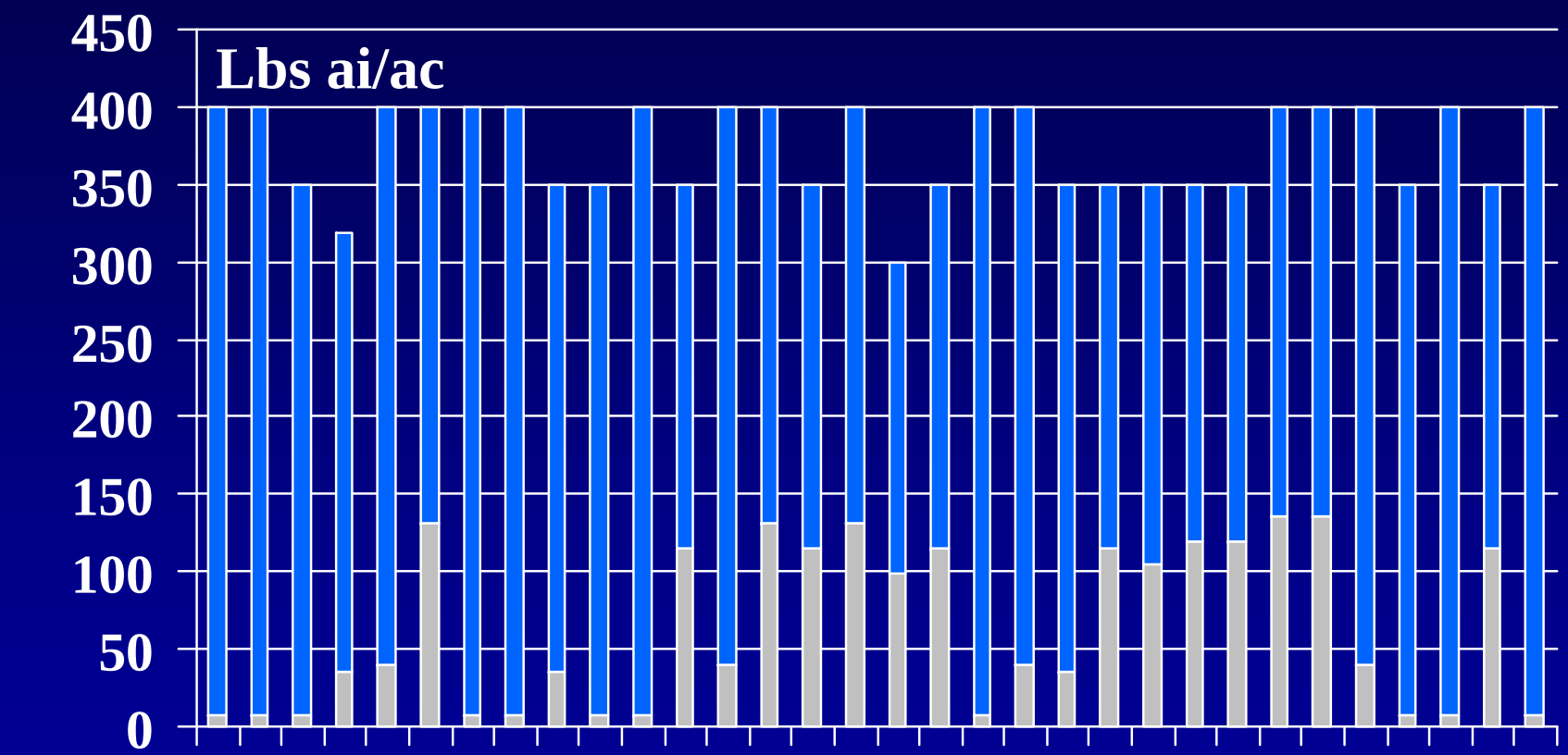
# Why Fumigation is Important in Forest Tree Nurseries

- 1 Values per area are high. When seedlings sell at $35/M = $25,000/ac.
- 2 Before fumigation seed efficiency was poor and losses to disease and insects were high.
- 3 Seedlings are not end-use. Problems from the nursery increase after outplanting.

