Late Blight

Fungus-like organism: *Phytophthora infestans*

Dari

Pathogen/Disease description: Late blight is the most important disease of potatoes in most regions. It is caused by a fungus-like organism. Spores are air borne and infect during periods of high humidity. All plant parts may be infected. Early symptoms include necrotic lesions on leaves and stems. These progress quickly to kill the entire stem or plant. Infected tubers in cull piles can be a source of infection the following year. If 2 mating types are present then thick-walled oospores may form which are resistant to drying and cold and help the pathogen overwinter.

Cultural control: Destroy or bury all crop debris and tubers at the end of each season. Irrigate early in the day to allow leaves to dry before night.

Chemical control: Regular fungicide sprays are needed in areas where this disease occurs.
Early Blight
Fungus: *Alternaria solani*
Dari

**Pathogen/Disease description:** The fungus overwinters in plant debris and spores spread long distances by air. Early blight lesions on leaves are brown, dry and have a target pattern; and do not usually spread very far and rarely affect petiole tissue. Affected leaf tissues turn yellow if there are many lesions. Tubers may be infected but stems and petioles are not infected.

**Cultural control:** Plow under crop debris each fall, rotate to grains or other crops.

**Chemical control:** Regular fungicide applications may be needed in areas with high humidity.

Photos: ipmimages.org and Purdue Univ.
Rhizoctonia canker and Black Scurf
Fungus: *Rhizoctonia solani*
Dari

**Pathogen/Disease description:** The fungus is soil borne and attacks roots and tubers. Root lesions are sunken and black. Black fungal structures, called sclerotia, develop on tubers. These are called Scurf and are raised black areas that look like dirt but won’t wash off.

**Cultural control:** Some damage from this fungus may be avoided by planting later when soils are warmer. A 1 or 2 year rotation to crops other than potato may help reduce the problem.

**Chemical control:** Use fungicide treated seed-pieces.

Photos: ipmimages.org and Purdue Univ.
Erwinia soft rot of tubers and Black leg of stems

Bacteria: *Erwinia* *spp.*

Dari

**Pathogen/Disease description:** Soft rot bacteria infect potato seed pieces during cutting and handling operations. Stems which grow from infected seed pieces develop a black soft decay. Tubers which develop normally on nearby plants may be infected through the skin or wounds. The bacteria may also overwinter in crop debris on the soil surface. The disease is favored by warm conditions and dense plantings.

**Cultural control:** Keep seed tubers at 10-13 C during storage and after cutting. Clean cutting knives and tools frequently to prevent spread. Allow cut seed pieces to suberize (heal or develop a skin) at high humidity and 10-13 C for a few days. Provide good ventilation during storage.

**Chemical control:** None.

Photos: ipmimages.org and Purdue Univ.
Common Scab
*Causal organism:* *Streptomyces scabies*

**Pathogen/Disease description:** This disease is present in most potato growing regions. Symptoms appear as rough, raised, cracked lesions on the tubers. The streptomycete bacterium is found in soils around the world. Symptom severity varies widely. *Streptomyces scabies* is not active in soils with a pH below 5.2 but tubers may be attacked at this pH by *Streptomyces acidiscabies* which is adapted to lower pH levels. The pathogen can survive in the soil many years and also attacks turnip, radish, carrot and beets.

**Cultural control:** Avoid soils with high organic matter. Rotate to small grains or alfalfa.

**Chemical control:** None practical

Photos: ipmimages.org and Purdue Univ.
**Tomato Spotted Wilt**

**Viruses:** *Tomato Spotted Wilt Tospovirus*

**Dari**

**Pathogen/Disease description:** This virus is spread from plant to plant by thrips insects. Infected leaves develop necrotic spots, often with concentric rings of brown tissue. If plants are infected early some whole stems may turn brown and die. Infected tubers develop an internal brown discoloration. Symptoms vary by time of infection, strain of the virus and cultivar of potato. TSWV has a very wide host range, including tomato and pepper.

**Cultural control:** Early planting of early maturing varieties may help where this disease has been a problem. Control weeds in the field that may harbor thrips.

**Chemical control:** None
Virus diseases
Viruses: *Alfalfa Mosaic Virus Alfamovirus*

**Dari**

**Pathogen/Disease description:** The virus is worldwide but is not economically important. AMV infects more than 150 types of plants and is spread by aphids.

**Cultural control:** Use disease free tubers for planting. Control weeds that may have the virus near the field.

**Chemical control:** None. Insecticides do not act quickly enough to prevent spread from outside the field.
Virus diseases
Viruses: *Potato Virus Y Potyvirus*
Dari

**Pathogen/Disease description:** PVY is has worldwide distribution and causes significant losses. Symptom severity depends on the virus strain. Infected leaves may show irregular necrotic brown spots or line patterns. Early infections result in plant stunting. Infected tubers have dark brown line patterns that reduce quality. The virus is spread by aphids.

**Cultural control:** Use disease free tubers for planting.

**Chemical control:** None. Insecticides do not act quickly enough to prevent spread from outside the field.

Photos: ipmimages.org and Purdue Univ.
Root knot nematodes
Nematode: *Meloidogyne spp.*
Dari

Pathogen/Disease description: Root-knot nematodes are widespread. Damage to tubers is similar to scab but large swellings may appear.

Cultural control: Rotate to non-host plants such as small grains. Harvest early before damage occurs. Grow green cover crops, including mustard, sudangrass or rapeseed, and till them into the soil.

Chemical control: None practical.

Photos: ipmimages.org and Purdue Univ.