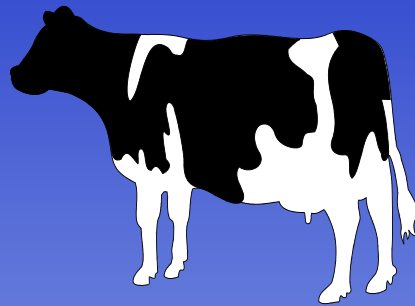


# Effect of region and herd size on dairy management parameters



*G. H. Oleggini, L. O. Ely, and J. W. Smith*



*The University of Georgia*

# Introduction



**Environmental, cultural, and market differences have led to different management systems among US dairy regions**



**Dairy management strategies change constantly following the availability of new technologies and market signals**



**Herd expansion has been a big change**

# Objectives

 **Determine if significant differences in management exist among herds of different sizes and regions of the U.S.**

- **In which parameters are they significantly different ?**
- **How big are these differences ?**
- **How these differences have evolved during the last decade**

# Material and methods

- **Dairy Herd Improvement Records (DHI)**

- 1998
- 17000 dairy farms
- 37 states

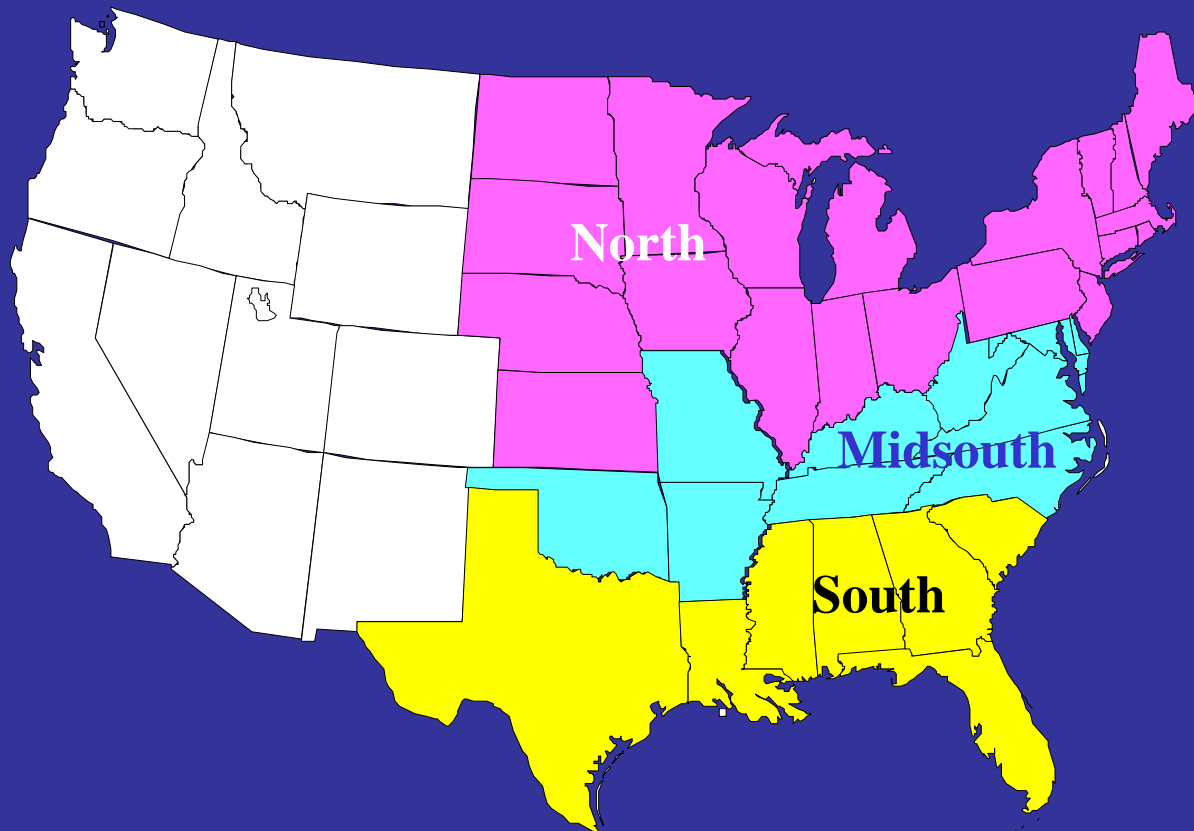
- **Data grouped into:**

- 6 herd sizes:
  - 20-49, 50-99, 100-149, 150-249, 250-449, > 449 cows
- 3 regions: North, Midsouth, South

# Materials and methods

- **DHI records**
  - 1990 -1999 data set
  - 107,484 observations, analyzed 41,129 obs.
  - 8 variables
- **3 Regions and 6 herd sizes**
- **Statistical analysis**
  - Ls means
  - Proc. reg
  - Reg. Coefficients compared through T-test

# Region definition



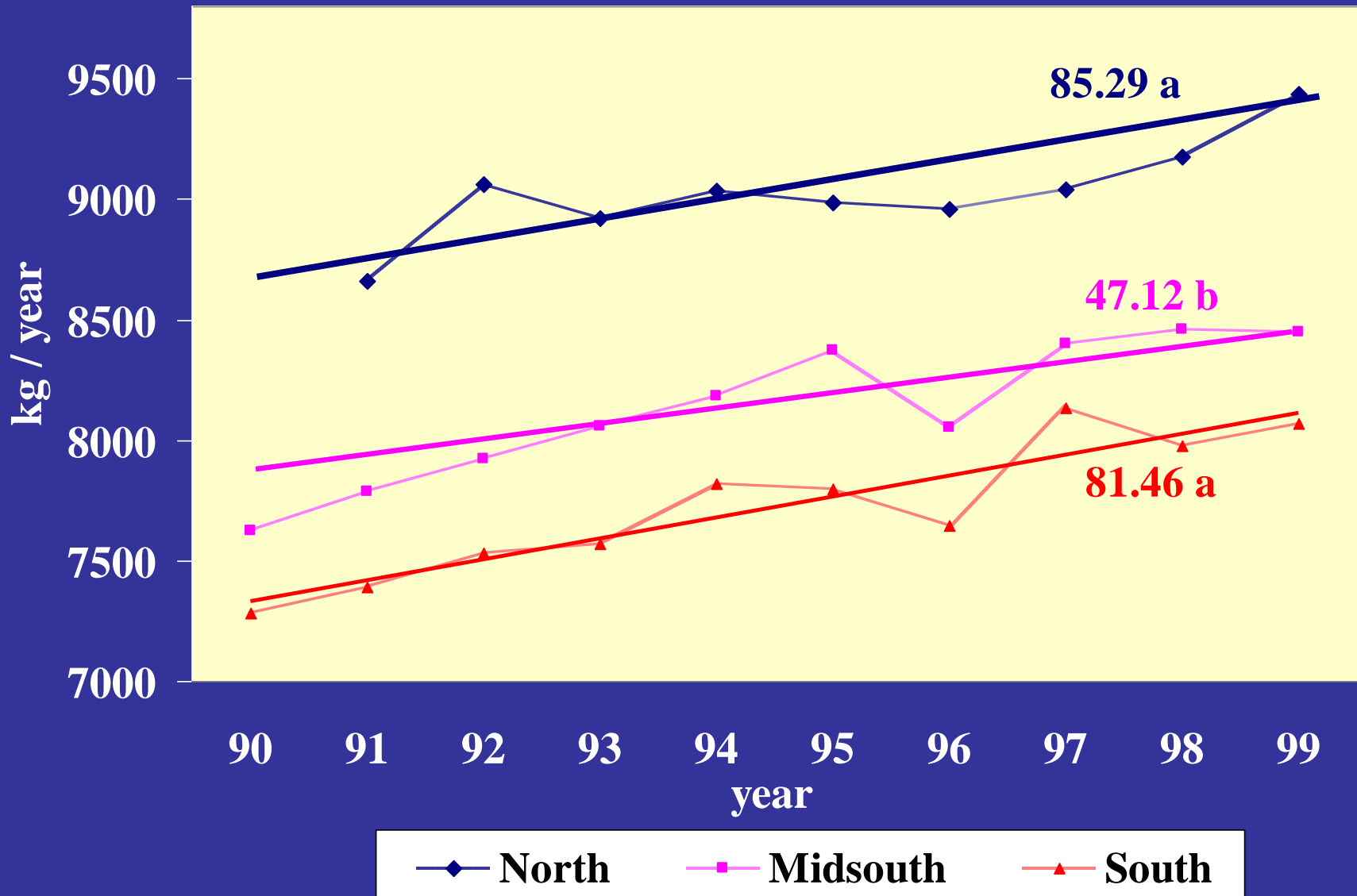
# RESULTS

# Milk production by region

(kg/cow/year)