# Fumigation for 35 nurseries in 2000



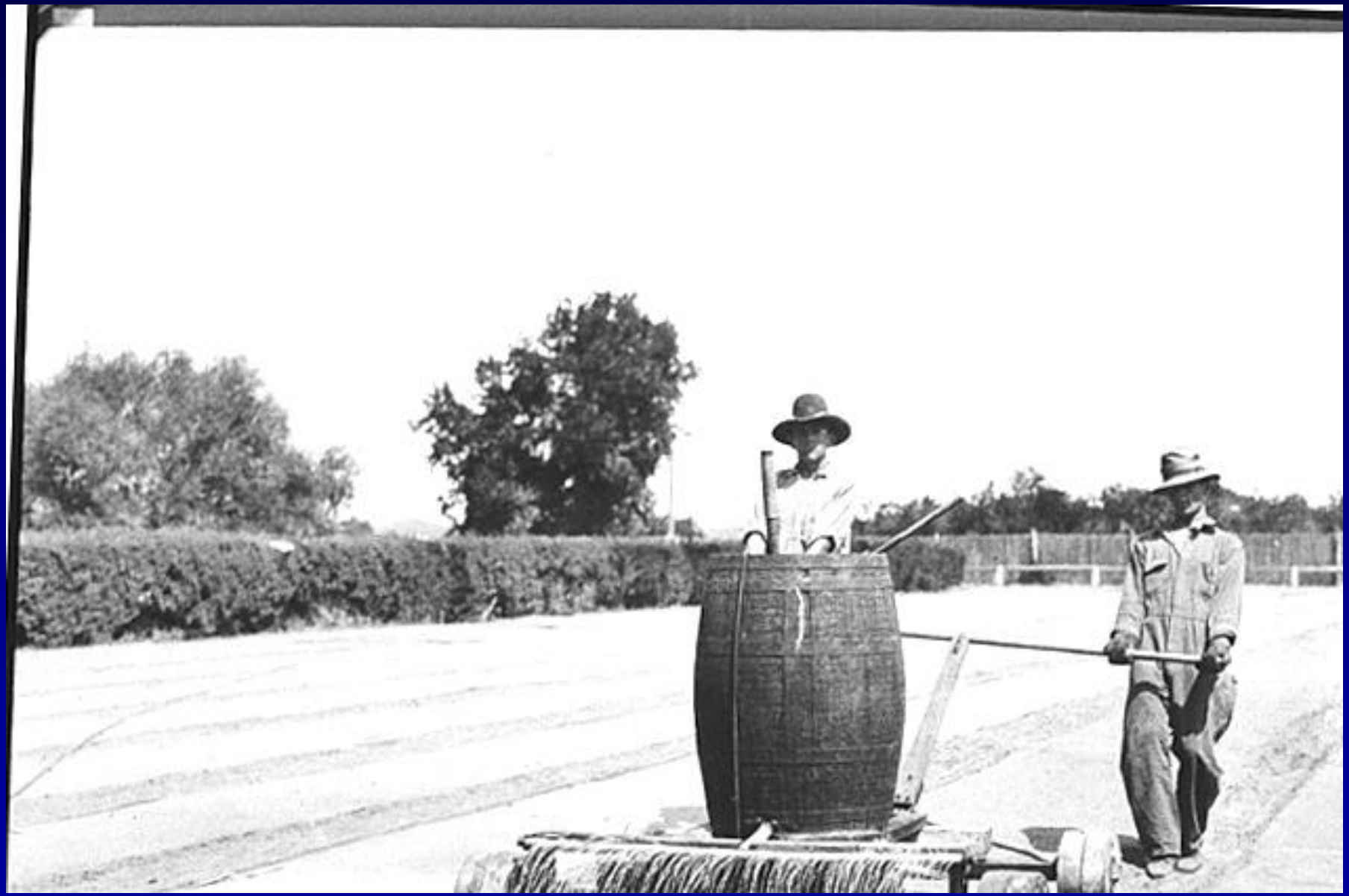

Avg = 310/64

4 nurseries withheld data

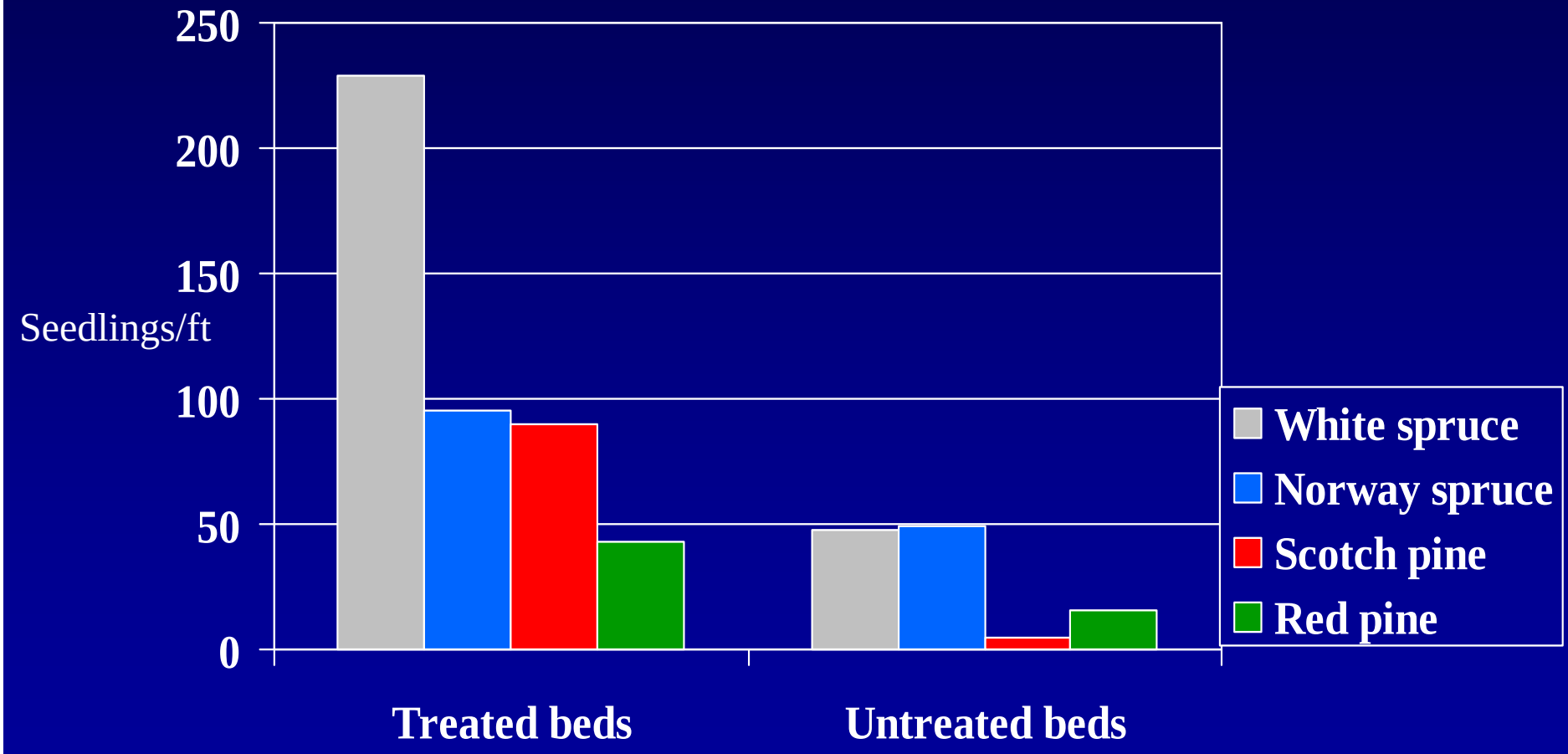
# An ecological observation

- $ER = RP^{-1}$
- environmental resistance = the inverse of reproductive potential
- Over time, most organisms just replace themselves and their population remains constant.
- What is the RP of loblolly or, How many seed does one produce in its life?
- The nurseryman wants to overcome ER.

