INFORMATION ALERT: Late Blight in Alberta.

In 2010, late blight, a highly destructive plant disease, was reported in many areas across southern and central Alberta, including some commercial potato fields and market gardens and many urban residential gardens and plantings. This was the first major outbreak of late blight in Alberta since 1993. One of the strains of late blight identified in 2010 was particularly virulent on tomatoes, which is relatively uncommon. Due to late identification, limited control options and excellent conditions for disease development, the disease developed and spread rapidly in urban locations. Commercial plantings of potatoes were protected by monitoring and regular fungicide applications. It is hoped that little or no late blight overwintered, but precautions should be taken.

When the pathogen is present and weather conditions are favorable for disease development, commercial potato and market garden crops are at risk from late blight, as are all other plantings of potatoes and tomatoes. There is also a risk of spread into greenhouse tomato operations. The risk of introduction comes from either infected transplant material (tomatoes or other host crops) or infected seed potato stock (either imported or carried over).

Late blight is a serious plant disease caused by the fungus *Phytophthora infestans*, and is found in most potato and vegetable-growing areas of Canada, although it does not occur every year on the Prairies. Late blight is most damaging on tomatoes and potatoes, but may also affect eggplants, peppers, petunias and some related Solanaceous weeds, such as nightshade and wild tomato. Late blight is an aggressive disease that, if left unchecked, can cause significant and rapid crop losses in gardens, greenhouses, fields and in controlled environment storages, e.g. potato bins.

Initial symptoms of late blight are typically noted on older leaves, appearing as dark, water-soaked areas (lesions), sometimes with yellow edges, that move in from leaf tips/margins, becoming brown and brittle within a couple days. Late blight lesions are not contained by the leaf veins, as they are with another common foliar disease called early blight (caused by the fungus *Alternaria solani*). Lesions may also develop on plant stems and on potato tubers and tomato fruit. A small amount of sporulation (observed as white, fluffy growth on the edges of lesions) may be visible in some cases on the underside of affected leaves. Late blight develops most quickly in wet/humid conditions and can spread very rapidly through plantings. Plants may be rapidly defoliated, die and yields can be significantly reduced.

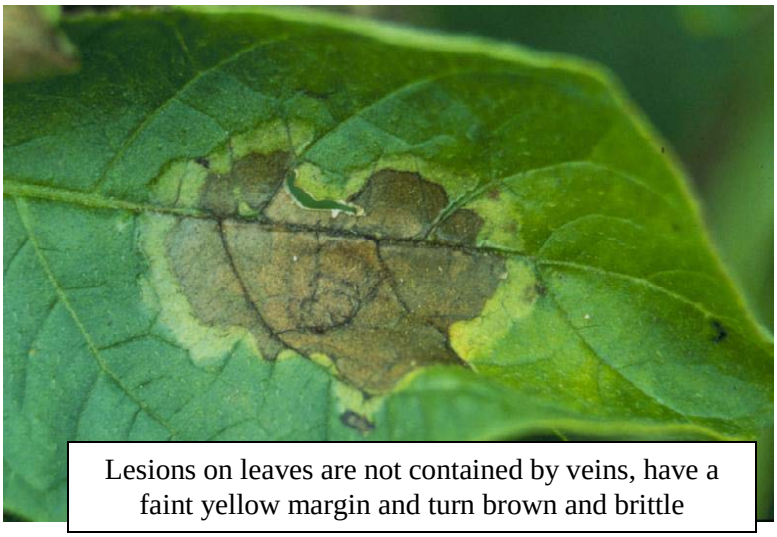
Potato tubers may be infected by spores produced on the foliage which are subsequently washed into the soil. Infected tubers may have irregular, sunken lesions that are often first found around the eyes. Tomato fruit and potato tuber rot can penetrate deeply into the tissues and has a reddish-brown colour. Late blight can spread from diseased to healthy fruit and tubers in stored tomatoes, in potato piles in storage and on seed potato pieces.

On the Prairies, late blight does not form an overwintering spore type. Rather, the pathogen overwinters on living tissues and the disease is carried forward from one season to another on infected seed potatoes, cull piles and volunteer potatoes. In-season spread is by spores produced on infected tissues (infected transplants, volunteers, weeds and diseased crop debris) or by long distance spore transport. Spores can move considerable distances on the wind or will spread within the fields by rain or water splash.

The priority for late blight management should centre around efforts to reduce the introduction of the disease into plantings, either by avoiding overwinter survival or by monitoring for infected plant materials that might be brought in from other areas. Leaving potato cull piles or diseased materials in the open can lead to infection of healthy plants. Volunteer potato plants and Solanaceous weeds, such as nightshade and wild tomato, should be controlled. Late blight can be managed in commercial crops using protective fungicidal sprays (with rotating chemistries),

applied at regular intervals when conditions favour disease development. The use of cultural practices, such as drip or furrow irrigation and the adjustment of plant stand density can be effective in reducing the risk or rate of disease development in alternative crops or smaller stands. Infected plant material should be disposed of as soon as possible after detection, either by burying or freezing. If infected crop debris is composted, it should be covered with a tarp or soil until it has frozen to minimize the risk of spore survival and distribution. Killing potato tops can help to minimize tuber infection, as this encourages tuber skin set and stops top growth. Tubers can be harvested a couple of weeks after the tops are killed. Tubers should be heavily graded and culled before storage in an attempt to prevent entry of the disease into storage.

Complete and rapid foliar breakdown of potato plant due to late blight



Lesions on leaves are not contained by veins, have a faint yellow margin and turn brown and brittle

Tomato fruit and potato tuber rot – note tissue discoloration

Tomato fruit rot

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Late blight lesions on tomato leaves