

***P. ramorum* Best Management Practices Guidelines for Garden Centres**

Conventional garden centres tend to have the following constraints / practices / habits which will challenge the application of effective best management practices for *P. ramorum*

- Public access to all parts of your facility, with no ability to determine where they have been prior (i.e. customers going from store to store looking for particular plants) or to be able to reasonably request consistent sanitary practices from your customers (footbaths, hand washing, etc)
- Limited space for holding stock
- Co-mingling of same genera stock from several suppliers
- Co-mingling of different genera of stock from different suppliers within beds
- Movement of stock from beds to display areas
- Sick plant returns from customers
- High demand and movement during spring with low turns during remainder of year.

Buyers must become informed on what appropriate best management practices are for production nurseries so that they may knowledgeably discuss pathogen suppression programs with suppliers.

- Plants should be obtained from suppliers which participate in a certification program for *P. ramorum*.
- Prior to purchasing from a supplier, the nursery should receive assurances that best management practices are in place which limit the likelihood or spread of *P. ramorum*.
- Keeping in mind the considerations for Plants of High Risk genera, suppliers who grow or handle these plants should be held to a higher standard.

In BC, a comprehensive *P. ramorum* Certification program is available on a voluntary basis. These *P. ramorum* Certified nurseries are moving through a comprehensive program to minimize the risk of importing or moving *P. ramorum* into BC.

In the Pacific Northwest States, California, Washington and Oregon have also implemented a Certification Program, but it is only a 'sample and test' program with no 'Best Management Practices', education or audit requirements like BC's has.

Shipments from the European Union must come from programs approved by CFIA and where existing programs are being re-evaluated as more *P. ramorum* science becomes available. The situation in the European Union is:

- EU is considered generally infested

- Some jurisdictions have already declared that eradication is not possible
- Plant Passport system only concentrates on most common hosts
- Individual countries have to present export programs for approval by CFIA
- As programs tend to be for named host plants, rather than for all plants, when new hosts are recorded, shipments may be disrupted

Following are other recommended options for garden centres and retail nurseries:

- Train staff to check for *P. ramorum* symptoms on incoming host plant stock and either reject any incoming stock with symptomatic leaves, or place plants in isolation. Particularly watch rhododendrons, camellias, viburnum, kalmia, pyracantha, leucothoe and syringa, as these plants, *particularly the first three*, account for the majority of incidents of *P. ramorum*.
- Since *P. ramorum* spores become active with 9-12 hours of leaf wetness, irrigation should be limited to 6 hours, and only in the mornings, to allow the leaves to dry during the day. Drip irrigation may contribute to addressing the leaf wetness issue.
- Nursery drainage is an issue particularly with the high risk host plants. With the importance of free water in the spread of *P. ramorum*, it is very important for the site to be well drained, particularly in display and growing areas.
- Avoid moving plants, particularly host plants, into a display area, then returning it to the original bed. If at all possible, sell the entire display, so the movement is from the bed, to the display, and out the front door. Because of the high traffic in display areas, and the comingling of plants, there is a higher risk of plants transferring infection, or contracting an infection from outside sources in seasonal display beds
- If you have a holding area, plants should move from the holding area to the beds, and out the front door. Once material has left the growing / holding area it should not be returned.
- The depository for sick plants from customers should be as close to the front door as possible. Sick plants should not enter the nursery area:
 - Sanitation practices should be in effect, including immediately bagging the plant and cleaning of hands with a hand sanitizer.
 - A diagnostic manual of plant insects and diseases should be provided in this area for possible identification.
 - If the plant is to be sent to the BC Ministry of Agriculture and Lands for testing for Invasive Alien Species, all the paperwork and materials should be provided at the front of the store.

Management Decisions and Policies:

1. Arrangement of the Nursery:

There is considerable debate amongst garden centre owners who have had positives regarding the best strategy to reduce potential short term impacts from a positive find. One issue continues to be the organization of beds to minimize destruction.

