



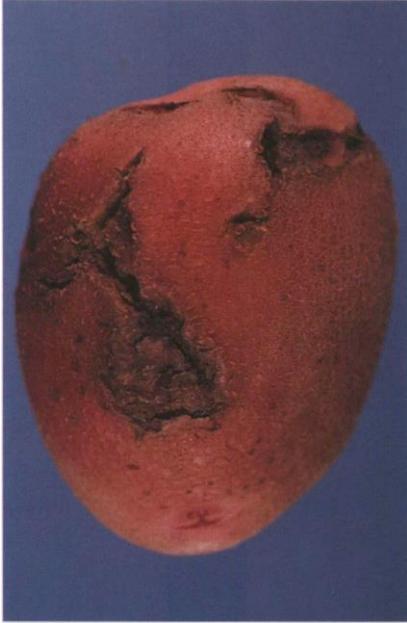
16.1a Bacterial ring rot; wilted stem, a characteristic susceptible reaction.



16.1b Bacterial ring rot; wilted stems and premature dieback of foliage.



16.1c Bacterial ring rot; moderately severe symptoms in tubers.



16.1d Bacterial ring rot; skin cracking on tuber.



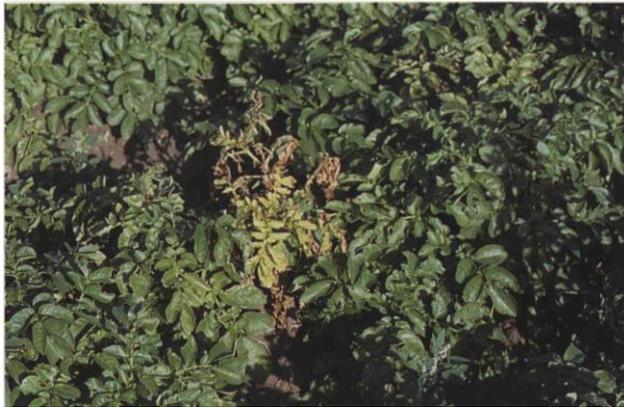
16.1e Bacterial ring rot; very severe symptoms in tubers.



16.2a Bacterial soft rot; lenticel infections of tuber.



16.2b Bacterial soft rot; severe decay of tubers in a plastic bag.



16.3a Blackleg; affected plant with wilted, chlorotic foliage.



16.3b Blackleg; rotted tuber; note infection started at stolon end.



16.3c Blackleg; soot-black discoloration of stem and bacterial ooze.



16.4a Pink eye; cracked skin with pink- brown discoloration.



16.4b Pink eye; severely affected tubers.



16.5a Common scab; raised symptom, erupting lesions.



16.5b Common scab; deep-pitted symptom, lesions up to 6 mm deep.



16.5c Common scab (above); shallow symptom. Russet scab (below); corky reticulations.



16.6a Black dot; microsclerotia of *Colletotrichum* on dead vine.



16.6b Black dot; an affected tuber with microsclerotia of *Colletotrichum* (tiny black dots).



16.7a Dry rot; sunken, shrivelled lesion and concentric rings on affected tuber.



16.7b Dry rot; tuber cavity lined with white mycelium of *Fusarium*.



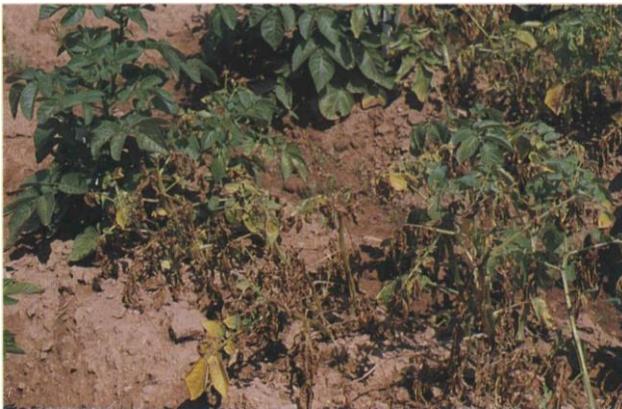
16.8a Early blight; leaf lesions are often delimited by veins and have concentric rings. See late blight, 16.11a,b.



16.8b Early blight; severe top-killing in potato field.



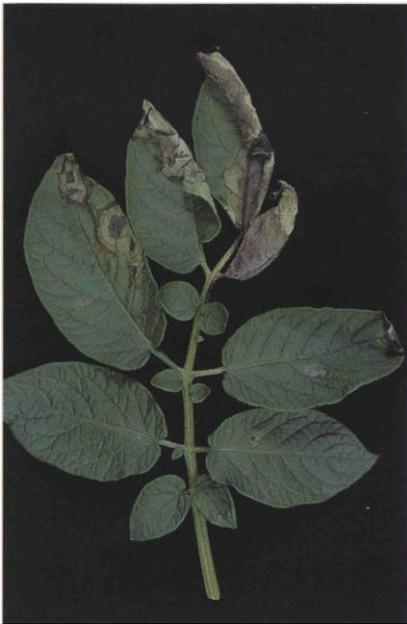
16.8c Early blight; sunken area on tuber caused by *Alternaria* infection.



