University of California
Agriculture and Natural Resources

Making a Difference for California

EVALUATING DRIP IRRIGATED TOMATOES ON 80-INCH BEDS

Scott Stoddard, Farm Advisor,
UCCE Merced & Madera
Tom Turini, Farm Advisor, UCCE Fresno

BACKGROUND

- Double row tomatoes on wide beds (72 - 80 inches) has become very common in last 5 years (Stanislaus - Fresno)
  - drip irrigation > 80% in this area
- Better fit for growers with crop rotations that use 40” systems (lettuce, melons, onions).

OBJECTIVE:

Final year to evaluate 80” double-row processing tomatoes with different plant populations and drip systems, with emphasis on economic analysis.

METHODS

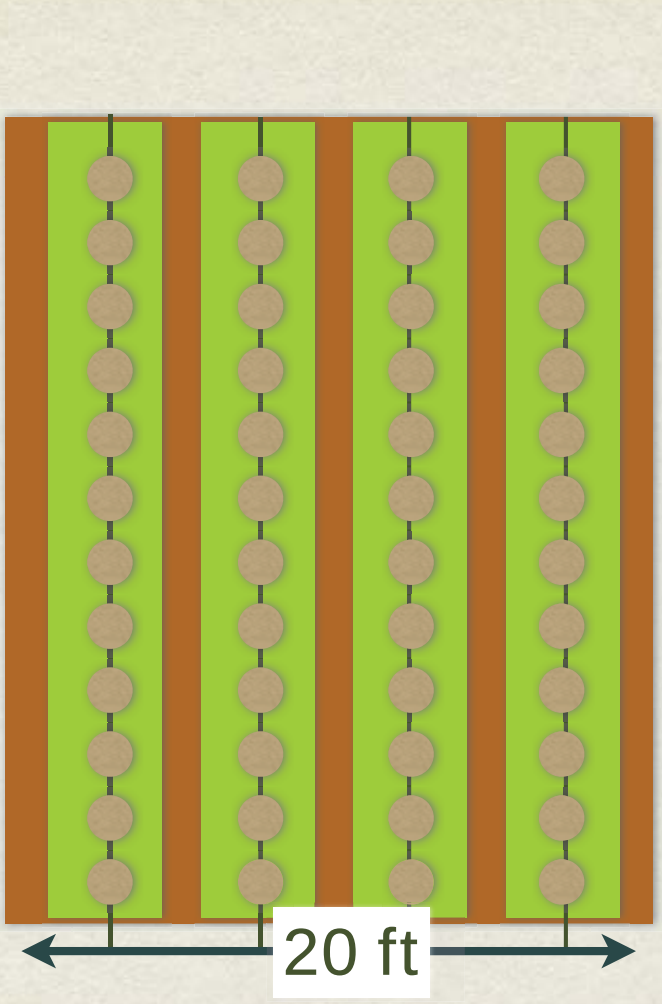
1. Std 60” bed w/buried drip, single row plants
2. 80” bed w/single buried drip, double row plants
3. 80” bed w/two buried drip lines, double row plants
4. 80” bed w/single drip, with rotation (fallow, tomatoes, tomatoes melons)

