

# Predominant Diseases in Nebraska Sunflower Production - 2010

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# Objectives

- Conduct a comprehensive disease survey of Nebraska production fields, including all growing regions of the state (primarily western half – Panhandle)
- Surveying at least twice during the season to correspond with crop growth stages
- Identify diseases and establish their relationships with crop growth stage and distribution in both irrigated and dry-land fields.

# Methodology

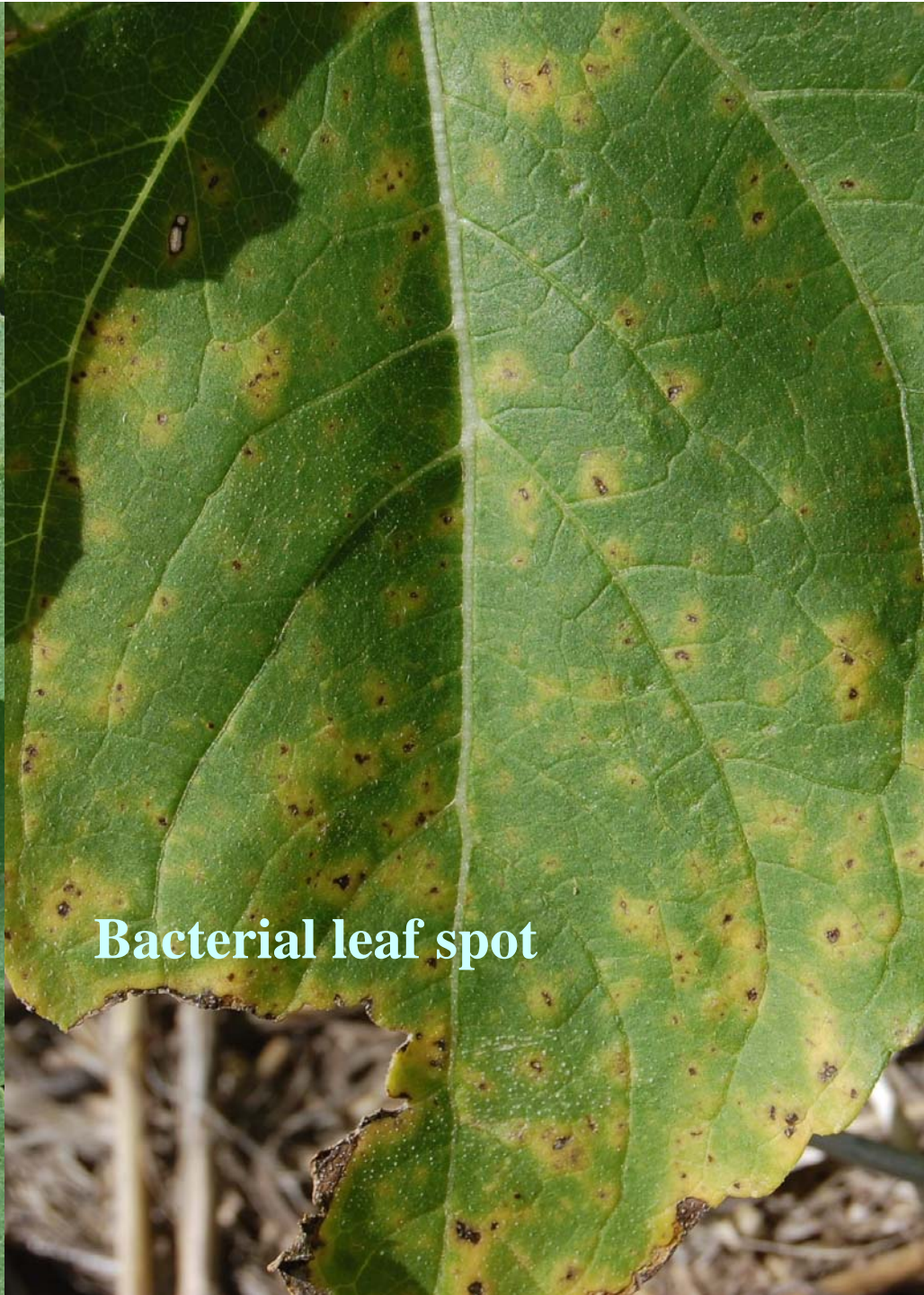
- Consisted of 30 fields
  - 20 irrigated/10 dry-land
  - Each was surveyed at least once
  - 25 were surveyed twice
- Walked fields in a “W” or “Z” pattern
- Spent approximately 30-45 minutes per field, per visit

