UNIVERSITY OF FLORIDA
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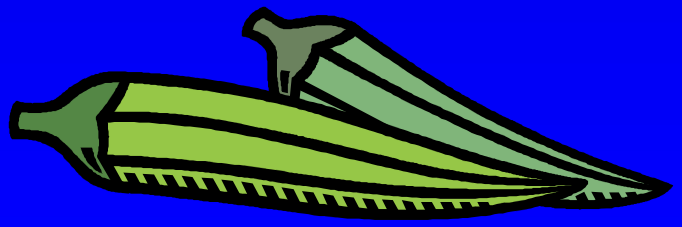
Plant population affects growth and yield of okra *(Abelmoschus esculentus)*

T. Olczyk, K. Cushman, W. Klassen,
M. Codallo & R. Regalado
University of Florida, IFAS

Background Information

- Origin: West Africa, warm season crop
- Production in US – Texas, Georgia, Florida, Tennessee, Alabama, California;



Background information

- Important cash crop in Miami-Dade County, FL
- 2,000 – 3,000 acres planted
- Production: Spring, Summer & Fall (some growers plant as early as January)

Background information cont.

- Soils: shallow, calcareous: "Krome very gravelly loam"
- Low nutrient & H_2O holding capacity
- High pH

Okra in Crop Rotation

- A primary crop for some growers
- A second crop for others
- Spring/summer planting – most common
- January (short days, cold nights) – less common

Production practices in South Florida

- Typical plant spacing:
  rows spaced 91 cm (36") apart
  plants within row 5 cm (2") apart

Plant population up to 35,000 plants/ha

Problems with high densities

- Pests: difficult to control
- Plants competing for light & nutrients
- Weaker plants, no lower leaves
- Harvesting problems for workers

Research Question

- Are these high densities necessary?

Materials and Methods

- Experiment conducted at farmer's field in Homestead, FL
- Clemson Spineless 80
- Planting date: May 23, 2005
- Planting and field operations conducted by the grower

