# Area-wide Demonstration of Alternatives:

# Forest Nurseries in the Southern US

Marietjie Quicke
Tom Starkey
Scott Enebak


School of Forestry & Wildlife Sciences, Auburn University
Southern Forest Nursery Management Cooperative

# Cooperators in Research

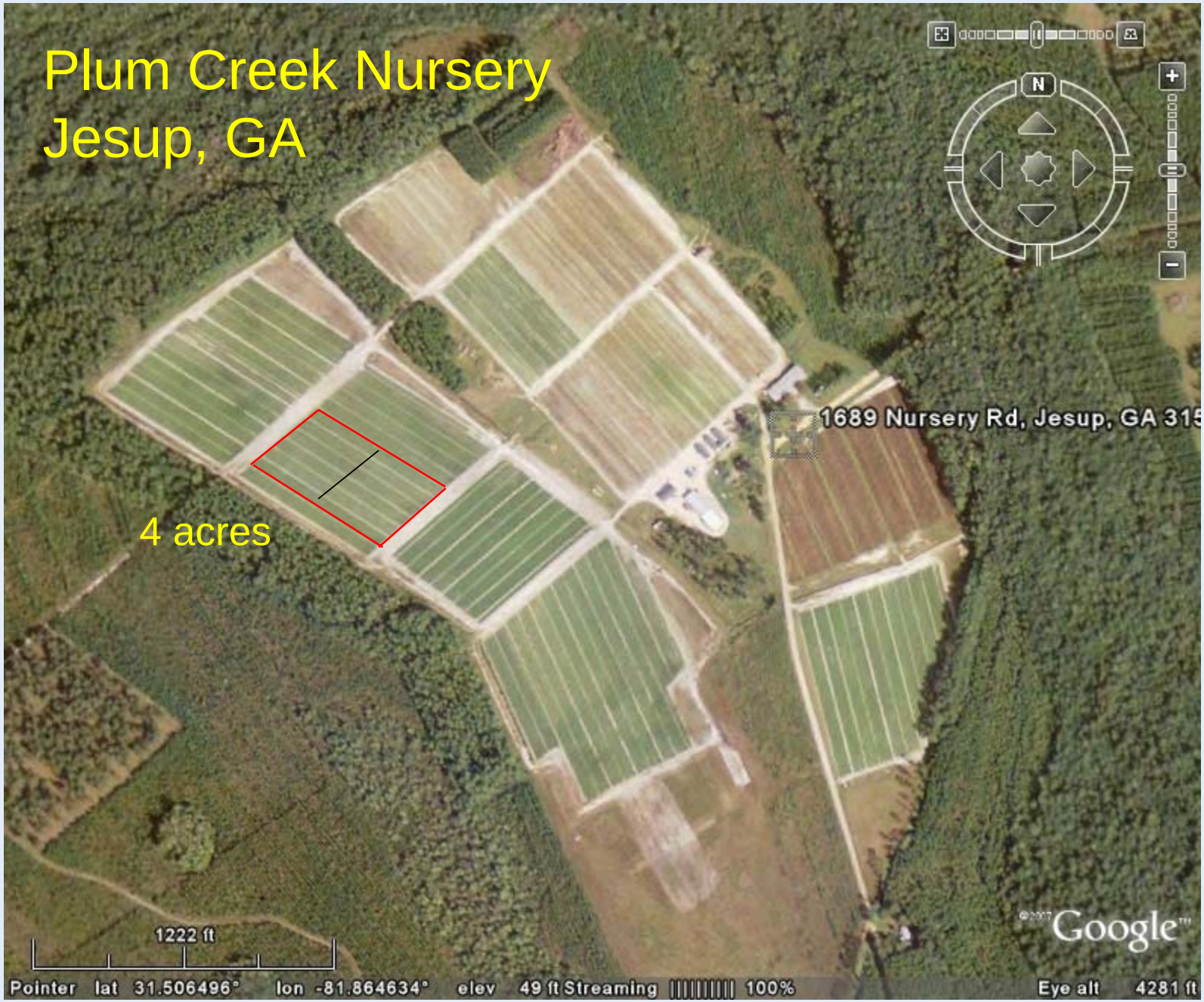
- Steve Godbehere, Hendrix & Dail
- Dean McCraw, Rayonier, Glennville, GA
- Ken Woody, Plum Creek, Jesup, GA
- USDA – ARS Area-Wide Pest Mgt Project for Methyl Bromide Alternatives – South Atl. Region

# 2007 Fumigants

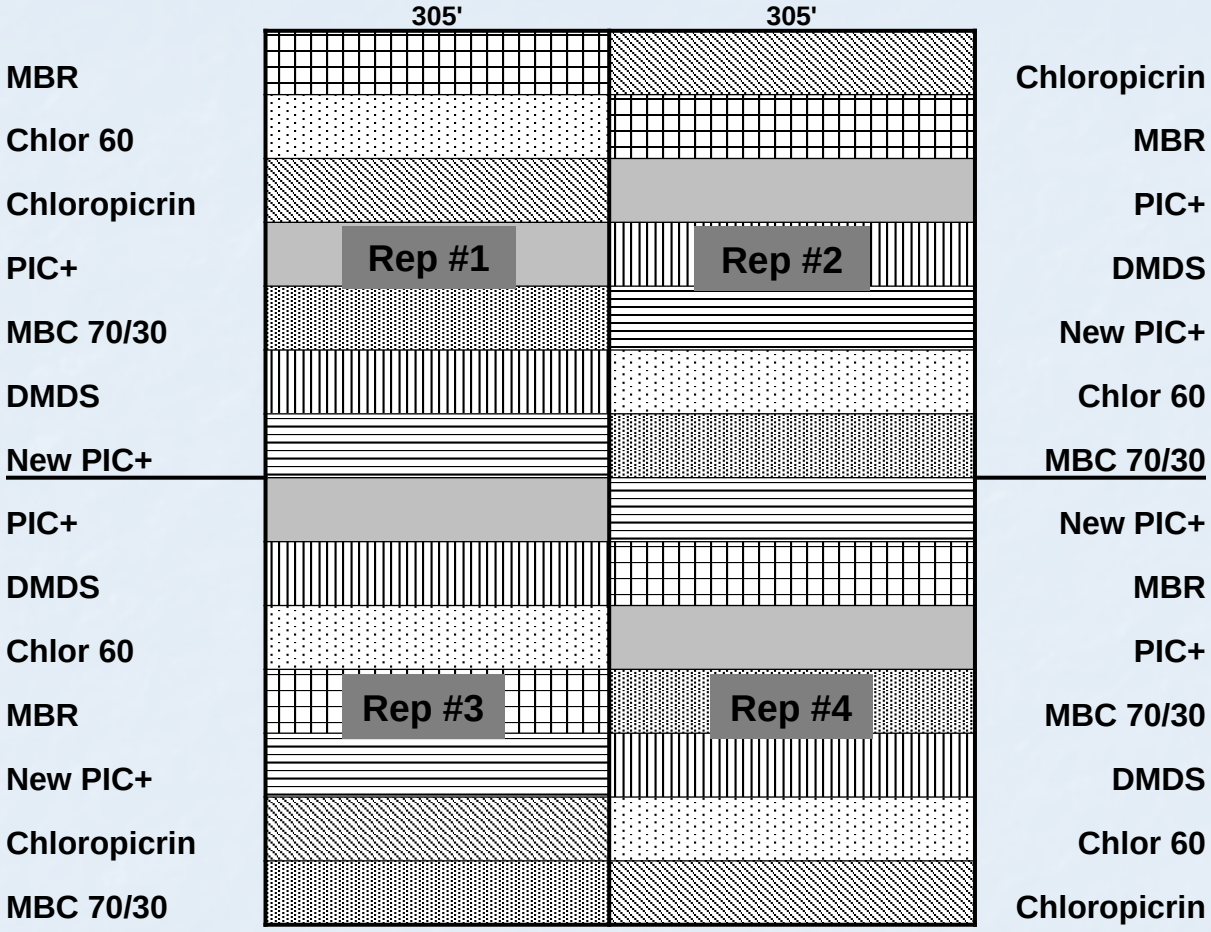
| Fumigant | Rate | Components |
|---|---|---|
| MBr | 350 lbs/a | 67% MBr + 33% Chlor |
| Chloropicrin | 300lbs/a | 100% Chloropicrin |
| MBC 70/30 | 400 lbs/a | 70% MBr (98/2) + 30% Solvent A |
| Pic Chlor 60 | 400 lbs/a | 60% Chlor + 40% 1,3-D |
| Pic+ | 300 lbs/a | 85% Chloropicrin + 15% Solvent A |
| New Pic+ | 300 lbs/a | 85% Chloropicrin + 15% Solvent B |
| DMDS | 74 gal/a (731 lb/a) | 79% DMDS + 21% Chlor |

