

avoided. Otherwise seed pieces may be treated with Mancozeb (1kg in 450 litres water) for 10 minutes and dried for 24-48 hrs before planting.

Late Blight (*Phytophthora infestans*):



The disease affects all plant parts, viz., leaves, stems and tubers. It appears on leaves as small pale green spots, which enlarge into large water soaked lesions. A white mildew (cottony growth) ring forms around the dead areas on the lower side of leaves. In dry weather, water soaked areas turn necrotic brown. On stems, light brown elongated lesions are formed which may encircle the stem. Tubers develop reddish brown, shallow to deep, dry rot lesions. The affected tuber flesh becomes 'caramalised' with a sugary texture. Frequently metallic tinge develops on the margins of the affected tissue.

Tubers carrying the pathogen are the real carriers and serve as the source of the disease in the subsequent season. Infected seed tubers grow into healthy plants but under favourable conditions for the disease (10-12°C and RH > 80%) development, the disease infects the stem and lower leaves.

Control: Seed potatoes should be checked thoroughly before storage. All blighted tubers must be removed and buried deep in the soil. Ridges should be made high enough to cover all daughter tubers and reduce chance of their infection upon exposure. If the weather conditions (temperature 10-20°C, RH>80%) are favourable for the disease development irrigation should be stopped immediately. If essential only light irrigation is given. When the disease affects 75% crop foliage, the haulms should be cut, removed from the field, and buried deep.

Protective sprays with a contact fungicide, viz., Mancozeb (0.2%) before appearance of the disease is effective. Subsequent sprays if necessary should be repeated at 8 to 10 days interval. In case of severe blight attack, one or two sprays of Metalaxyl (0.25 %) are given to check the further spread of the disease. Mancozeb is applied at an interval of 15 days after the Metalaxyl application.

Early blight (*Alternaria solani*):

The disease mainly infects leaves and tubers. Initially the symptoms occur on the lower and older leaves in the form of small (1-2 mm) circular to oval brown spots. These lesions have the tendency to become large and angular at later stage. Mature lesions on foliage look dry and papery, and often have the concentric rings, looking like bulls eye. The symptoms on the tuber comprise of brown, circular to irregular and depressed lesions with underneath flesh turning dry, brown and corky. Lesions tend to enlarge during storage and affected tubers later become shriveled.



Control: Use of disease free seed tubers for raising the crop. The crop must be given balanced doses of fertilizers, especially nitrogen. Spraying the crop with urea (1.0%) at 45 days after sowing and giving subsequent sprays 8-10 days after the first spray helps the crop to easily escape the severe onslaught of early blight disease.

In the hilly regions, spraying of Copper Oxychloride (0.30%) and Bordeaux mixture (1.0%), is

recommended for control of early blight disease. Solanaceous crops, which act as the collateral hosts for the disease organism, hence their cultivation nearby potato fields, must be avoided.

Potato Leafroll Virus (PLRV):

The PLRV invokes primary or secondary types of symptoms in plants depending upon the age of infection. The primary symptoms develop during the crop growth. These symptoms are confined to top young leaves, which usually stand upright, roll and turn slightly pale. The secondary symptoms of PLRV develop when plants are grown from infected seed tubers. Such symptoms are rather prominent in older leaves. Infected plants have characteristic pale, stunted and upright appearance with rolling of lower leaves that turn yellow, brittle and are leathery in texture.

Control: The disease is managed by using virus-free seed potatoes. Multiplying virus-free seed in aphid free areas. Population of aphid vectors is controlled by application of suitable contact/systemic insecticides.

Potato Mosaics

Potato mosaics mostly invoke inter-veinal and veinal chlorosis, mild mottling and slight crinkling of leaves. Top necrosis occurs in immune varieties while others express light yellowing of the leaf margins or shiny yellow mottle of the entire leaf lamina. The potato plant is also affected by a severe