# FUSIFORM RUST FUNGICIDE ALTERNATIVE STUDY

Looking good!

Very!

# 2007 Study Fungicides

| *Fungicide* | *Manufacturer* | *Active Ingredient* | *Chemical Class* |
|---|---|---|---|
| **Bayleton** | **Bayer Cropscience** | **Triadimefon 50%** | **Triazole** |
| **Eagle** | **Dow Agroscience** | **Myclobutanil 19.7%** | **Triazole** |
| **Inspire** | **Sygenta** | **Difenconazole 25%** | **Triazole** |
| **Dividend Extreme**<br>Seed trt only | **Sygenta** | **Difenoconazole 7.73%**<br>**Mefenoxam 1.93%** | **Triazole**<br>**Phenylamide** |
| **Provost 433 SC** | **Bayer Cropscience** | **Prothioconazole – 12.9%**<br>**Tebuconazole – 25.8%** | **Triazolinthiones**<br>**Triazole** |
| **Absolute 500SC** | **Bayer Cropscience** | **Tebuconazole 22.6%**<br>**Trifloxystrobin 22.6%** | **Triazole**<br>**Stobilurin** |
| **Folicur**<br>Seed trt only | **Bayer Cropscience** | **Tebuconazole 38.7%** | **Triazole** |

# Germination Results Following Seed Treatments

| Seed Trt | % Germination following Seed Trt |
|---|---|
| Check ($H_2O$) | 99% |
| Bayleton | 92% |
| Eagle | 31% |
| Inspire | 30% |
| Dividend | 71% Surprised |
| Provost | 100% |
| Absolute | 95% |
| Folicur | 100% |

# What has happened to date?

- Seed treatments applied and seed sown on 4/18/07
- Seedlings for foliar and seed test taken to Asheville, NC Rust Lab on 5/10/07
- Seedlings challenged with rust spores 5/14/07
- 3 month (8/17/07) & 6 month (10/24/07) evaluations made by Rust Center
- Seedlings picked up from RC 11/1/07

