

# Incidence and Distribution of Predominant Diseases found in Nebraska Sunflower Production in 2009

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# Sunflower Production in Nebraska

- Sunflower production in has increased over the past 10 years - oil and confectionary seed industries establishing local markets
- Planted acres in 2005 was 100,000 acres - high demand of the NuSun mid-oleic oils
- Since 2005 - averages between 50,000 and 60,000 acres, due to the high prices realized for corn and dry beans.

# Sunflower Production in Nebraska

- Sunflower is adapted well for this region and can be successfully cultivated in both dry-land and irrigated areas
- It fits well in many production systems as an alternative crop in dry-land wheat/fallow rotations.
- Sunflowers are also being increasingly used to lengthen the traditional irrigated rotations of dry beans, corn and sugar beets.

# Survey 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

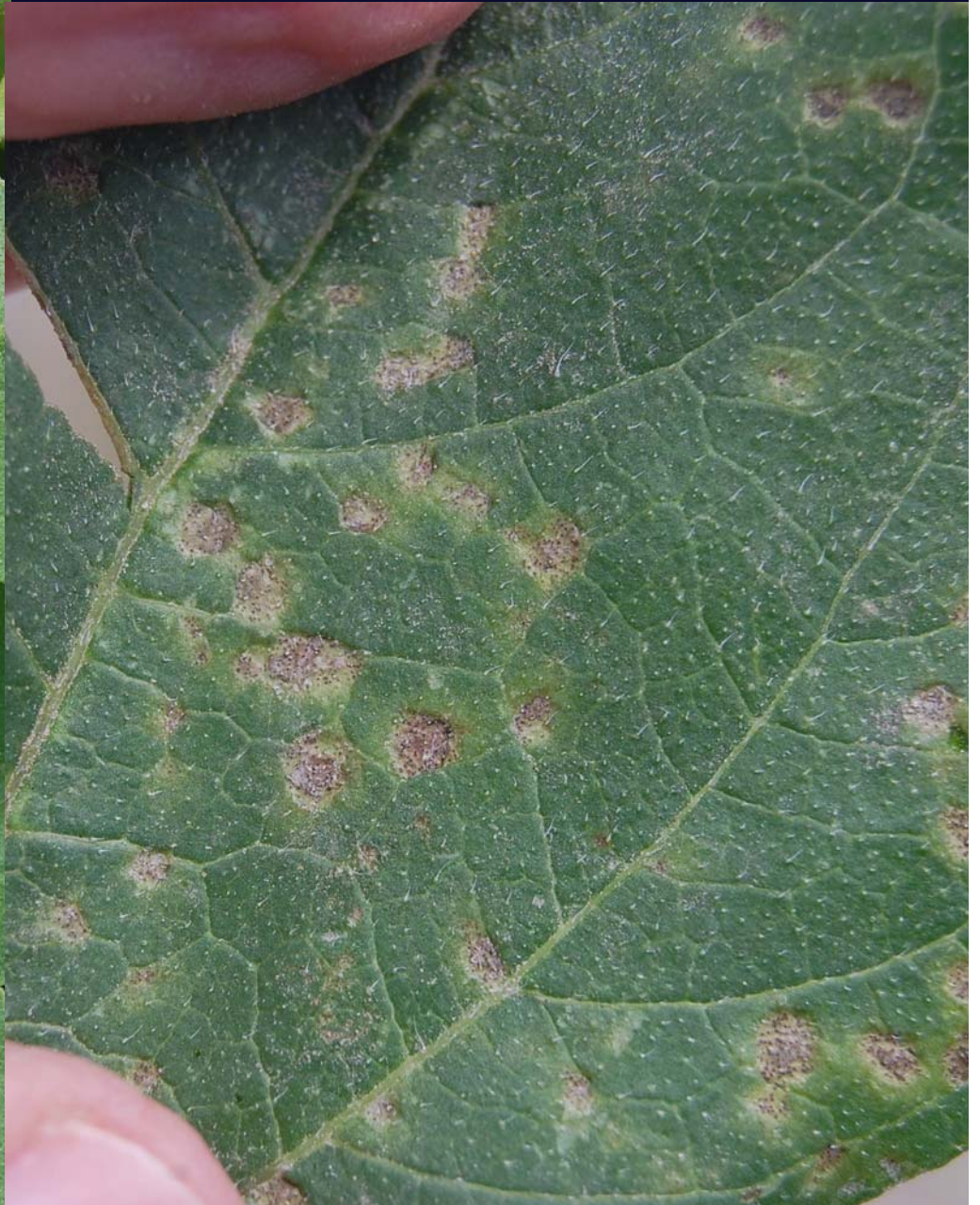
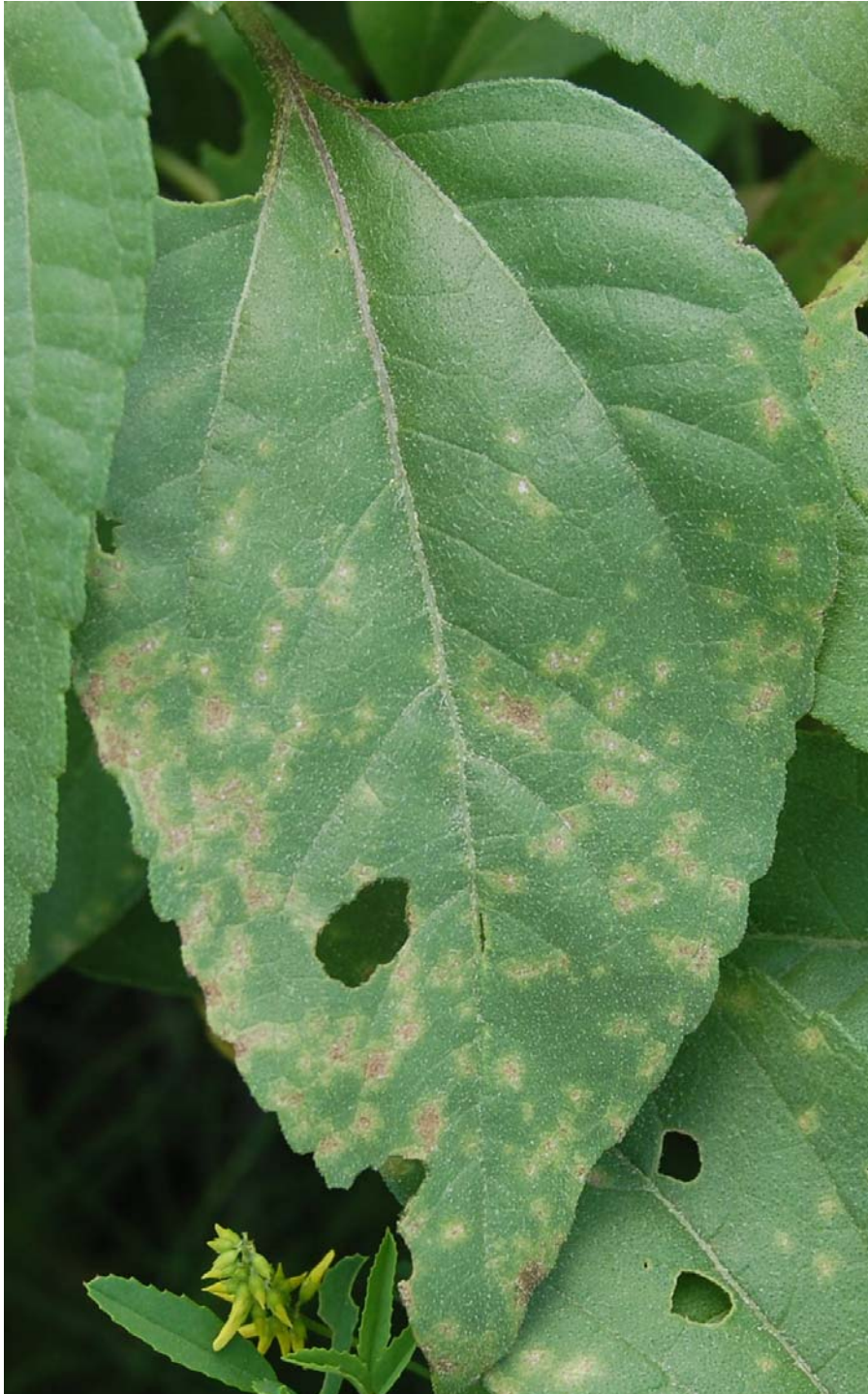
- Consisted of 30 fields
  - 20 irrigated/10 dry-land
  - Each was surveyed at least once
  - 25 was surveyed twice
- Walked fields in a “W” or “Z” pattern
- Spent approximately 30-45 minutes per field, per visit