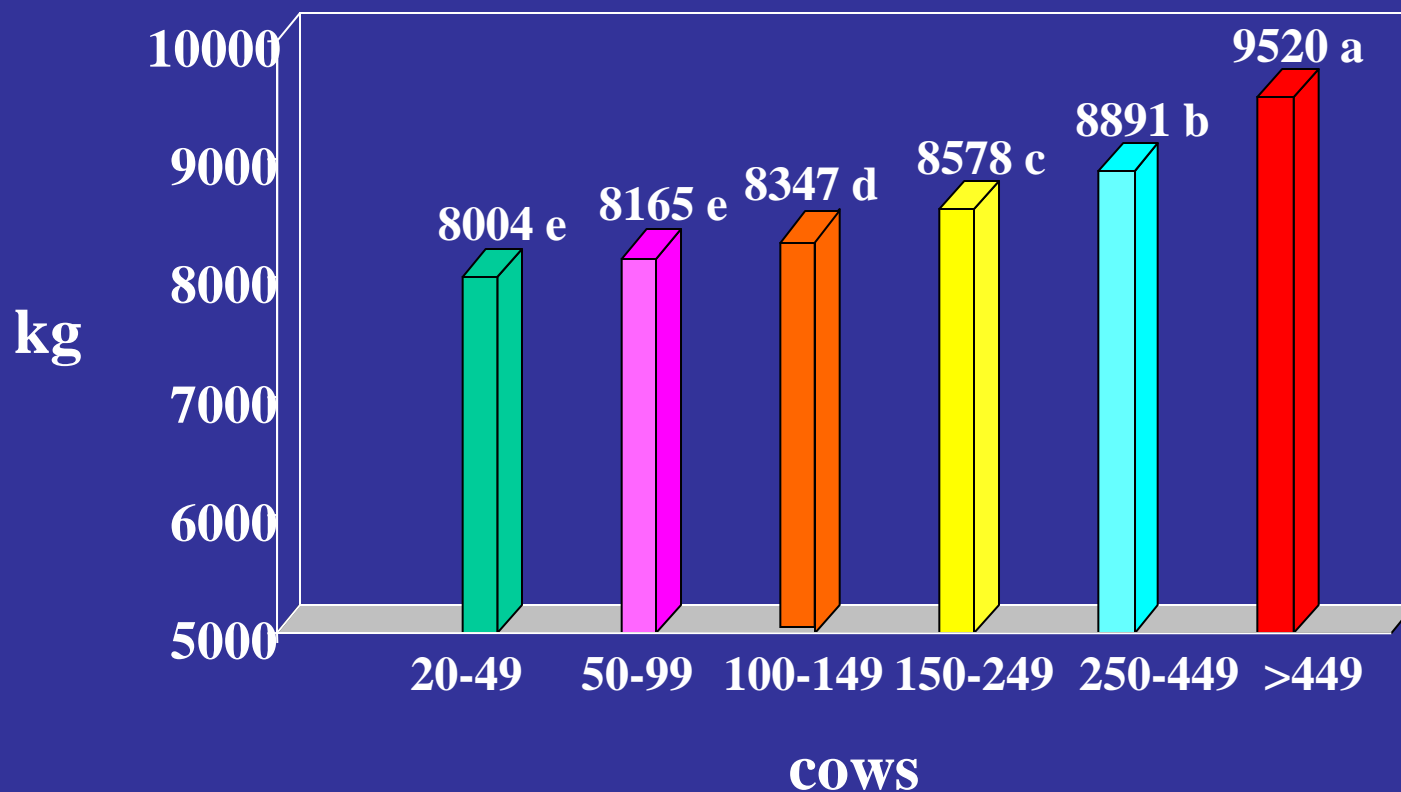


# Milk production per cow by region

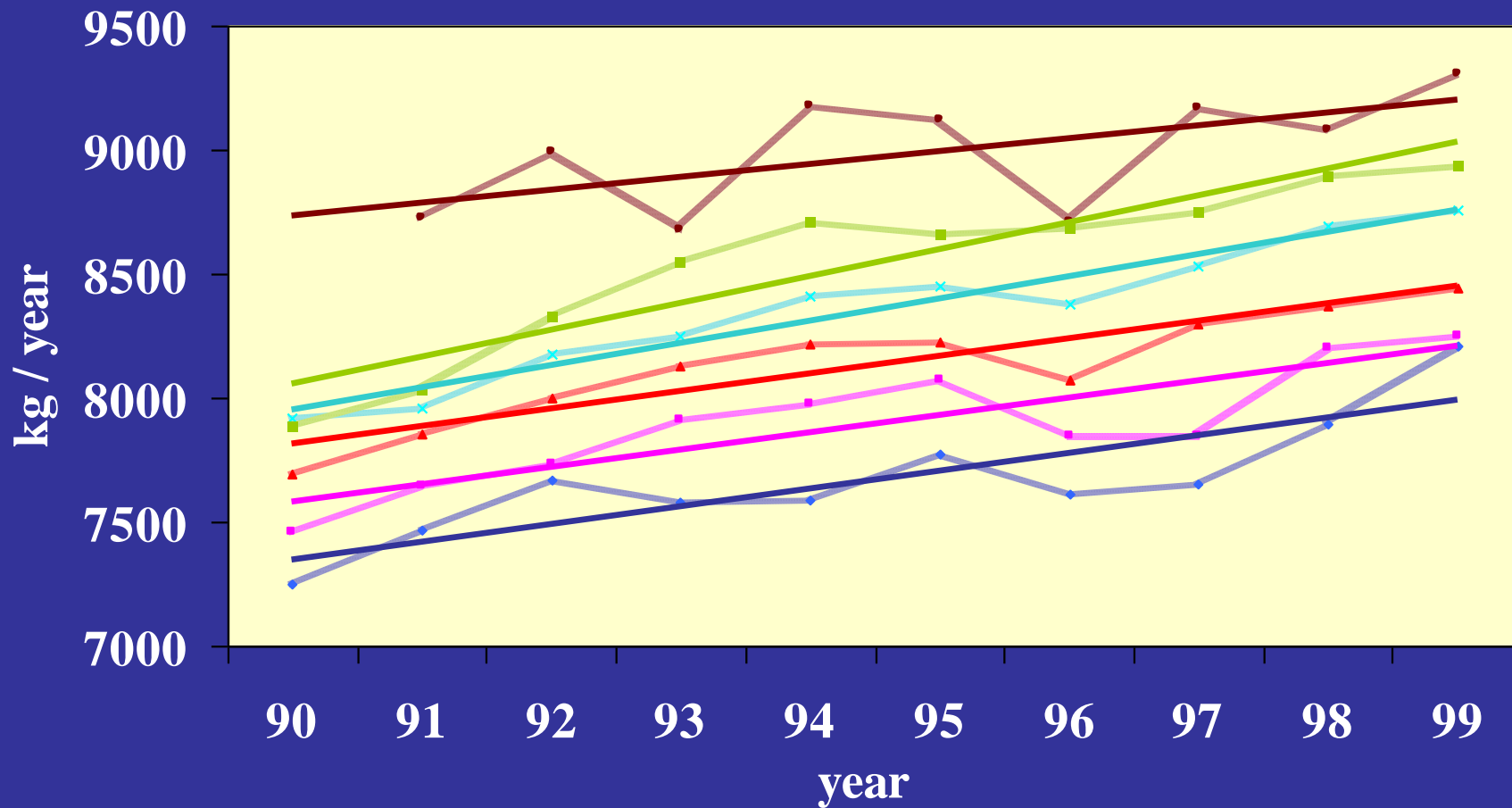


Reg.coeficcients with the same letter are not significantly different ( $P < 0.05$ )