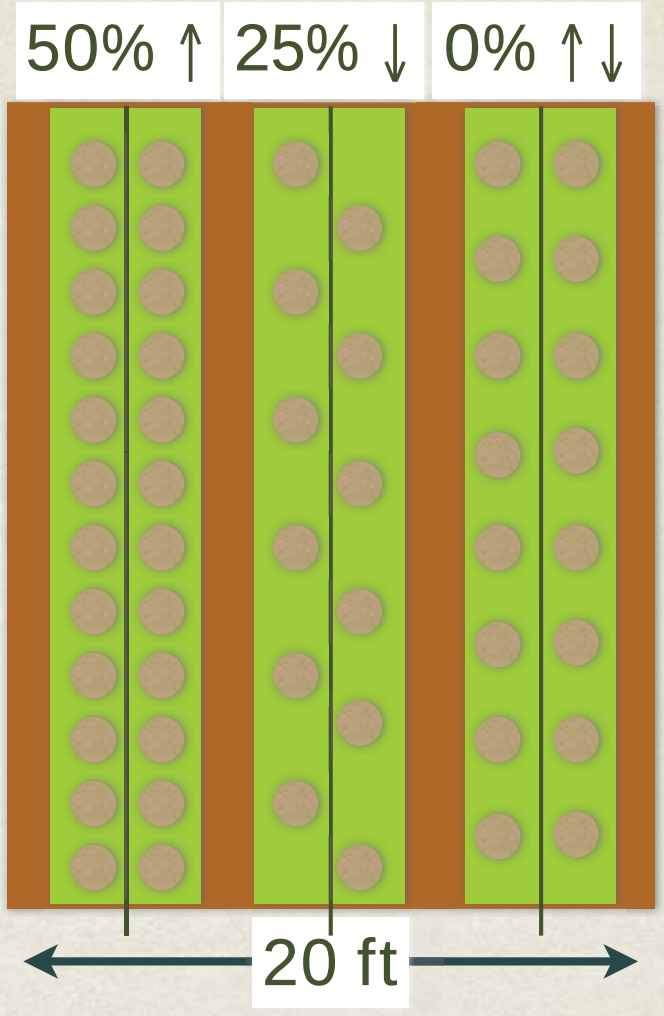
A. Same amount of water for trts 1 - 3 (110% Et).
   a. lower flow rate for double row tape
   b. similar cut-off date

B. Plant spacing split plots of 4, 6, 8, 10,000 plants per acre

C. Measure yield, PTAB fruit quality, economic analysis