•Soil treatment is not an option in forest tree nurseries

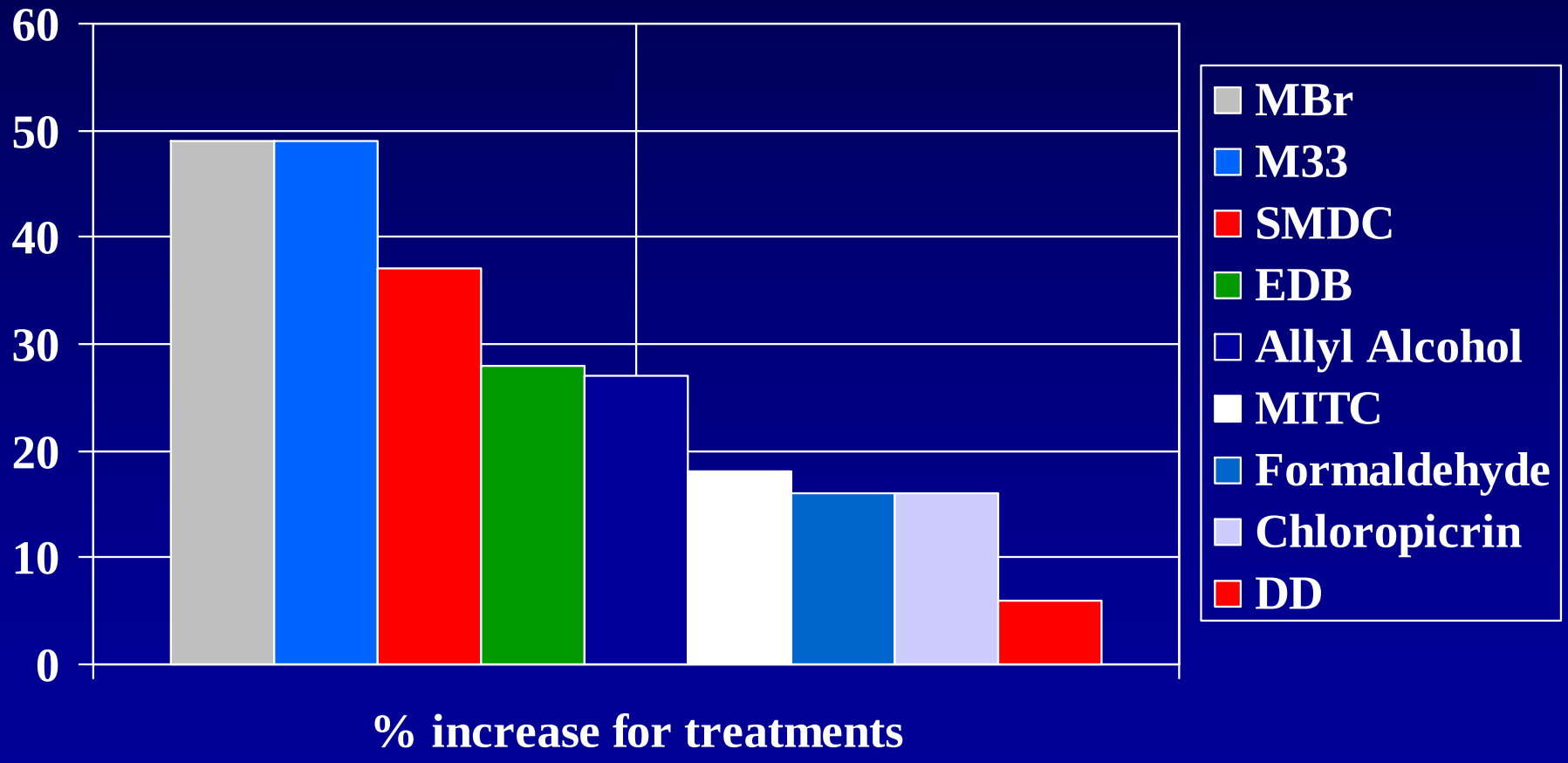


# Effect of fumigation with methyl bromide at one New York nursery

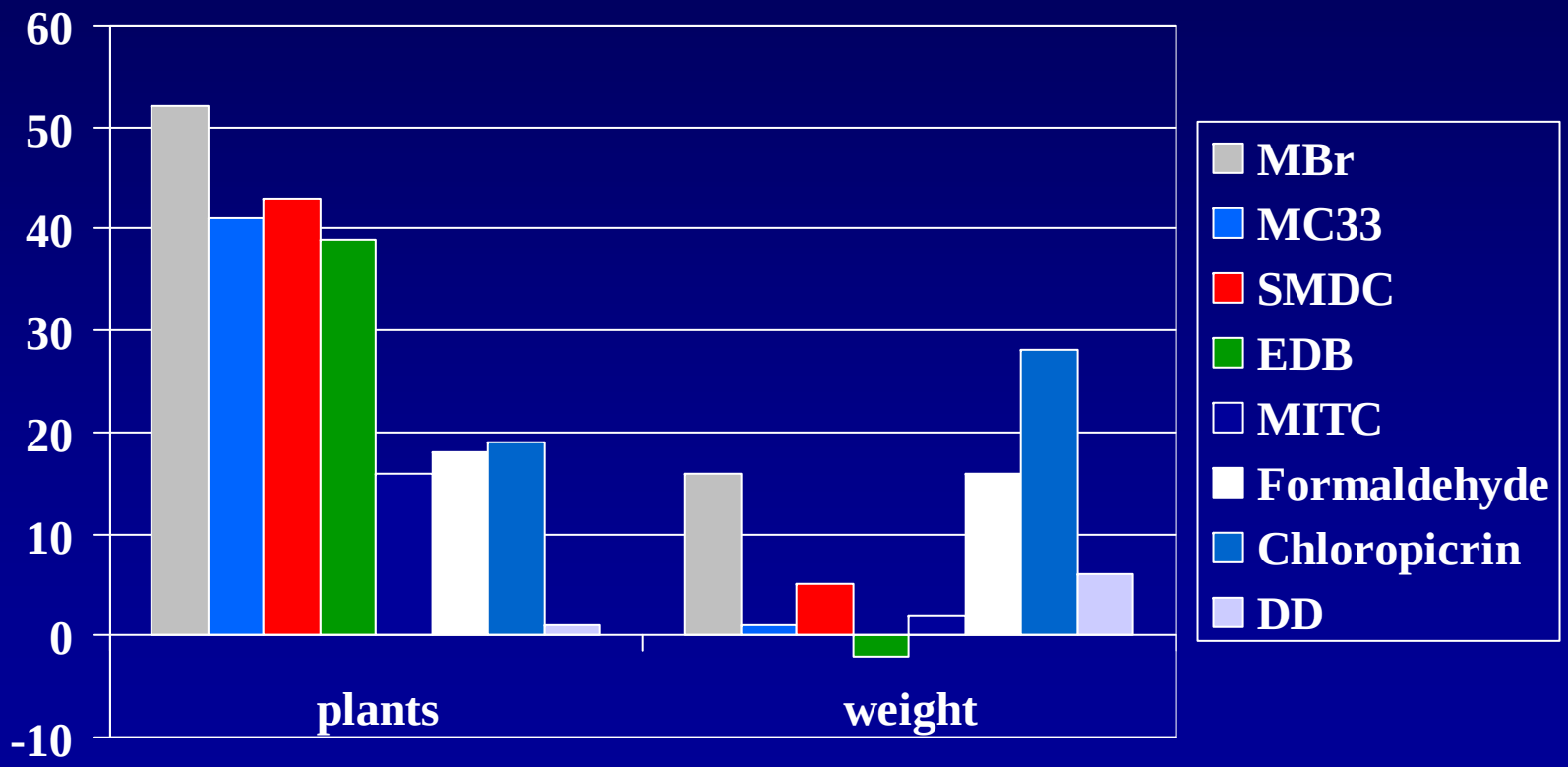



Joseph A. Hill, TPN 1955, N.Y. State Conservation Department.

# Effects of fumigation on numbers of plantable seedlings



# Average percent increase in numbers