# Milk production by herd size (kg/cow/year)



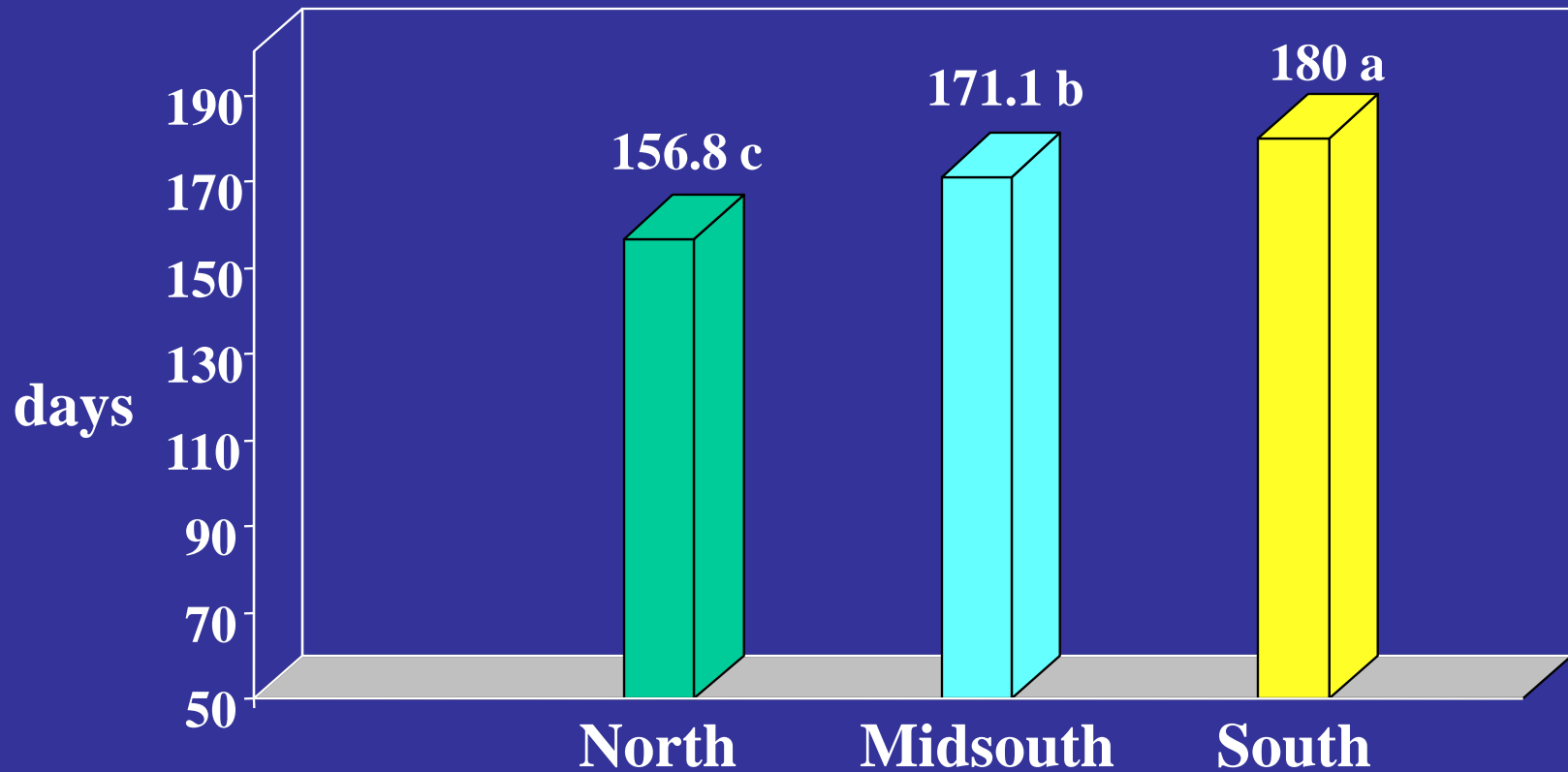
# Milk production per cow by herd size



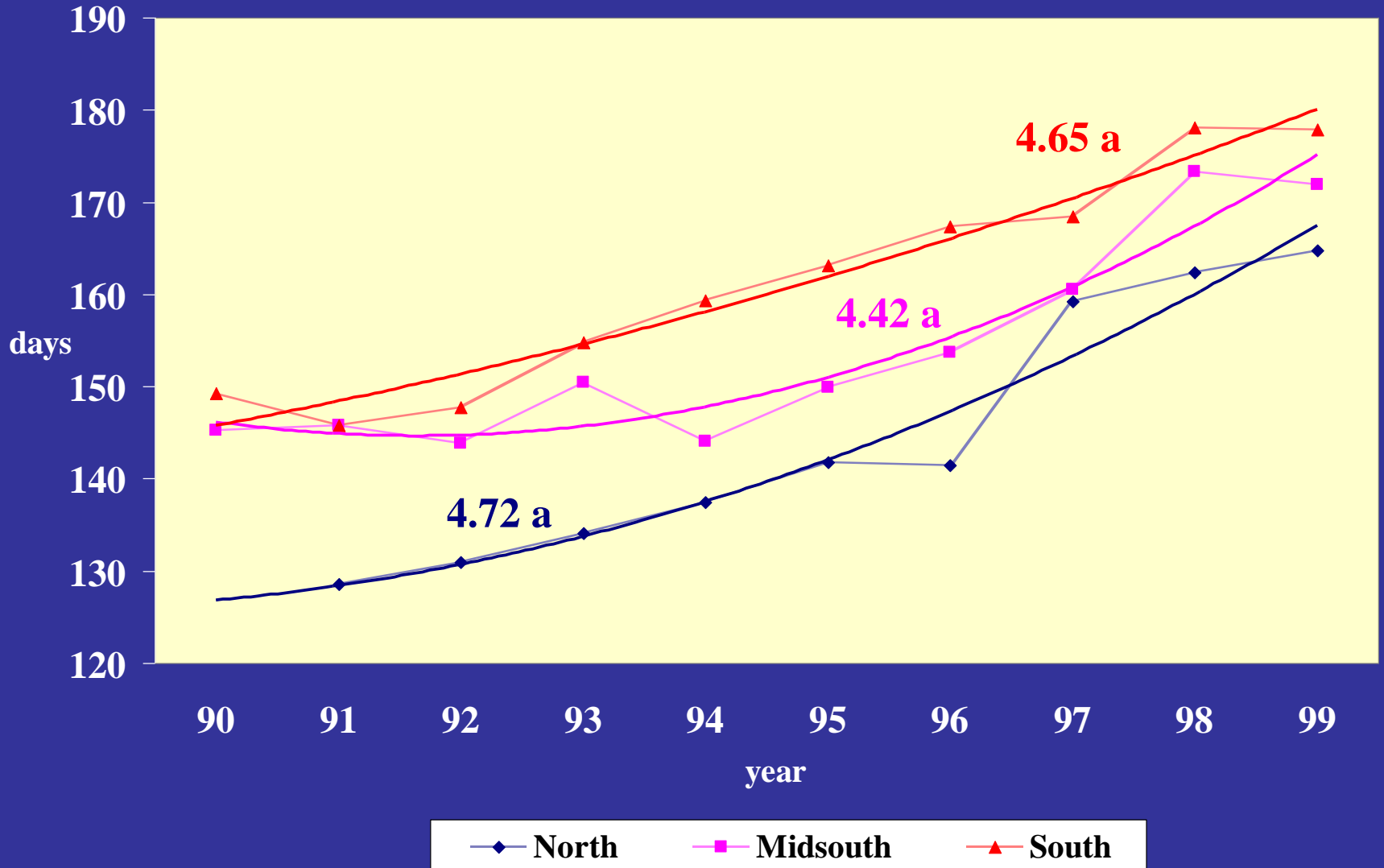
◆ 20-49    
 ◆ 50-99    
 ▲ 100-149    
 × 150-249    
 ■ 250-449    
 ● >449