PLANT SPACING





METHODS

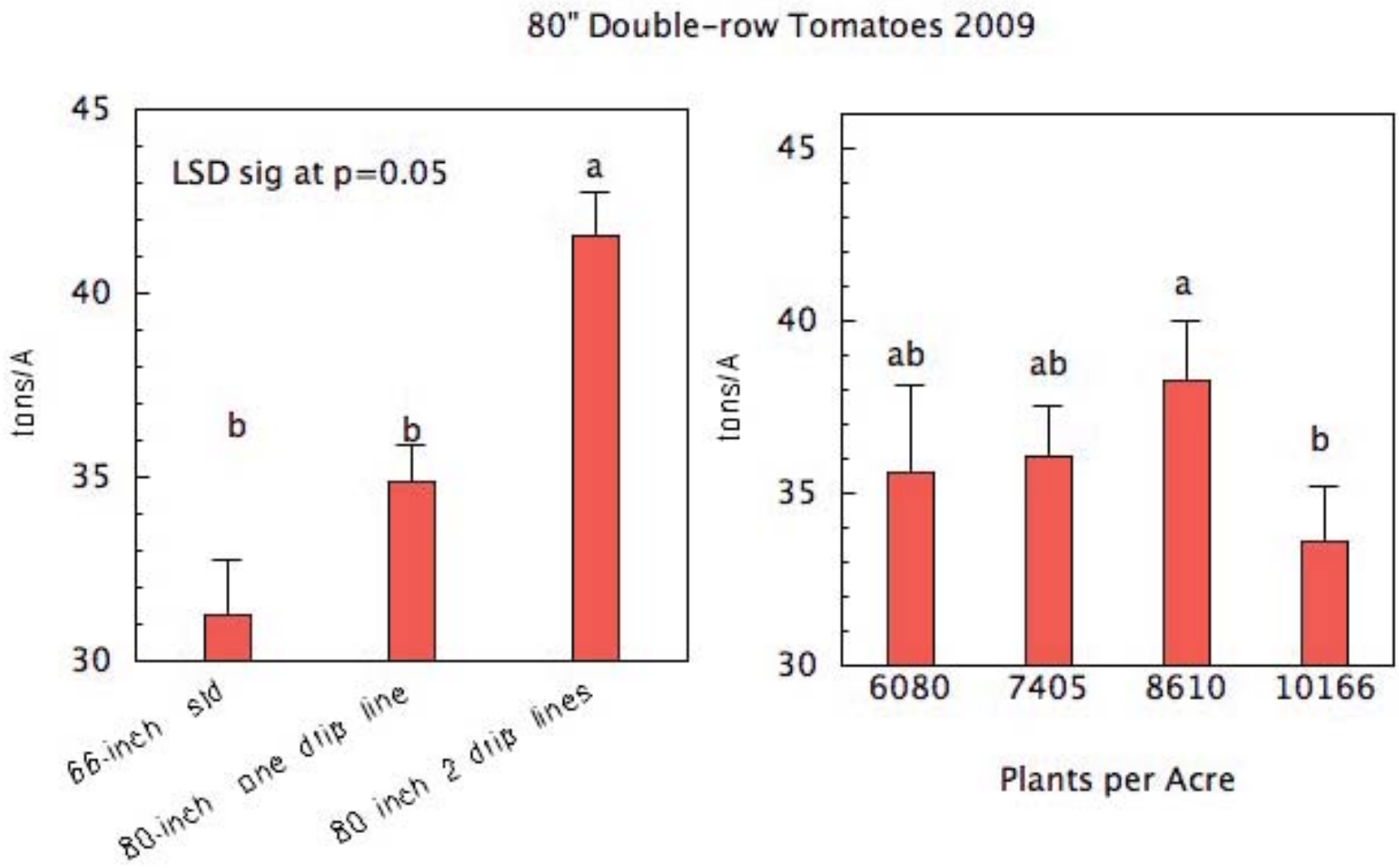
- Location WSREC.
- RCB split plot, 3 beds x 300 ft. ~ 2.0 acres
- Mechanically transplanted, good stand numbers
- TSWV resistant varieties (2011)
- machine harvest middle bed