and weights of conifer seedlings among control beds by fumigation treatment and relative rank for fumigants



## Across the beds were fumigation treatments

# Why is MBr a good fumigant?

| | MBr | Chloro | 1,3-d | Dazomet |
|---|---|---|---|---|
| VP mm Hg | 1380 | 20 | 21 | 21 |
| Boils C | 4.6 | 112 | 104 | Na |
| Soluble in water | 1.6 | 0.2 | 0.3 | 0.7 |

# All you need for a fumigant with a VP of 1400 mm Hg

**What you need for a fumigant with no VP**

**PPE will have less affect on forest nurseries compared to other agriculture**

# What you need for a fumigant that is not going far after application

Rotovation will be needed for most alternatives

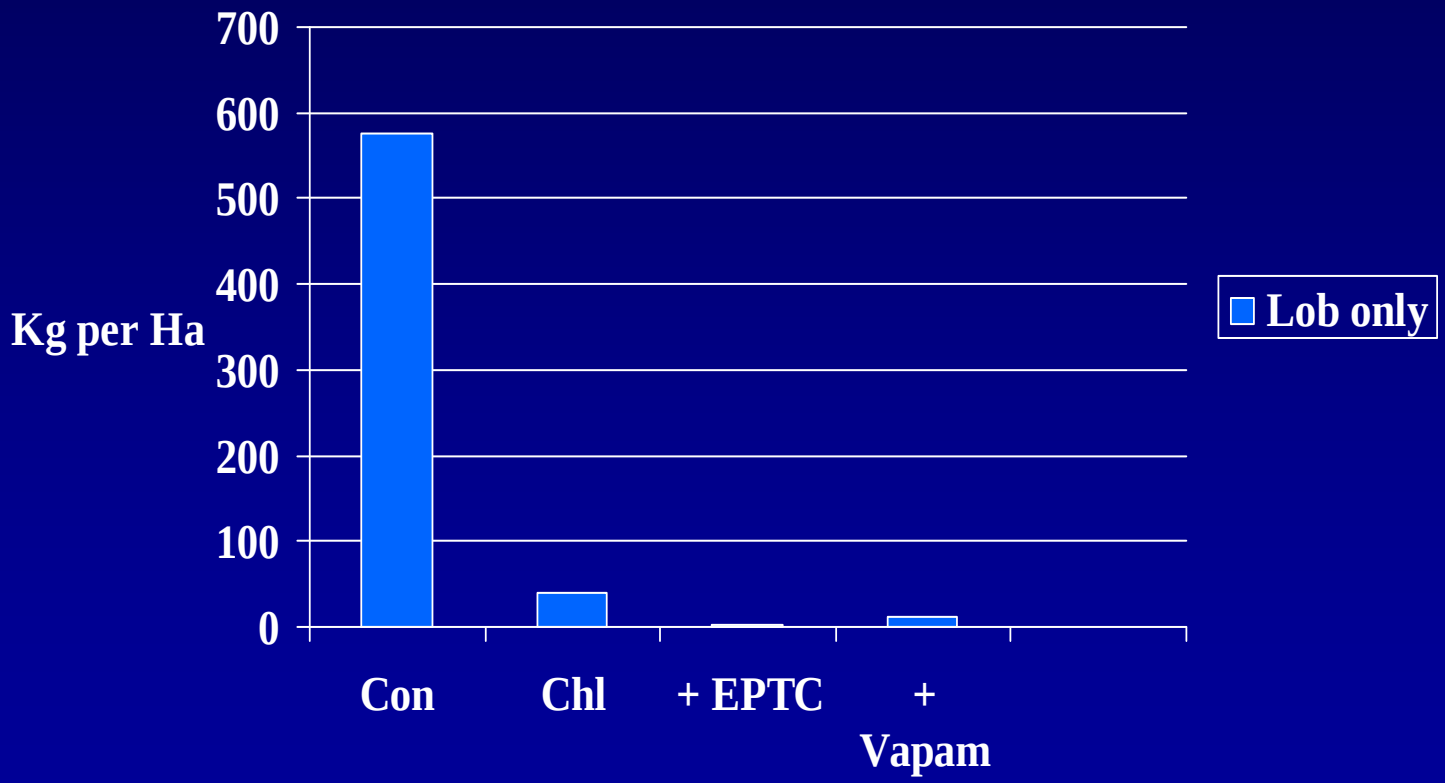
# Fumigation in non-crop area (1993)