R. Coef: **68.56 bd**     **65.86 cd**     **56.45 cd**     **97.47 a**     **93.26 ab**     **84.88 abc**

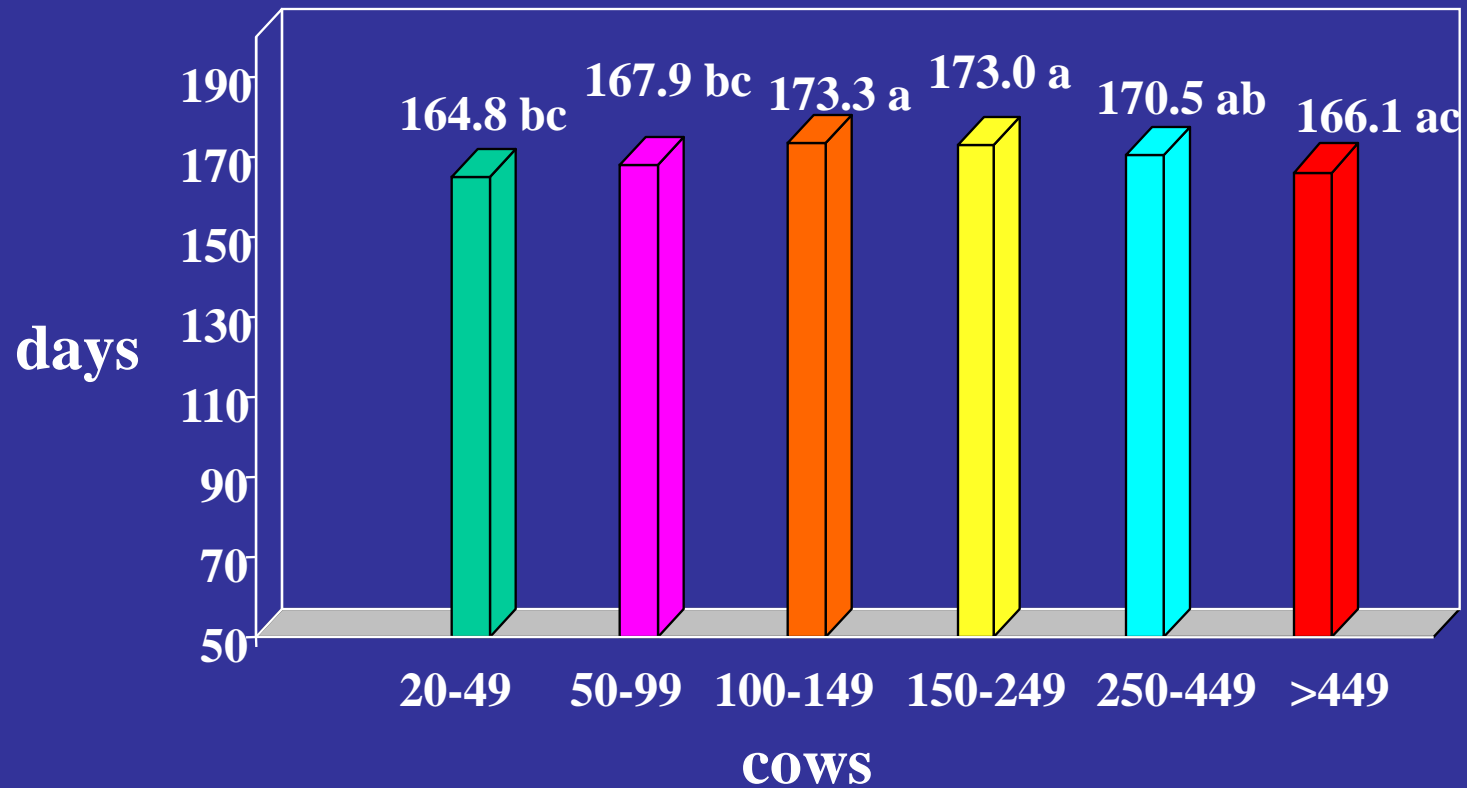
# Days open by region



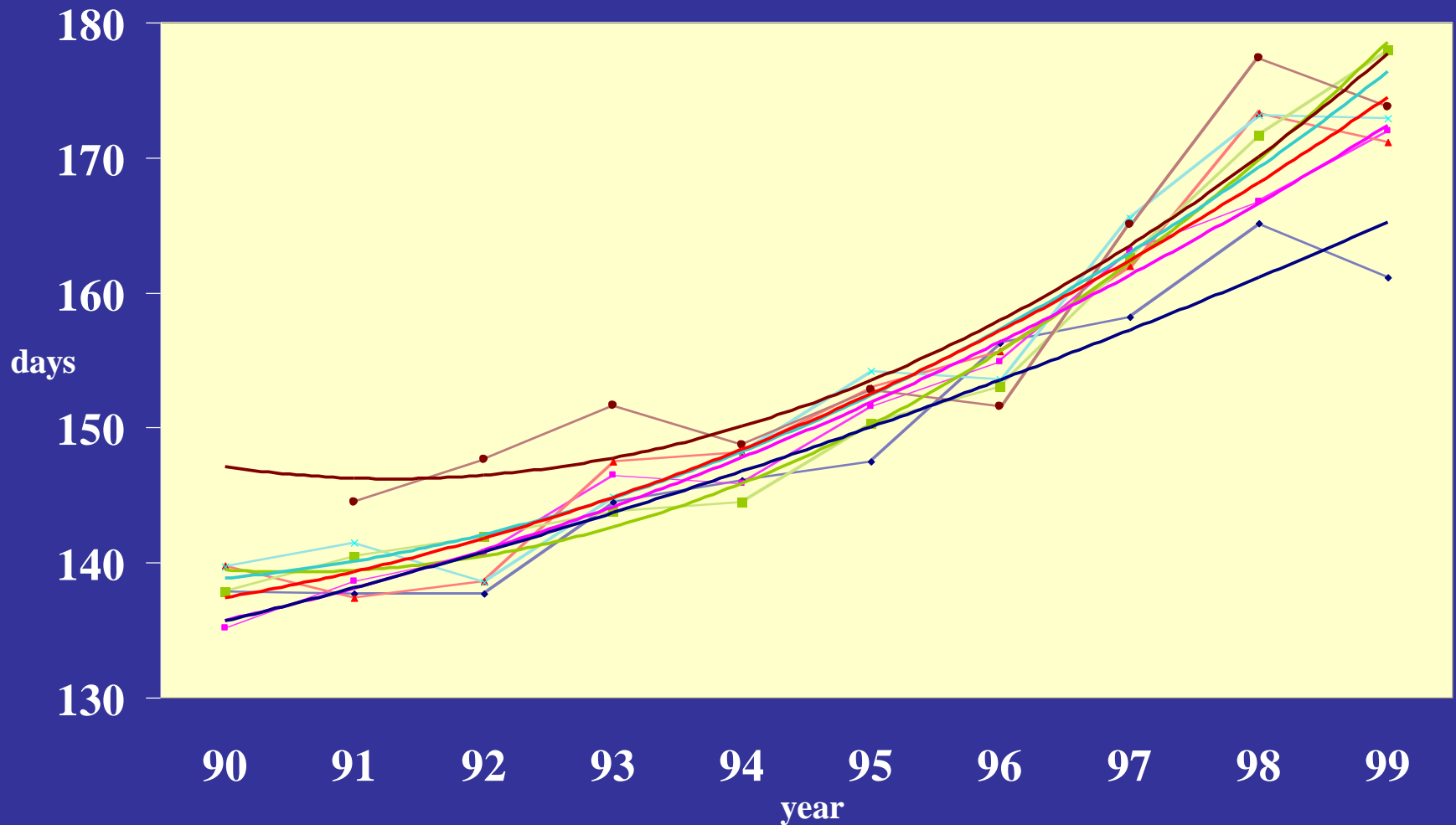
