

Evaluation of Reduced Fall-Timed, Tillage Operations



Gene Miyao, UC Farm Advisor, Yolo, Solano & Sacramento counties
Jeff Mitchell, Veg Crops Specialist, UC Davis
Tim Hartz, Veg Crops Specialist, UC Davis
Shrini Upadhyaya & Leroy Garciano, Ag Engineering Dept, UCD



Approaching No-Till: Fresh Market tomatoes w/ buried drip irrigation

Major Challenges for Processing tomato growers:

- ✓ Furrow irrigation w/ high residue
- ✓ Weed control w/out cultivation
- ✓ Mechanical harvest w/ residue
& minimally disturbed soils





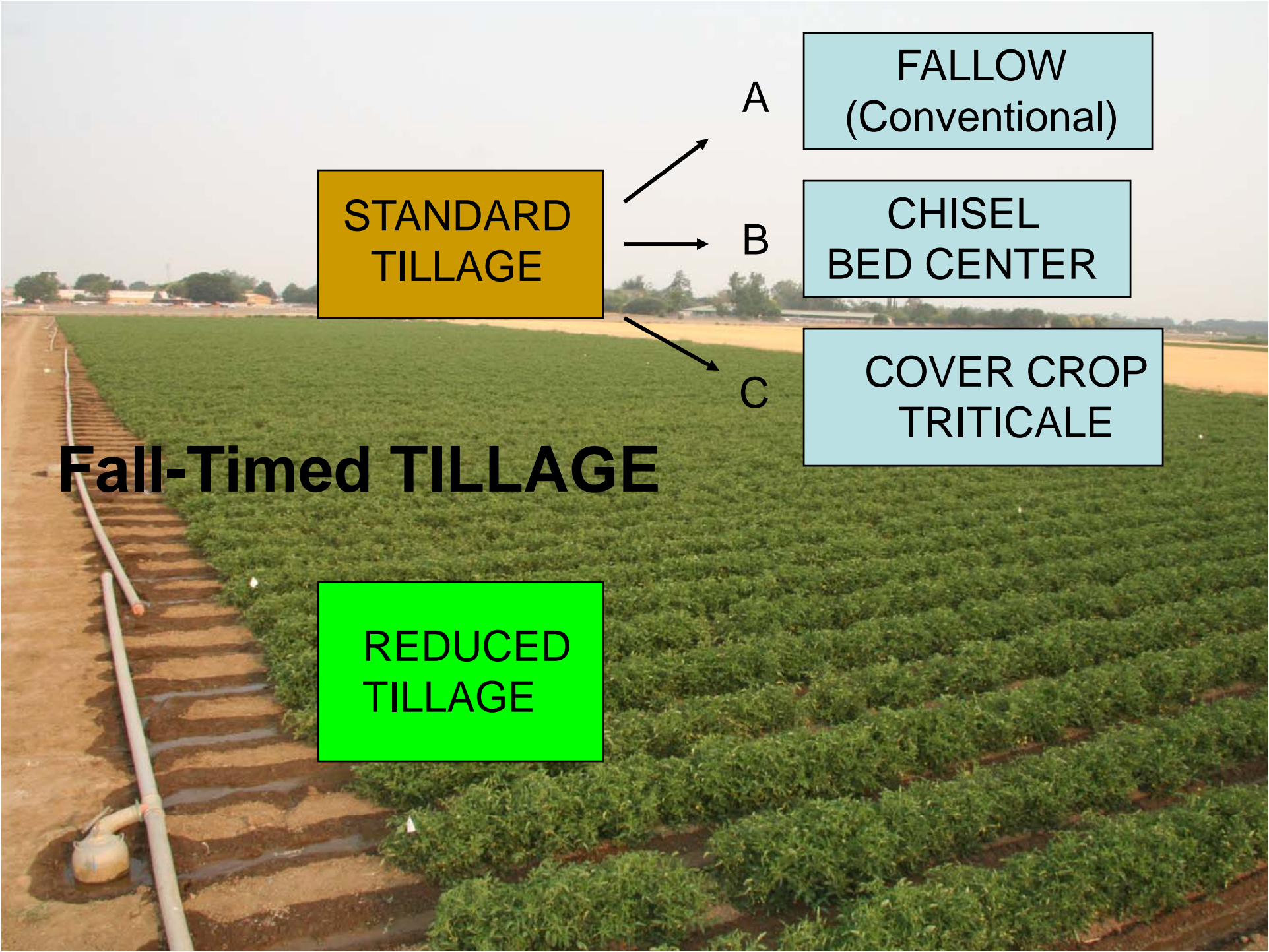




STANDARD
TILLAGE

Fall-Timed, Primary TILLAGE

REDUCED
TILLAGE



STANDARD
TILLAGE

A

FALLOW
(Conventional)