Materials and Methods

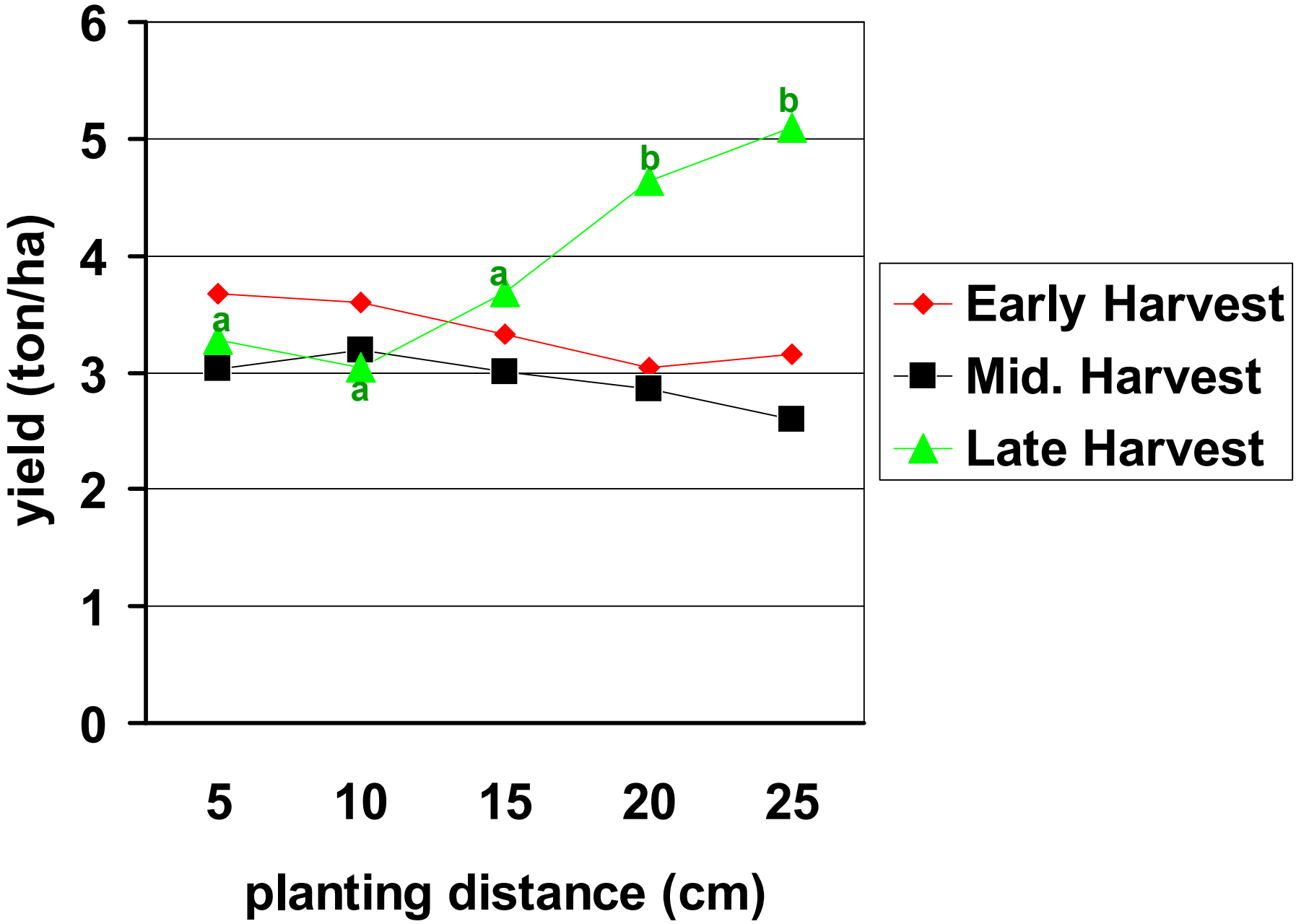
- Treatments:

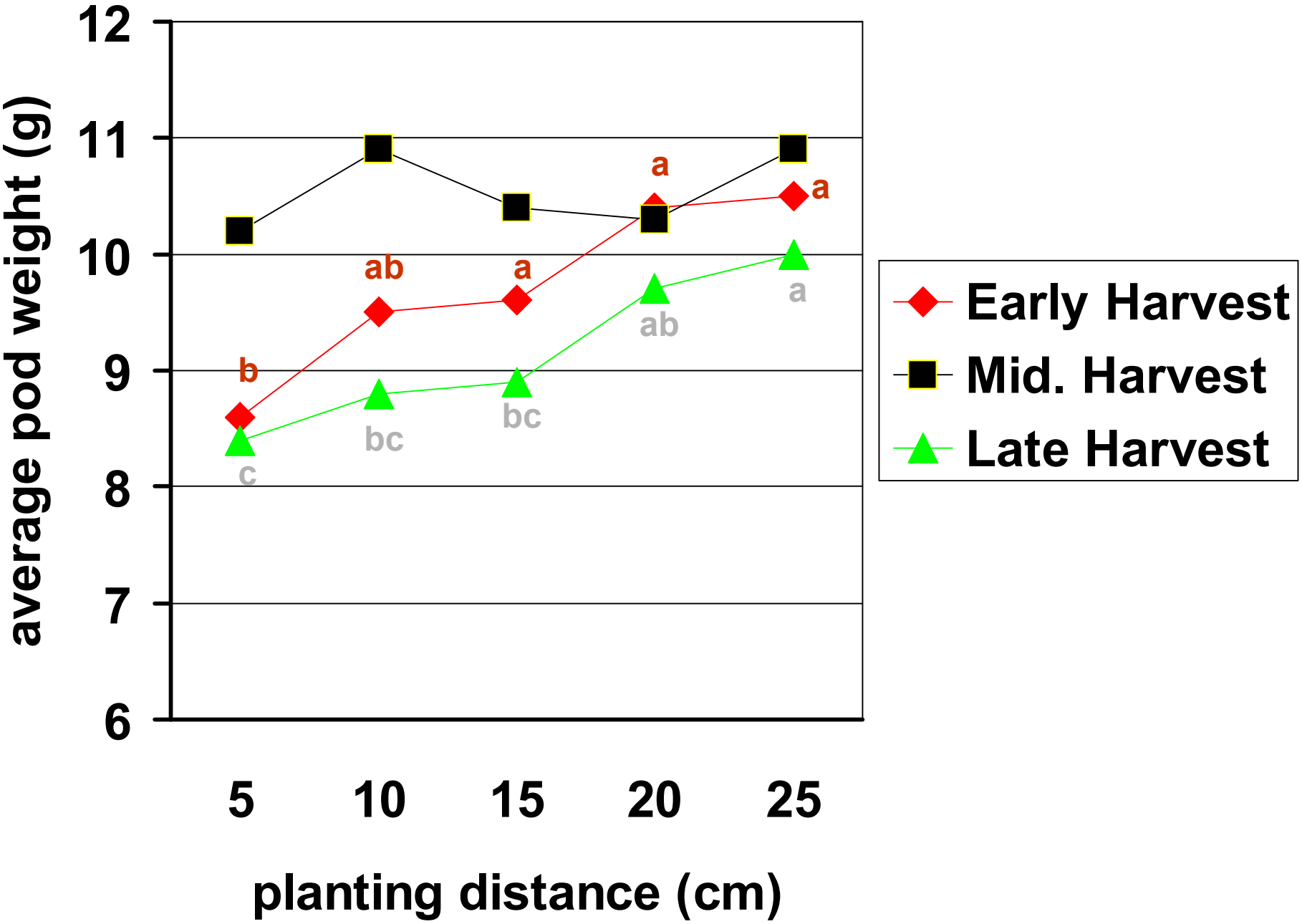
5 cm	35,270 plants/ha
10 cm	17,640 plants/ha
15 cm	11,760 plants/ha
20 cm	8.820 plants/ha
25 cm	7,050 plants/ha