# Days open by region



# Days open by herd size



# Days open by herd size



—◆— 20-49

—■— 50-99

—▲— 100-149

—×— 150-249

—■— 250-449

—●— >449

R. Coef: 4.29 a

4.29 a

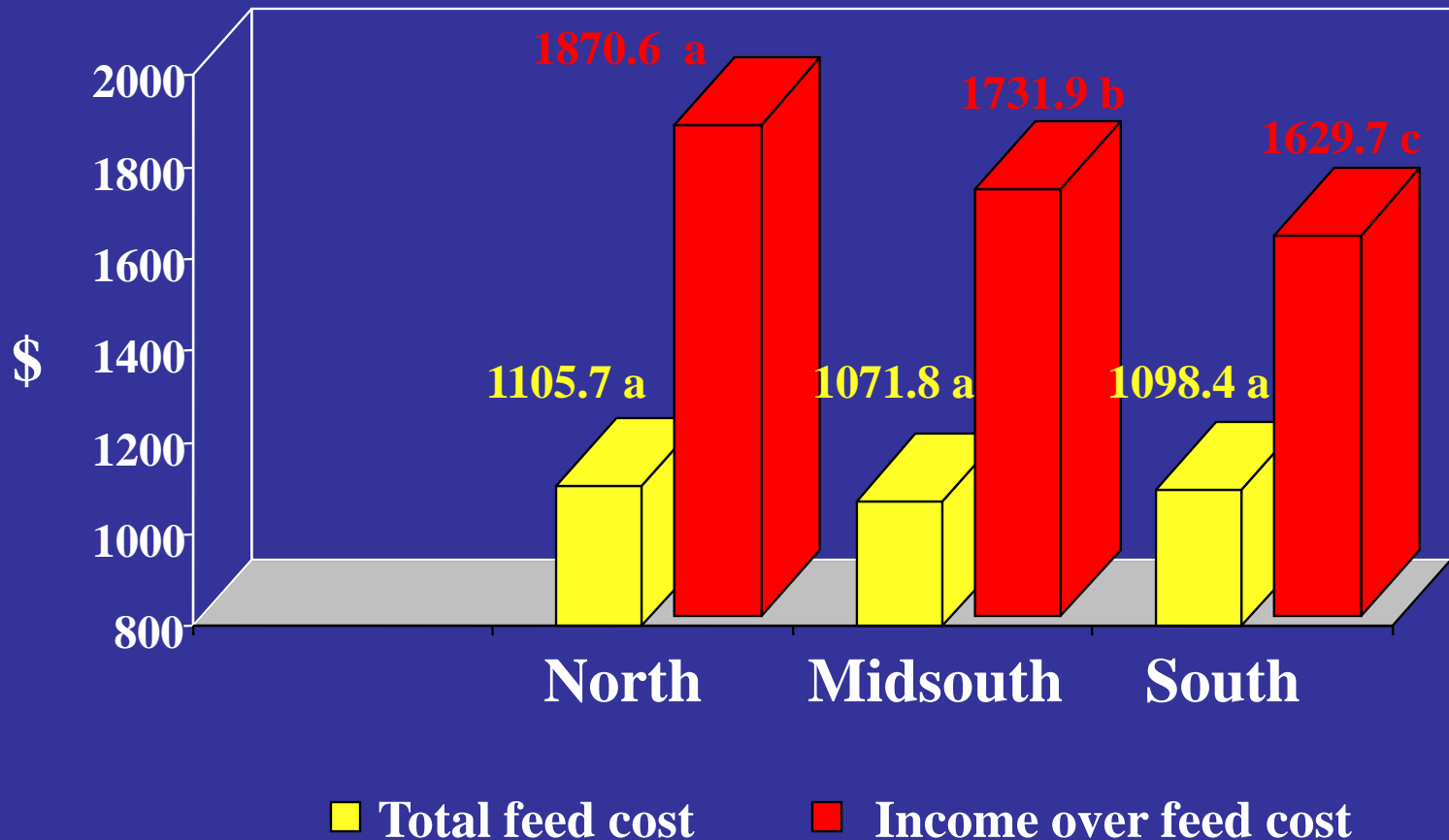
4.34 a

4.48 a