# Survey Results - 2010

- Found routine, expected diseases –
  - Rust, white mold, and Rhizopus head rot
- High incidence of DM, BLS, and various stalk rots
- Additionally found several new and/or unknown diseases, including stem rot, scorch, powdery mildew, and multiple virus diseases



**Septoria leaf spot**



**Bacterial leaf spot**



**Bacterial Leafspot**



**Bacterial Leaf Spot**



Unknown (scorch)





# Sunflower Rust

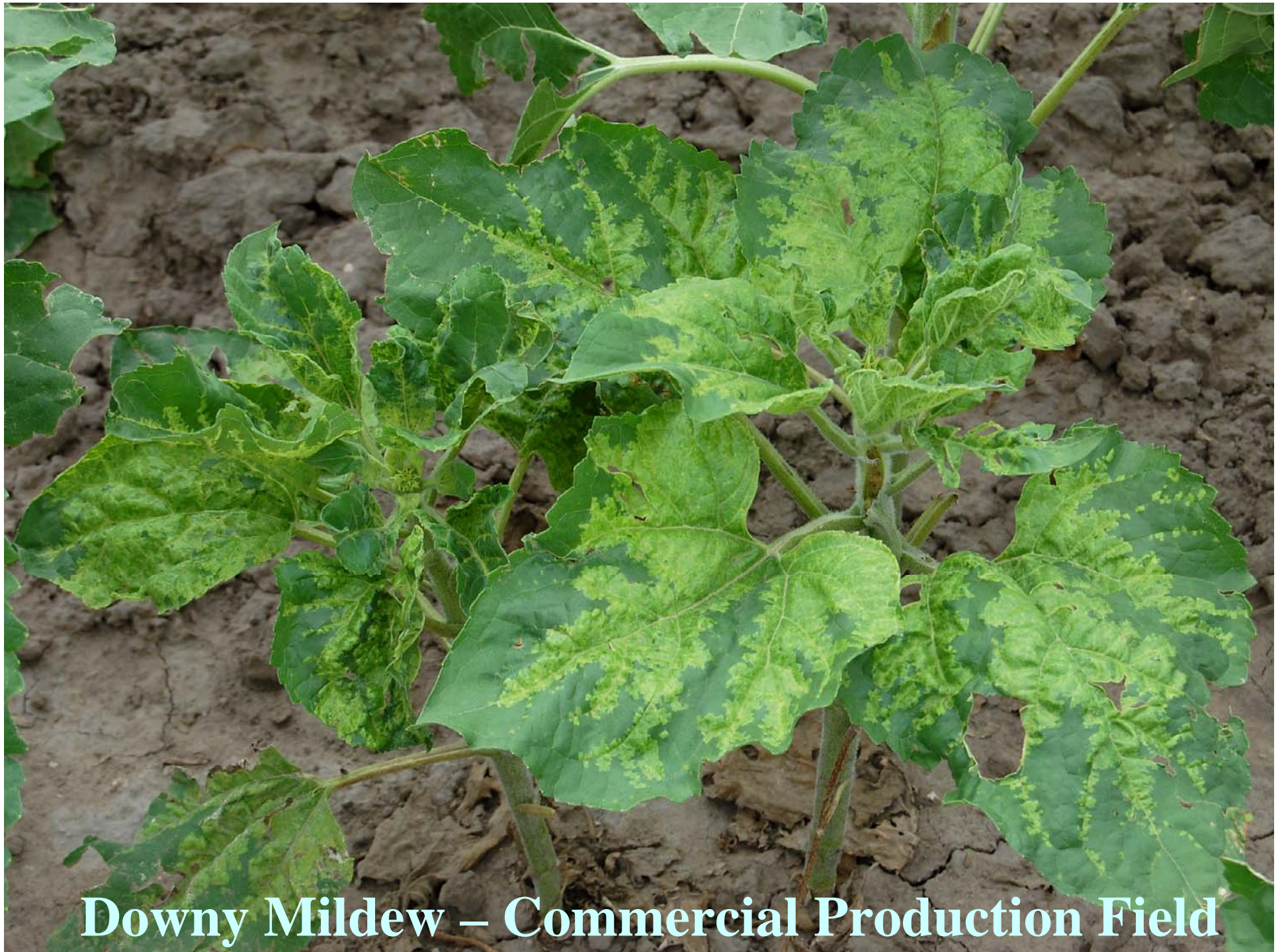


# Sclerotinia Head Rot





**Downy Mildew - Wilds**



**Downy Mildew – Commercial Production Field**

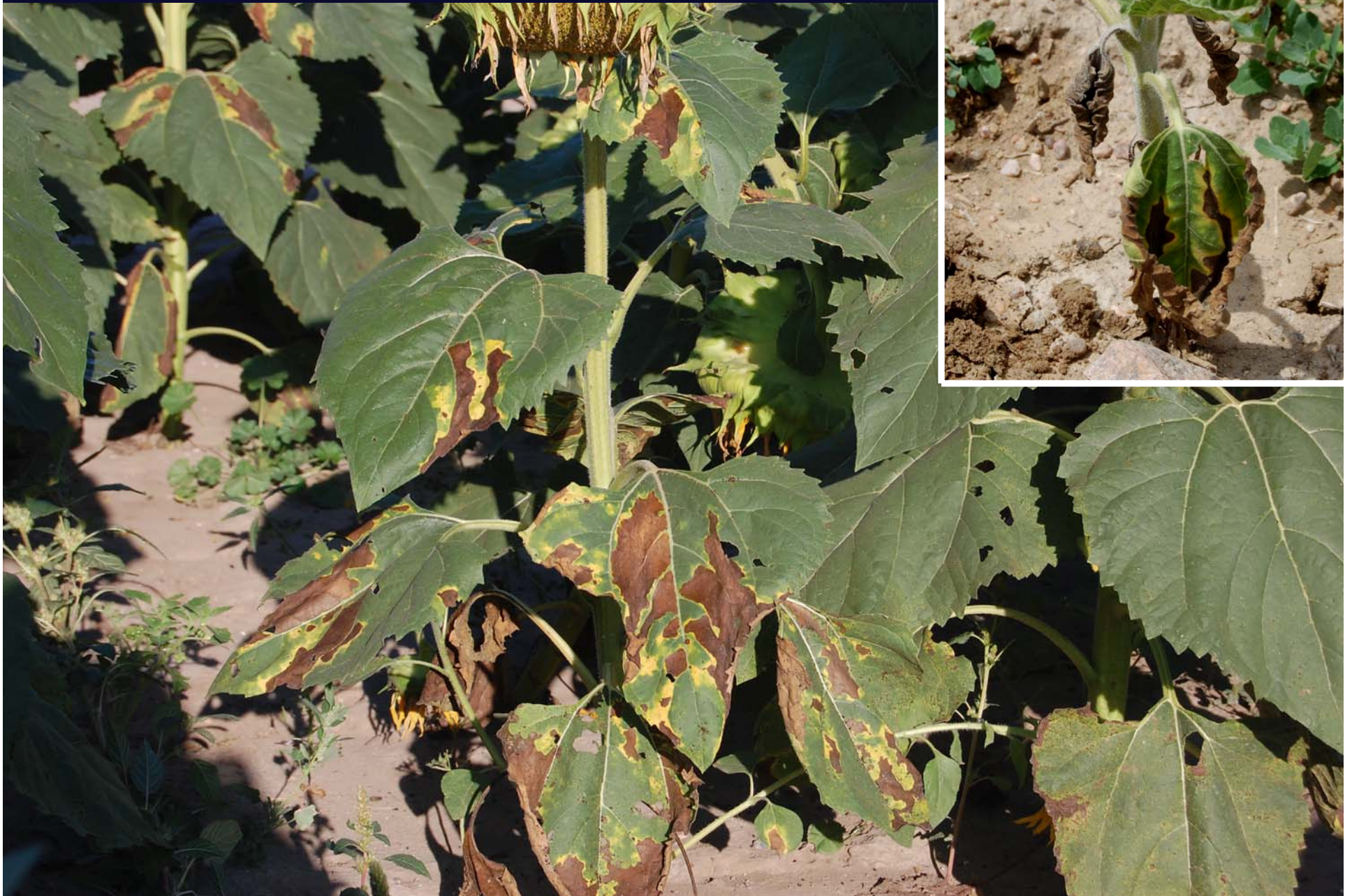