# Survey Results

Found common expected diseases –

- Rust
- White mold
- Rhizopus head rot
- Additionally found a number of new and/or unknown diseases, including apical chlorosis, Verticillium wilt, downy mildew, several leaf spots, and several other root and stem/stalk rots

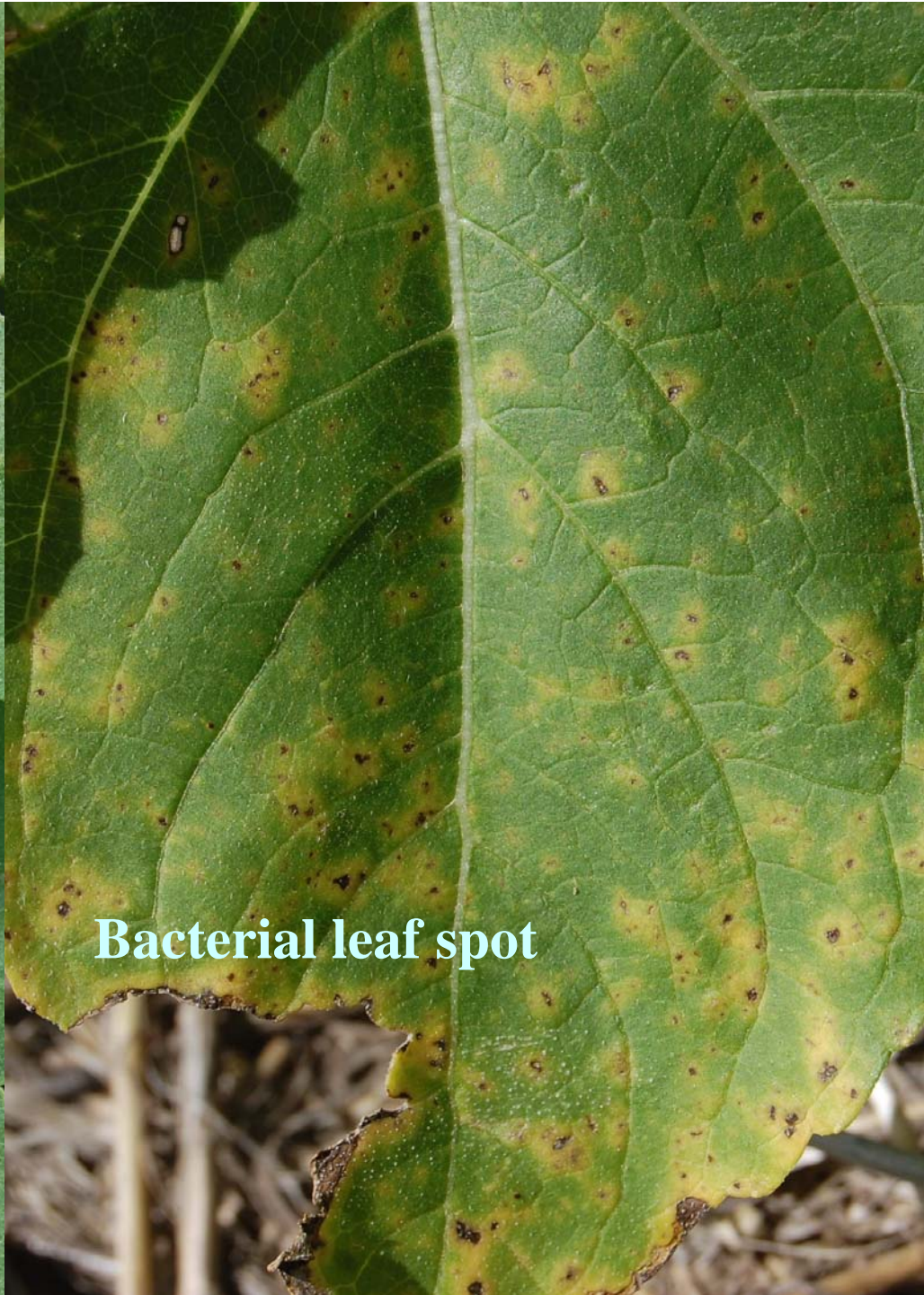
# Septoria Leaf Spot







**Septoria leaf spot**



**Bacterial leaf spot**



# Sunflower Rust





# White Mold









# Downy Mildew – Kimball Co







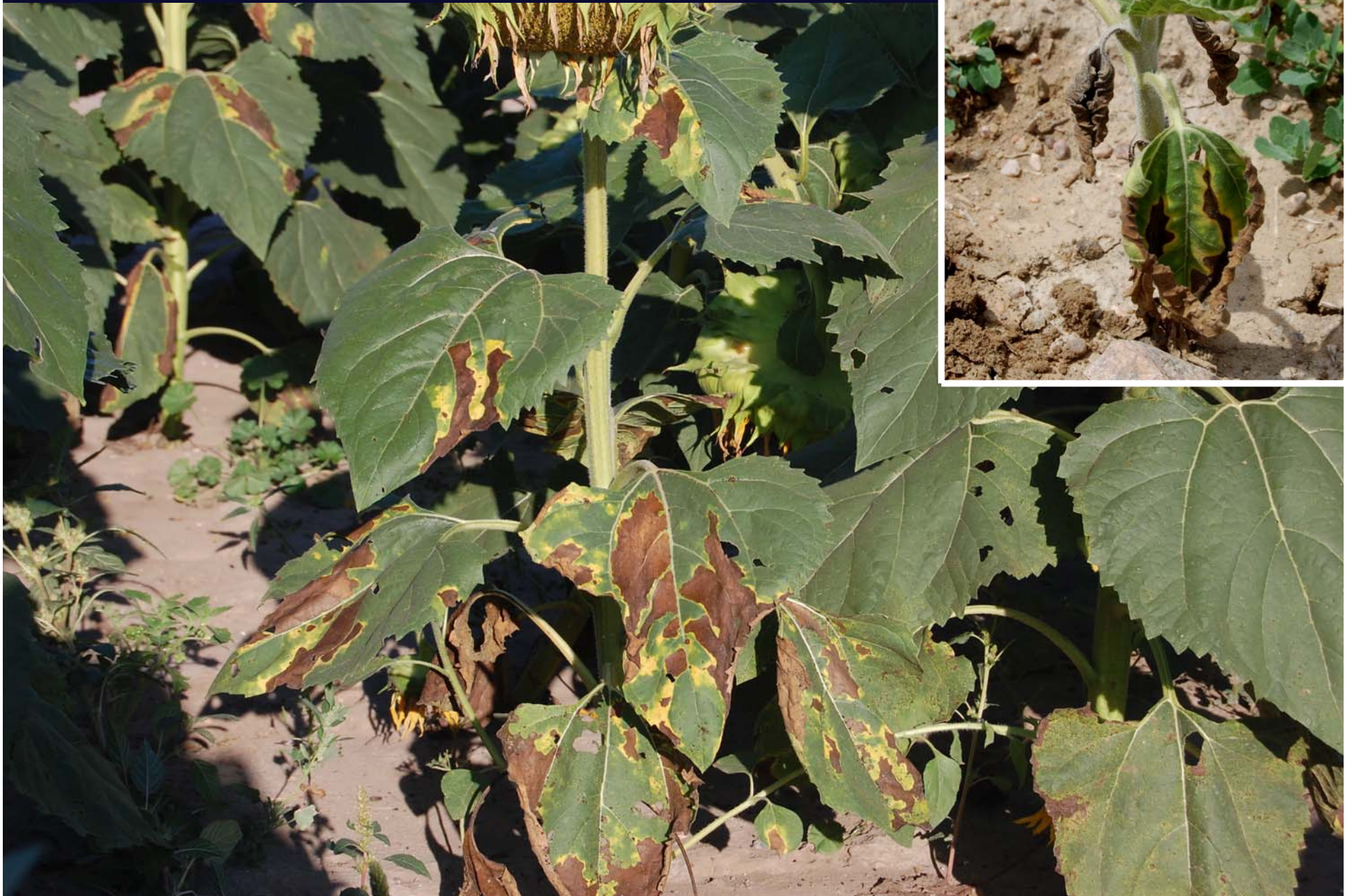
**Downy Mildew**







# Verticillium Wilt

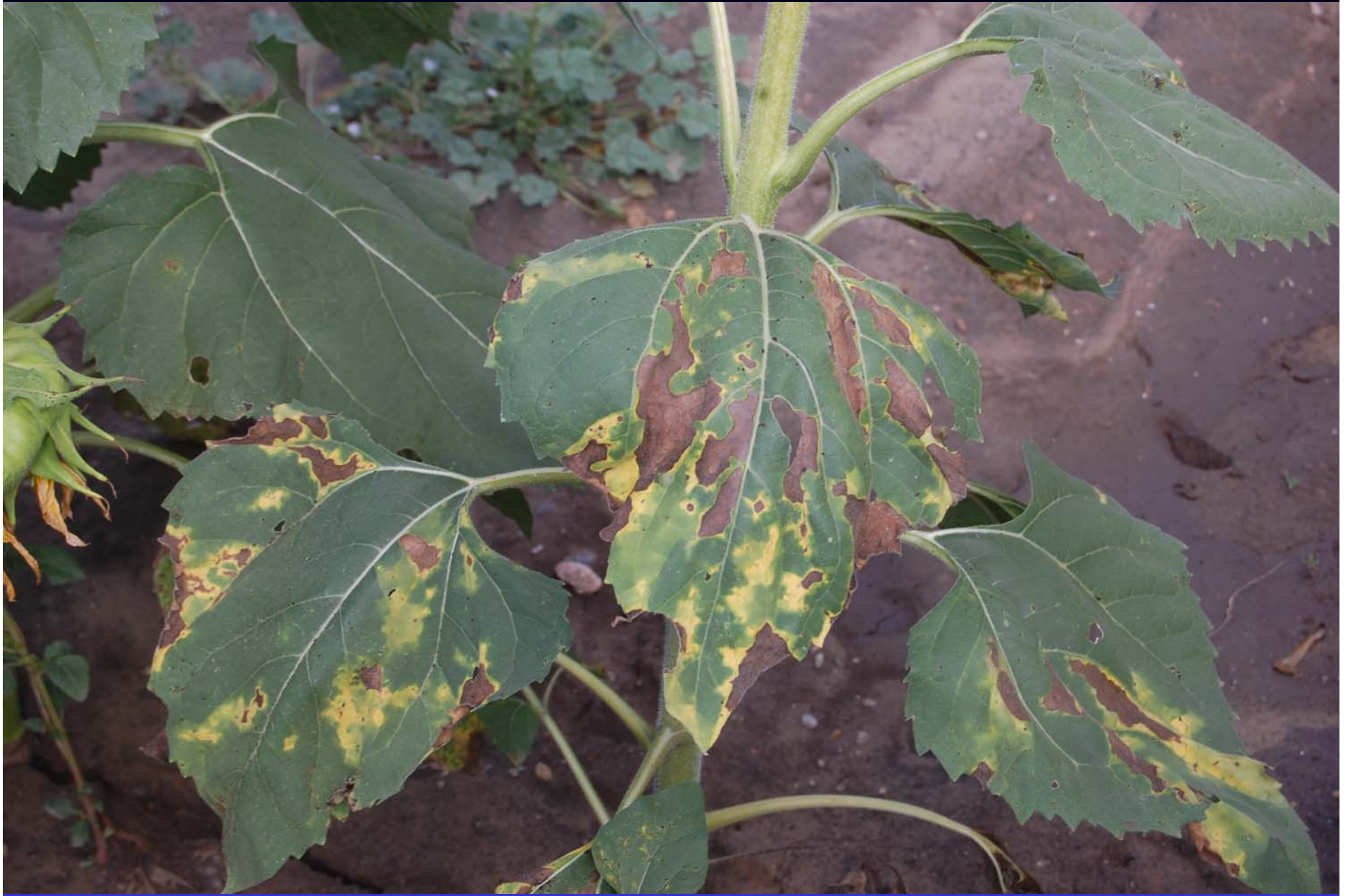