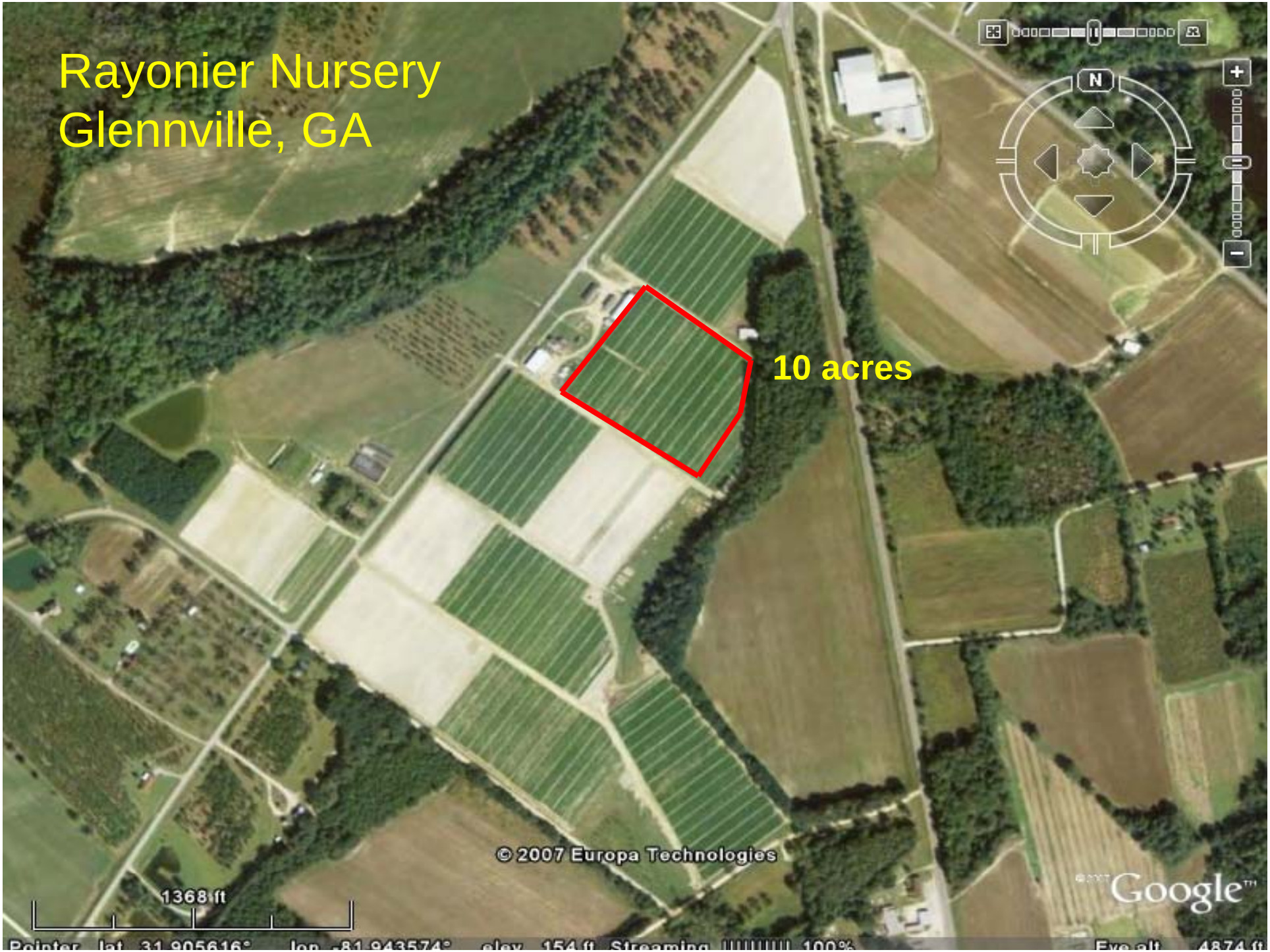
# Trial Information

| | **Jesup, GA** | **Glennville, GA** |
|---|---|---|
| Fumigation | April 3, 2007 | March 20, 2007 |
| Fumigation type | Shank injected<br>Broadcast/flat tarp | Shank injected<br>Broadcast/flat tarp |
| Area in trial | 4 acres | 10 acres |
| Air temperature range | 67° to 88°F | 50° to 78°F |
| Wind speed | 3 – 6 mph | 3 – 13 mph |
| Soil moisture | 8.5% | 5.5% |
| Soil series | Norfolk loamy sand | Tifton loamy sand |
| Plastic in place | 7 days | 7 days |