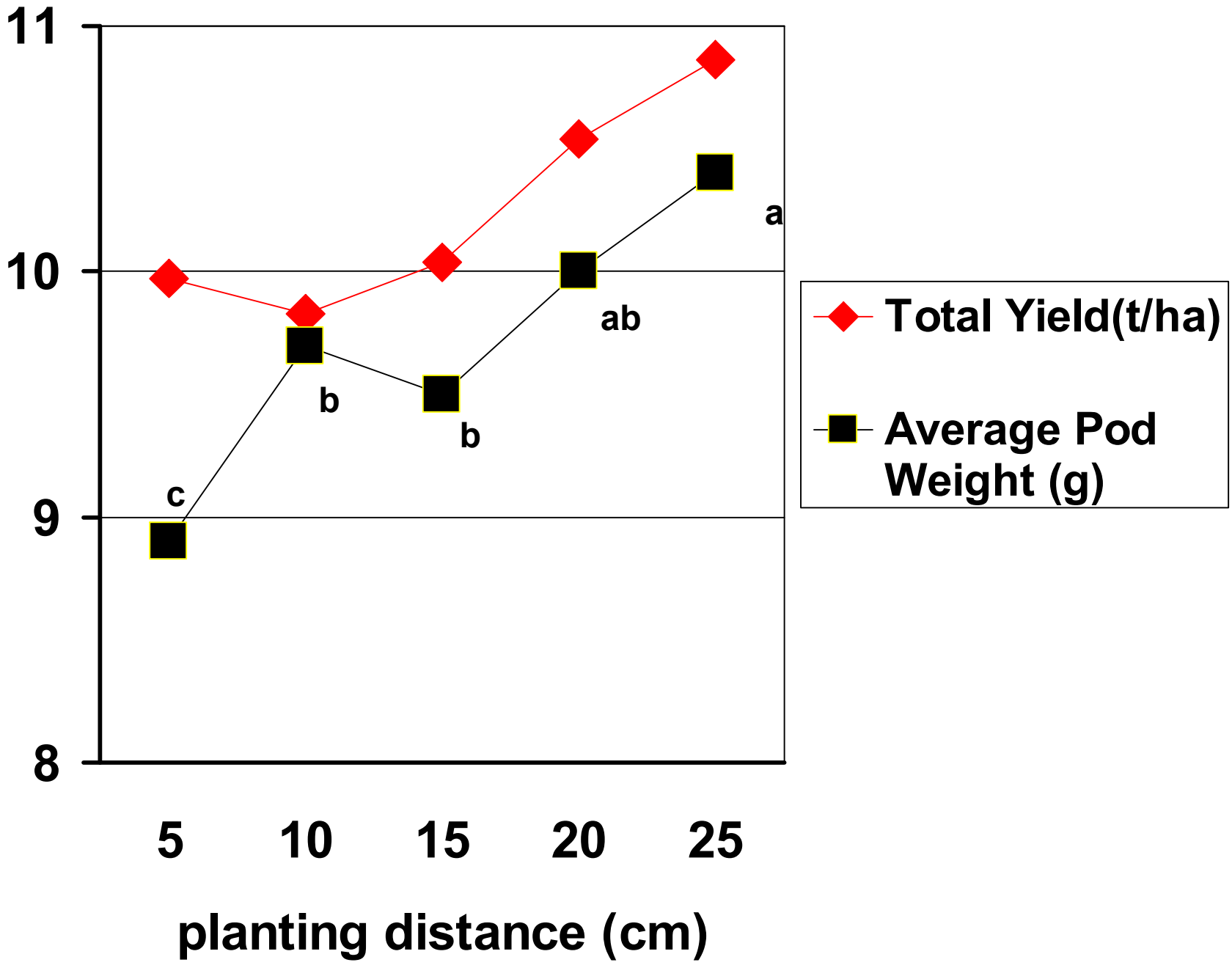
- Thinning of seedlings - June 8, 2005
- Between row spacing : 91 cm
- Plots 4.5 m long by three rows wide

