



EVALUATING DRIP IRRIGATED TOMATOES ON 80-INCH BEDS

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ACKNOWLEDGMENTS

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- Dan Burns, San Juan Ranch



BACKGROUND

- Drip irrigation has increased substantially in the last 10 years
 - > 50% state acreage
- Benefits (yield) vs issues (cost, maintenance, and rotation limitations)

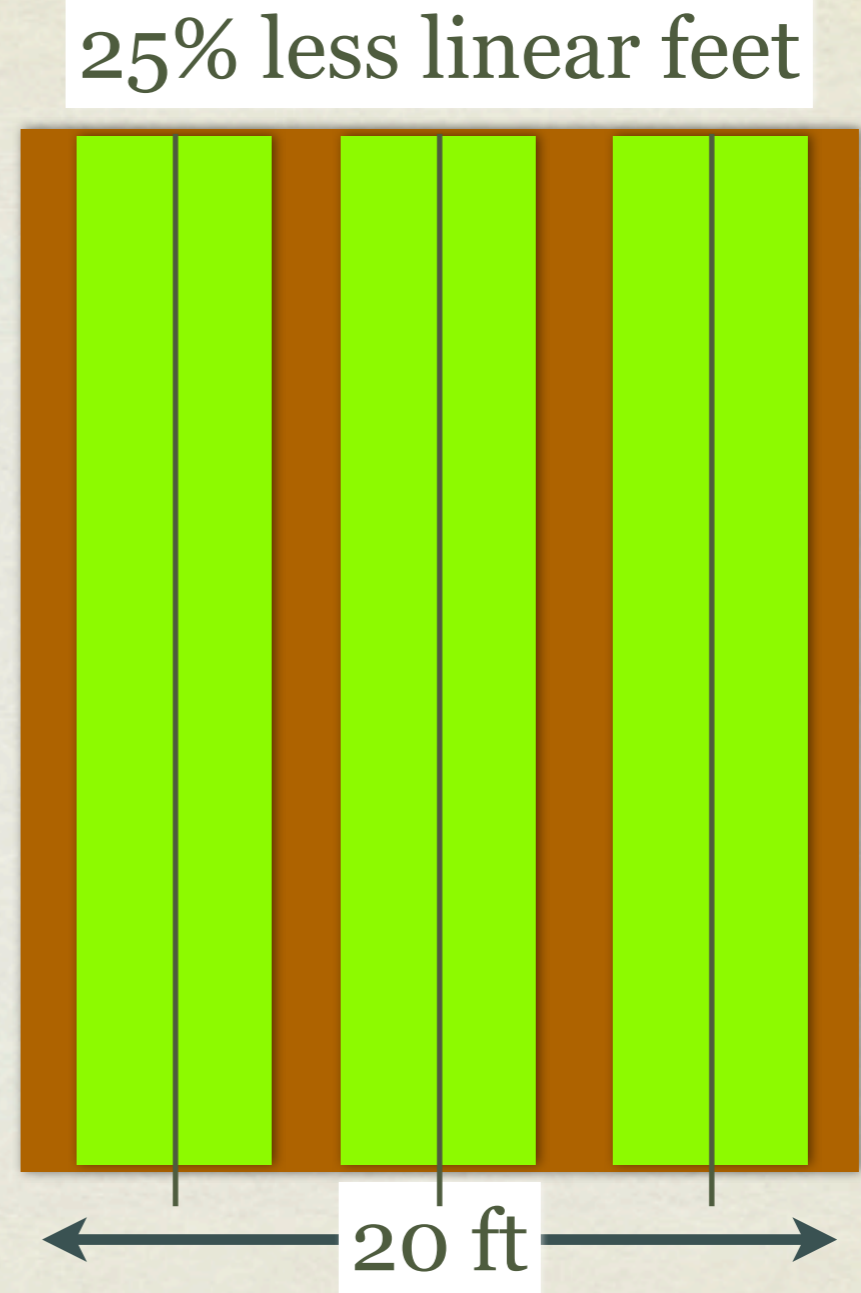
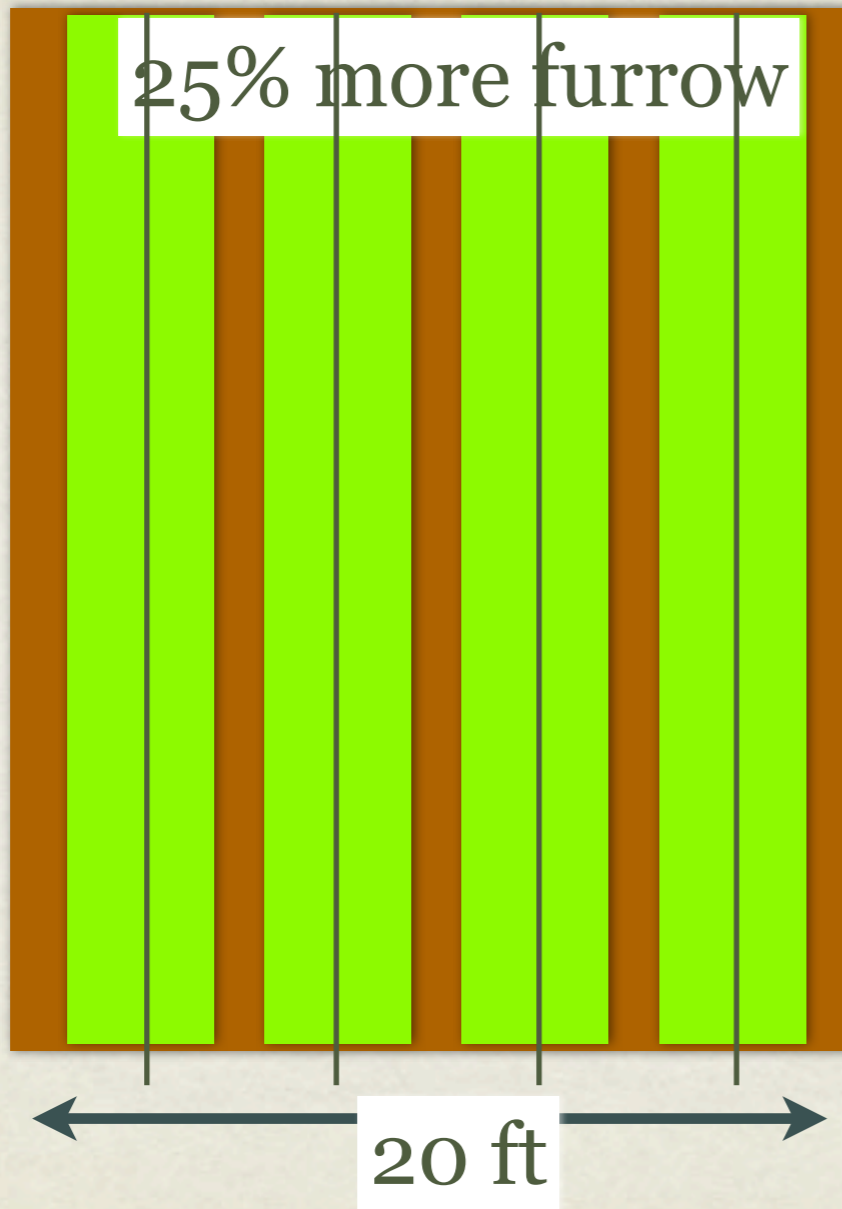