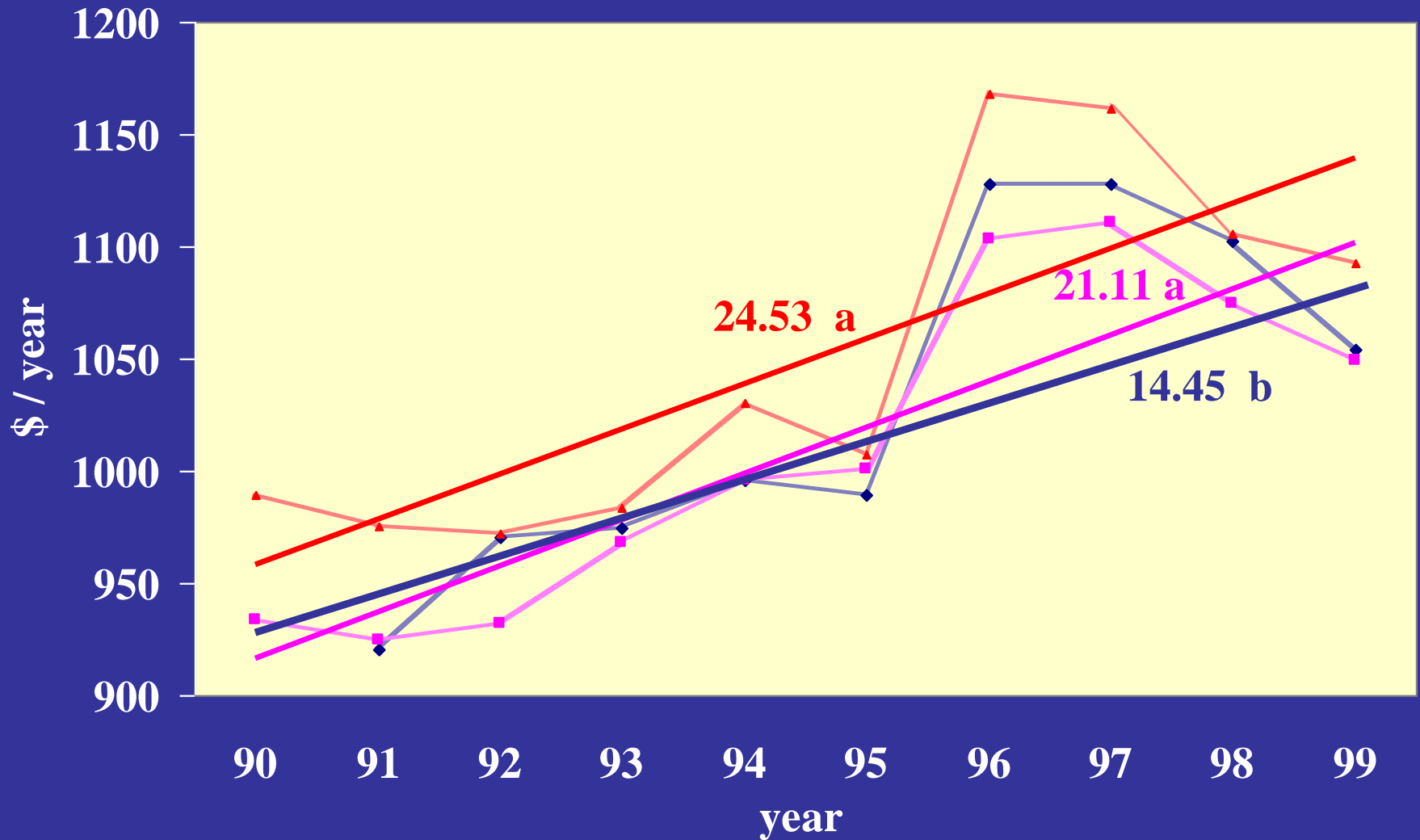
4.66 a

4.14 a

# Total feed cost and IOFC per cow by region (\$/year)



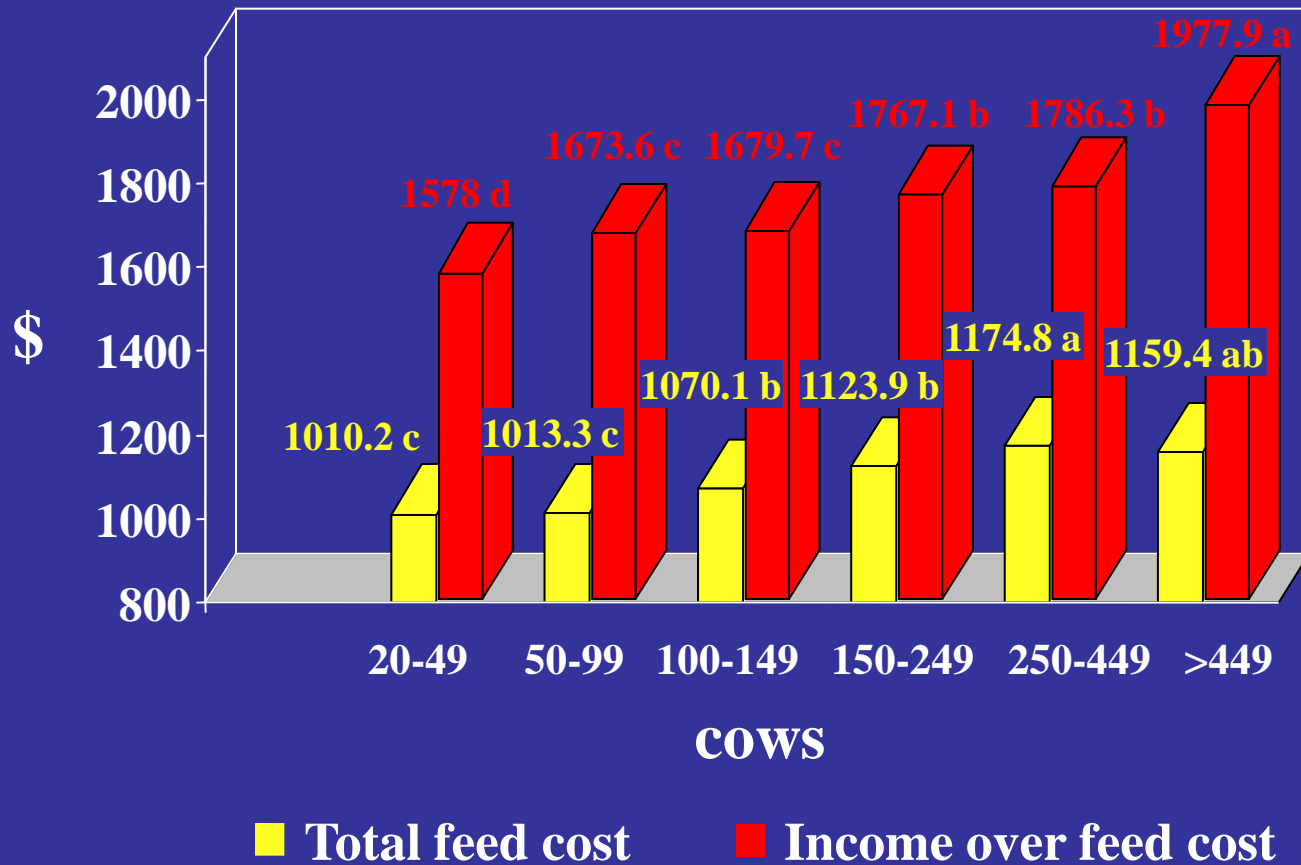
# Total feed cost per cow by region



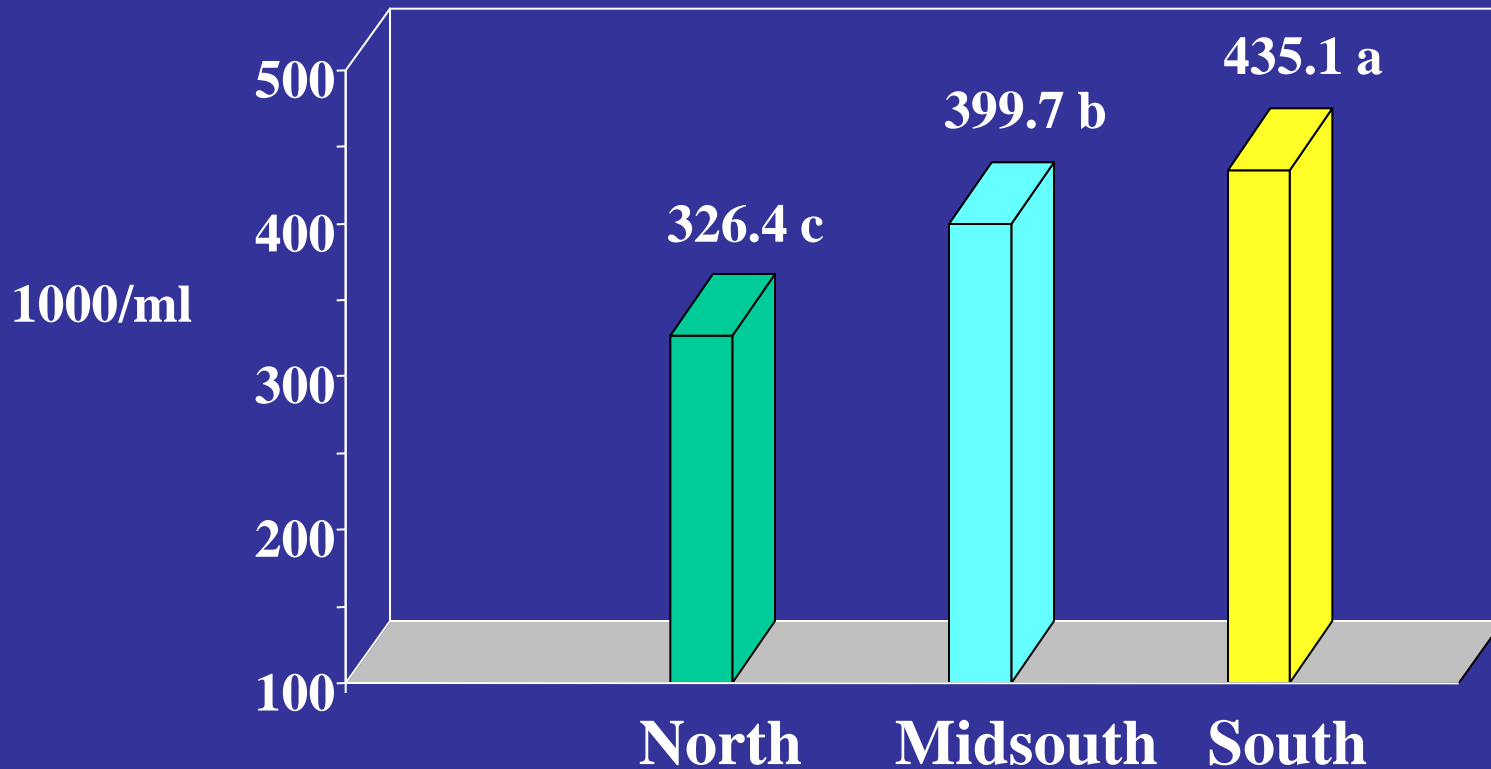
