

# Invasive Alien Species

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(updated October 2008)

Invasive alien species (also known as non-native or exotic pests) are organisms that are introduced to a country or region outside their natural habitats. Invasive alien species include invasive bacteria, fungi, insects, mites, molluscs, nematodes, plants, and viruses. Many of these non-native pests fit in with their new environment and do not cause appreciable damage to their hosts. Others can quickly establish themselves and spread if suitable hosts and environmental conditions are present. The lack of natural enemies, which regulate their abundance in their home range, may also aid in their establishment and spread. In time, natural enemies or introduced biocontrol agents may reduce the damage and permit us to live with such pests. Some invasive alien species never come into balance with their new environment and their presence continues to cause trade restrictions.

There are numerous examples of invasive alien species that are brought to BC by human activity, both by legal trade, ignorance and deliberate smuggling. Inspectors with the Canadian Food Inspection Agency (CFIA) attempt to prevent the entry of alien species but they need the help of the horticulture sector in addition to all Canadians. Make yourself aware of what is native or exists on your property and report the presence of a new pest to the CFIA or BC Ministry of Agriculture and Lands (contact information for these organizations is listed in Appendix F, *Publications and Industry Contacts*). Alien pests cost everyone in lost productivity and dollars. Let's work together to keep them out of BC!

## Introduced Pests and their Impacts

Countries around the world regulate the movement of goods to prevent the introduction of some alien pests. In Canada, the CFIA has regulations for more than 240 alien pests. The list of pests regulated by Canada is available on the CFIA web site at [www.inspection.gc.ca/english/plaveg/protect/listpests.pare.shtml](http://www.inspection.gc.ca/english/plaveg/protect/listpests.pare.shtml).

Importing countries use phytosanitary measures to prevent the introduction and/or spread of alien, regulated pests. If a regulated pest is detected in a region, then eradication measures are often implemented. If the detection is at a floriculture operation, the actions could include prohibitions on plant movements and destruction of affected stock at the facility. The discovery can also lead to lost market opportunities for individual operations or an entire region. These actions can cause serious financial hardship to the affected businesses. The threat posed by a regulated pest being found in a greenhouse operation is very real and it has been referred to as the single greatest external threat to industry operators.

Several alien pests have recently been detected in North America and have had a very negative impact on the ornamental industry. Some of the regulated pests that have been detected include Sudden Oak Death (*Phytophthora ramorum*), Bacterial Wilt of Geranium (*Ralstonia solanacearum* race 3, biovar 2), and Emerald Ash Borer (*Agrilus planipennis*). The detection of *R. solanacearum* race 3, biovar 2 in North America in 2003 had a very negative impact on the floriculture industry. The regulatory actions implemented to eradicate this bacterial wilt disease from the US resulted in more than 800 greenhouses being quarantined and financial losses for the industry estimated at \$4 to \$5 million. The entire geranium crop was destroyed at some greenhouses with no guarantee of future financial compensation for this loss.

There is a risk of introducing alien pests on imported plants. Therefore, producers need to implement detection procedures. A first step is awareness of the key alien pests that threaten your business. Below is a brief description of several alien pests that pose a threat to floriculture producers in BC. Additional information on invasive alien species is available on the Ministry's web site at [www.agf.gov.bc.ca/cropprot/nonnativepests.htm](http://www.agf.gov.bc.ca/cropprot/nonnativepests.htm).

**Chrysanthemum White Rust** (*Puccinia horiana*) is a fungal disease that has been detected in commercial greenhouses in BC on several occasions. The disease is difficult to detect since it only develops visual symptoms in the fall when chrysanthemum plants are in bloom. The movement of symptomless cuttings from outside of North America brings this alien species to Canada. This disease is regulated in both Canada and the U.S. See the section on *Rusts* in Chapter 11 for recommended actions to prevent this disease from being introduced into your greenhouse.

**Figure 9.1: Yellowish lesions of Chrysanthemum white rust on the upper leaf surface and rust pustules on the under leaf surface (inset).**



**Golden Nematode** (*Globodera rostochiensis*) is a tiny parasitic worm that was introduced to the Saanich area of Vancouver Island many years ago, most likely on bulbs or plants from Europe. Quarantines established in the 60's to prevent the spread of the nematode have caused difficulties for Island potato producers as well as producers in the horticulture industry. The quarantine continues today and still impacts the movement of stock from the area to the rest of Canada and the US.

**Pink Hibiscus Mealybug** (*Maconellicoccus hirsutus*) attacks more than 360 plants including many greenhouse ornamental and flowering plants such as hibiscus, bougainvillea, chrysanthemum, poinsettia, ficus, begonia, palms, pothos and oleander, to name a few. The mealybug releases a toxic substance while feeding that causes leaf curling and plant death. It has the potential to cause great economic loss and the wide host range makes it easy for the pest to spread and establish rapidly. The pink hibiscus mealybug occurs in many tropical parts of the world, Asia, the Middle East, Africa, Australia, and Hawaii. In the 1990's it became a

serious problem in the Caribbean and the US Virgin Islands. The pest was detected in Southern California in 1999 and in Florida in 2002. Because the pest attacks many economically important hosts, it is categorized as a quarantine pest in the US. It is not regulated in Canada.