ROTATIONS (CENTRAL SJV)

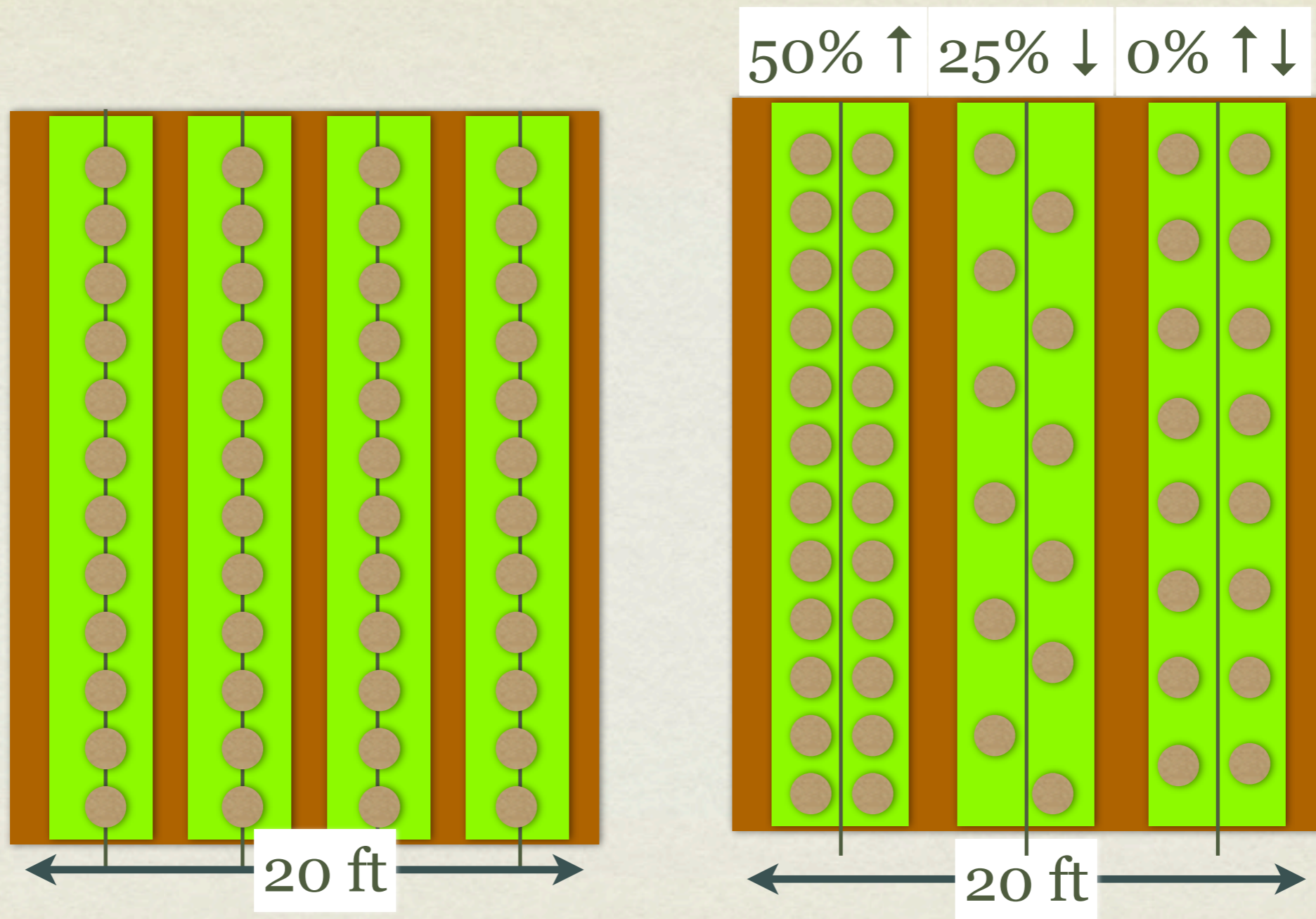
- tomato/cotton/corn on 60" (Merced) or 66" (Fresno) beds
- melons on 80"
- lettuce, cole crops, onions, garlic on 40"



BED AND DRIP LINES



PLANT SPACING



DOUBLE-ROW 80” BEDS

- 1 drip line per bed
 - reduced installation cost
 - limit rotation possibilities?
- 2 drip lines per bed
 - increased \$\$
 - increased rotation options
- ↑ plants, ↑ yields?
- Equipment & harvest configuration



OBJECTIVE:

Compare yield, economics, and flexibility of processing tomatoes on standard 66" beds to 80" beds with different plant populations and drip systems.

