Dirty Little Diagnostic Cheat Sheet

(No warranty, written or implied)

http://plantsciences.montana.edu/department/plp/pathology.html
Break it down into parts affected:

- **FLORAL**
  - Smuts and bunts
  - Scab
  - Ergot
  - Black chaff

- **FOLIAR**
  - Leaf spots
  - Rusts

- **SYSTEMIC**
  - Fungal
  - Viral
  - Phytoplasmal

- **ROOT**
  - Seedling
  - Root and crown
Floral Diseases

Premature Bleached Florets Within Head

Entire Heads Bleach (look to root and crown diseases)

Florets Green No Premature Bleaching

Black Discoloration of Florets no spores visible (Black Chaff)

Dark spores present (Glume Blotch)

Pink to no discoloration of florets (Fusarium Head Scab)

Grain replaced with large dark tan to black bodies (Ergot)

Loose black spores present, Swollen Grain may be present (Bunt Ball) (Smuts and Bunts)

Check Wet some grain in bag. Pink fungal growth should occur within 2 or 3 days
Foliar

- Bright orange spores (Stripe Rust) (Cool Temperatures)
- Brick red spores in discrete pustules (Leaf Rust) (Moderate Temperatures)
- Burnt red spores. Medium to larger pustules often on stems (Stem Rust) (Warm Temperatures)
- Copious orange to brick red spores. Late season, black spores appear.
- White powdery lesions, sometimes with black specs
- Powdery Mildew
- Maroon Discoloration Darker pin head spots in center of lesions (Stagnospora or Septoria Leaf Spot)
- Tan or darker lesion with small to large halos
- Large yellow halos surrounding lesions Tan Spot
- Tan Spot
Systemic Disease (Confusing)

- Yellow necrotic streaks follow veins (winter wheat)
- Patch yellow lesions, general yellowing
- Early Purpling
- Cephalosporium Stripe
- Viruses (Wheat Streak Mosaic?)
- Yellows?...viruses...nutrients
Root, Crown and Seedling Diseases:

- Poor Stand
- Lower Stem Discoloration
- Poor Root System
  Poor Nutrition
  (limited stem discoloration)
- Seedling Diseases
- Root and Crown Diseases
- Root Diseases...
  Go to a Diagnostician
Identifying Seedling Diseases Outside A Laboratory Is Challenging

- **Seedling Diseases**
  - **Dry Soil,**
    - Blue, green or black fungal growth
    - on planted seeds
  - **Poor winter survival with good snow cover**
  - **Large bare patches,**
    - Purpling of surviving seedlings on the margin of patches
    - Spear tipping of roots
    - Heavy volunteer or weed populations prior to planting
  - **Cool wet spring**
    - Durum or irrigated cereal production
    - Soft brown rot of roots
  - **Dry Seed Decay**
  - **Fusarium Induced Winterkill**
    - Or
    - **Typhula Snow Mold**
      - (Snow mold affected leaves will have small brown dots)
  - **Rhizoctonia Bare Patch**
  - **Pythium Damping Off**
Stem Discoloration

Root and Crown Disease

- Discoloration extends from crown well into the second internode and above
  - Tillers may prematurely abort or be stunted
  - Shiny dark brown...later turning black
    - Brown runner hyphae on roots
      (Take All)

- Discoloration is a chocolate or lighter brown
  - (Fusarium Crown Rot)

- Subcrown internode...chocolate brown
  - (Common Root Rot)

- Localized lesions appear on stem that don’t extend from crown
  - Lesions have lighter interiors...sometimes with a darkening center
    - (Eyespot)

- Lesions sometimes have light interior but often do not
  - (Sharp Eyespot)
Root Diseases (TOL)

Root Diseases
(Plants look unthrifty for no apparent reason. Often mistakenly blamed on low precip. or poor nutrition)

Go to Diagnostician:
May involve any crown or seedling pathogens. May also involve root pathogens such as lesion nematodes or cereal cyst nematodes.