16.9 Fusarium wilt; severely wilted plants.



16.10 Gray mold; gray-black lesions turn brown during dry weather.



16.11a Late blight; leaf lesions, at first water-soaked, quickly become dark brown, brittle.



16.11b Late blight; diffuse leaf lesions; compare with early blight, 16.8a.



16.11c Late blight; stem infection.



16.11d Late blight; reddish, granular, sunken lesions in tuber.



16.12a Leak; internal symptoms in tubers.



16.12b Leak; severely rotted tubers.



16.13 Phoma rot; pocket-like lesions formed in tuber following wounding.



16.14 Pink rot; tissues surrounding the decay have a pinkish tinge.



16.15a Rhizoctonia canker; lesions on newly emerged sprouts on seed piece.



16.15b Rhizoctonia canker; characteristic stem cankers.



16.15c Rhizoctonia canker; black scurf stage (sclerotia) on tuber.



16.15d Rhizoctonia canker; knobby tubers from infected plants.



16.15e Rhizoctonia canker; cupped, pinkish upper leaves, often mistaken for purple-top wilt.



16.15f Rhizoctonia canker; aerial tubers formed on infected vines.



16.15g Rhizoctonia canker; perfect state (*Thanatephorus cucumeris*), gray-white mycelium (center) just above soil line.



16.16 Powdery scab; numerous deep pits, usually smaller and rounder than in common scab (see 16.5).



16.17a Seed-piece decay; very poor emergence in affected crop.



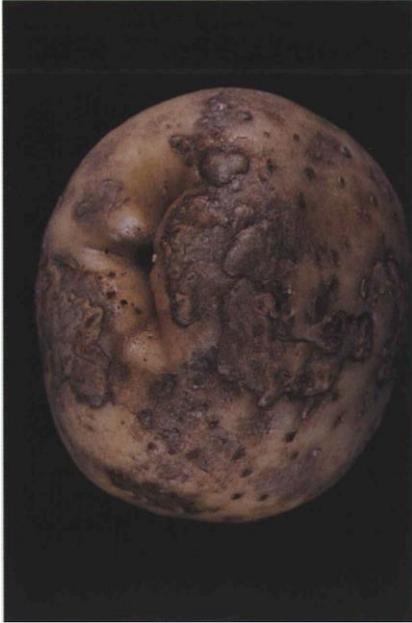
16.17b Seed-piece decay; rotting seed piece.



16.17c Seed-piece decay; decayed seed piece.



16.18a Silver scurf; moderately affected tuber.



16.18b Silver scurf; severely affected tuber.



16.18c Silver scurf; unpeeled and abrasive-peeled tubers; affected tubers are difficult to peel, skin tissue may remain.



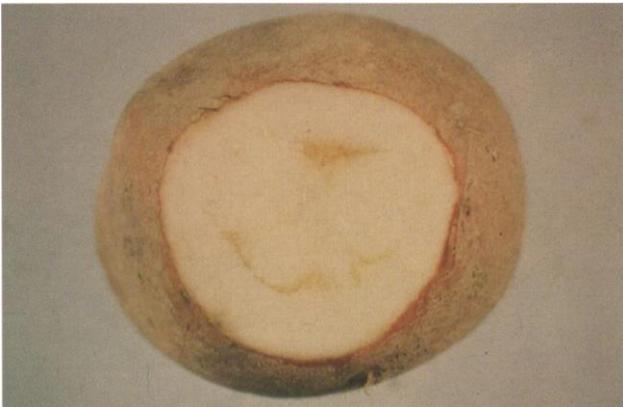
16.19 Skin spot; small, sunken spots with raised centers on tuber surface.



16.20a Verticillium wilt; wilted plants.



16.20b Verticillium wilt; note vascular discoloration in cut stem.



16.20c Verticillium wilt; vascular discoloration at stem end of infected tuber.



16.21a Wart; galls on above-ground stem tissue.



16.21b Wart; infection at base of potato stem.