METHODS

1. Std 66" 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, following fallow bed
 - A. Same amount of water for trts 1 - 3 (107% Et).
 - a. lower flow rate for double row tape
 - b. similar cut-off date
 - B. Plant spacing split plots of 6, 8, 10, 12 thousand plants per acre
 - C. Measure yield, PTAB fruit quality, economic analysis

METHODS

- Location WSREC.
- RCB split plot, 3 beds x 300 ft. ~ 1.5 acres
- Mechanically transplanted, good stand numbers
- TSWV moderate to severe
- machine harvest middle bed





transplanting

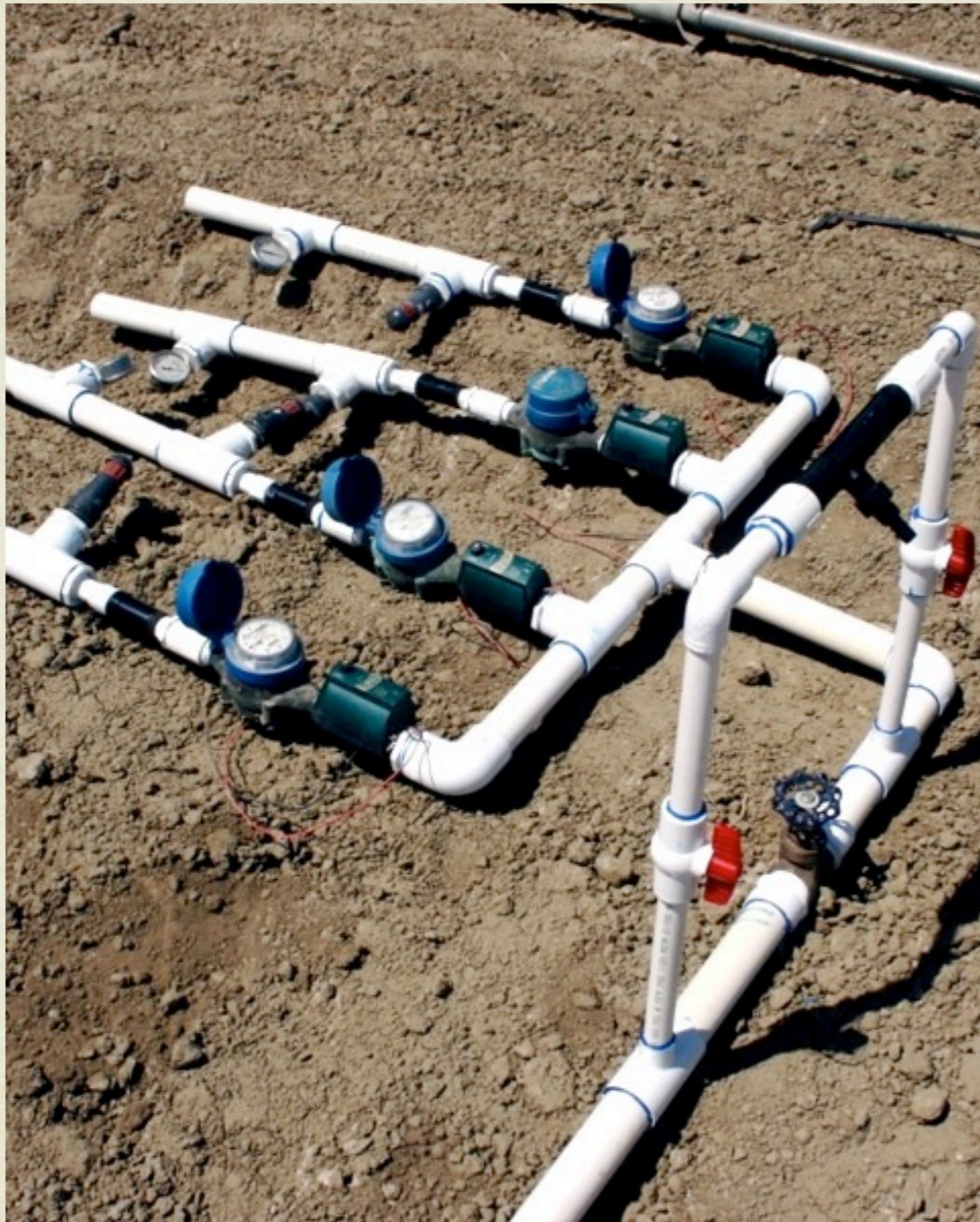
CHALLENGES 2010

- irrigation system
- TSWV





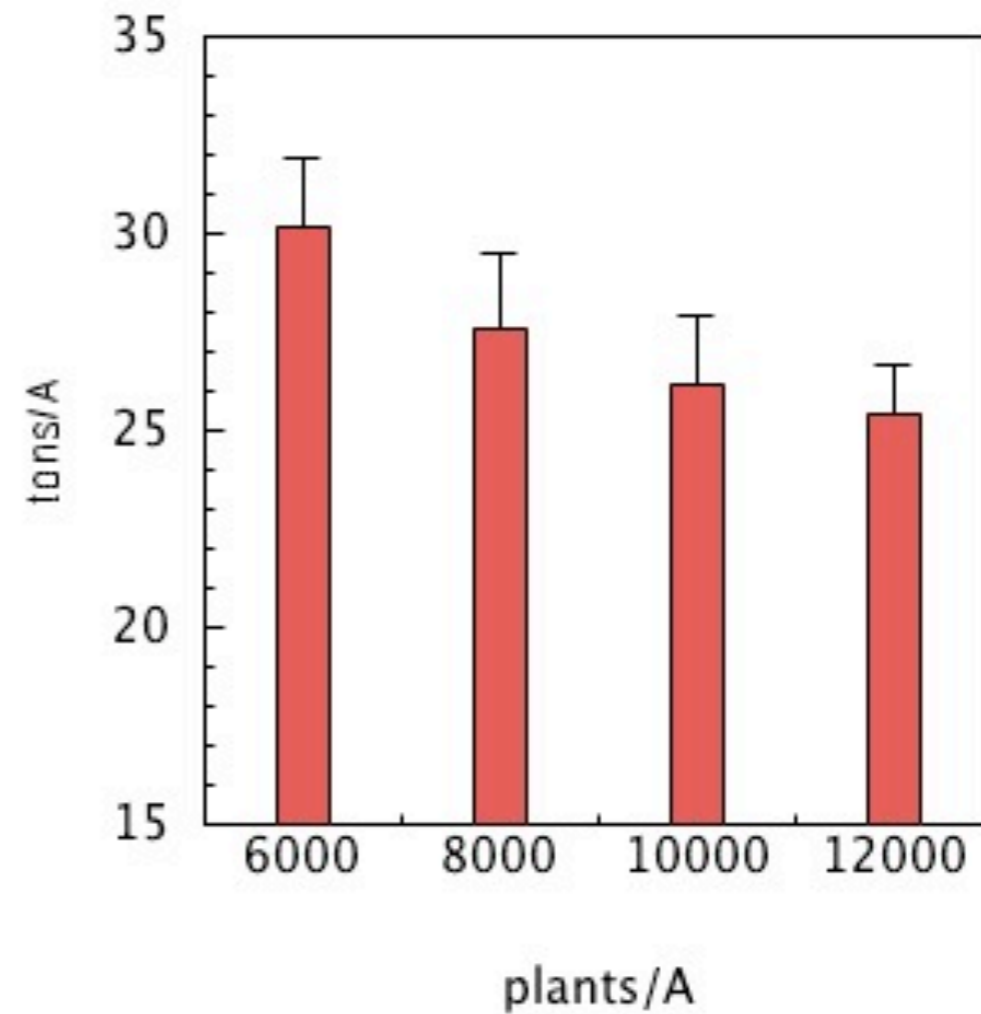
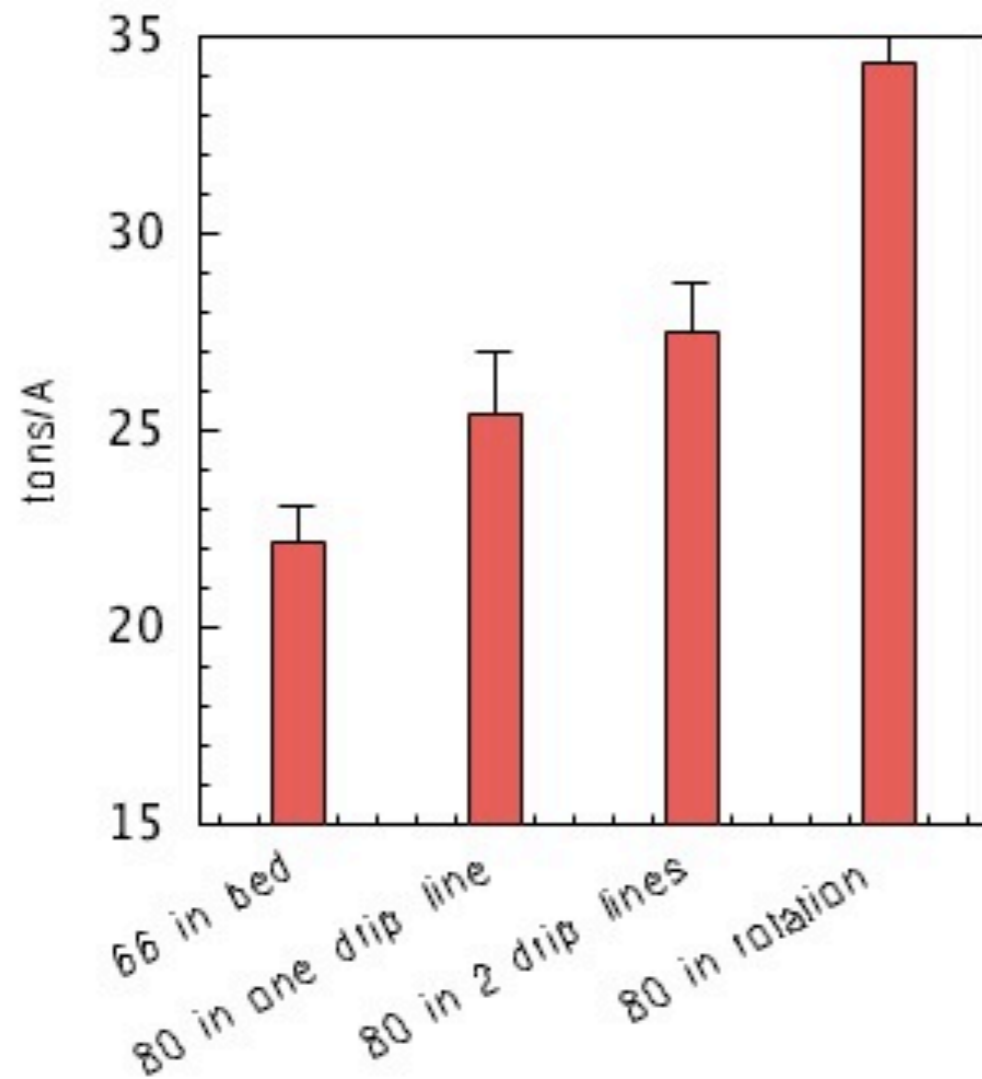
RESULTS