TRANSPLANTING

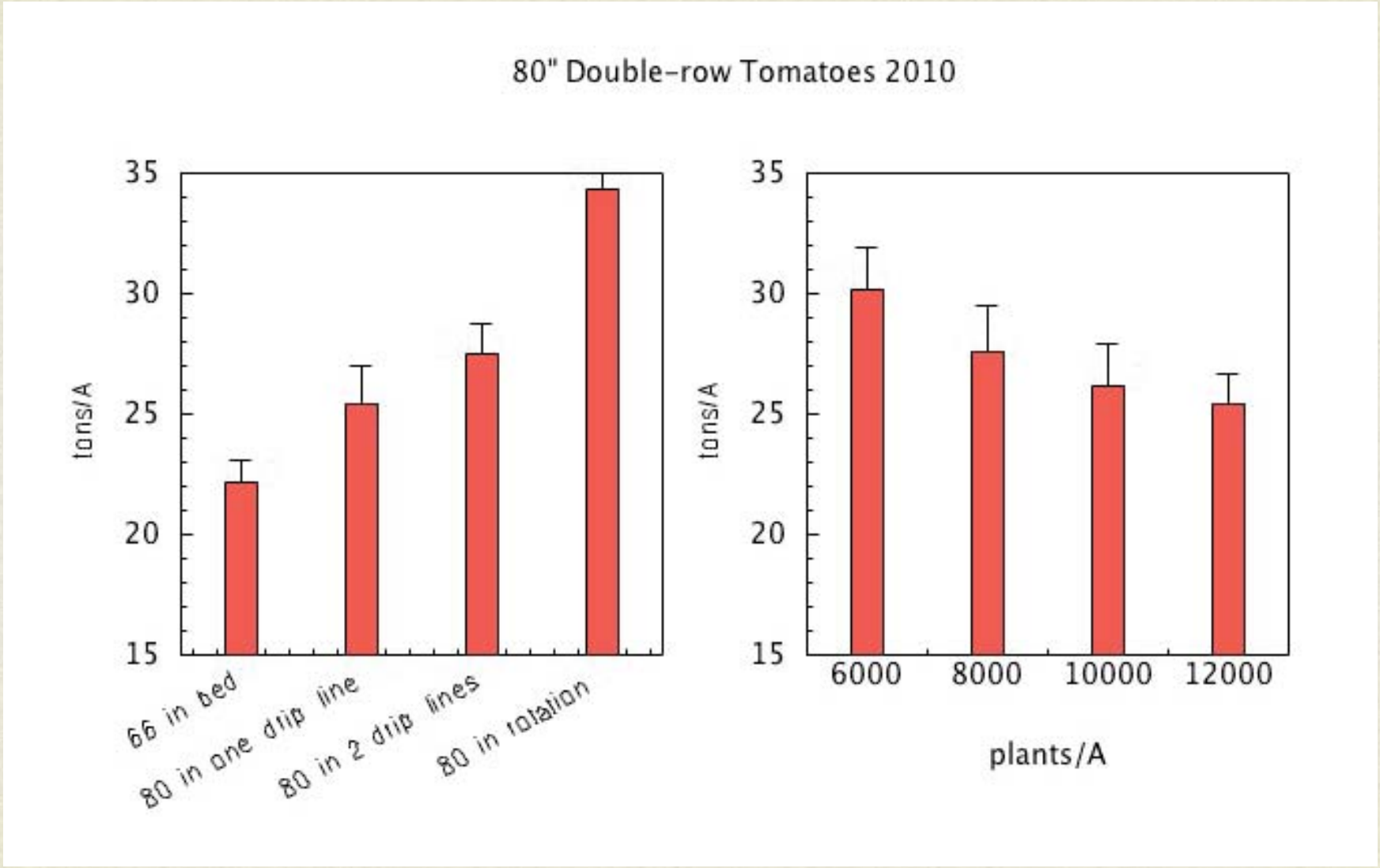
RESULTS

Treatment	Applied Water, inches
1. 66” beds	26.9
2. 80”, one line	27.2
3. 80”, two lines	25.7
4. 80”, rotation	26.8

