IPM: Cereal Rust Problems – Resistance, Susceptibility, and Management

Hay Days Workshop
March 1, 2019, Morgan Hill at Tilton Ranch
Nick Clark – Agronomy & Nutrient Mgmt. Farm Advisor, Fresno, Kings, & Tulare Counties
(559) 852-2788
neclark@ucdavis.edu
680 N. Campus Dr., Ste. A; Hanford, CA 93230
Presentation Outline

• Plant Disease
• Rust pathogens, disease cycle
• Rust management strategies
• Variety selection tool
• Conclusion
Plant Disease

- Diminished capacity to function normally;
  - **Biotic** and abiotic causes
Rust Diseases

- Caused by pathogens
  - *Puccinia* spp.
- Obligate parasites
- Host species specific
- Stem, crown, leaf, stripe
  - All different pathogens
- Alternate hosts usually not important

USDA ARS
Favorable Environments

- **Leaf Rusts**
  - 60-86 °F
  - Frequent dew or high RH%

- **Stem Rusts**
  - 60-86 °F
  - Frequent dew or high RH%

- **Strip Rust**
  - 50-64 °F
  - Frequent dew or high RH%
Management of Rust

- Establishing/maintaining healthy plants
- Planting of resistant varieties
- Planting blends of species
- Disease favorable environment forecasting
- Well-timed application of fungicides
  - Strobularins or triazoles to protect the flag leaf

Consult a PCA and always follow all pesticide label instructions.

Images: OSU Ext.

UC IPM Small Grains Webpage
Barley resistance table
Oat resistance table
Wheat resistance table
UC Small Grain Variety Selection Tool

Small Grain Selection Web Tool
Choose a small grain variety based on UC trial data

Explore simple summaries of multi-year small grain variety trials in California

Select Crop Type: (Start Here)

Common Wheat
Durum Wheat
Triticale
Barley

Select Planting
Choose a small grain variety based on UC trial data

Explore simple summaries of multi-year small grain variety trials in California

Select Crop Type: (Start Here)
Common Wheat

Select Planting Season:
- Fall
- Spring
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<th>Years</th>
<th>Name</th>
<th>UC Number</th>
<th>3-yr Yield (lb/acre)</th>
<th>3-yr St.Err. Yield (lb/acre)</th>
<th>3-yr Yield Rank</th>
<th>St.Err. Diff. from overall mean X</th>
<th>P. Value</th>
<th>2018 Yield (lb/acre)</th>
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Select Region:
- [ ] Rainfed Trials
- [ ] Commercial Varieties Only

Download CSV
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Summary

• Plant disease requires the convergence in the same place at the same time of a susceptible host, enough of a virulent pathogen, and the favorable environmental conditions for disease development (infection, growth, dispersion).

• Small grains rust diseases can largely be controlled by selection of resistance varieties and species coupled with well-timed fungicide applications in high disease pressure years or for susceptible varieties to protect the flag leaf.

• A dynamic, interactive web-tool is available to assist in the selection of small grain varieties for irrigated and dryland systems based on a number of agronomic and disease resistance factors.
Thank You

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