# Verticillium Wilt – Cockleburr?





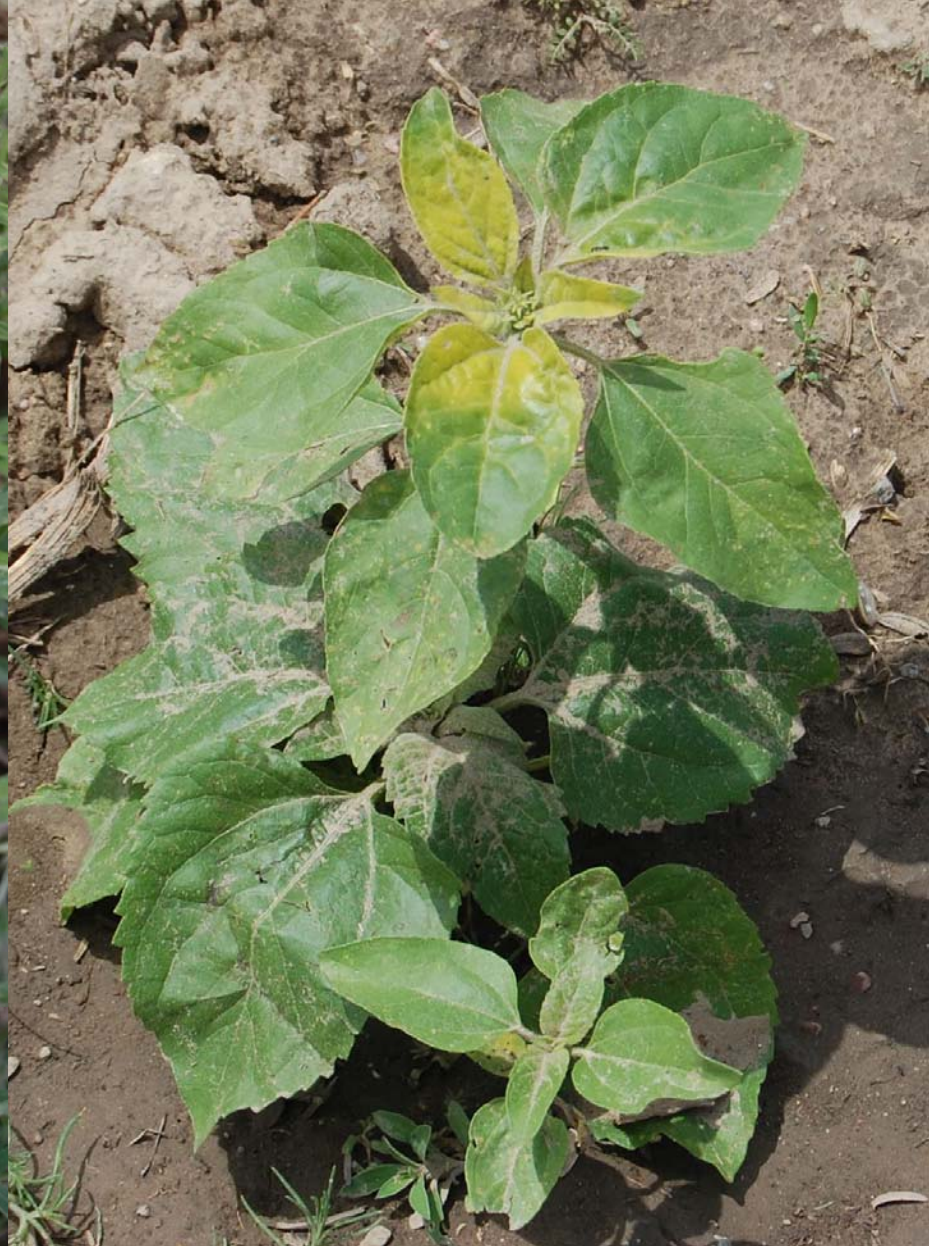








# Apical Chlorosis?



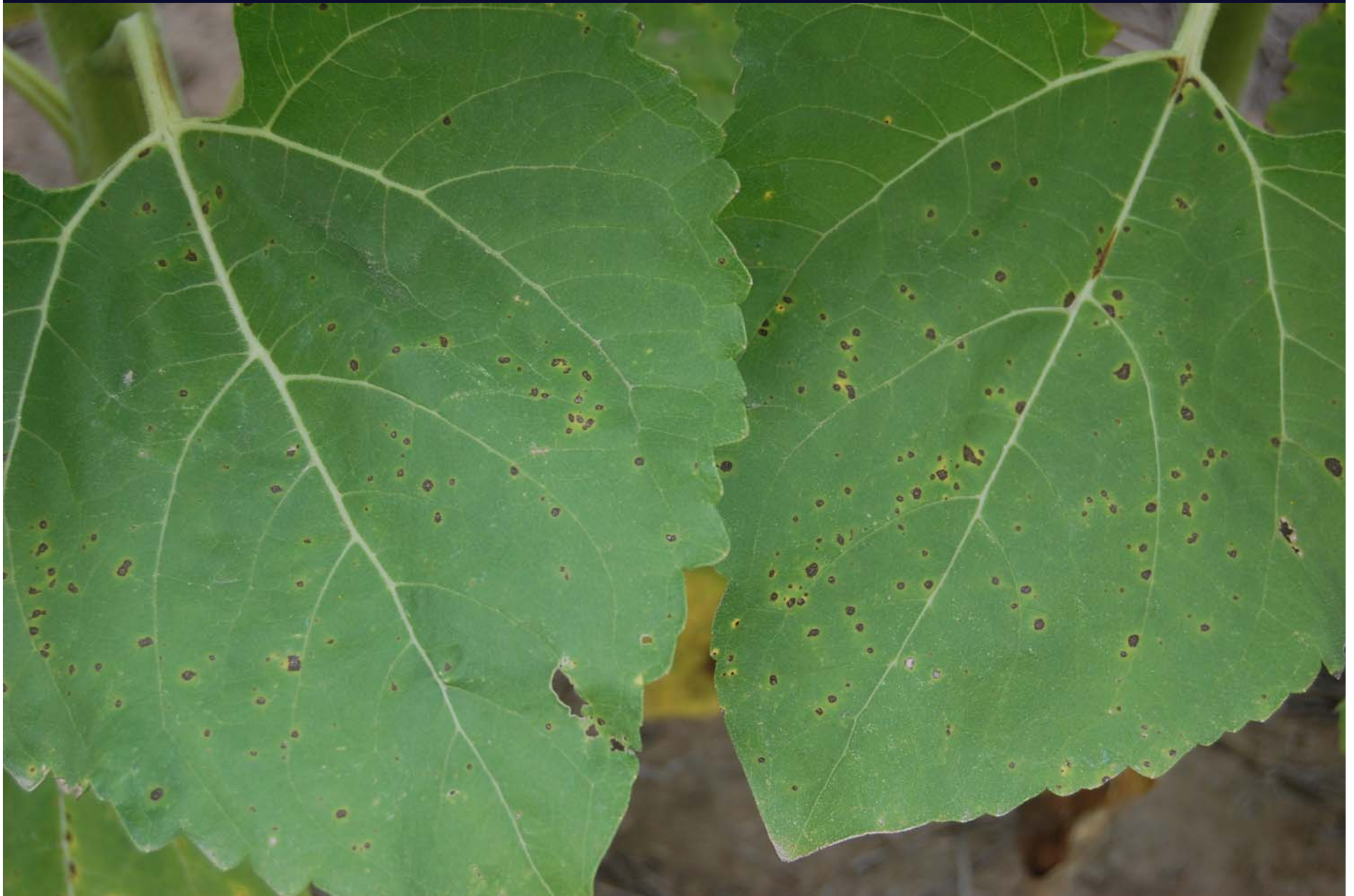


# Apical Chlorosis

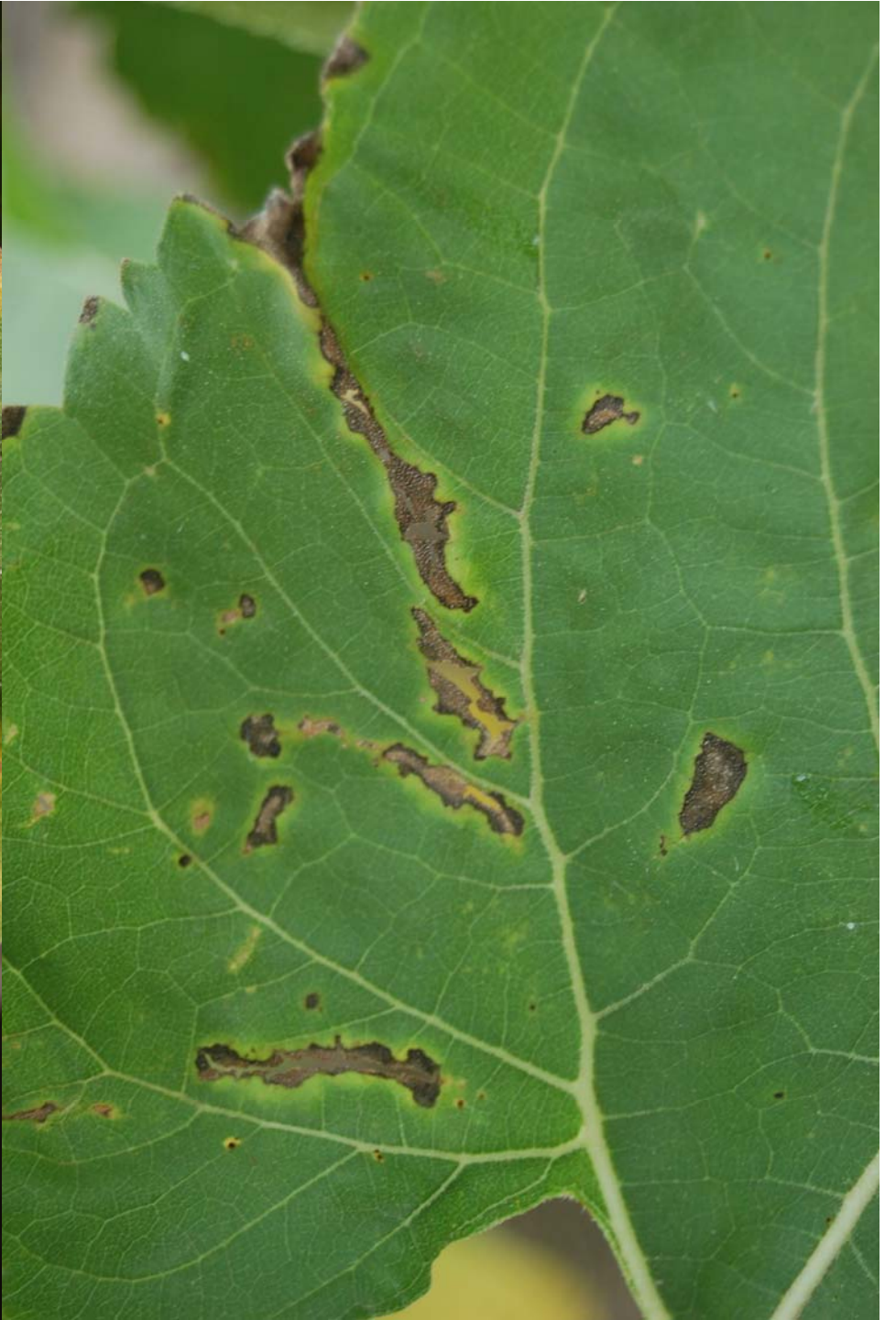