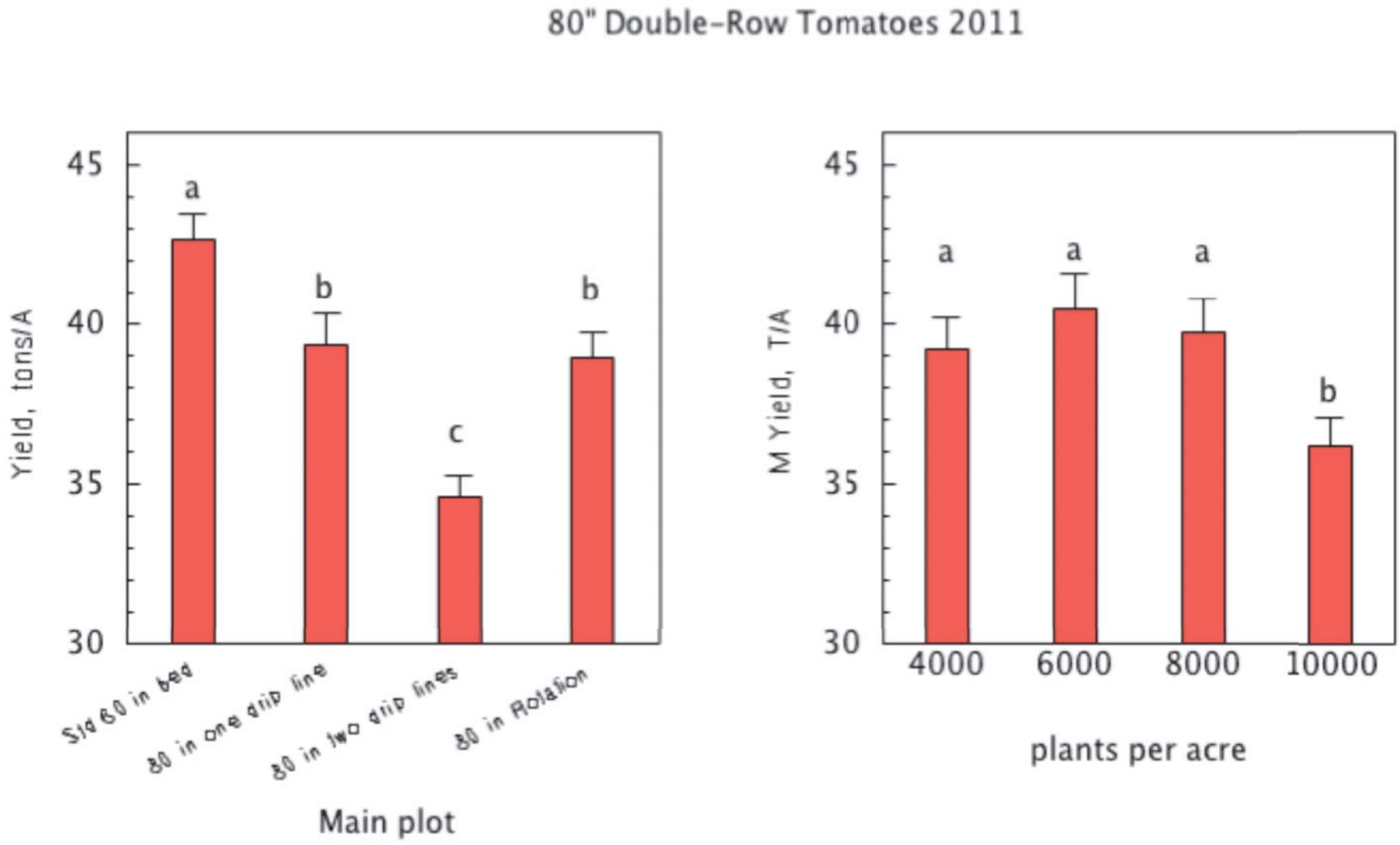
2009 YIELD


80" Double-row Tomatoes 2009
LSD sig at p=0.05
tons/A
45
40
35
30
a
b
b
66-inch std
80-inch one drip line
80 inch 2 drip lines
ab
ab
a
b
6080
7405
8610
10166
Plants per Acre

