

# Guide to head diseases of wheat and barley in Montana

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## Fusarium head blight (scab) of wheat and barley (*Fusarium* spp.)

**Symptoms:** Partial bleaching of the head; brown stems on very susceptible varieties; if moist, pink/orange fungal mycelia

**Risk Factors:** Continuous wheat or barley production, moist conditions at flowering, previous history of scab

**Management:** Crop rotation, cut irrigation 10 days before flowering and through the flowering period, resistant varieties, fungicides applied at or before flowering



## Common bunt (stinking smut, covered smut) of wheat (*Tilletia tritici* or *T. laevis*)

**Symptoms:** Grain kernels replaced with brown masses of spores known as smut balls; fishy smell

**Risk Factors:** Contaminated seed, often from previous crop

**Management:** Resistant cultivars, fungicide seed treatment, new seed source



## Dwarf bunt (TCK) of winter wheat (*Tilletia controversa* Kuhn)

**Symptoms:** Grain kernels replaced with brown masses of spores known as smut balls; fishy smell; plants and heads are stunted/dwarfed

**Risk Factors:** Contaminated seed, often from previous crop

**Management:** Resistant cultivars, systemic fungicide seed treatment, new seed source



## Loose smut of wheat and barley (*Ustilago tritici*)

**Symptoms:** Grain kernels replaced with green-brown masses of spores covered by a thin membrane; spores disperse within days of head emergence

**Risk Factors:** Contaminated seed, often from previous crop

**Management:** Resistant cultivars, systemic fungicide seed treatment, new seed source



### Ergot of wheat and barley (*Claviceps purpurea*)

**Symptoms:** Grain kernels replaced with solid purple-black mass of fungal hyphae called a sclerotia; if wet after flowering honeydew (sticky mass of fungal conidia) can be observed on infected heads

**Risk Factors:** Contaminated seed, often from previous crop

**Management:** Crop rotation to non-grass crop; tillage to bury sclerotia; clean seed

**Caution:** Ergot is toxic to humans and animals (ergotism)

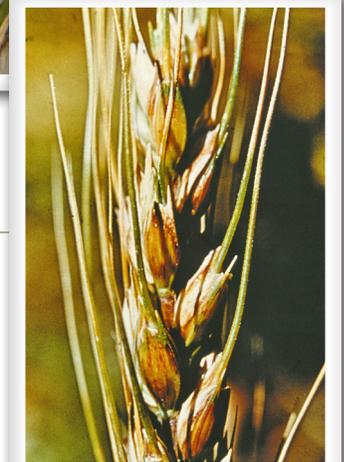


### Black chaff of wheat and barley (*Xanthomas* spp.)

**Symptoms:** Red/brown/black streaks on glumes; watersoaked spots on leaves and/or glumes

**Risk Factors:** Contaminated seed, often from previous crops; can also be on residue or soilborne

**Management:** Crop rotation to non-grass crop, tillage to bury residue, clean seed



### Melanism (abiotic)

**Symptoms:** Red/brown/black streaks on glumes; no spots on leaves, although stems or nodes may also be dark

**Risk Factors:** Stress (particularly heat stress), variety (genetics)

**Management:** Variety selection



### Black point (kernel smudge) (various fungi)

**Symptoms:** Glumes, other tissues covered with black, sooty-appearing mold; diseased kernels are discolored, weathered, black at seed ends, embryos often shriveled and brown to black in color

**Risk Factors:** Warm, moist weather during maturation, delayed harvest

**Management:** None practical, avoid moisture during crop storage

### Sooty mold (primarily *Alternaria*, but other fungi can be involved)

**Symptoms:** Glumes, other tissues covered with black, sooty-appearing mold; diseased kernels are discolored, weathered, black at seed ends, embryos often shriveled and brown to black in color

**Risk Factors:** Warm, moist weather during maturation, delayed harvest

**Management:** None practical, avoid moisture during crop storage