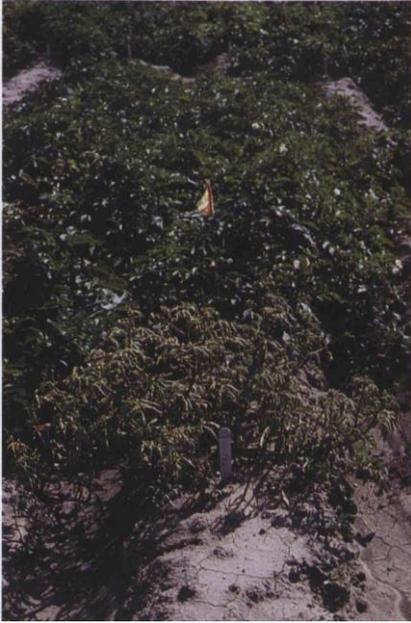
16.21c Wart; tuber infection (large gall).



16.21d Wart; black-wart stage and stolon tip infection.



16.22 White mold; potato vine with mycelium of *Sclerotinia sclerotiorum*.



16.23 Aster yellows; plant showing purple- top wilt (foreground).



16.24 Calico; leaf yellowing symptoms.



16.25a Corky ring spot; external ring spotting symptoms on tubers.



16.25b Corky ring spot; brown lines and areas in tubers.



16.26a Leafroll; marked upward rolling of leaves on affected plant (center).



16.26b Leafroll; net necrosis may form in tubers of some cultivars during storage.



16.27a Mosaic; mild mottling and distortion of leaves (potato virus X).



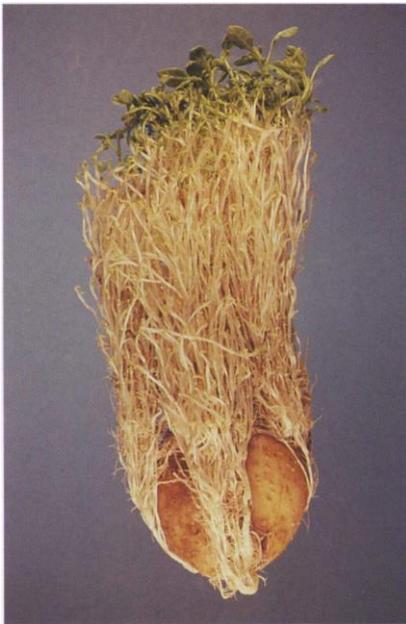
16.27b Rugose mosaic; severely wrinkled leaves (potato virus X plus Y).



16.28a Spindle tuber; affected plant displaying upright growth habit.



16.28b Spindle tuber; spindle-shaped tubers from affected plants.



16.29a Witches'-broom; numerous shoots arise from infected tuber.



16.29b Witches'-broom; upright, multi- branched stems, small aerial tubers.



16.30 Blackheart; discoloration usually from lack of oxygen.



16.31 Growth cracks; note callus in the cracked areas.



16.32 Hollow heart; large, angular, tan to brown cavities inside affected tuber.



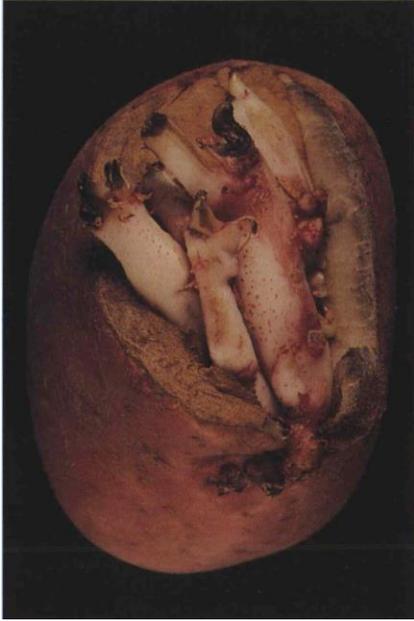
16.34a Genetic abnormality; pink color in center of tuber of white- fleshed cultivar.



16.34b Herbicide injury; fiddlehead distortion caused by picloram.



16.34c Herbicide injury; tuber malformation from amitrole residue in soil.



16.34d Internal sprouting; from storage above 16°C or from sprout inhibitor.



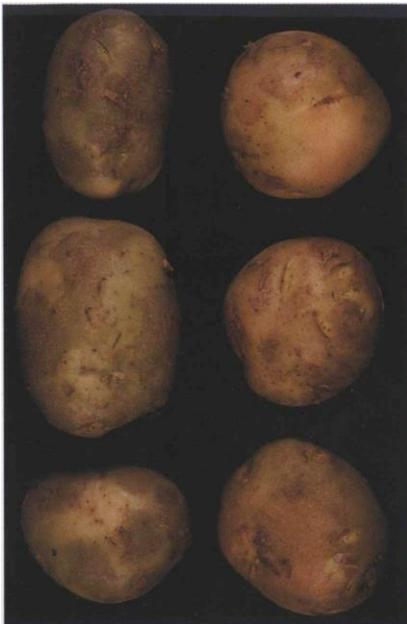
16.34e Leaf flecking; induced by highly acidic soil (left), healthy leaf (right).