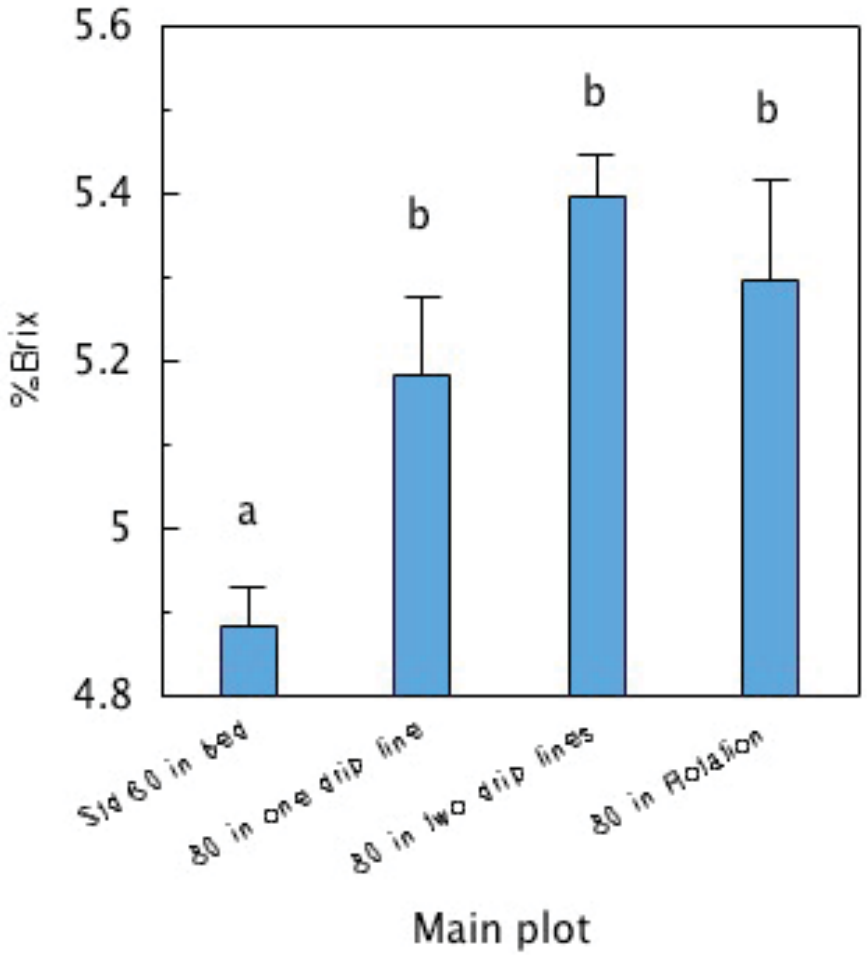
2010 YIELD

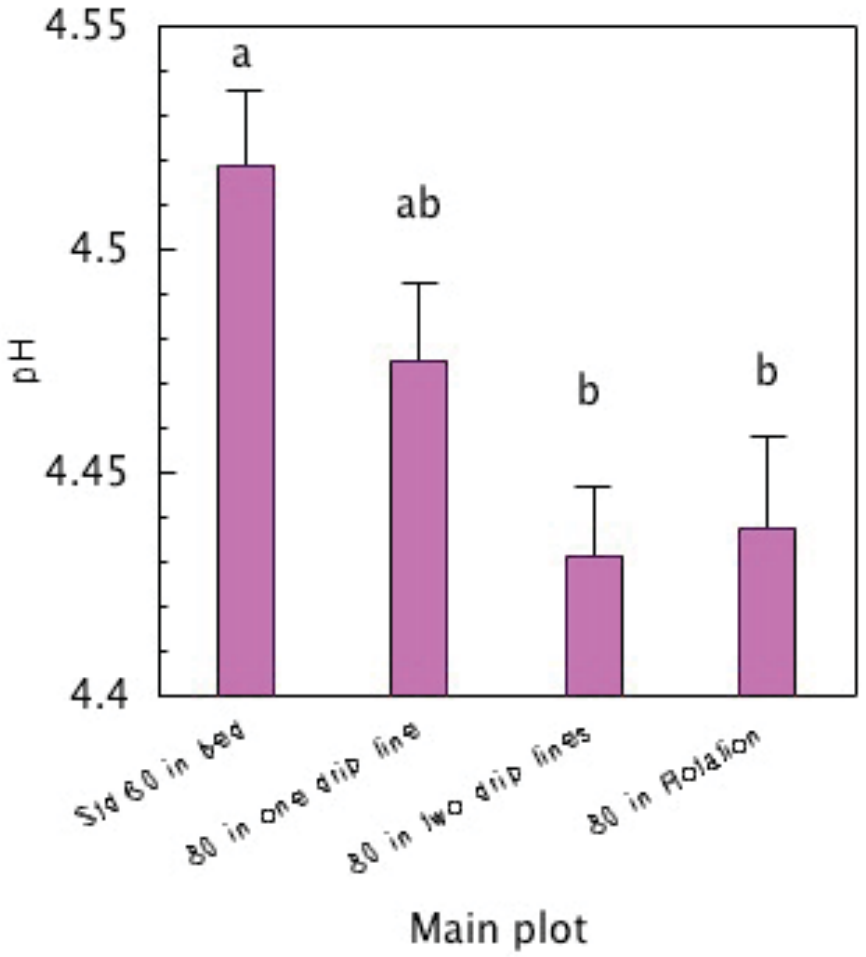

80" Double-row Tomatoes 2010
tons/A
35
30
25
20
15
66 in bed
80 in one drip line
80 in 2 drip lines
80 in rotation
tons/A
35
30
25
20
15
6000
8000
10000
12000
plants/A

