

# Multi-Environment Testing for Charcoal Rot Resistance: A Regional Approach

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Soybean Breeders Meeting

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# How We Got Started

- USB meeting
- Charcoal Rot an increasing problem
- Main control-irrigation
- No chemical controls
- Resistance-difficult to evaluate
  - Disease unpredictability
  - Symptoms similar to drought
  - No established screening methods

# Why a Regional Approach?

- Disease inconsistency
  - Environment
    - Rainfall
    - Temperature
    - Soils
  - Inoculum
- Inconsistencies between individual tests
  - Cultivars/lines
  - Evaluation methods

# Our Approach

- Cultivar/line selection
  - Common susceptibles
    - MG III-V
  - Candidate resistant lines
- Inoculation-millet seed
- Standardized evaluation methods-Mengistu
  - Root and stem splitting
    - Root discoloration
    - Stem colonization (%)
  - Colonization

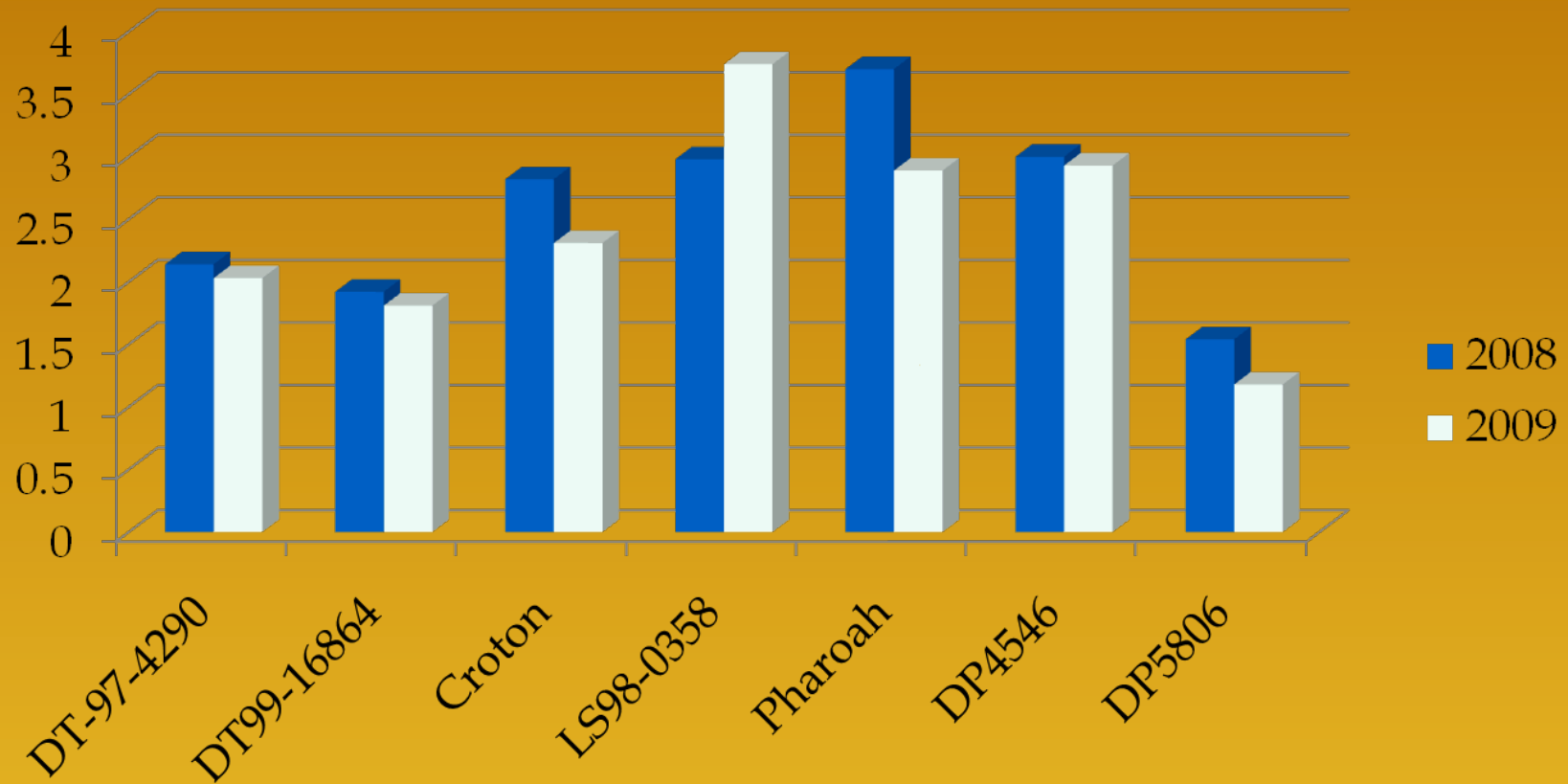
# Locations

- Kansas-Chris Little
- Arkansas-John Rupe
- Missouri-Allen Wrather
- Illinois-Jason Bond
- Tennessee-Alemu Mengistu