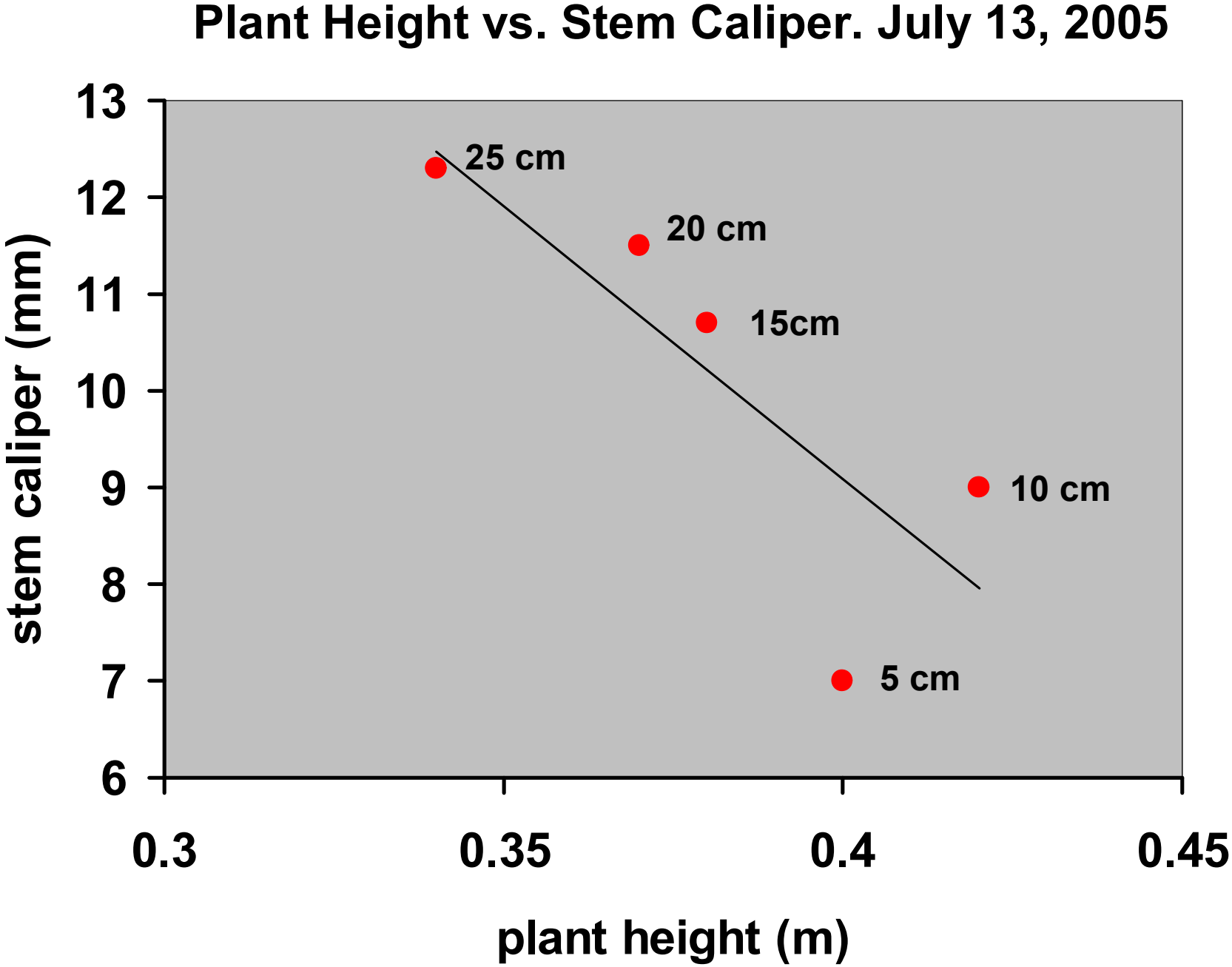
Materials and Methods

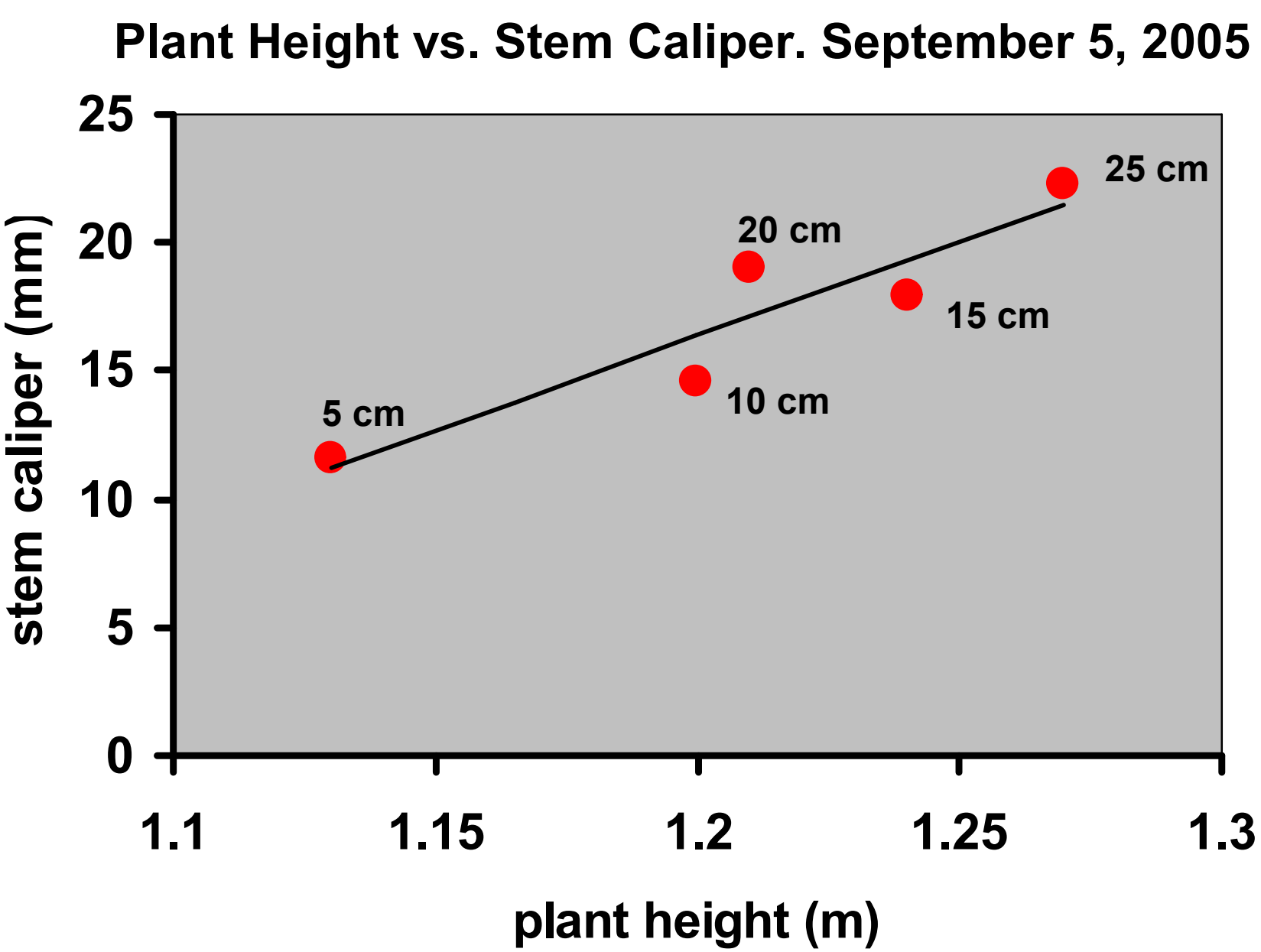
- Randomized Complete Block design with 3 blocks
- Data was collected from 3 m of the center row
- Harvesting: 3x week from July 29 to September 30
- 26 harvests total


6
5
4
3
2
1
0
yield (ton/ha)
a
a
a
b
b
5
10
15
20
25
planting distance (cm)
Early Harvest
Mid. Harvest
Late Harvest


12
11
10
9
8
7
6
average pod weight (g)
5
10
15
20
25
planting distance (cm)
a
a
ab
a
b
ab
bc
bc
c
a
Early Harvest
Mid. Harvest
Late Harvest


11
10
9
8
5
10
15
20
25
planting distance (cm)
a
ab
b
b
c
Total Yield(t/ha)
Average Pod Weight (g)


Plant Height vs. Stem Caliper. July 13, 2005
stem caliper (mm)
13
12
11
10
9
8
7
6
25 cm
20 cm
15cm
10 cm
5 cm
0.3
0.35
0.4
0.45
plant height (m)


Plant Height vs. Stem Caliper. September 5, 2005
stem caliper (mm)
25
20
15
10
5
0
1.1
1.15
1.2
1.25
1.3
plant height (m)
5 cm
10 cm
15 cm
20 cm
25 cm

Conclusions

- Early and midseason yields (t/ha):

  No significant differences
- Late yield (t/ha):

  Lowest for the highest densities and highest for the lowest
- Total yield (t/ha):

  Not affected by spacing treatments

Conclusions, cont.

- Plant height (early):
  Tallest among the highest densities

- Plant height (late):
  Shifted to tallest among the lowest densities

Conclusions, cont.

- Stem caliper:

  Greatly affected by spacing with larger caliper stems among lowest plant densities

Hurricane Katrina (8/25/05)

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¡Gracias!

Thank you!