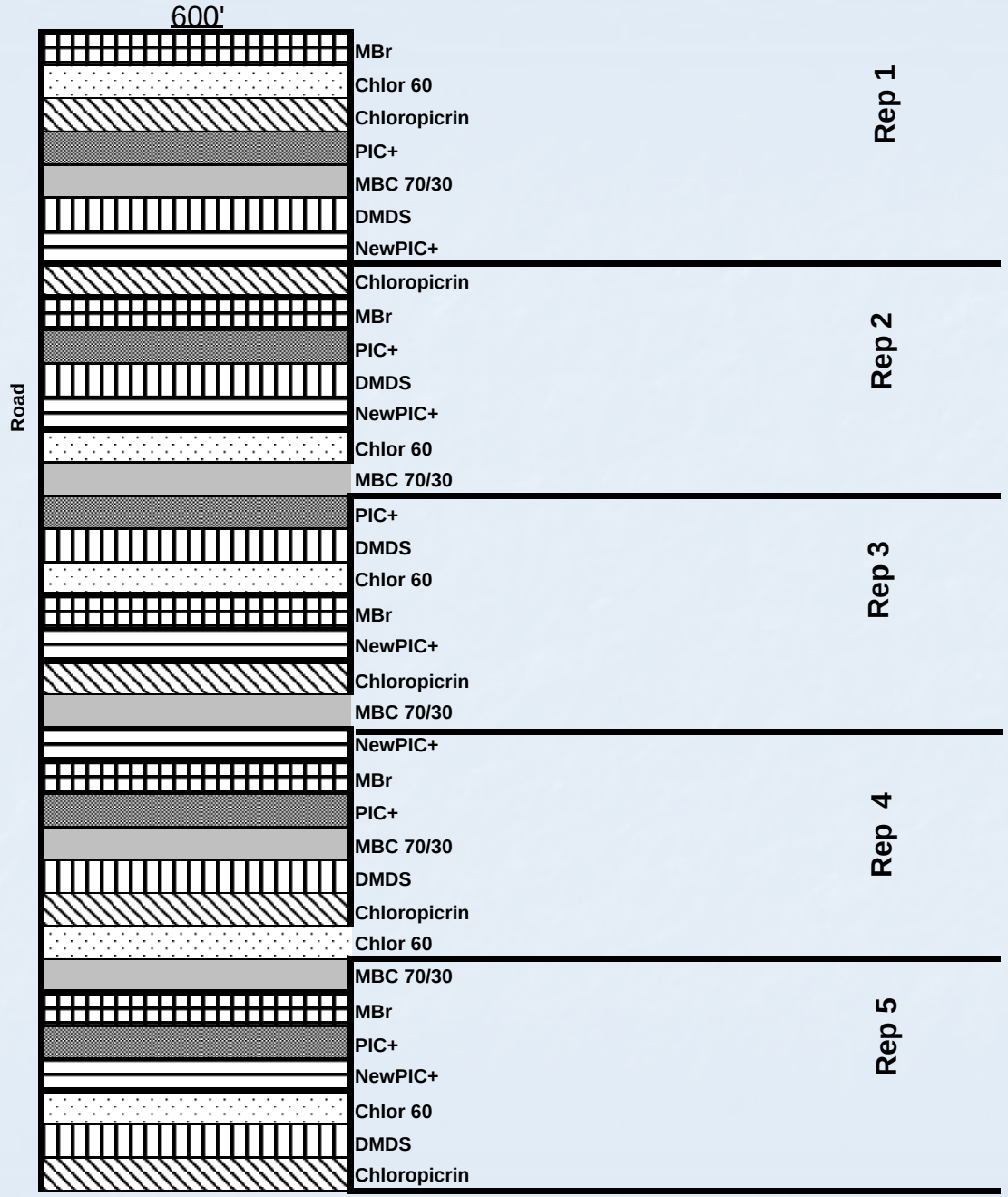

Plum Creek Nursery
Jesup, GA
4 acres
1689 Nursery Rd, Jesup, GA 315
1222 ft
Pointer lat 31.506496° lon -81.864634° elev 49 ft Streaming 100%
Eye alt 4281 ft
Google

# Jesup, GA Trial



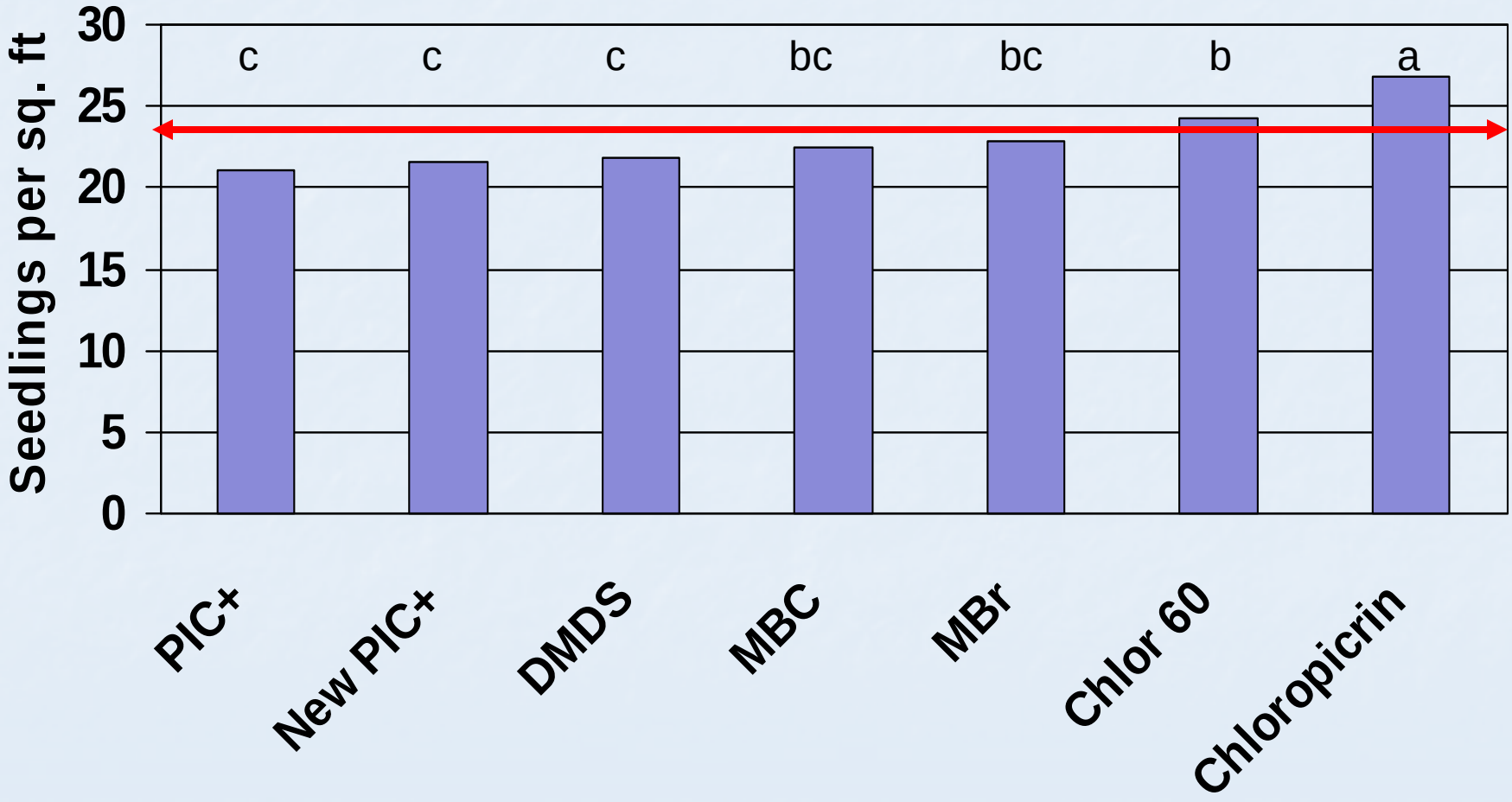

Rayonier Nursery
Glennville, GA
10 acres
© 2007 Europa Technologies
1368 ft
Google