- Size of the nursery and ability to maintain a 2 meter break (canopy to canopy) between stock beds
- Amount of host material sold – if small quantities, one option is that these could be isolated, if large quantities, another strategy should be considered to minimize destruction requirements. Or you could maximize turnover by decreasing host stock levels in beds and holding stock in the back.
- Traffic movement by the public – it would be preferable to have the least amount of movement in the three high-risk host plant areas. However, if rhododendrons are in bloom, it is very difficult to minimize traffic.
- Is it possible to arrange beds of high risk plants so the customer can select plants without having to walk in the display block?
- If you have a 'dig your own' operation, you have a lower risk due to plants not being moved around; however your customers may be importing the risk from the outside.

Some retailers prefer to put all their host plant stock together, some with buffers of non-host plants, some preferring specific designated areas for host plants. This is a risk management decision that you must make dependent on your own situation.

2. Incoming Plants:

- ***This is the most likely entry point for P. ramorum.*** If the pathogen moves on to your nursery, it is most likely to come directly from a supplier as opposed to your customers or contaminated transport.
- As management, you must set the policy for incoming stock plants. The degree of surveillance, monitoring and recording should be set for all incoming plants, with a policy in place for poor or ill stock.
- Retail nurseries should maintain records of plant purchases and movement of plants throughout the facility as per the Nursery Certification program.
- Whereas you do not want every plant with a leaf spot to be disposed of, you do need to be able to set criteria for actions. The expertise of your staff will dictate your hierarchy of authority to dispose of sick plants.
- After unloading, drivers should sweep debris into bags for appropriate disposal. Do not allow drivers to sweep or dump debris on your facility.
- If you have your own trucks and drivers, you may wish to establish a policy for rejecting suspicious plants prior to loading at the source. You may also set a sanitation policy for your own trucks.

3. Preventative Spraying:

- Emergency Registrations of Subdue Maxx and Alliette have enabled the BC industry to provide effective preventative control for *P. ramorum*. This registration is in effect until the end of September; it is hoped that a long-term registration will be permitted.
- Your spray regimen, if you decide to use one, will be predicated by the weather, (amount of rainfall), temperatures, and degree of risk (purchases from risky sources or large amounts of high-risk hosts).

4. Bio-security and sanitation practices by staff

P. ramorum spores will actually grow towards cut or damaged surfaces (entry points). Thus, it is important that a sanitation policy be in place for staff working amongst nursery stock.

Guidelines are:

- High risk plants should be handled at the end of the day, when the leaves are dry (less risk of spore transfer) and the worker will go home and change clothes.
- Pruners and tools should be disinfected particularly after working in the high risk host plant beds.
- When organizing or rearranging nursery areas, disinfect the surface areas with a disinfecting solution after moving and prior to re-setting beds or displays.
- Leafy debris, a prime breeding ground for *P. ramorum* spores, should be collected and disposed of after the stock has been moved out, particularly for high risk hosts.
- Retail nurseries or those with 'in-ground' plants will require attention to weed control, as some weed species have been shown to be *P. ramorum* hosts.
- Cull plants should be disposed of promptly by disposal in regular garbage, not tossed into piles.

Options for nurseries or retailers which engage in growing on or handling plants sourced from multiple nurseries:

- While plant genera have been identified which are more prone to infestation of *P. ramorum*, the probability of detection of *P. ramorum* is far more likely to be associated with an individual nursery which has become infested.
- Arranging blocks of plants by supplier, rather than by plant type should reduce the extent of within-nursery spread of *P. ramorum*, should infested plants be introduced.

If a retailer's **first** priority is to effectively reduce the potential effect of *P. ramorum* on their operation, consider the following options:

- Ensure the site is well drained
- Buy certified stock
- Arrange stock by supplier, as opposed to plant type
- Do not indiscriminately move plants around the nursery
- Organize plant movement process so it's a one way trip through the nursery (holding area to display to the customer)

These may seem like difficult measures, but may be a reasonable choice if faced with lengthy closures and plant destruction.

Website references

P. ramorum Canadian Certification Standards and List of Certified Nurseries: www.canadanursery.com
(click on link to 'Nursery Programs')

Host Plant List:

<http://www.inspection.gc.ca/english/plaveg/protect/dir/sodspe.shtml>

California Oak Mortality Task Force:

<http://nature.berkeley.edu/comtf/>