**Downy mildew - Kochia**



**White rust - Pigweed**

# Verticillium Wilt



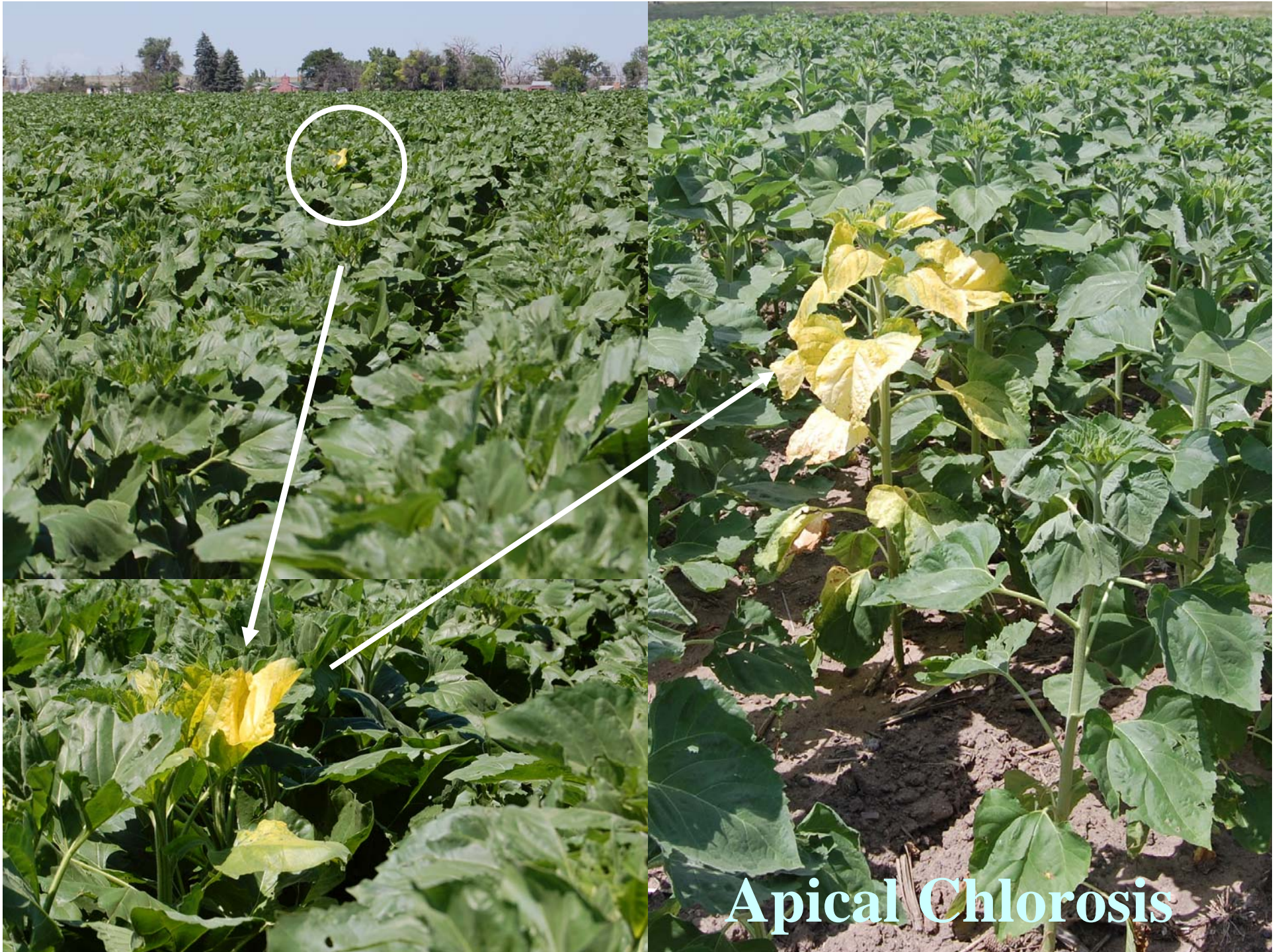


June 21, 2010



July 8, 2010





**Apical Chlorosis**

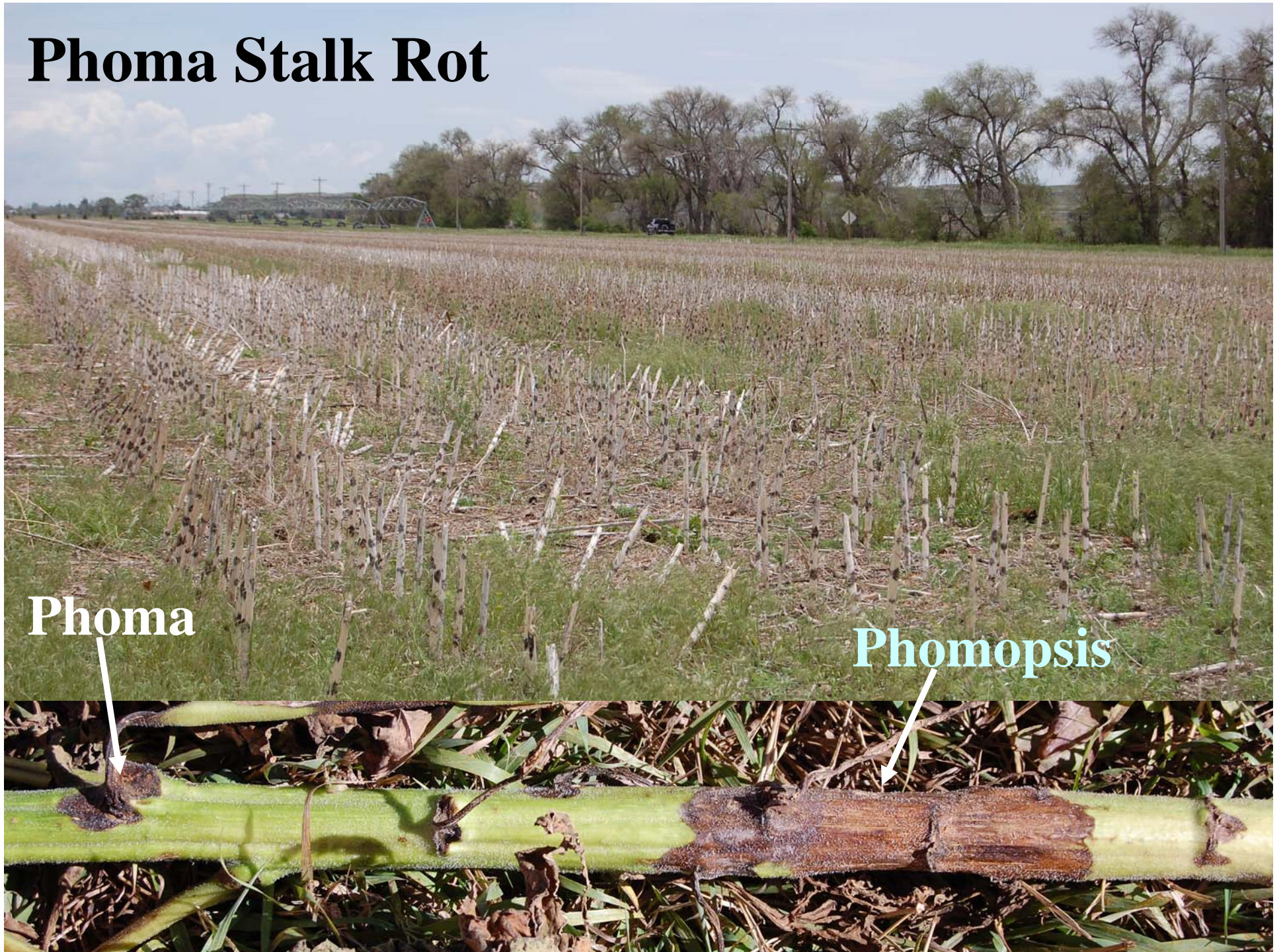
# Apical Chlorosis?



# Downy Mildew and Apical Chlorosis



# Phoma Stalk Rot



# Stem Rot





A photograph of a sunflower field showing signs of powdery mildew. The sunflower heads are dark brown and appear to be past their peak. The leaves are heavily damaged, with many showing yellowing, browning, and significant holes. The overall appearance is one of a stressed and declining crop.

**Powdery Mildew**

**September 14, 2010**

September 14, 2010  
Powdery Mildew





# Hemingford, NE Virus Field

- Massive weed problem