**Bacterial Wilt of Geranium** (*Ralstonia solanacearum* race 3, biovar 2) is a pathogen that causes several plant diseases including potato brown rot, bacterial wilt of tomato, and geranium southern bacterial wilt. As well as being fatal to geraniums, it is a major concern to the potato industry because infected tubers are unmarketable. Due to this risk, *R. solanacearum* race 3, biovar 2 is now considered a quarantine pest in Canada, Europe and the US. It was included in the Select Agents and Toxins list in the USDA's *Agricultural Bioterrorism Act* (2002). In 2003, the presence of *R. solanacearum* race 3, biovar 2 was confirmed in the US from diseased plant material in Guatemala. The Guatemalan greenhouse ceased shipping to the US and, as a precaution, all geraniums received in Canada from the affected US greenhouses were destroyed. On a few occasions in 2003, the pathogen was brought to Canada on infected plant material from Costa Rica, Guatemala, and Kenya. In order to eradicate the infection nearly 2 million geraniums and associated plants were destroyed across North America. Infected plants were exported from Guatemala in 2004 and over 1 million plants and cuttings in the US were destroyed.

**Melon Thrips** (*Thrips palmi*) is an insect pest that has a wide host range including chrysanthemum, cyclamen, certain orchids, and many other greenhouse ornamentals and vegetables. *T. palmi* causes stunting or death of affected plants, and can also be responsible for spreading viral diseases. On top of this, it is resistant to many pesticides, which makes it difficult to control. It is presently known to occur in Asia, Africa, Central and South America, and The Caribbean. The pest has also been present in Hawaii and Florida since the early 1980's. In Hawaii, *T. palmi* causes severe damage to ornamental orchids and thus is a pest of quarantine importance to the US. This pest is also quarantined in most of Europe and The Caribbean. While it has yet to be detected in Canada, it would also be economically harmful to our greenhouse crops if it were to spread here. Melon thrips is not regulated in Canada.

## Invasive Plant Species

Plants themselves can also be invasive pests. Introduced plant material can escape from a garden and has the potential to negatively impact natural resources or industries such as agriculture, forestry or tourism. The desirable characteristics for ornamental varieties (hardiness, persistence, self-seeding ability, pest resistance, and vigorous growth and establishment) are some of the same attributes that make a plant species a successful invader. A few ornamentals that have escaped to damage BC's environment include: purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Polygonum cuspidatum*), giant hogweed (*Heracleum mantegazzianum*), Russian olive (*Elaeagnus angustifolia*), baby's-breath (*Gypsophila paniculata*), reed canarygrass (*Phalaris arundinacea*), Scotch broom (*Cytisus scoparius*), policeman's helmet (*Impatiens glandulifera*) and English ivy (*Hedera helix*).

## Legislation, Import and Export Concerns

Currently there is only limited invasive plant legislation in Canada that regulates the import of aggressive or potentially noxious plants for landscape and garden use. Weed laws and regulations are normally enacted to limit further spread after a plant has proven itself as an invasive weed. Federally, the *Seeds Act* regulates the allowable weed seed content of crop seed and the *Plant Protection Act* regulates the import of a few aquatic and parasitic plants. Provincially, 45 plant species are regulated under the *BC Weed Control Act*. This Act places a duty on all land occupiers to control listed plants and to prevent their propagation and transport. Weeds currently legislated in BC can be found online at [www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm](http://www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm).

In the US, the *Plant Protection Act* regulates the movement and importation of over 100 aquatic, terrestrial and parasitic plants. Japanese bloodgrass (*Imperata cylindrica*), giant hogweed (*Heracleum mantegazzianum*), 4 *Pennisetum* spp. and 2 blackberry species (*Rubus fruticosus*, *Rubus moluccanus*) are examples of plants not permitted entry into the US. The US National Invasive Species Council has recommended screening all new introductions for "invasiveness" before the plants are allowed entry. In addition, most states have enacted weed legislation aimed at enforced control or

prevention of introduction of nearly 500 invasive species. For additional information about invasive plant species in the US, see the National Plant Board Internet site at [//nationalplantboard.org/laws/index.html](http://nationalplantboard.org/laws/index.html).

## Reducing Invasive Pest Potential

Because floriculture trade takes place on a world wide basis, it is especially important to monitor products for plant parts and seeds which may spread invasive species and result in both import and export concerns. When importing plant material from outside of BC, both growers and the public need to be cautious to avoid the introduction of new invasive plants. Once established in an area, invasive plants can be impossible to eradicate or difficult to control due to extensive creeping, rhizomatous roots or because they produce vast amounts of seed.

Take care to monitor seedling establishment and spread of propagated stock to adjacent natural areas and control escapes. Also, discontinue production and sale of any plant species known to be invasive to BC and check all imported stock for new, unfamiliar pests, symptoms, weeds or weed parts. If you find an uncommon, aggressive weed in imported stock, contact your local BC Ministry of Agriculture and Lands office or a Canadian Food Inspection Agency Inspector for assistance.