# Glennville, GA Trial



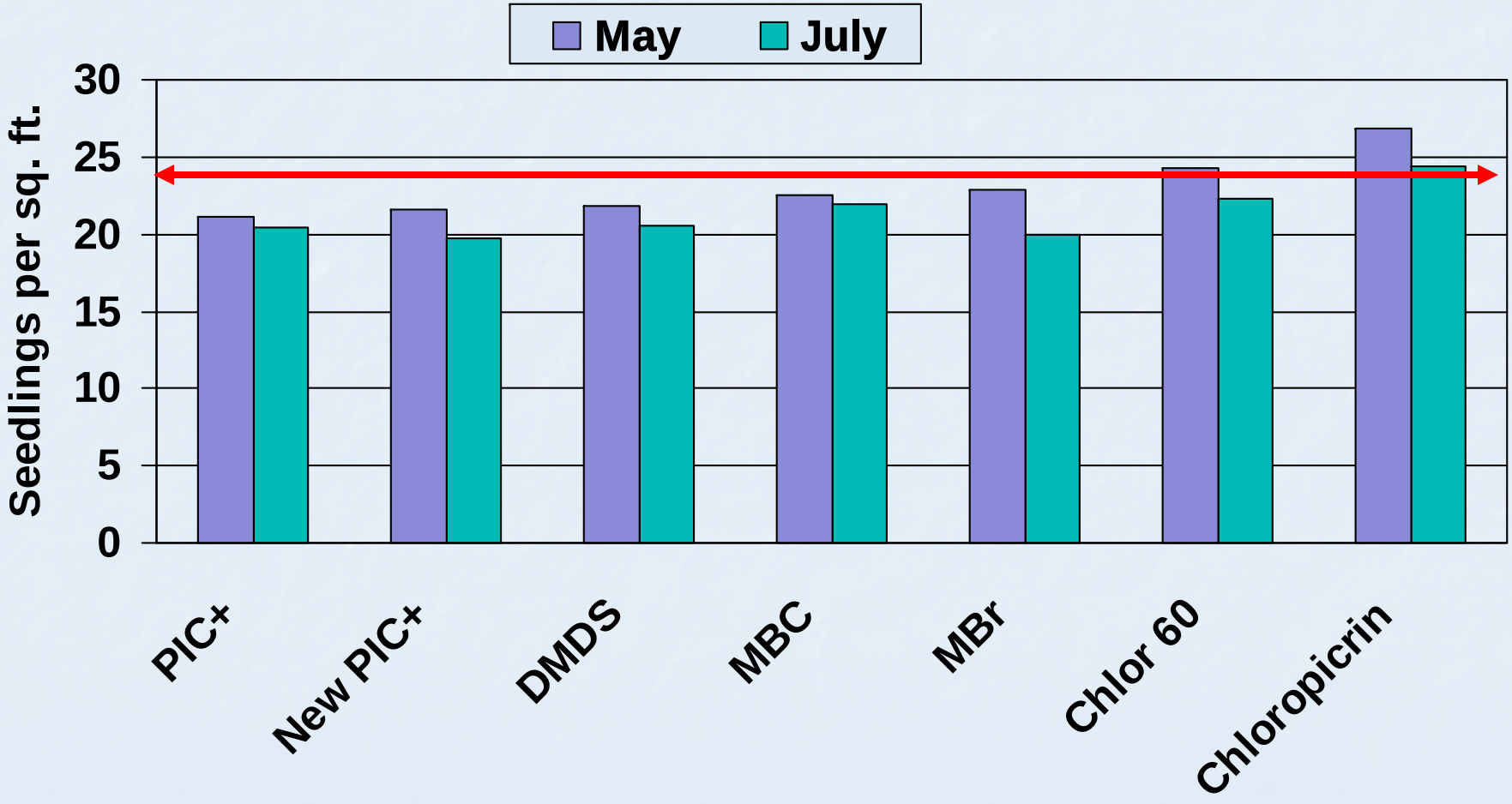
# Seedling Counts

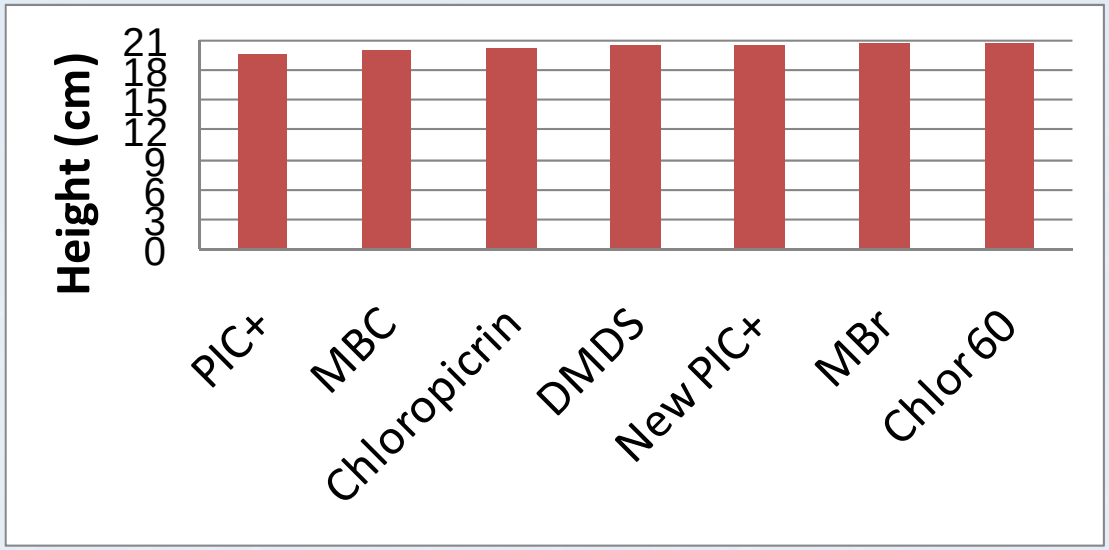
## Jesup, GA May 2007



# Seedling Counts

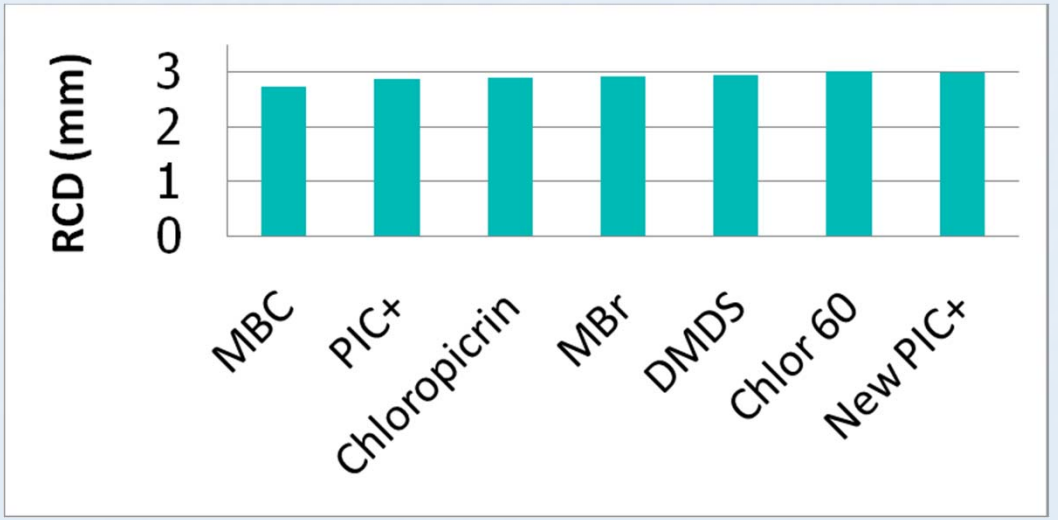
## Jesup, GA  May & July 2007






Seedling height

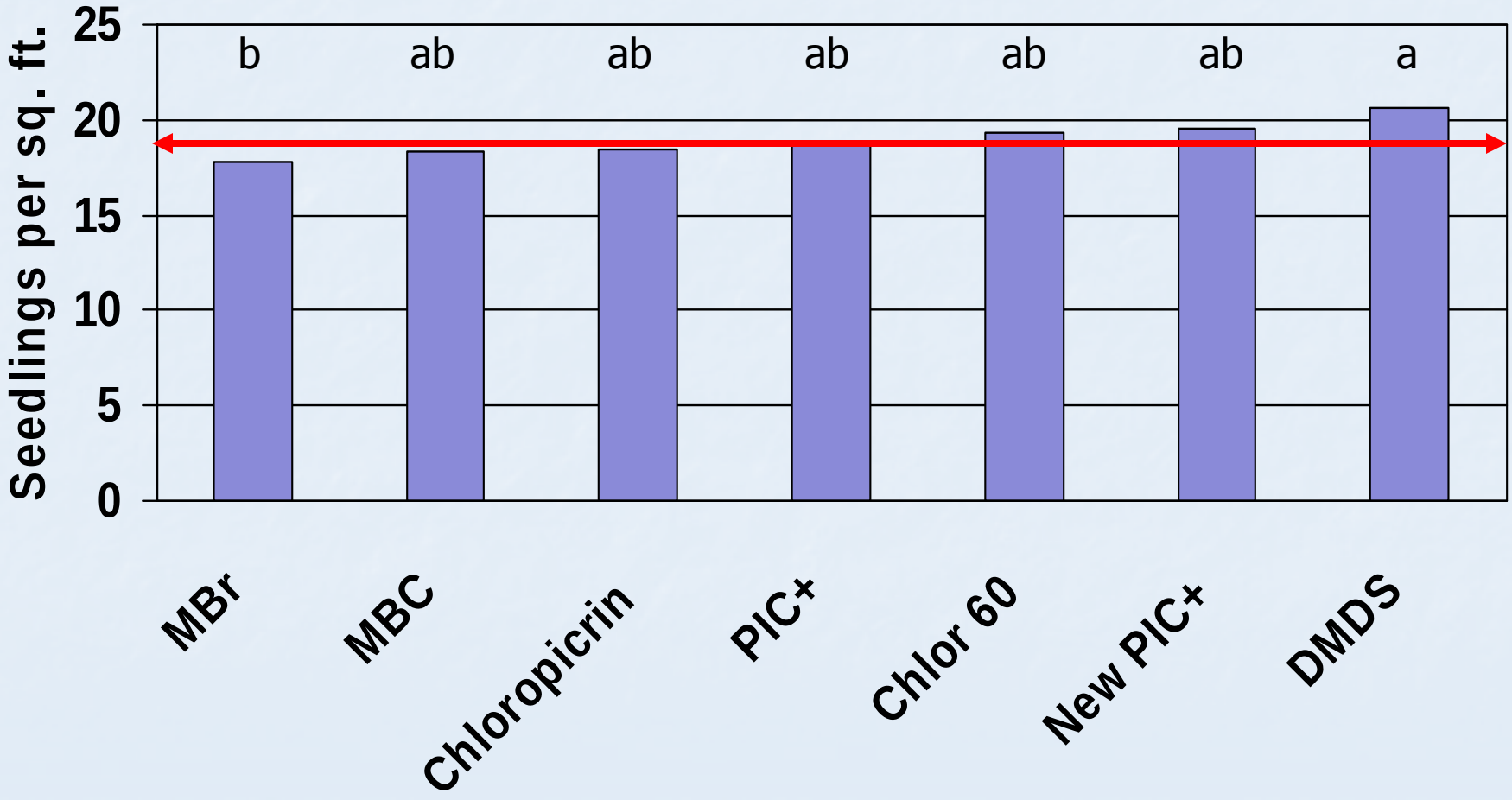
Jesup, GA
July 2007




Root Collar Diameter

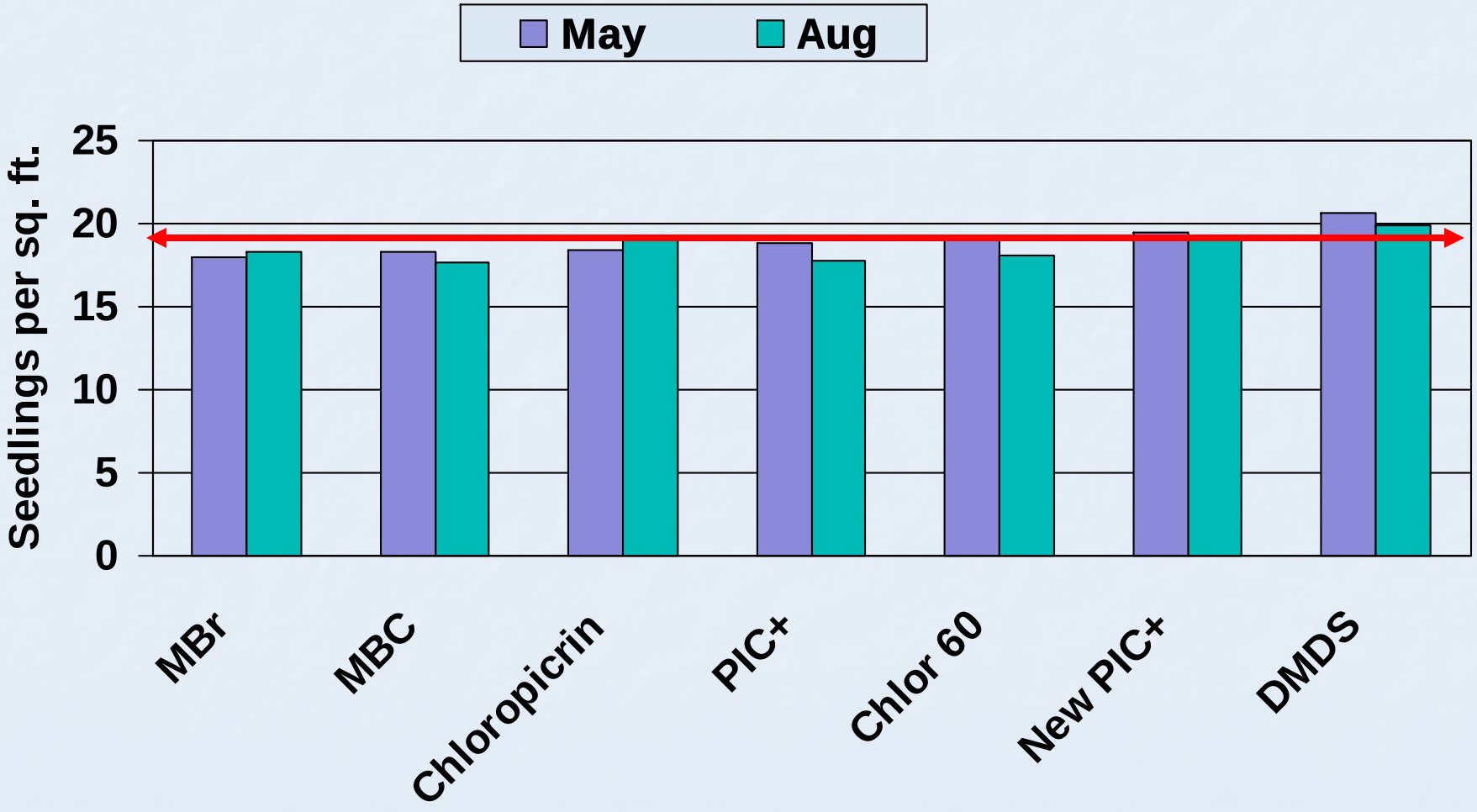
# Seedling Counts

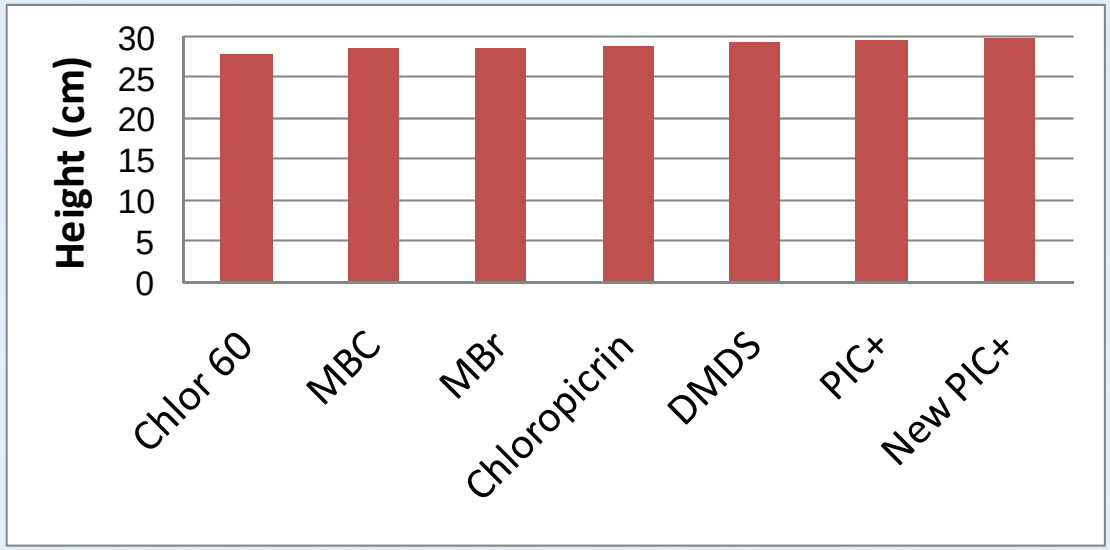
## Glennville, GA May 2007



# Seedling Counts

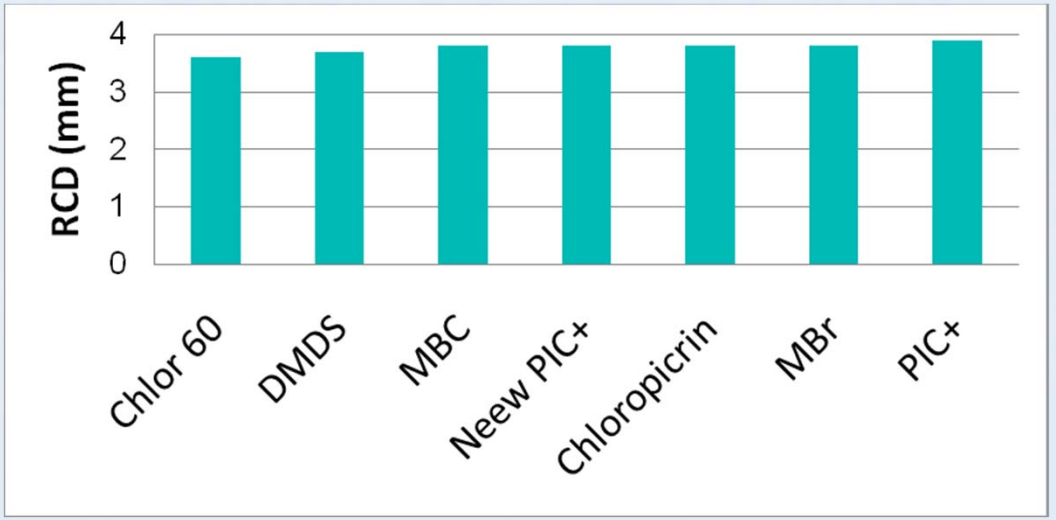