16.34f Manganese deficiency; chlorotic foliar symptoms.



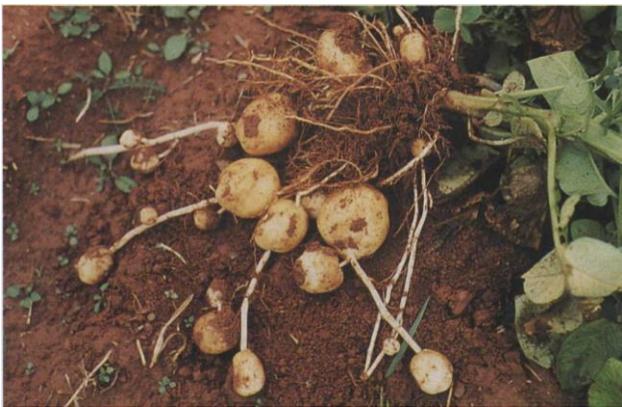
16.34g Secondary tubers; new tubers on seed-piece sprouts.



16.34h Tuber greening; chlorophyll and toxic alkaloids from exposure to light (left).



16.34i Sprouting; stolons from young tubers; induced by high soil temperatures.



16.34j Secondary tubers; new tubers on sprouts from mother tubers.



16.34k Stem-end browning; brownish streaks at stem end of affected tubers.



16.34m Enlarged lenticels; tuber symptoms, caused by wet soil conditions.



16.34n Cold injury; results in necrotic areas in tuber flesh.



16.35 Northern root-knot nematode; penetration of lenticels results in scab-like lesions.



16.36 Golden nematode; white or golden-yellow cysts on potato roots.



16.37 Potato-rot nematode; symptoms on tubers inoculated with U.S. isolates; not found in Canada since the 1960s.



16.38 Root-lesion nematode; yield in plots having 0 (left) to about 18000 nematodes per kg (8100/lb) of soil.



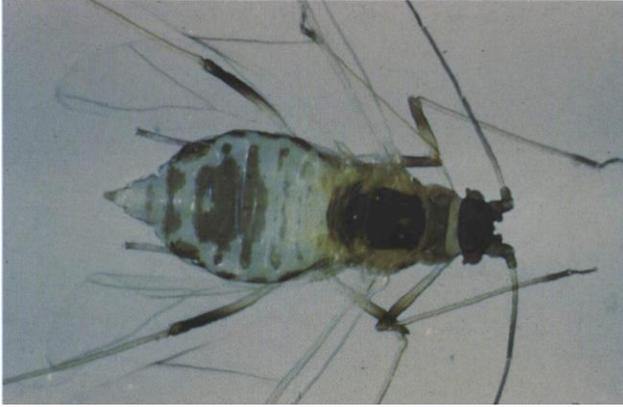
16.40a Buckthorn aphid; wingless adult and nymphs.



16.40b Buckthorn aphid; winged adult; length 1.2-2.0 mm.



16.41a Green peach aphid; wingless adults and a nymph.



16.41b Green peach aphid; winged adult; length 1.2-2.5 mm.



16.42a Potato aphid; aphids on potato leaf; color varies from yellow-green to pink.



16.42b Potato aphid; wingless adult; length 1.7-3.6 mm.



16.42c Potato aphid; winged adult; largest of the potato-colonizing aphids in Canada.



16.43 Foxglove aphid; nymph.



16.44a Colorado potato beetle; adults mating on foliage; length \pm 10 mm.



16.44b Colorado potato beetle; eggs on underside of leaf.



16.44c Colorado potato beetle; larvae, and severe defoliation.



16.44d Colorado potato beetle; larva showing distinctive markings.



16.45a Potato flea beetle; leaflets scarred by adult feeding.



16.45b Potato flea beetle; leaf damage from adult feeding, resulting in shot-hole appearance.



16.45c Potato flea beetle; adult; length ± 1.7 mm.



16.46a Potato leafhopper; hopperburn symptom, caused by feeding.



16.46b Potato leafhopper; adult; length 3-4 mm.



16.47a Potato stem borer; female moths laying eggs; wingspan \pm 42 mm.



16.47b Potato stem borer; eggs and newly hatched larva.



16.48a Tuber flea beetle; tuber damage from larval feeding.



16.48b Tuber flea beetle; partially peeled tuber showing damage to flesh.



16.48c Tuber flea beetle; adults; length 1.5-2.0 mm.



16.49a White grub; damage to potato.



16.49b White grub; larva, adult June beetle, and damage from larval feeding.



16.49c White grub; adult June beetles; length \pm 20 mm.



16.49d White grub; eggs and newly hatched larvae.



16.49e White grub; mature larva; length ± 30 mm.



16.50 Wireworm; larvae and severe injury to a tuber.