infection following high winds and driving rain which can result in trauma blight infections.

Powdery Mildew

Once again cooler temperatures and fungicide spray programs appear to have kept this fungus in check. Nursery trees and non cropping trees should still be watched for mildew infection and treated when found. Mildew infection will reduce tree growth.

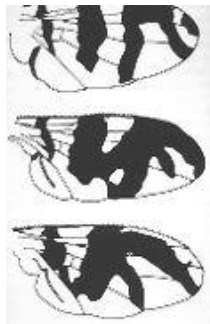
Codling Moth

Continue to monitor traps for a while yet and treat when thresholds are caught or an additional 10 moths are caught seven days after the treatment is applied. In the case of non contact insecticides which do not kill the moths such as Confirm, Intrepid and Calypso these products should give upwards of 14 days protection. The additional trap captures of 10-15 moths 14 days after treatment would indicate that a second treatment is required.

Apple Maggot

The treatment period for maggot can begin late this week or next week and should be based upon trap captures. If you have caught one or more maggots in a trap then a treatment is required. Check the wing pattern on a captured fly to determine if it is an apple maggot and not a cherry fruit fly. Recommended insecticides for maggots are Guthion/Sniper, Imidan, Zolone or Surround. Growers who are planning to use Surround should now be applying this product at a rate of 25-50 kg/ha. The first application should be made with the high rate and repeat applications made every 7 to 14 days using

the lower rate. Surround controls maggot with its protective barrier thus if the product is diluted by rainfall then the application interval may need to be reduced to 7 days. A second or third treatment for maggot should be based upon trap captures. New maggot captures 7 to 10 days following a pesticide treatment would warrant an additional treatment. Monitor traps until the middle of August.



Cherry Fruit Fly

Black Cherry Fruit Fly

Apple Maggot

Mites

Continue to monitor into late August for mites (European Red, Two Spotted Spider and Rust Mite) and treat when thresholds are reached. Dr. Mike Hardman commented that studies indicated that Acramite is relatively easy on typhs which should be taken into consideration for orchard block with good typh populations.

Other Insects to Watch For

Continue to monitor for green aphid. Green apple aphid repopulated the orchards that were treated for this pest. Green aphid will be around into the fall. Early August check for white apple leafhopper. An average of one leafhopper per leaf (100 leaf sample) would indicate that a treatment is required. Fall web worm will start to show up. This is a minor pest and removing the colony by hand or pruning will keep the caterpillar in check. Pear block should be monitored for pear psylla as late summer build up can lead to stick pears covered with sooty mold

Calcium Deficiency Disorder

Bitter pit and cork spot are two fruit disorders that are primarily related to low levels of calcium and sometimes to high levels of nitrogen in the fruit flesh. In Nova Scotia we tend to recognize both of these disorders as bitter bit. The Penn State production guide defines cork spot as being characterized by spherical dead areas in the flesh while bitter pit is primarily a storage disorder which usually attacks the skin and adjacent cells. The planting of Northern Spy and Jonagold in the 1990's and Honeycrisp in the 2000's has resulted in an increase in the incidents of calcium disorders. These three cultivars have a tendency to produce large apples and even more so when grown on dwarf rootstocks. In order to correct this calcium related fruit disorder; growers have been making greater use of foliar calcium sprays. Foliar calcium applications are the quickest and most cost effective means to correct a fruit

deficiency problem however in the long run growers should follow a cultural program that will help to reduce calcium related disorders.

Cultural practices that can have an influence on fruit calcium levels begin with the selection of an orchard site and its preparation for planting. As stated many times in the past, deep well drained soils are best while poorly drained soils or soils with poor water holding capacity will contribute to calcium problems. On poorly drained soil root growth is restricted which restricts the uptake of calcium while soils lacking in oxygen due to water logging will stress the tree and increase calcium disorders. Likewise soils with poor water holding capacity will also stress the trees during periods of draught. Tile drainage and/or ridging can be used to improve soils that are poorly drained while mulch and irrigation can be used to increase soil moisture levels. The soil pH should be checked prior to planting because low soil pH can restrict root growth resulting from aluminum and manganese toxicity. Soil with a low calcium and/or magnesium level should also be corrected prior to planting. The application of dolomitic lime stone will raise both the pH and magnesium level. The ratio of calcium to magnesium in the soil should be 10:1. Calcitic lime stone should be used to raise the pH when the soil magnesium level is within the desire range and the ratio of calcium to magnesium is less than 10:1. Gypsum (magnesium sulfate) can be used to raise the magnesium level on soils which have a pH above 7. The application of gypsum will also improve the soil structure and improve the infiltration of water.