—◆— **North**    —■— **Midsouth**    —▲— **South**

Reg. Coefficients with the same letter are not significantly different ( $P < 0.05$ )

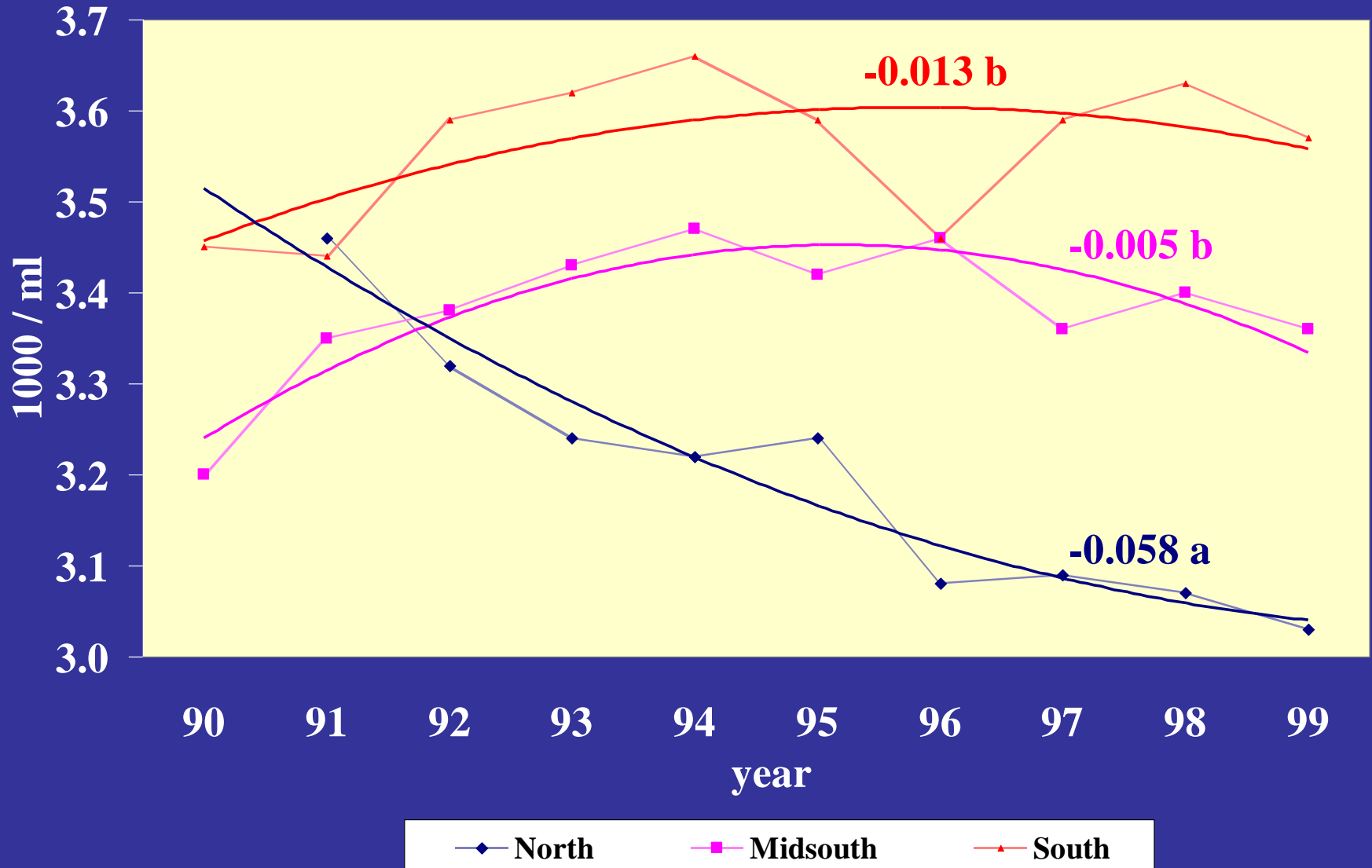
# Total feed cost and IOFC per cow by herd size (\$/year)