## Glennville, GA  May & Aug 2007






Seedling height

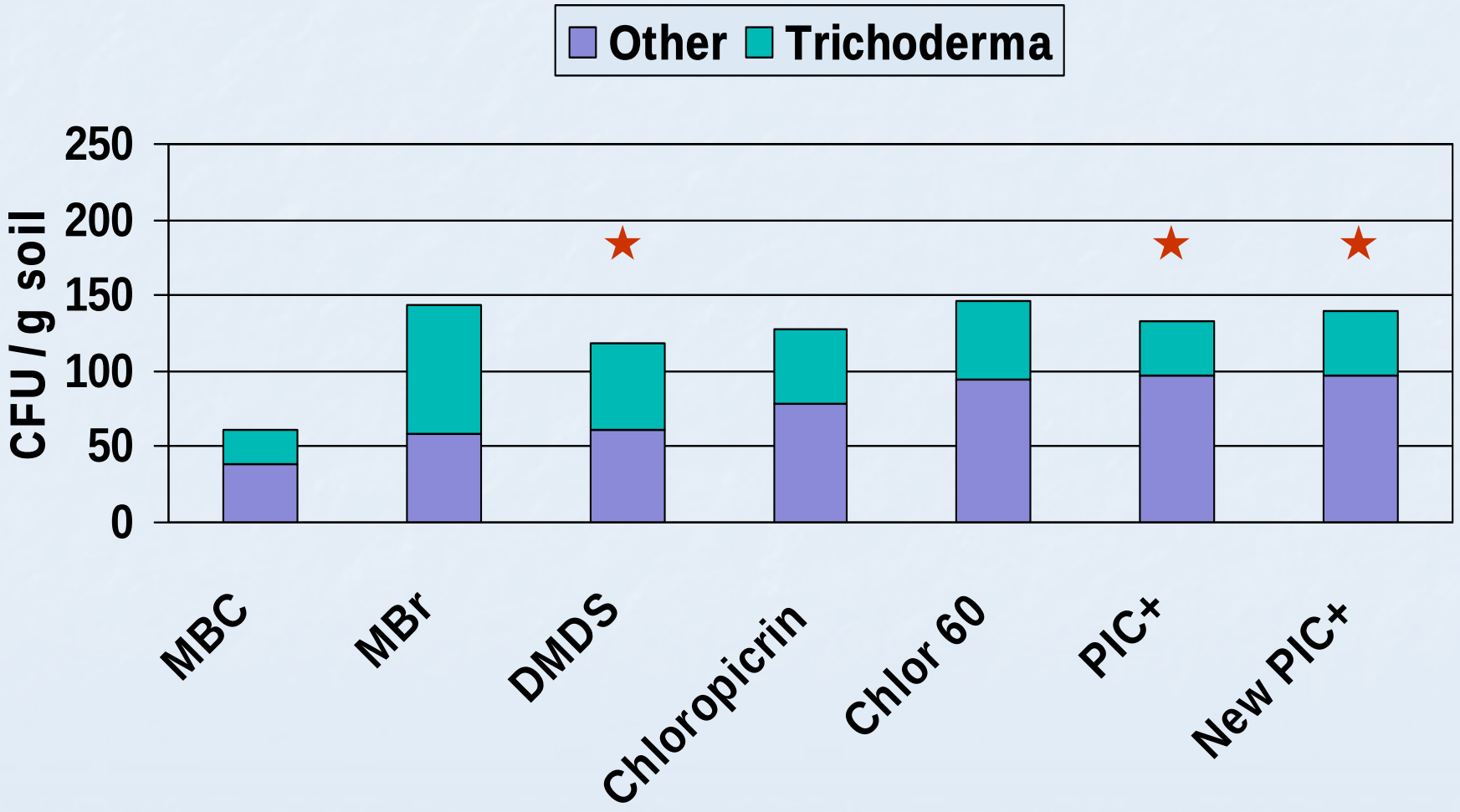
# Glennville, GA
# August 2007




Root Collar Diameter

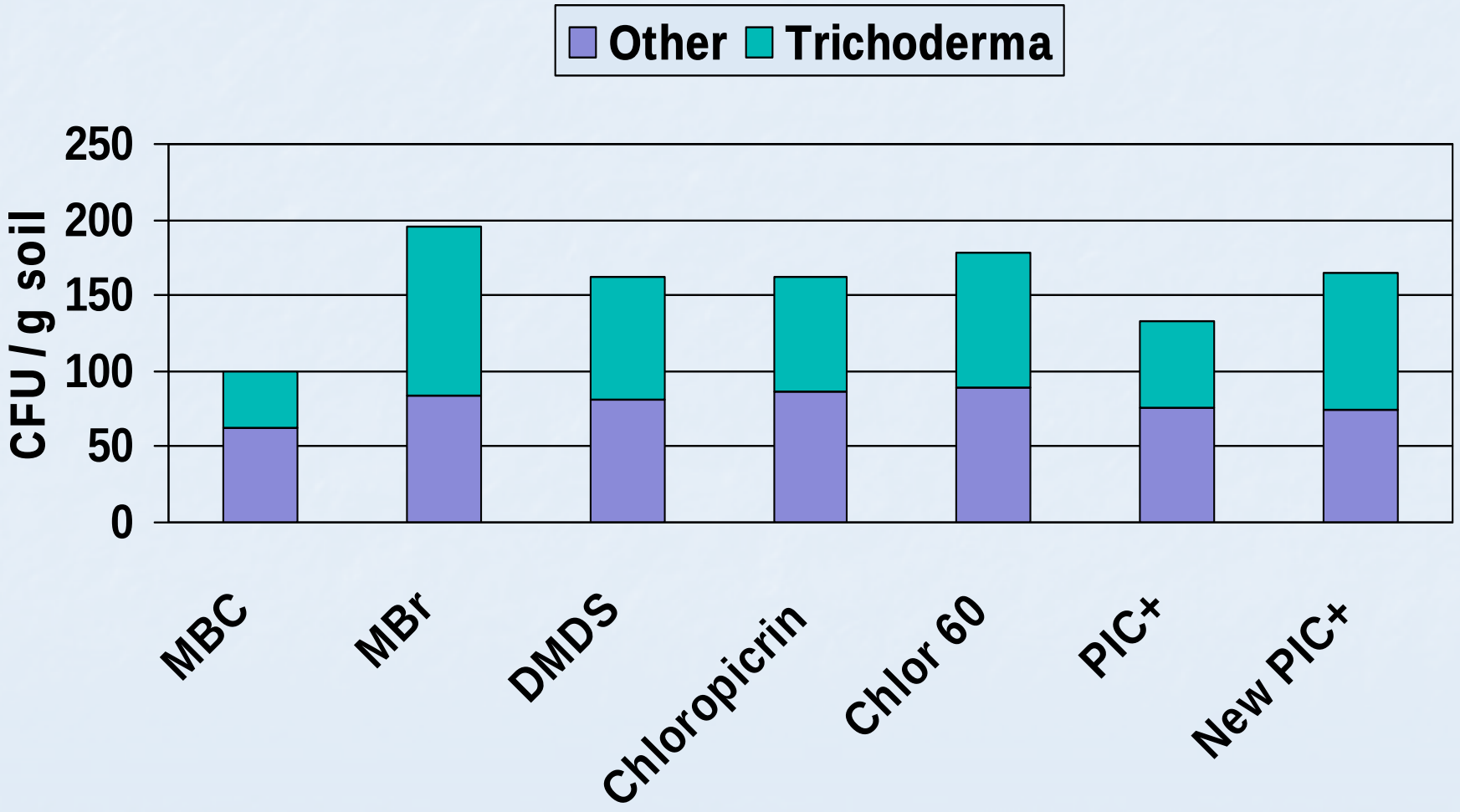
# Soil Fungal Counts May 2007

Jesup, GA



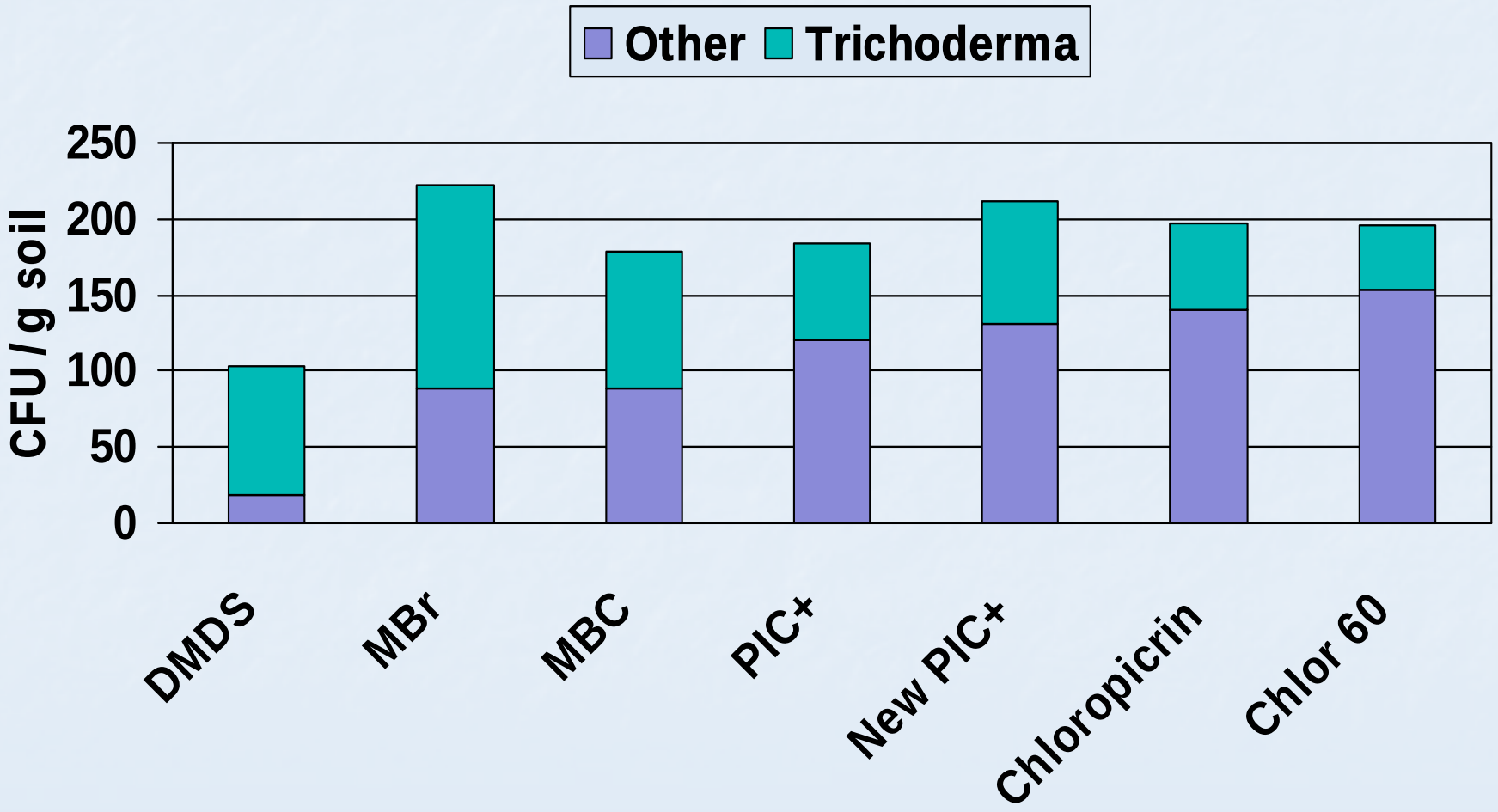
# Soil Fungal Counts July 2007

Jesup, GA



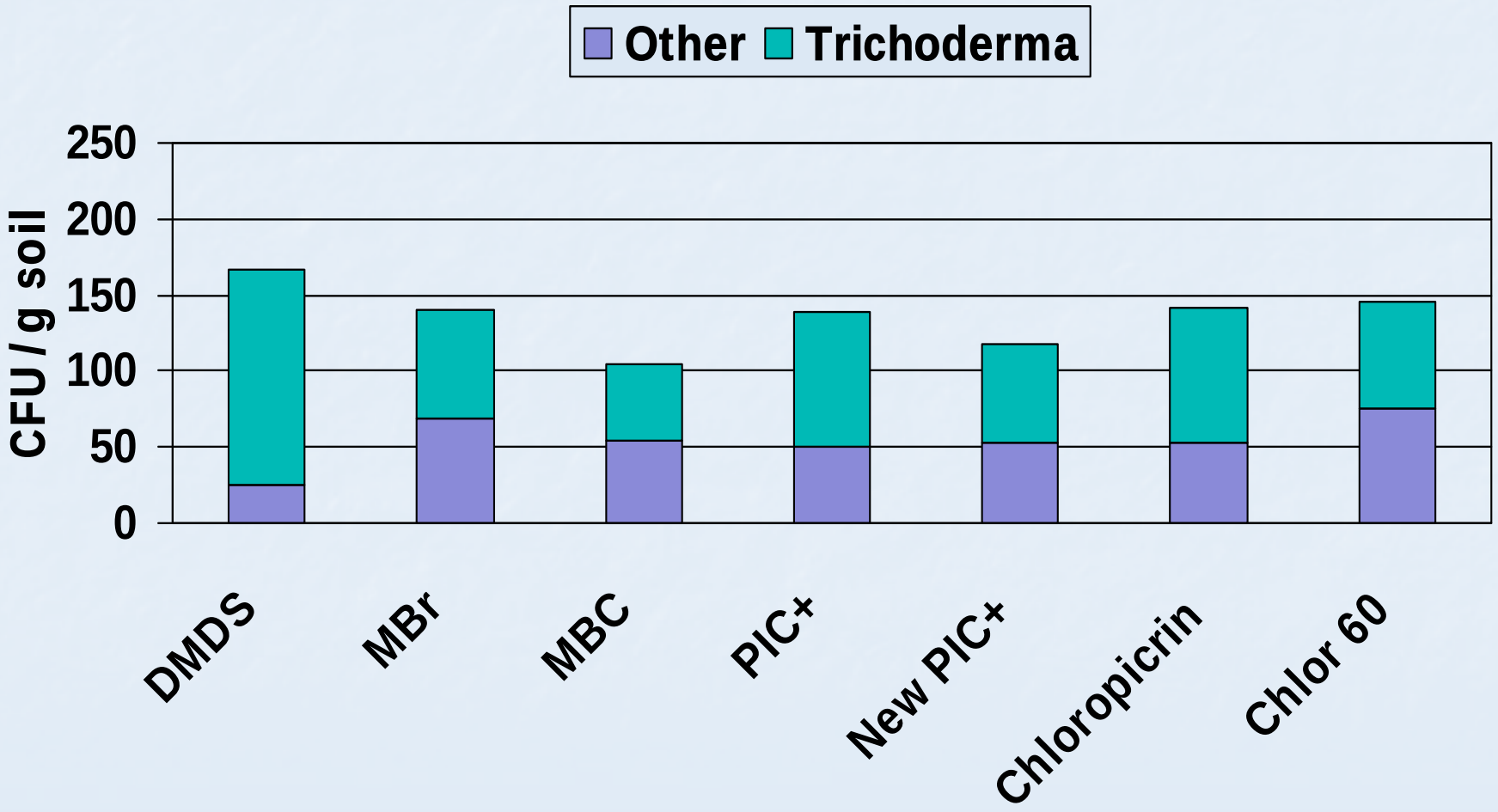
# Soil Fungal Counts May 2007

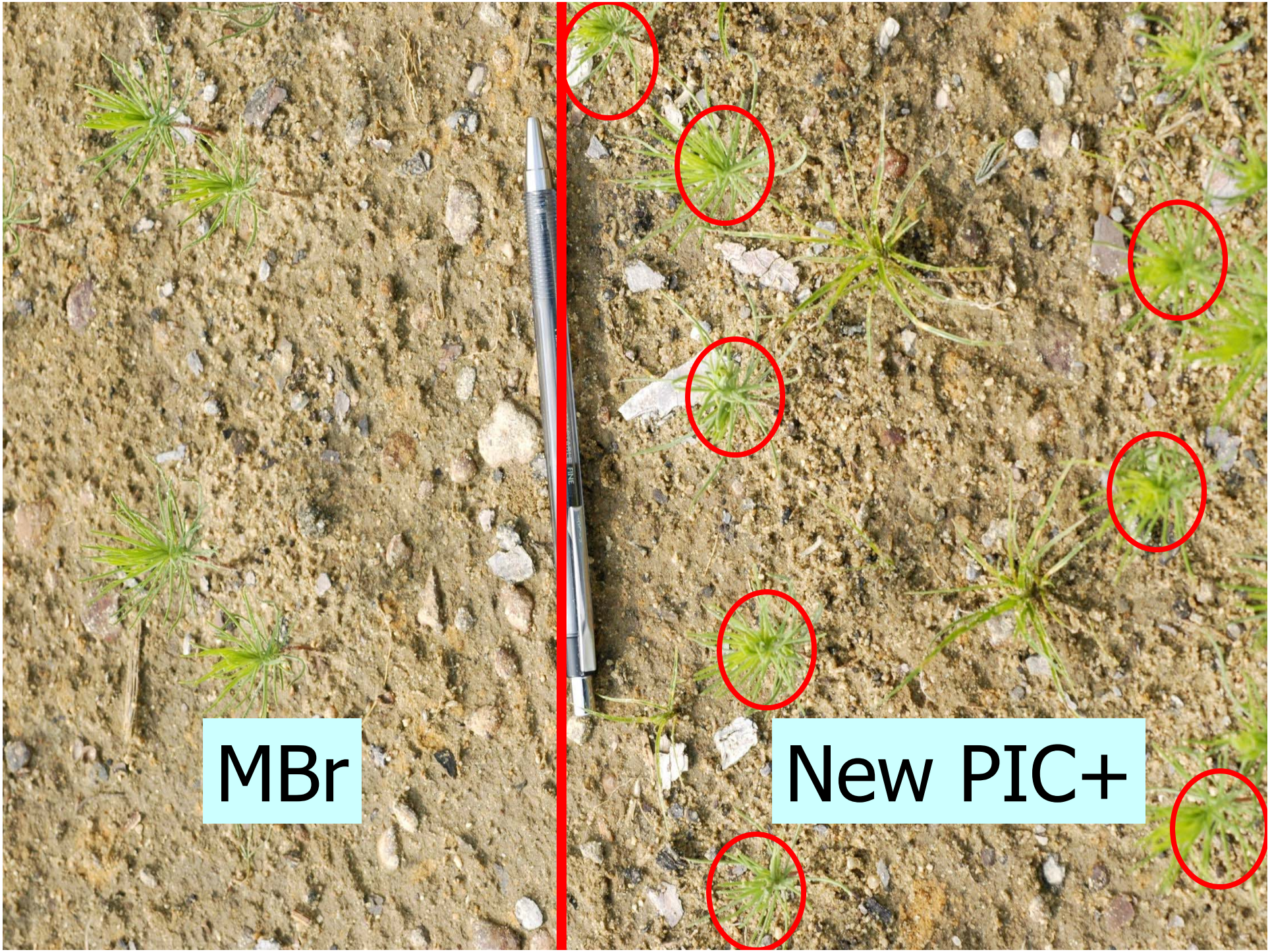
Glennville, GA