Maintaining a balanced nutrition program that avoids excessive levels of nitrogen, potassium, and magnesium and deficient levels of calcium, boron and zinc will help to prevent calcium related problems. Regular soil and leaf tissue analysis are the tools to use for a good orchard nutrition program.

Tree vigour will influence fruit calcium levels. The vegetative points generally have high levels of calcium and excessive growth may use calcium that could go to the fruit. Maintaining moderate tree vigour will help with fruit calcium levels. Avoid excessive pruning which means that trees should be pruned annually at the same level. Regulate crop load to avoid light crops which result in excessive growth. Match cultivar, rootstock, and soils to avoid crowding problems which leads to excessive pruning and subsequent excessive growth.

Moderate crop load should provide the desired fruit quality and fewer calcium deficiency problems. Light crop load leads to large apples that are more prone to calcium deficiency disorders while heavy crop load has few calcium problems but fruit quality is less than desirable. Make use of thinners to obtain moderate crop loads.

The last step is the application of foliar calcium sprays. The application of calcium chloride is the most cost effective calcium spray. The amount of calcium applied will depend upon the severity of the calcium disorder with Pennsylvania recommending a range of 15-50 lbs/ac. Under Nova Scotia growing conditions calcium deficiency is not as severe as those in areas with warmer and longer growing seasons. The application of 20-30 kg/ha (20-30 lbs/ac) per season should be sufficient to control cork spot or bitter pit in most situations in Nova Scotia. The dilute application rate for calcium chloride is 13.5 kg/ha. Concentrated sprays of calcium chloride can be made provided you are able to obtain even coverage. Growers generally cut back on the rate when applying calcium in a spray concentration 2X.

Cut in half the recommended per hectare rate for concentrate; this should avoid serious fruit and foliage injury. Some foliage burn on the edge of the leaves can be expected but if there is significant damage then the rate should be reduced. When applying calcium at a reduced rate, more application will be required to obtain the desired annual application rate. The calcium has to land on the fruit to be effective so spraying close to harvest will be more effective than sprays applied 2 to 3 weeks after fruit set.

Soil and Leaf tissue Analysis

The proper time to collect fruit tree leaves nutrient analysis is just after the setting of terminal buds on vegetative shoot. Most years this occurs by the last week of July which means that the collection of leaves should take place by the third week of August. Nutrient levels in leaf tissues change with the growing season and the desired nutrient levels for apples were based on leaves being collected once the trees have stopped growing (late July to early August in Nova Scotia). Collecting samples prior to or after the specified period may give inaccurate nutrient level readings. Annual fertilizer applications should be based on tissue analysis reports and other factors such as pruning, vegetation control and anticipated crop load.

I have enclosed the following information for growers who will be collecting their own samples or giving instruction to hired staff. A sample usually represents a block of orchard one to two hectares in size. The sample consists of 100 apple leaves collected from ten trees of the sample cultivar. Collect leaves from trees that are representative of the typical tree growth. Marking these trees and collecting leaf samples from them each year should provide more accurate information and help to eliminate some of the variability in yearly reports. If there are problem areas within the orchard, then sample trees in this area separately. Ten leaves per tree are collected from the mid-point of this year's terminal growth with terminals being sampled from all sides of the tree. Place the leaf samples in a paper bag (in the past, 10 lb brown paper bags were used). The leaf sample needs to be dried as soon as possible after collection, preferably the day of collection, in order to obtain an accurate nutrient analysis.

Collecting a soil sample from the block will provide additional information when it comes to determining fertilizer requirements. Soil samples do not need to be collected on an annual basis but should be collected at least once every three years. Two to four soil cores should be taken at the drip line from each of the ten trees. The soil cores should be mixed and a representative sample placed in a soil box for analysis.

The cost per sample for registered farms is \$11.50 for tissue and \$6.75 for soil and these costs include GST. Boxes and bags need to be clearly identified with the following information: Grower or farm name; mailing address; phone number; farm registration number; orchard block name; cultivar and sample number. Soil boxes can be obtained from the NSDAF office in Kentville.

NSFGA Summer Orchard Tour Thursday August 2

The program for the tour will be sent out next week.

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