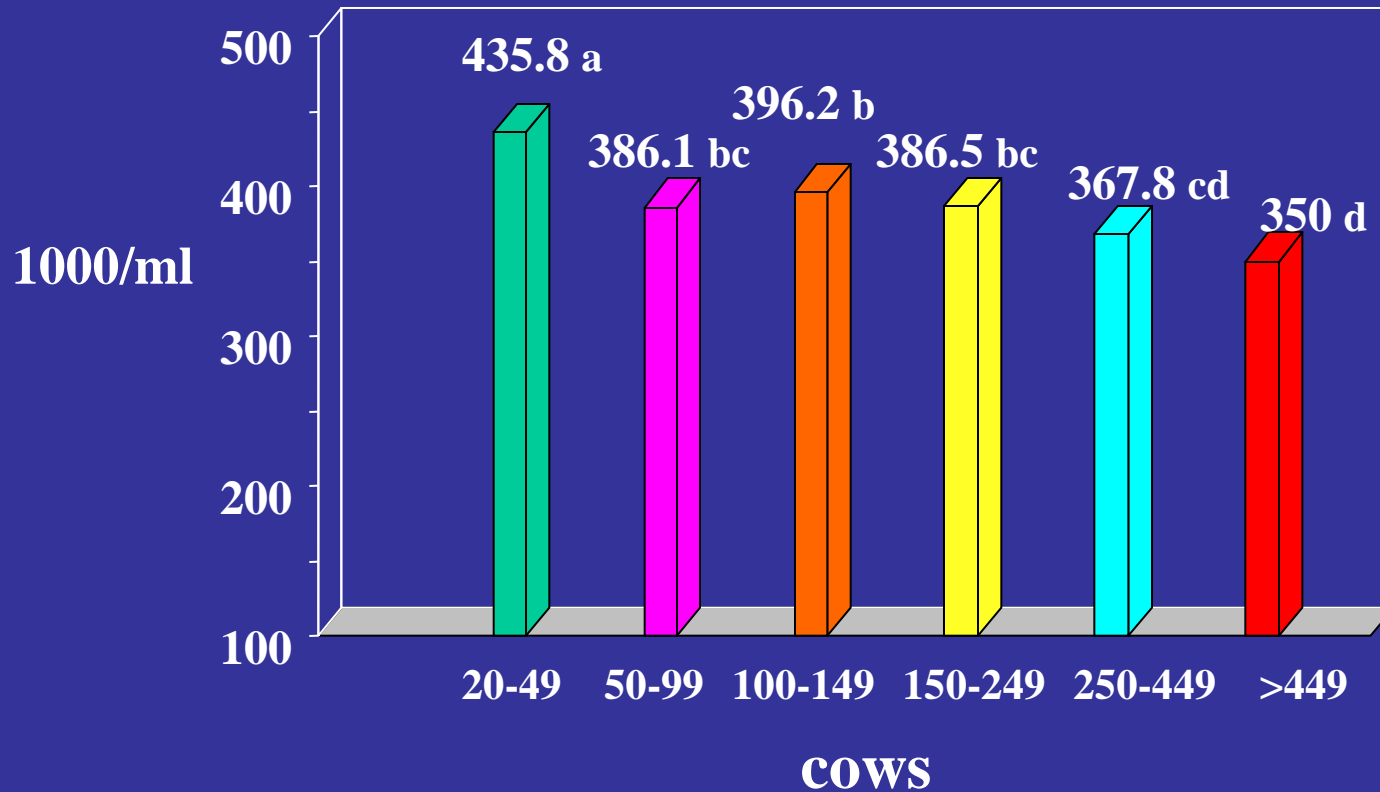
# Somatic cells content by region



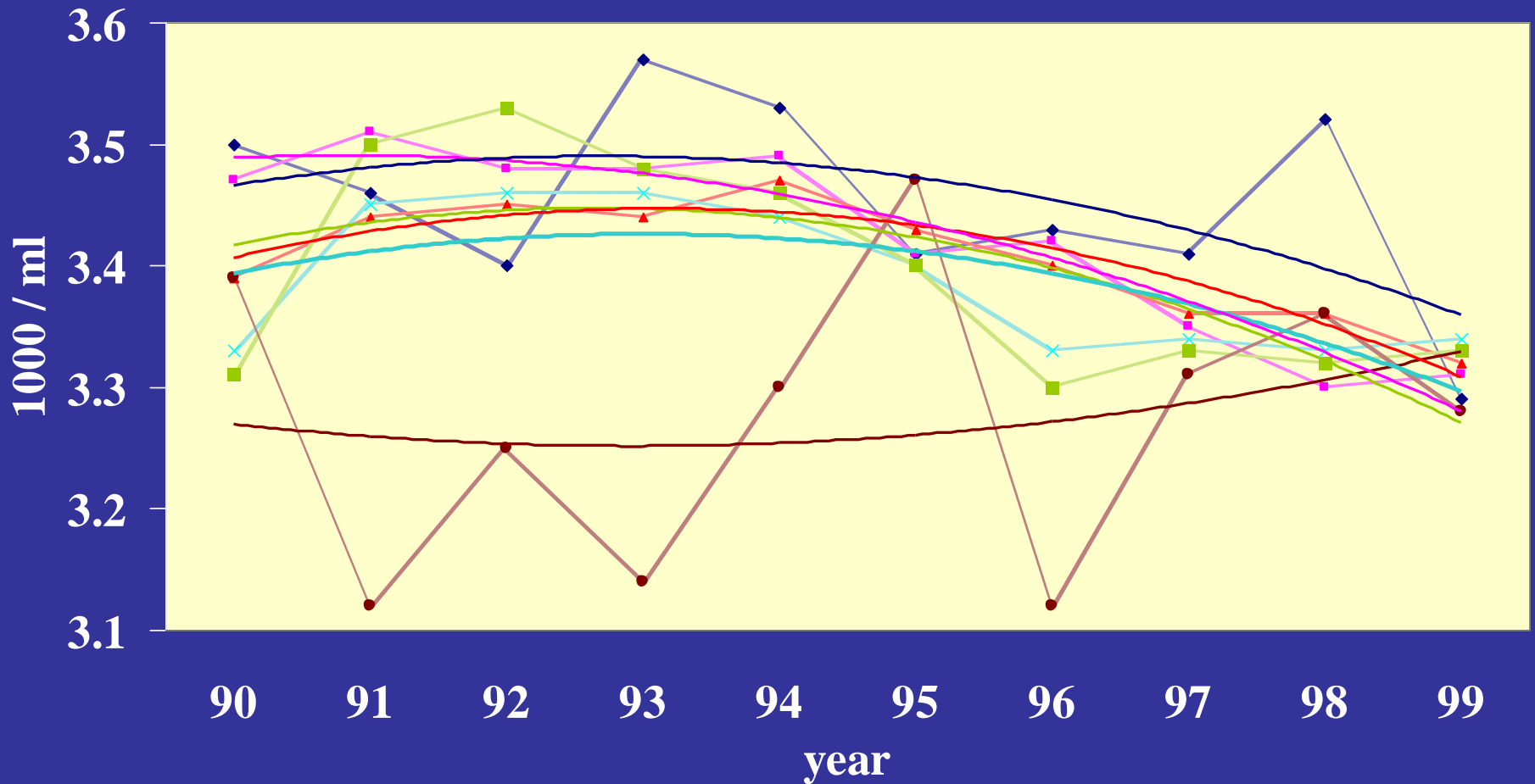
# Somatic cell score by region



# Somatic cells content by herd size

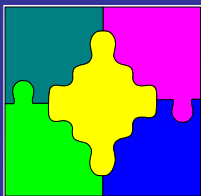


# Somatic cell score by herd size



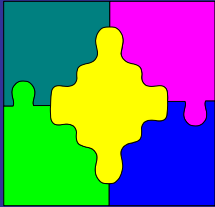
◆ 20-49   
 ■ 50-99   
 ▲ 100-149   
 × 150-249   
 ■ 250-449   
 ● <449

**R. Coef:**   
-0.05 a   
-0.04 b   
-0.02 cd   
-0.03 bd   
-0.03 bc   
-0.01 d



# Conclusions

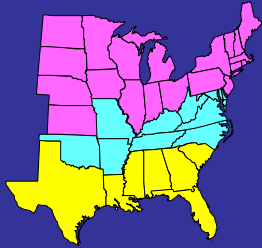
- ☞ There were significant differences among regions and herds of different size for most of the variables.**
- \* North had the highest IOFC basically as a result of higher milk production.**
  - better reproductive performance and lower incidence of mastitis
- \* Larger herds had higher IOFC than smaller as a result of higher milk production and same feed cost/cwt.**



# Conclusions

**Over the period from 1990 to 1999:**

- Milk production per cow, days open, total feed cost, feed cost/cwt, and IOFC increased
- Somatic cell score decreased
- The rate of change for the studied management parameters varied among regions and herd sizes



## Differences among regions:

- Became greater for milk production, SCS, total feed cost, total feed cost/cwt, and IOFC
- Days open were constant



## Differences among herd sizes:



- Total feed cost became greater
- Milk production, Days open, Feed cost/cwt, IOFC, were constant
- SCS became smaller

# **BENCHMARKS USED FOR EVALUATION**

**SET UP FOR REGION  
AND HERD SIZE**