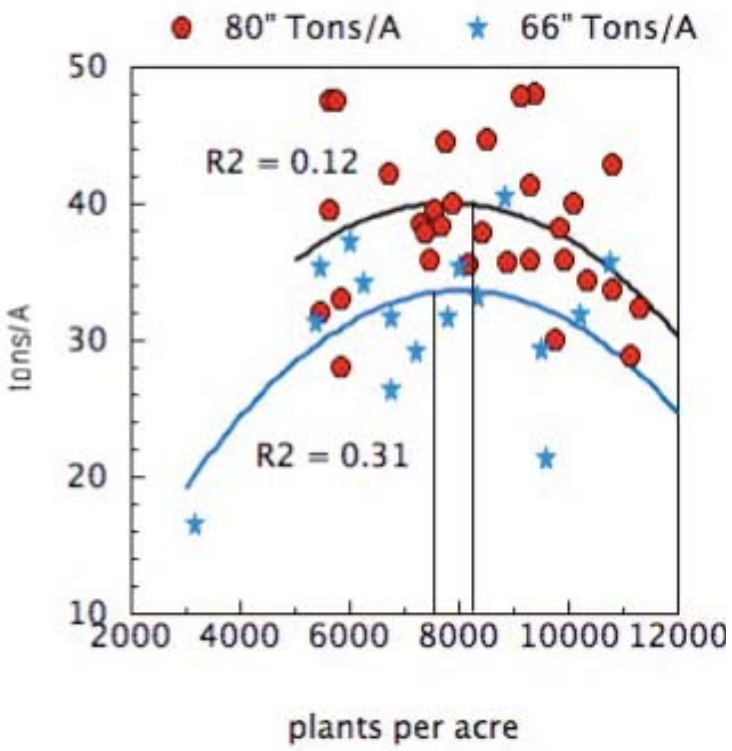
YIELD: 2011

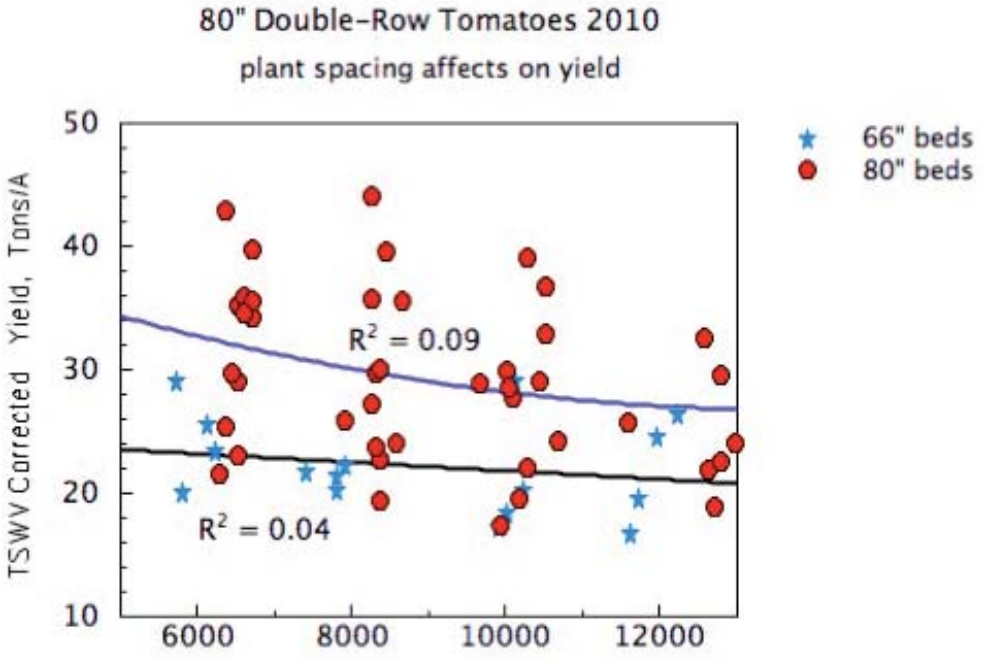

80" Double-Row Tomatoes 2011
Yield, tons/A
45
40
35
30
a
b
c
b
Sgl 60 in bed
80 in one drip line
80 in two drip lines
80 in Rotation
Main plot
M Yield, T/A
45
40
35
30
a
a
a
b
4000
6000
8000
10000
plants per acre