B

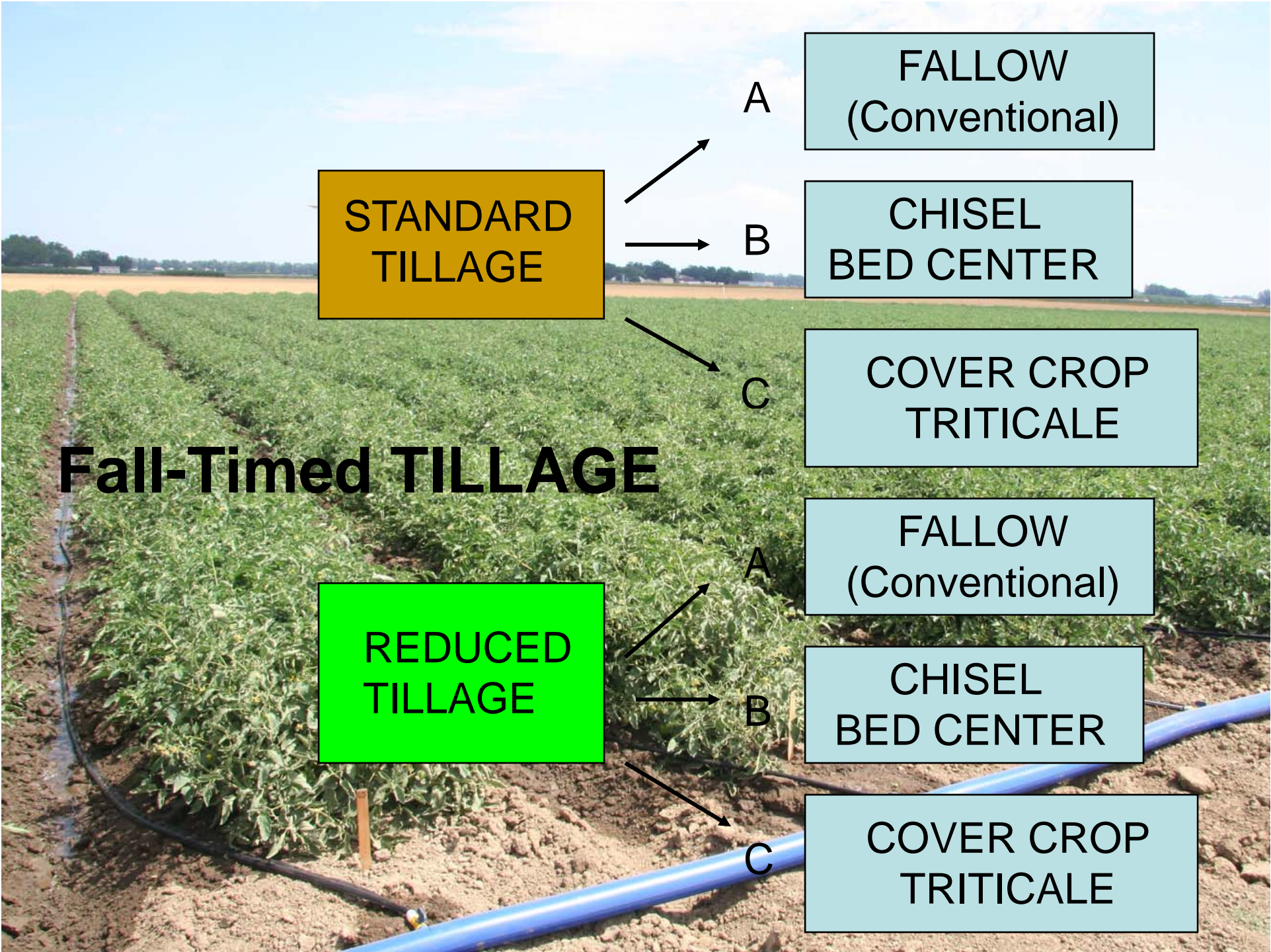
CHISEL
BED CENTER

C

COVER CROP
TRITICALE

Fall-Timed TILLAGE

REDUCED
TILLAGE



**STANDARD
TILLAGE**

A

**FALLOW
(Conventional)**

B

**CHISEL
BED CENTER**

C

**COVER CROP
TRITICALE**

Fall-Timed TILLAGE

**REDUCED
TILLAGE**

A

**FALLOW
(Conventional)**

B

**CHISEL
BED CENTER**

C

**COVER CROP
TRITICALE**





Reduced Fall Tillage Comparison, UC Davis, 2007

Treatment		Net Yield (Tons/A)
Standard Till	Chisel Center	23.8
Standard Till	none	25.2
Reduced Till	Chisel Center	24.5
Reduced Till	none	24.1
Standard till		25.9
Reduced till		24.3
Probability		NS
	Chisel Center	24.2
	none	24.6
Probability		NS
	Interaction	NS
	%CV	11

✓ Similar yield between tillage systems

✓ Bed chisel – no response in 1st year

✓ Slight reduction in PTAB color, brix, and early plant growth

Reduced Fall Tillage Comparison Effect on Yield (tons/A) UC Davis, 2008

	<u>Tillage Method</u>		
	Conventional	Reduced	
Chisel (bed center)	33.5 z	40.1 a	
Triticale	32.4 z	27.5 b	
Fallow	30.9 z	31.1 b	
LSD (@ 0.05)	5.0	7.5	