# Nutsedge by treatment at the Beauregard Nursery

# Nutsedge Biomass

## By Treatment

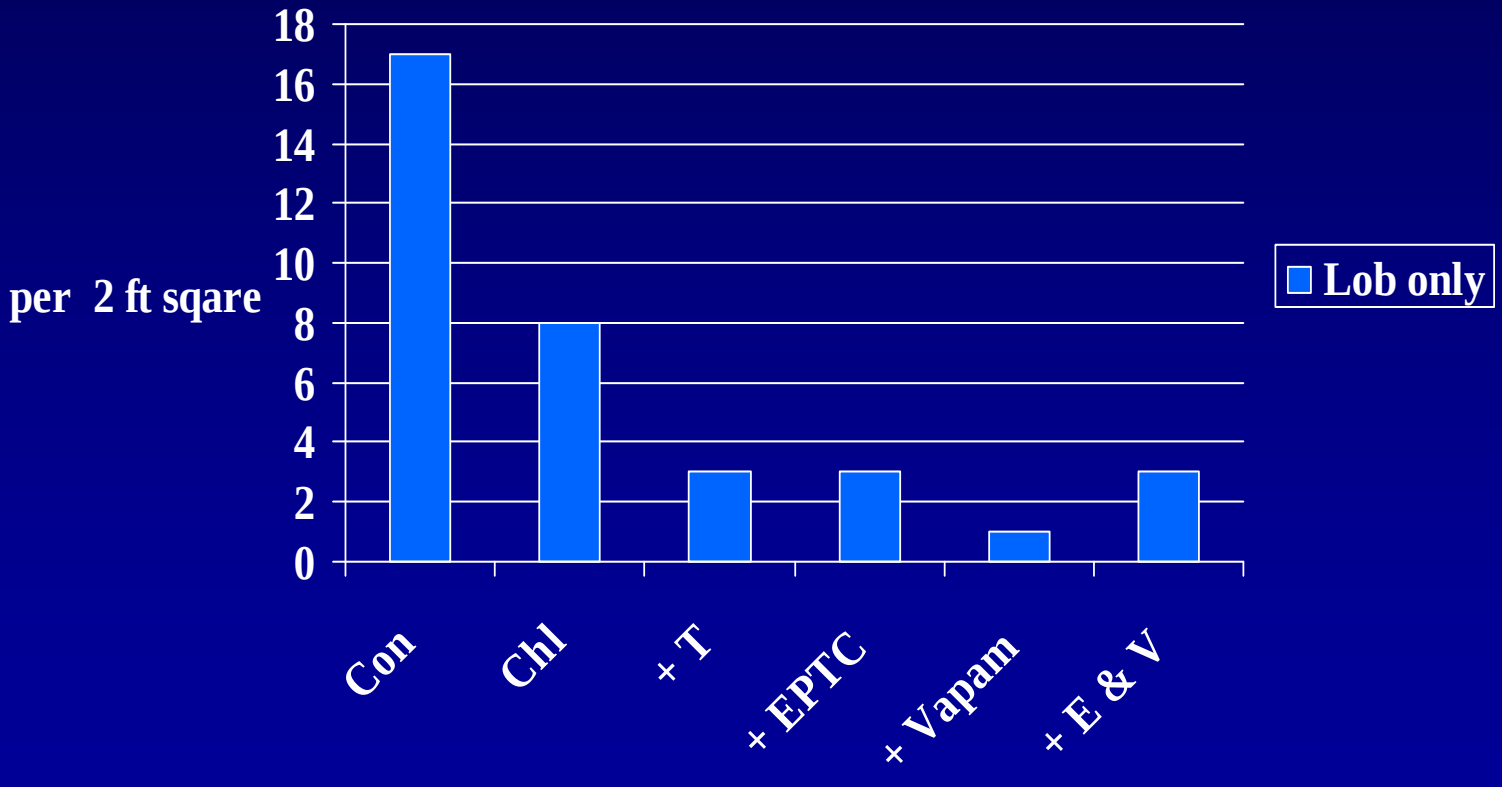
## Beauregard, LA



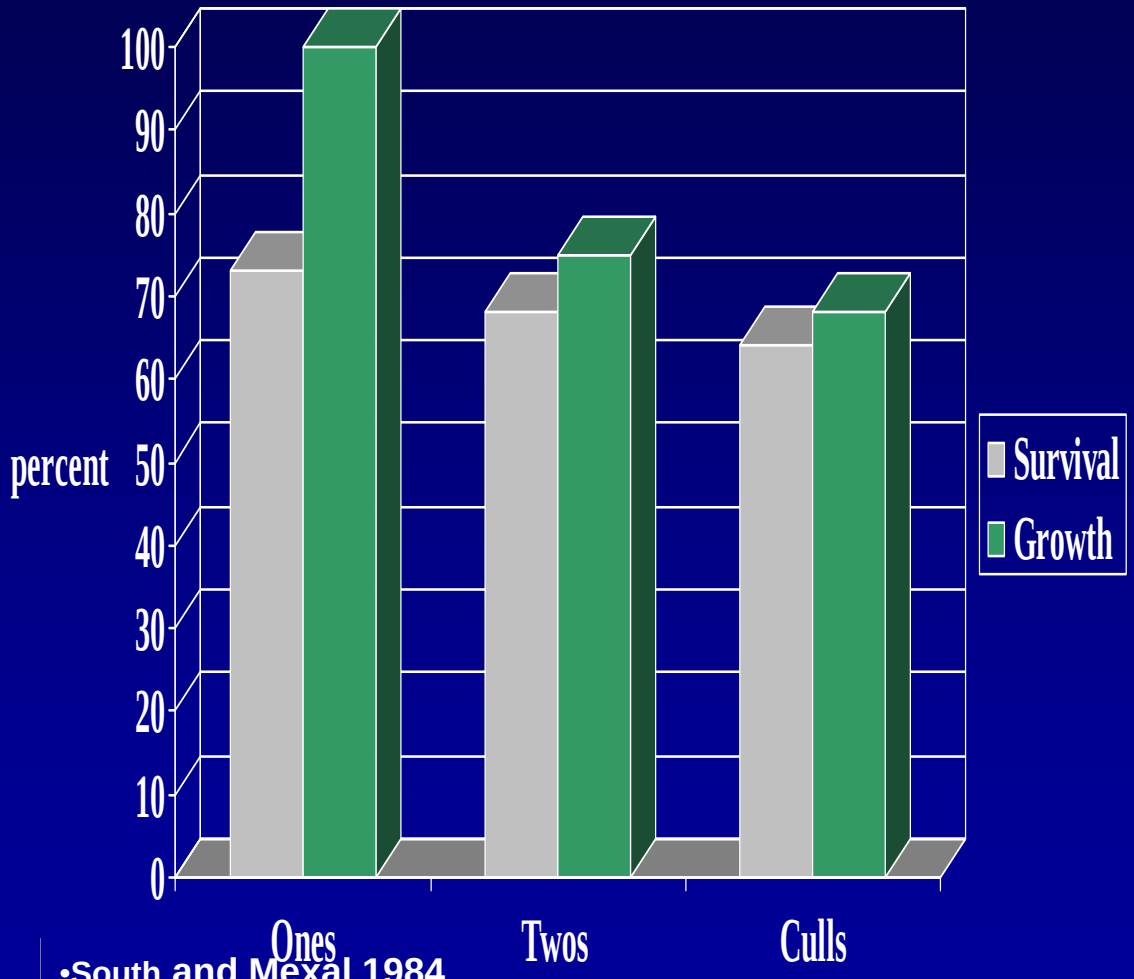

- **Beauregard 1998**

# Numbers of Nutsedge Tubers By Treatment

## Flint River Nursery



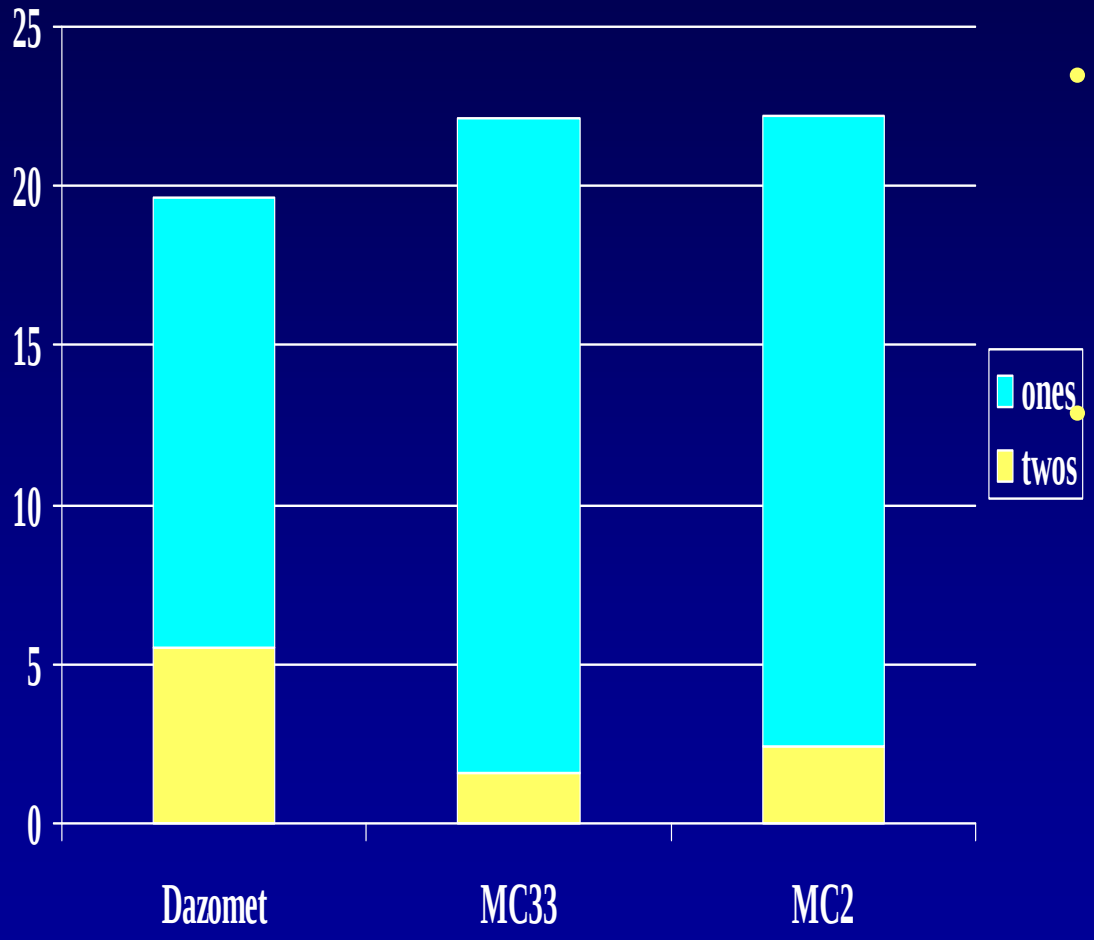
# Seedling Grade Affects Survival and Growth




- South and Mexal 1984
- Data from 10 to 34 years after planting

- Based on the differences in the figure at right, South concluded the PV of Grade 1 seedlings was up to $100/M more than grade 2's.

# Glennville 1994




- **The difference between total bar height is about $ 2,000 / ac**

**The difference between blue bars is about $13,000 / ac**

**5 more Grade 1's / ft $^2$ for the average of MBr trmts**

# The Value of Grade and Number

- Where seedlings are sold for $35/M, each seedling per square foot represents $1000 / acre.
- Based on the three nursery average,  the best fumigate increased potential sales by $7,000.
- Based on the estimated PV for Grade 1, the best fumigant increased the value by $26,000/ acre.