- Rust (all stages)
- White mold/Sclerotinia head rot
- Phoma/Phomopsis/Erwinia stalk rots
- Rhizopus head rot
- Downy mildew (SF and various weeds)
- Verticillium wilt
- **Unknown virus problem**

# Summary of Results – Percentage of Surveyed Commercial Fields Affected

- Rust – 89%
- Downy Mildew – 61%
- Verticillium – 28%
- Bacterial LS – 71%
- Apical chlorosis – 21%
- Stalk rots – 68%
  - Phoma, Phomopsis, Erwinia
- WM/Sclerot. HR – 14%
- Stem rot – 10%
- Heat canker/soil problem – 14%
- Powdery mildew – 3%
- Unknown viruses ? – 14%
- Unknown – 32%

# Summary of Results – Diseases Identified From Wilds/Volunteers

- During rust survey for early spore stages and NSA-funded study surveying for downy mildew/Verticillium/Charcoal rot:
  - Early rust spore stages – 26 locations
  - Downy mildew – 10 locations
  - Rust (uredial stage) – 10 locations
  - Septoria – 9 locations
  - Apical chlorosis – 2 locations
  - Bacterial leaf spot – 1 location

# Conclusions

- Rust – most widespread and common disease
- Stalk rots – found in most fields by September
- Septoria – found exclusively in wilds
- DM – much higher incidence and Verticillium lower incidence in 2010 compared with 2009
- Stem rot and AC found in both years
- Virus and powdery mildew new in 2010

# Greetings from Nebraska – Questions?



**Thank you! Questions?**

