Rating Systems Used for Fungicide Assessments

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Importance of Sound Rating System

- Some 40,000 + compounds screened every year.
- 30 to 50 compounds promoted to early stage development (stage 1F/2) yearly.
- Only 1 to 3 compounds can be selected/promoted for commercialization
- Must select the best of the best!
Most Important Factor – Start Off Right

- Positive ID of Pathogen
  Many pathogens can look similar, ie. downy mildew and ASR on soybean
- Minimize the # of diseases present in a trial
  Accomplished through varietal resistances, pesticides, cultural practices, etc.
- One evaluator per trial. Multiple evaluators per trial adds to variability
Fungicide Label

- Crops
- Diseases
- Rates (lb/A, oz/A, pt/A, qt/A)
- Application directions
- IPM strategy
- Resistance management strategy
Criteria Required to Write a Label

- Diseases controlled/suppressed with active ingredient (a.i.)
- Rates needed to control each disease
- Timing of the application (preventative/curative)
- Spray interval timing if multiple application are used
- Tankmixture opportunities with other chemistry or adjuvants
- Rates of the tm ratios
- Compatibility of tm
- Residual disease control
- Rainfastness
Types of Fungicide Assessments

- Incidence – is a measure of disease based on individuals (plants, leaves, or any part of a plant)
- Assessments should be made in timely manner so progress curves can be incorporated.
Incidence Assessments

- Systemic effect
- A wilt
- Stem blight
- Soilborne pathogens
- Virus
- Foliar pathogens early in disease cycle
Peanut White Mold Assessment

Rating taken 4 weeks prior to harvest
Peanut White Mold Assessment

Rating taken 2 weeks prior to harvest
Peanut White Mold Assessment

Rating taken day of digging
Peanut White Mold Assessment

Combined of previous 3 ratings
Severity Assessments

- Category Systems – scale from 1 to 5;
  1 = 0 to 10% and 5 = >75%
- Horsfall – Barrett Scale
  12 classes or categories
- Standard Area Diagram – best method to assess severity because it is transferrable and standardized.
Diseases Associated w/ Severity Assessments

- Foliar Pathogens – Primarily used
  Downy Mildews
  Rusts
  Powdery Mildews
  Septoria spp

- Nematode Root Damage
  R.K. galling damage

- Virus
  Extent of systemic damage
STAGES OF FOLIAR DISEASES OF SOYBEANS

STAGES OF POD AND STEM DISEASES OF SOYBEANS
SOUTHERN CORN LEAF BLIGHT

Key No. 1.10

1 5 25 50
PERCENTAGE LEAF AREA COVERED
SEPRTORIA LEAF BLOTCH OF CEREALS (Leaf symptoms)

PERCENTAGE LEAF AREA COVERED
1 5 25 50

SEPRTORIA GLUME BLOTCH OF WHEAT

PERCENTAGE SPIKE AREA COVERED
10 25 50
Peanut Early Leafspot Severity Assessment

UTC
Fungicide 1
Fungicide 2
Fungicide 3
Fungicide 4
Peanut Early Leafspot Severity Assessment

% Severity 0 to 100%
Peanut Early Leafspot Severity Assessment

Florida 1 to 10 Scale
Peanut Early Leafspot Severity Assessment

AUDPC Value
Soybean Rust Severity Assessment

1st rating
Soybean Rust Severity Assessment

2nd rating
Soybean Rust Severity Assessment

3rd rating
Fungicide A @ 0.25 lb ai/A
Fungicide A 0.5 lb ai/A
Headline + Folicur
Other Parameters to Assess

- Leaf Defoliation
- Plant Height
- Root Mass
- Vigor
- Yield
- Kernal/Seed Wt.
% Soybean Defoliation

3rd rating
Conclusions

- Due to the cost of developing several experimental fungicides, assessment techniques must be utilized to separate treatments based on efficacy.
- Several techniques are available from incidence to several types of severity ratings.
- All are designed to find the “needle in the haystack”.