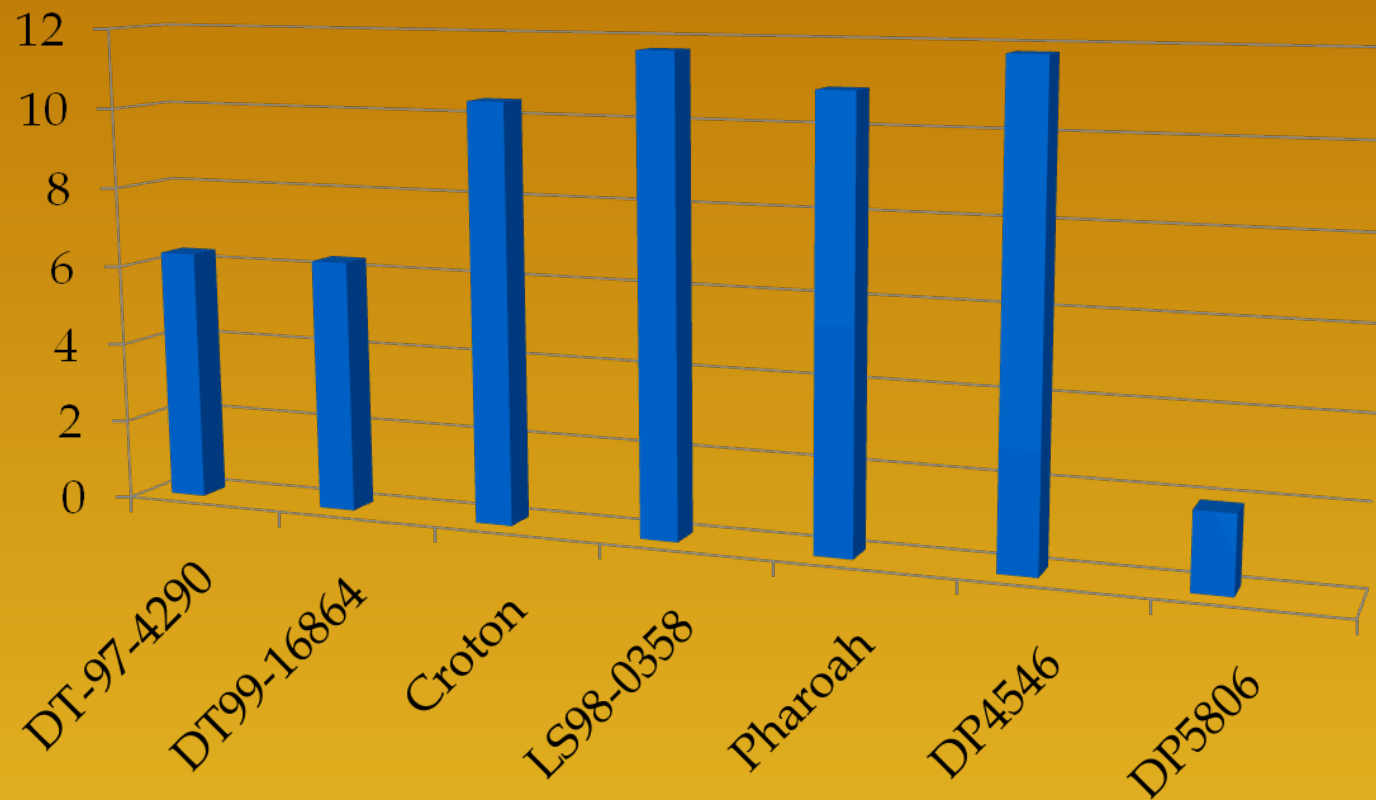
# Test Cultivars/Lines

- Moderately resistant
  - DT97-4290 (MG IV)
  - DT99-1684 (MG V)
- Moderately susceptible-Croton (MG III)
- Susceptible
  - LS98-0358 (MG IV)
  - Pharaoh (MG V)
- Unknown
  - DPL4546
  - DPL5806