# Bacterial Leafspot









# Unknown Leaf Spot







**Rhizoctonia**



# Pythium Root Rot













# Rhizopus Head Rot









# Phomopsis?





























# Early Soil Compaction









# Early Soil Compaction









# Compaction - Late





# Stem rot









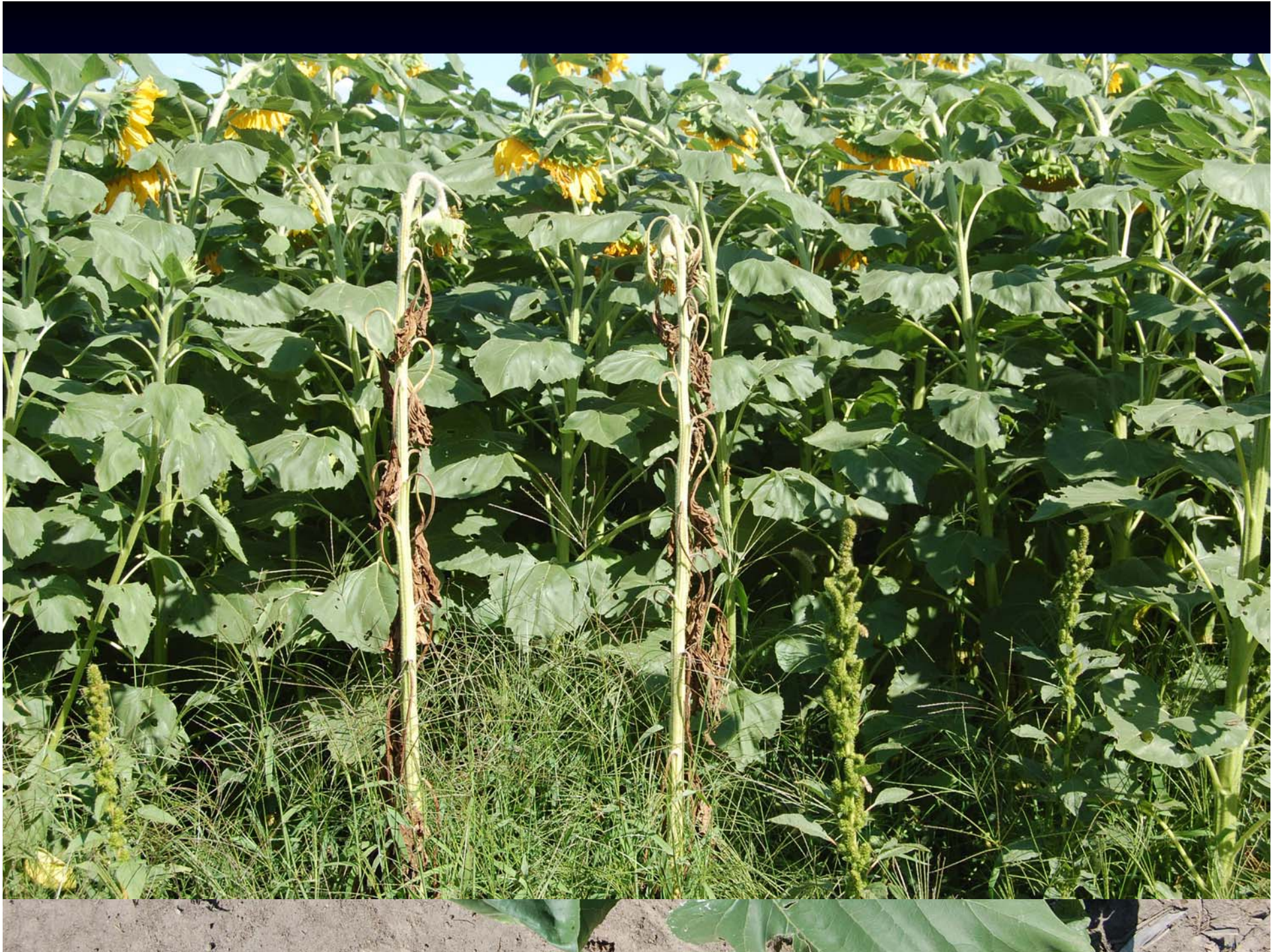