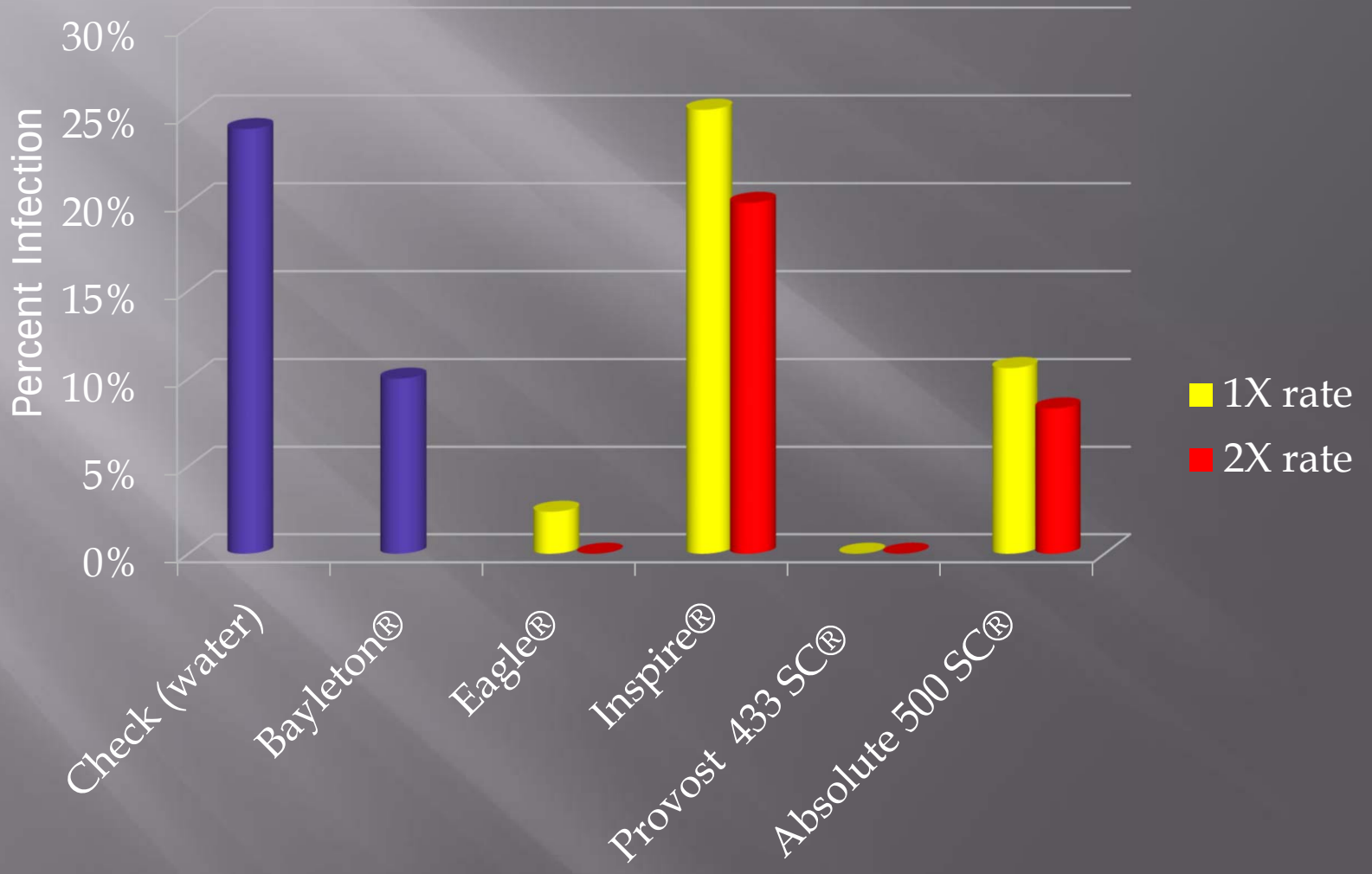
# Foliar Fungicide Rates

| | 1X Foliar Rate[1] | 2X Foliar Rate |
|---|---|---|
| **Check (water)** | N/A | N/A |
| **Bayleton®** | 8 oz/a | N/A |
| **Eagle®** | 15 fl oz/a | 30 fl oz/a |
| **Inspire®** | 7 fl oz/a | 14 fl oz/a |
| **Provost 433 SC®** | 8.5 fl oz/a | 17 fl oz/a |
| **Absolute 500 SC®** | 5 fl oz/a | 10 fl oz/a |