# Soil Fungal Counts Aug 2007

Glennville, GA




MBr
New PIC+

# Data to collect

| | 2007 Fall | 2008 Pre-sow | 2008 Post-sow | 2008 July/Aug | 2008 Fall |
|---|---|---|---|---|---|
| Nematode | √ | √ | √ | √ | √ |
| Trichoderma | √ | √ | √ | √ | √ |
| Seedling count | √ | | √ | √ | √ |
| Seedling quality | √ | | | √ | √ |
| Weed problems | | | √ | √ | |
| Root mass morphology | √ | | | | √ |

- Two installations/year for 5 years
- Next installations in South Carolina
- Fumigants efficacy varies by soil type:
  - Jesup, GA – Chloropicrin, Chlor60
  - Glennville, GA – DMDS

# Methyl Bromide Alternatives Conference
# San Diego October 2007

- New EPA Registrations:
  - Iodomethane (Midas)
    - 1 year
    - 25 ft to 500 ft buffer dependant on
      - Rate applied
      - Application method
      - Area treated
      - Emission control measures taken
    - Can NOT share buffers with other treated areas
  - DMDS
    - Experimental Use Permit for FL, GA, NC

Good Agricultural Practices (GAP) that reduce emissions will be considered by EPA in determining buffers

It was suggested that buffers need to change depending on:

Application method
Application rate
Season of application
Soil type
Soil moisture
Soil temperature
Soil compaction
Tarp type

# Future possibilities

- Acrolein - trichoderma friendly
  controls emerged weeds
  need herbicide to control nutsedge

- XRM 3162 Dow Agrosciences
  still in development
  same effectiveness as MBr 98/2 at 400 lb/acre
  on yellow nutsedge, root knot nematode