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

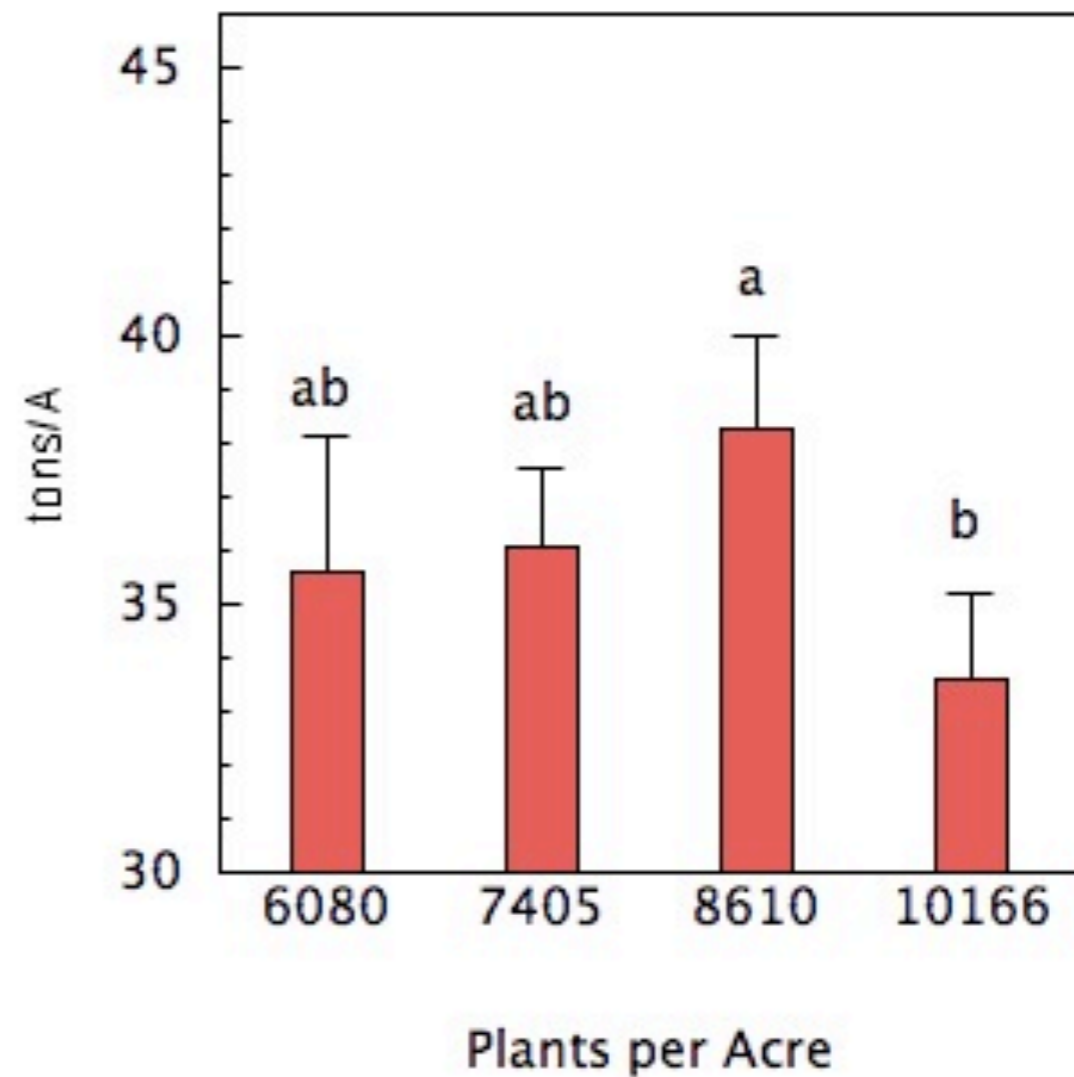
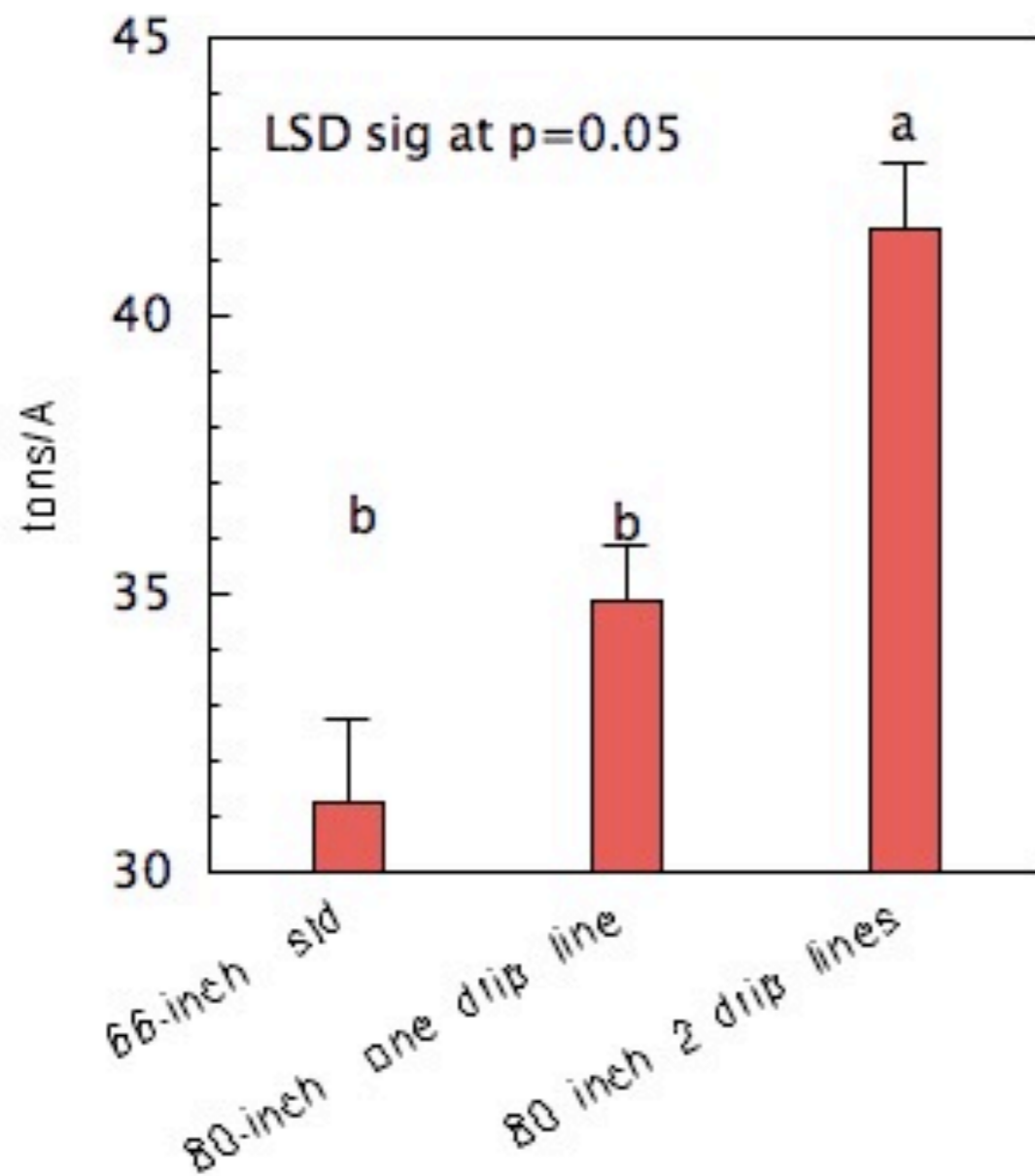
RESULTS: YIELD