# Summary of Results – Percentage of Surveyed Fields Affected

- Rust – 85%
- Verticillium – 60%
- Verticillium –
  - Cockleburr – 10%
- Bacterial LS – 50%
- Stalk rots – 38%
  - Phoma, Phomopsis, Erwinia
- Septoria LS – 20%
- Downy Mildew – 15%
- Unknown LS – 15%
- Heat canker/compaction/  
soil problem – 30%
- White mold – 10%
- Apical chlorosis – 8%
- Stem rot – 8%









**Downy Mildew – Kimball Co**





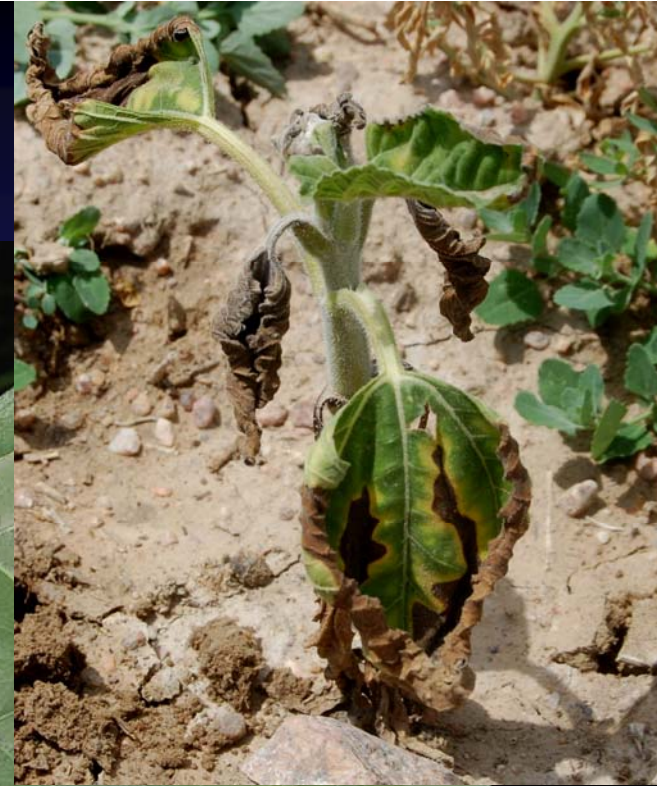




Bacterial stalk rot



# Verticillium Wilt of Sunflower





**Thank you! Questions?**