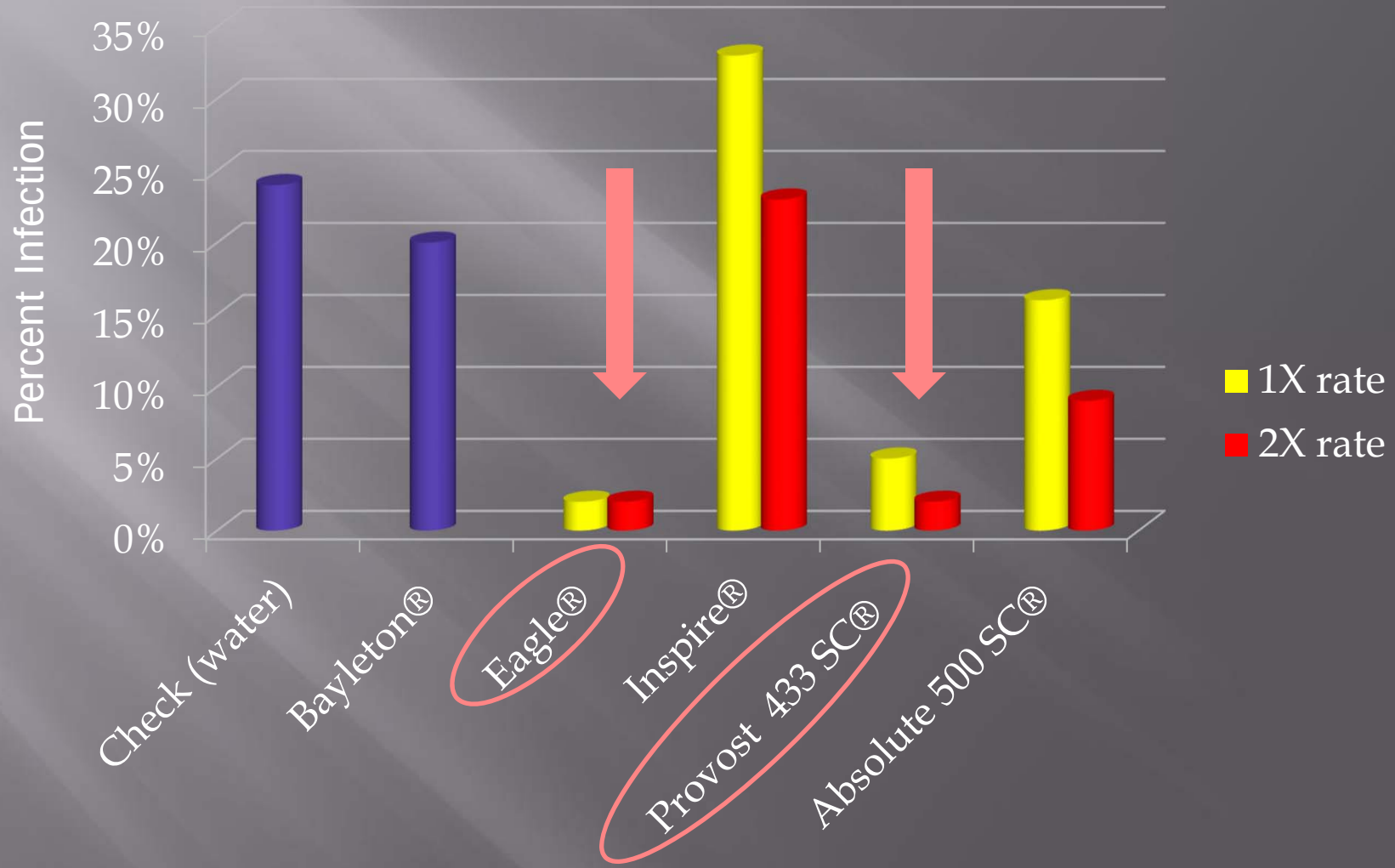
[1] Based upon 30 gal of water /acre

# 3 & 6 Month Seed Treatment

# 3 Month Foliar Treatment



# 6 Month Foliar Treatment



# Germination Results Following Seed Treatments

| Seed Trt | % Germination following Seed Trt |
|---|---|
| Check ($H_2O$) | 99% |
| Bayleton | 92% |
| **Eagle** | **31%** |
| Inspire | 30% |
| Dividend | 71% |
| **Provost** | **100%** |
| Absolute | 95% |
| Folicur | 100% |

Bayer CropScience

| GROUP | 3 | FUNGICIDE |
|---|---|---|

# PROVOST™ 433 SC FUNGICIDE

***For control of specified diseases on peanuts.***

| | |
|---|---|
| **Active Ingredients:** Prothioconazole, 2-[2-(1-Chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3*H*-1,2,4-triazole-3-thione | 12.9% |
| Tebuconazole, alpha-[2-(4-chlorophenyl)ethyl]-alpha-(1,1-dimethylethyl-1H-1,2,4-triazole-1-ethanol | 25.8% |
| **Inert Ingredients:** | 61.3% |
| **Contains 1.2 lbs/gal (144.6 g/l) of prothioconazole plus 2.4 lbs/gal (289.3 g/l) of tebuconazole** | 100.0% |

EPA Reg. No. 264-861 EPA Est. 3125-MO-01

Bayer CropScience

| GROUP | 3 | FUNGICIDE |
|---|---|---|

# PROLINE® 480 SC FUNGICIDE

*For control of specified diseases on various crops.*

| | |
|---|---|
| **Active Ingredient:** Prothioconazole, 2-[2-(1-Chlorocyclopropyl)-3-(2-chlorophenyl)-2-hydroxypropyl]-1,2-dihydro-3*H*-1,2,4-triazole-3-thione | 41.0% |
| **Inert Ingredients:** | 59.0% |
| **Contains 4 pounds Prothioconazole per gallon** | 100.0% |

EPA Reg. No. 264-825 EPA Est. 3125-MO-01

# Prothioconazole History

- Triazole chemistry discovered in late 1960s
  - **1st generation**: (Bayer) Bayleton, Baytan, and Baycor
  - **2nd generation**: propiconazole (Janssen), etaconazole and prochloraz (Boots)
  - **3rd generation** (ICI and Bayer 1988): Impact, Anvil, Folicur followed by epoxiconazole (BASF 1992)
- New class: Triazolinthione
  - **4th generation** – demethylase inhibitor.

    Prothioconazole - first compound (Bayer)

# Prothioconazole vs. tebuconazole

- Prothioconazole: Xylem and Phloem Systemic
- Systemicity: Prothioconazole >> Tebuconazole
- Even distribution: Prothioconazole > Tebuconazole
- Prothioconazole is rain fast within 2-4 hours of application.

# Prothioconazole – "The Emerging Gold Standard in Fungi Control"

- Prothioconazole has the broadest spectrum of any azole currently available and possesses some unique properties.
  - Behaves as an excellent long-term protectant on the leaf surface.
  - Re-invents itself inside the leaf to give extended curative benefits.
  - Has unique greening effects not seen with other azoles.

# Prothioconazole

- Efficiently stops all important steps of the fungal infection chain like appressoria and haustoria formation, mycelial growth as well as spore formation.
- Exhibits ideal systemic properties which provide protective, curative and long-lasting activity.
  - Labeled Prothioconazole could be visualized in new emerging leaves (soybean assay) Bayer CropScience

# Prothioconazole

- Has also shown very good fungicidal activity:
  - *Fusarium* ☑
  - *Rhizoctonia* ☑
  - *Sclerotium*
  - *Cylindrocadium*

# Cost Estimate

- Bayleton @ ~$69/lb using 8 oz/a = $34/a
- Provost @$246/gal using 8.5 fl oz/a = $16/a

# Next step

- Nursery field trials
  - 2008 - SC & GA
- Continued greenhouse study
  - Will repeat with Provost and Proline to gather data necessary for labeling.
    - Bayer CropScience, Senior Scientist, David Hunt very supportive of our efforts.
    - Labeling – <17 months

# Next step

- Are you interested in trying either Provost or Proline?
  - A nursery can test any chemical on any pest if the intent is to gather data for labeling purposes. "Restricted" <10 acres. You do not need an EUP.
  - Section 5 of FIFRA, 7 U.S.C. 136c and 40 CFR part 172
- Let me know and we can advise and help.