FRUIT QUALITY 2011







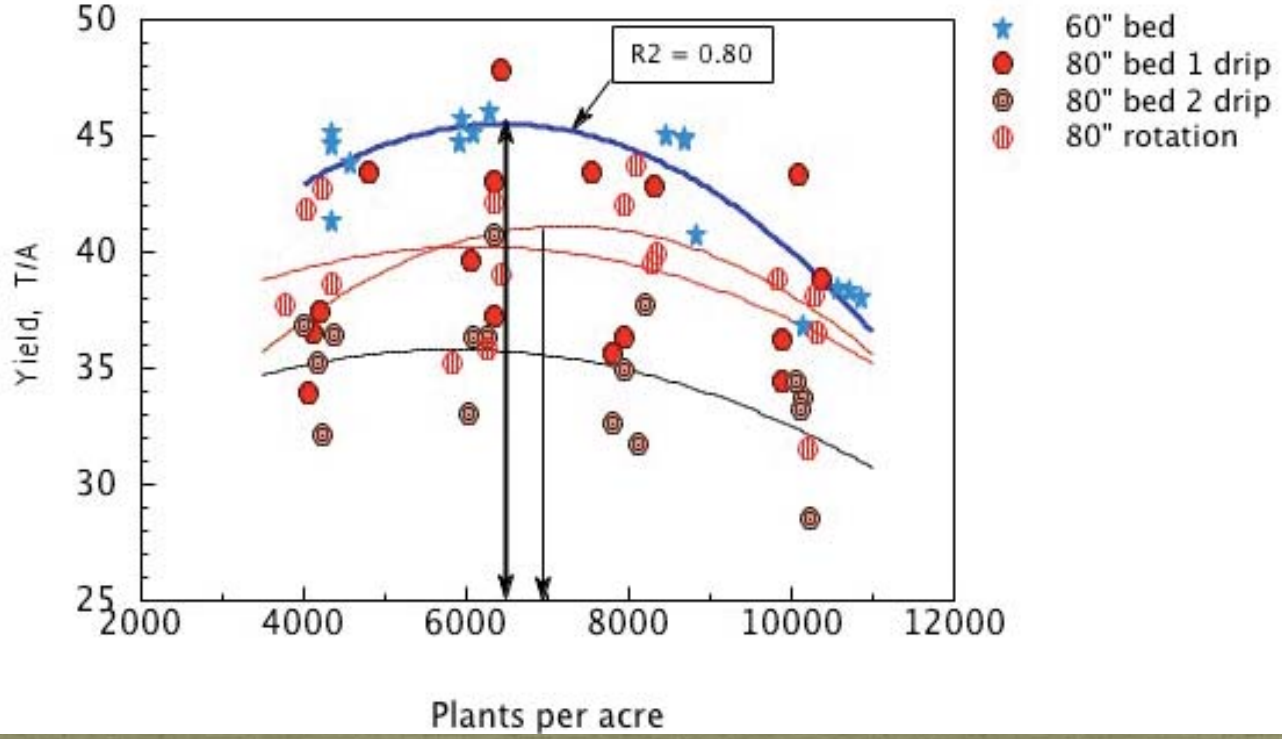


2010

Processing tomato 80" bed spacing trial 2011

2009

2011



ECONOMIC ANALYSIS

trt	plant cost	drip line	yield	gross $ ($68.00)	net $/A
1. 60” std	x ($350)	y ($180)	42	$2856	$2856 - 530 ($2326)
2. 80” one line	1.10x (speed?)	0.75y	39	$2652	2652 - 520 ($2132)
3. 80” two lines	1.10x	1.5y	35	$2380	2380 - 655 ($1725)
4. 80” rotation	1.10x (rotation $)	0.75y	39	$2652	$2132

3 YR. SUMMARY

- 2 years 80” system had superior yields, 60” beds better in 2011.
- Double row 80” beds seem to need slightly higher plant populations (~ 10%)
- No consistent differences in fruit quality (color, SS, pH, %rot) but trend for more green at harvest in 60” beds.
- Economic analysis complicated: not just inputs, also changes in transplanting and harvest speed (forward speed) and cultivation (lateral speed across field).

ISSUES


C9

80" SYSTEM: PRO/CON

1. less irrigation tape
2. faster cultivation from increased lateral speed thru field
3. lower hand weeding costs
4. increased photosynthesis from bed top:furrow ratio
5. better rotational fit for melons, onions, lettuce
6. better fit for trailers & less shoulder compaction

A. Slower transplanting and harvest speed
B. Modifications to equipment
C. Modifications to tractor wheel spacing
D. Vine trimming

THANK YOU

This is a CTRI funded project.