80" Double-row Tomatoes 2010

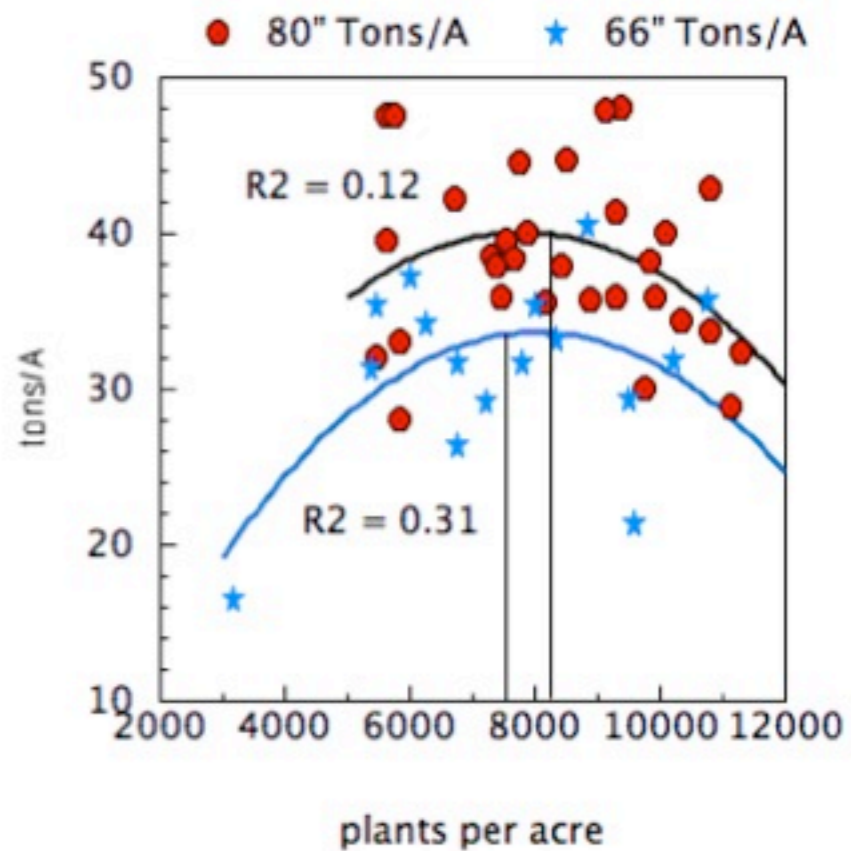


2009 YIELD

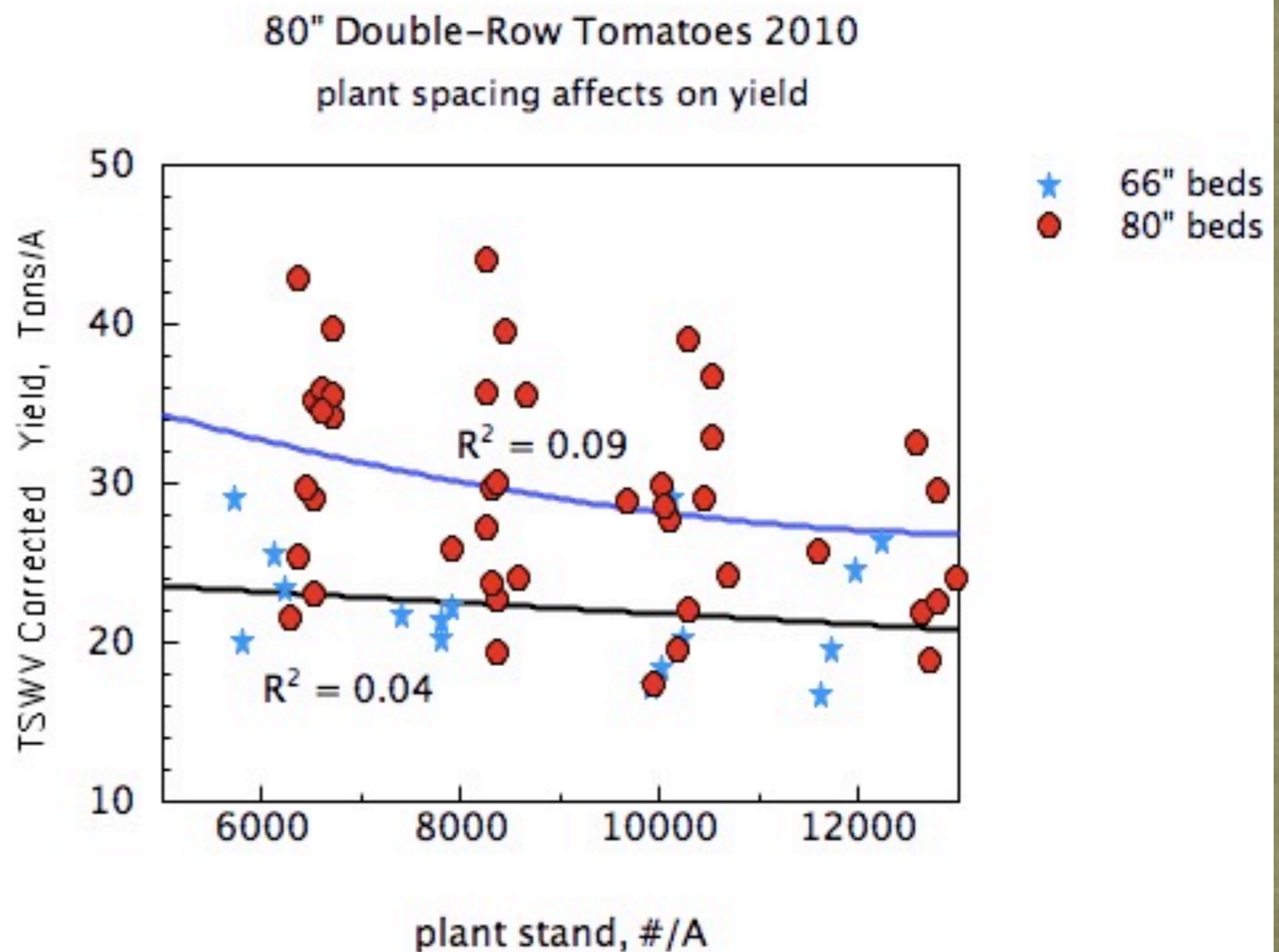
80" Double-row Tomatoes 2009



RESULTS: PLANT SPACING



2009

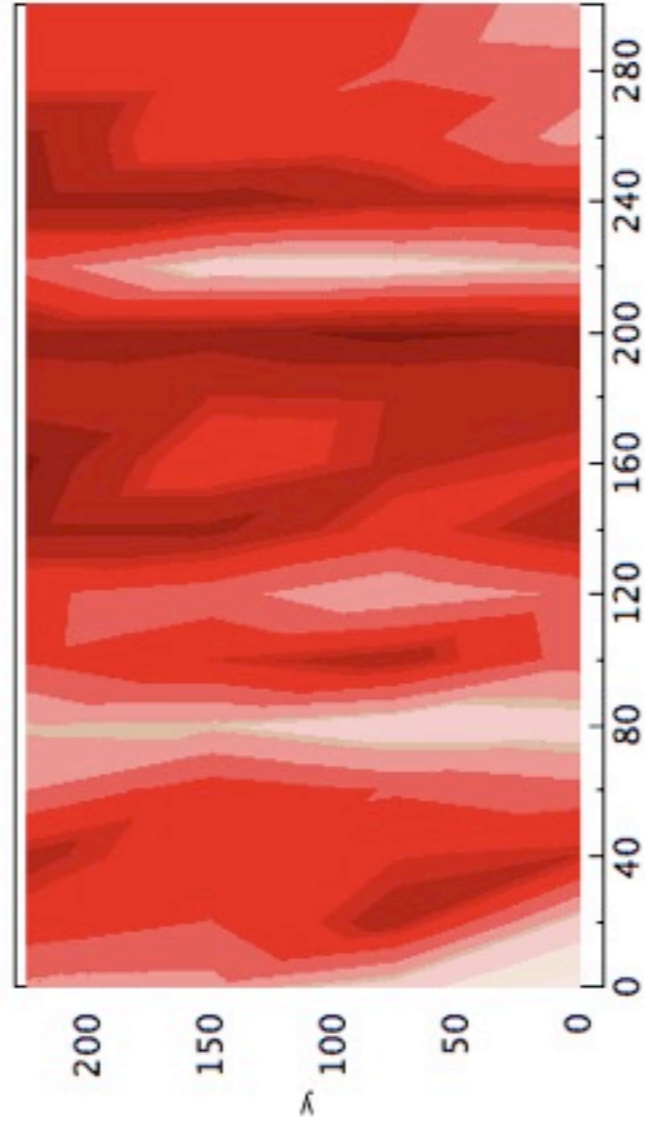


2010

IMPACTS: TSWV

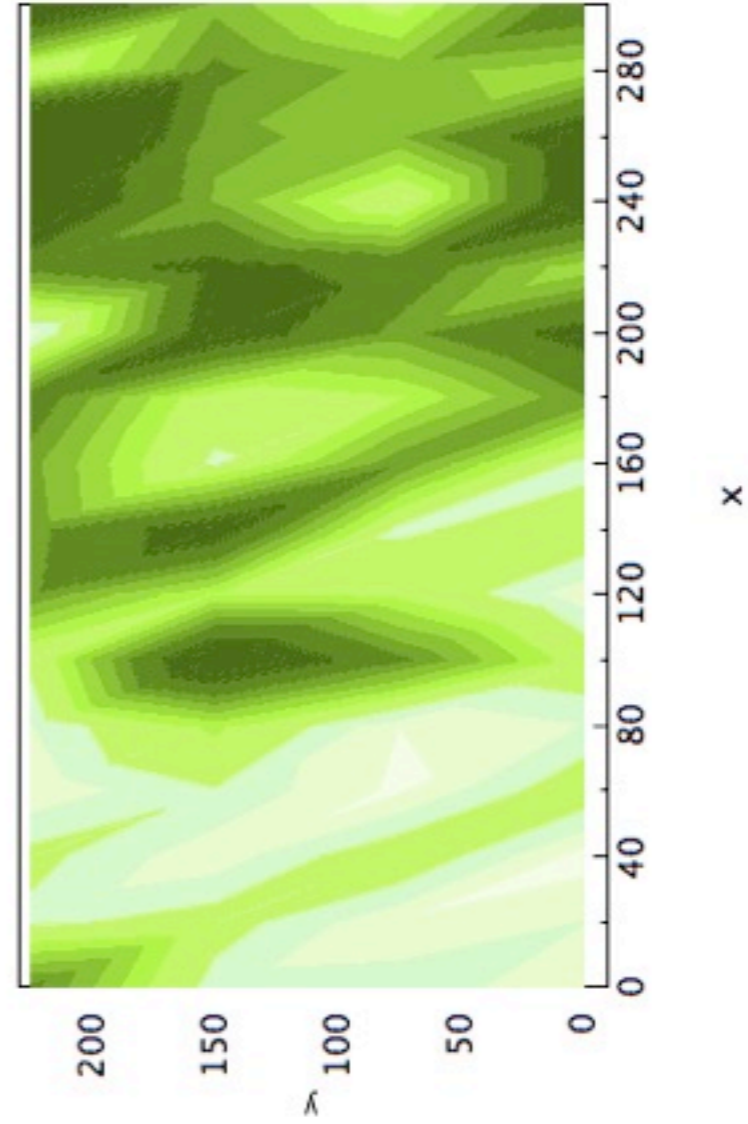
80" Double-Row Tomatoes 2010

Fruit Yield

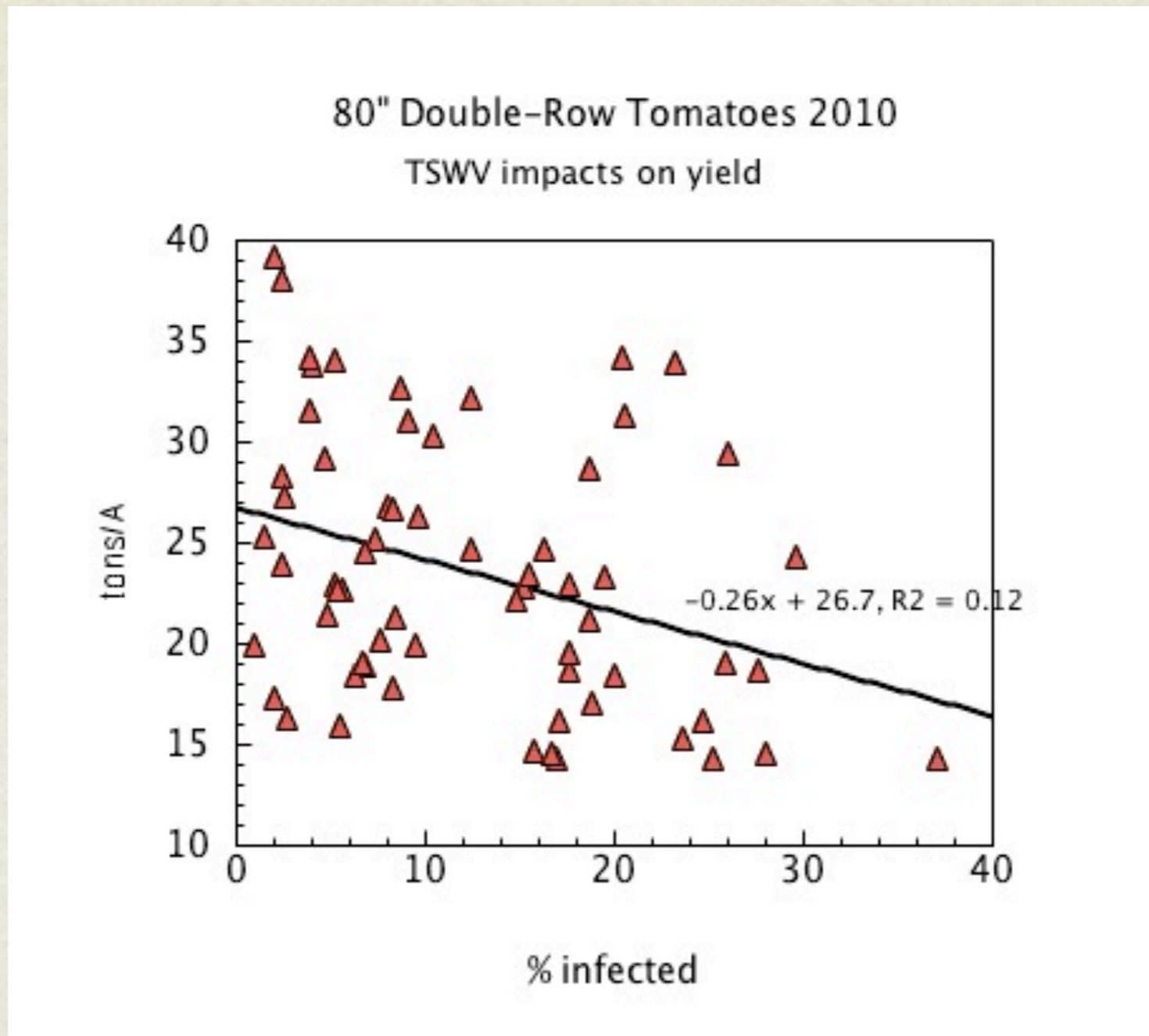


80" Double-Row Tomatoes 2010

TSWV Infection (%)



IMPACTS: TSWV



ECONOMIC ANALYSIS

trt	plant cost	drip line	yield	gross \$ (\$61.50)	net \$/A
1. 66" std	x (\$350)	y (\$160)	22	\$1353	\$1353 - 510(\$843)
2. 80" one line	1.10x	0.75y	25	\$1538	1538 - 505 (\$1033)
3. 80" two lines	1.10x	1.5y	27	\$1661	1661 - 625 (\$1036)
4. 80" rotation	1.10x/2	1.5y	34	\$2091/2	1045 - 432 (\$613)

SUMMARY

- 2 years of data suggest there are potential economic benefits to the 80" system.
 - yields improved, no loss of fruit quality
 - 2 drip lines vs 1: deficit irrigation?
 - benefit of rotation?
- double row 80" beds seem to need slightly higher plant populations (~ 10%)

PROPOSED TREATMENTS 2011

1. Std 66" 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. Rotation. 80" bed w/single drip (fallow, tomatoes, melons...)
- A. Increased amount of water for trts 1 - 4 (115% Et).
 - a. new tape
 - b. lower flow rate for double row tape
 - c. similar cut-off date
 - B. Plant spacing split plots of 4, 6, 8, 10 thousand plants/A
 - C. TSWV resistant variety
 - D. Improved weed management
 - E. Measure yield, PTAB fruit quality, economic analysis



THANK YOU

Questions?