Results: Tillage Trials, UC Davis 2007 & 2008

- ✓ **Comparable fruit yields between standard vs. reduced fall tillage.**
- ✓ **Benefit of single chisel in bed center w/ reduced tillage system?**



Future Plans:

- ✓ Continue on UC Davis campus field site
- ✓ Expand testing into grower fields

Funding Support: California Tomato Research Institute

Field Assistance:

Mark Kochi, Yolo County field assistant

Jim Jackson, Fred Stewart, Francisco Rodriguez & crew,
Plant Sciences Department, UC Davis

Students Sara Pearson (Chico) & Margaret Lloyd (UCD)

E & J Farms

Supplies:

T S & L

Ag Seeds Unlimited





Strip-tilling cover crop ahead of
transplanting tomatoes
Sano Farms, Firebaugh, 2006



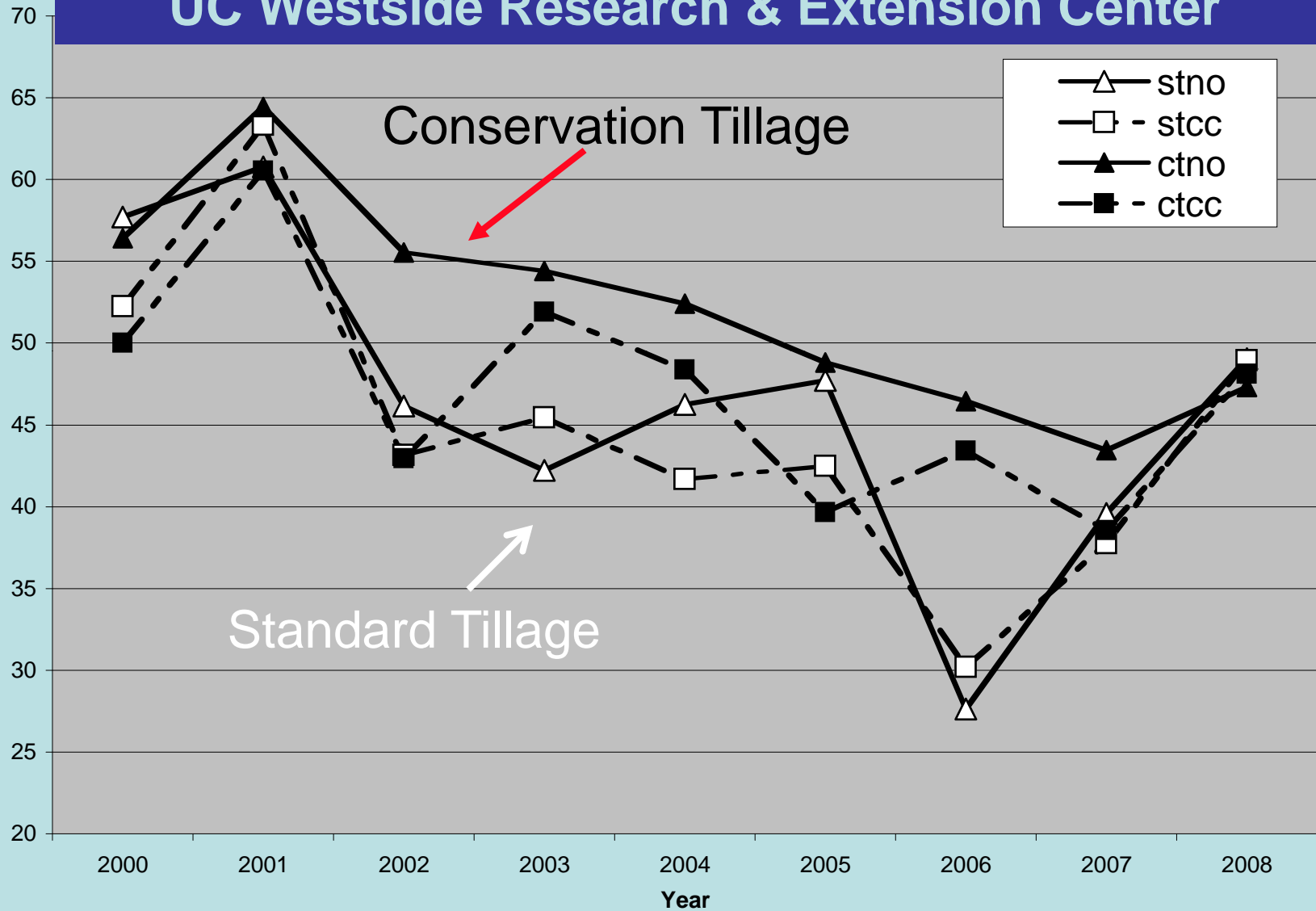


**Strip-till planted processing tomatoes
Firebaugh, CA 2006**

**PROCESSING TOMATOES
STRIP-TILL PLANTED INTO
TRITICALE COVER CROP
FIREBAUGH, CA 2005**



Tomato Yield (tons/A) UC Westside Research & Extension Center



The End