# Root Discoloration



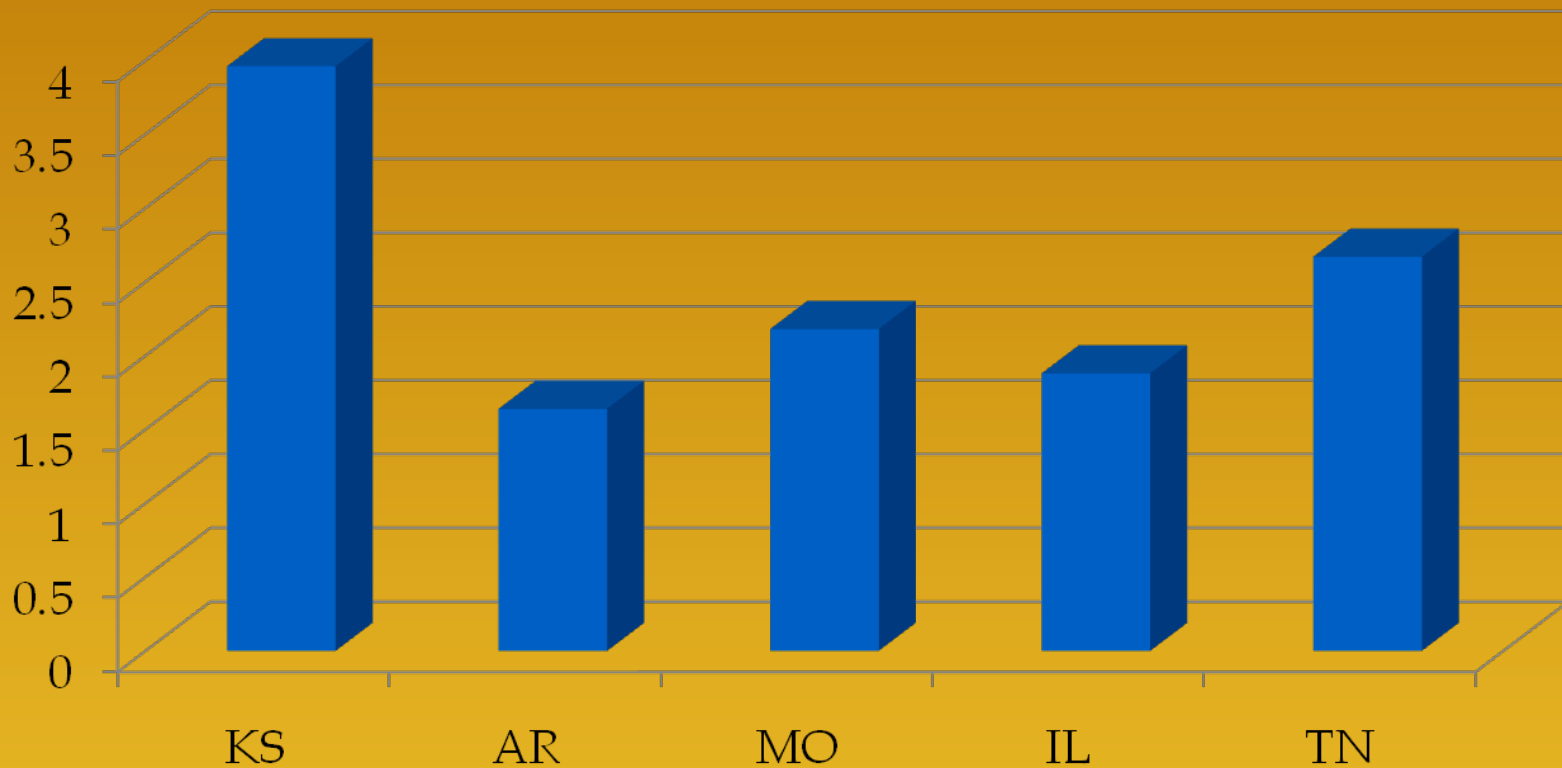
# Root Discoloration Ranking 2008



Chris Little



# Root Discoloration by Location 2008



# Where We're Going?

- Repeat another year
- Analyze across locations, years
  - Most consistent measure (s)
  - Reduce variability
  - Value of cfu's
- Establish criteria
  - Selection of lines
  - Removing lines

