Conservation Agriculture Systems Institute
University of California
United States Department of Agriculture
Natural Resources Conservation Service
California Association of Resource
Conservation Districts
Sustainable Conservation

2010 Tillage Practices Survey Findings
January 15, 2012

1. Introduction to 2010 Survey Findings

California's Conservation Agriculture Systems Institute (CASI) has prepared its survey of tillage management acreage for 2010. This tillage survey was conducted as an ongoing comparison of annual row crop acreage that is farmed under different tillage systems throughout the Central Valley region of California. Over 35 local NRCS, University of California and private sector experts were surveyed and results were compared with 2010 County Agricultural Commissioner cropland acreage. Previous surveys have been conducted in 2004, 2006, and 2008.

Data in this survey were compiled for two general types of conservation tillage. Tillage practices such as no-till, strip-till, ridge-till and mulch-till, that leave at least 30% of the residue from previous crops in place on the soil surface are the typical forms of conservation tillage that are recognized throughout the world. In addition to these practices, "minimum tillage" practices that reduce the overall number of tillage passes by at least 40% relative to what was done in the year 2000, are also included in the Workgroup's tally of conservation tillage acreage.

In 2010, conservation tillage systems accounted for about 14% of the acreage for the crops that were surveyed including silage and grain corn, small grains for hay, silage and grain, tomatoes, cotton, dry beans, and melons throughout the nine-county Central Valley region. This was an increase from about 10% in 2008. Minimum tillage practices were used on about 33% of crop acreage in 2010, also up from about 21% in 2008.

The largest change in conservation tillage acreage over the 2004 – 2010 period is found in the amount of corn silage acreage that uses strip-tillage. In 2004, there were only about 490 acres of summer silage corn using strip-till, while in 2010 over 103,000 acres throughout the San Joaquin Valley dairy region had adopted the use of this form of conservation tillage. The overall use of minimum tillage practices has also greatly increased during this time from about 64,000 acres under reduced pass tillage in 2004 and just over 700,000 acres under minimum tillage in 2010.

Table 1. California conservation tillage acreage survey (2010) for tomatoes, cotton, edible dry beans, silage corn, grain corn, and small grains for grain, hay and silage, December 15, 2011

	> 30% Residue Cover after Planting				>40% reduction in total passes	< 30% Residue Cover after Planting	Total Acreage	CT %
Total	**No Till**	**RT/ST**	**Mulch Till**	**CT Total**	**Minimum Tillage**	**Conventional Tillage**		
Fresno County	-	1,280	3,331	4,611	148,800	389,688	394,299	1%
Kern County	-	-	711	711	-	220,504	221,215	0%
Kings County	3,037	54,498	32,154	89,689	44,156	228,157	317,846	28%
Madera County	100	14,909	-	15,009	-	46,511	61,520	24%
Merced County	3,000	18,100	19,866	40,966	-	227,928	268,894	15%
Sacramento	620	559	1,866	3,045	3,568	46,913	49,958	6%
San Joaquin	2,100	-	-	2,100	150,260	276,440	278,540	1%
Tulare County	-	68,478	12,270	80,748	305,184	340,382	421,130	19%
Yolo County	23,530	-	26,069	49,599	49,792	47,295	96,894	51%
Total	**32,387**	**157,824**	**96,267**	**286,478**	**701,760**	**1,823,818**	**2,110,296**	

2. General Trends Since 2004

Forms of 'classic' CT, no-till, strip-till, ridge-till and mulch till increased from 57,105 acres in 2004 to 286,478 acres in 2010. Minimum tillage acres also increased during this period from 64,613 acres in 2004 to 701,760 acres in 2010. The greatest contribution to the increase in the classic forms of CT acreage from 2004 to 2010 was strip-tillage (Table 2).

Table 2. Tillage system acreage for 2004, 2006, 2008, and 2010 (acres)

	No Till	**RT/ST**	**Mulch Till**	**Subtotal**	**Minimum Tillage**	**Conventional Tillage**	**Total Acreage**
2004	5,265	690	51,150	57,105	64,613	2,509,917	2,567,022
2006	17,181	9,020	42,964	69,165	318,006	2,060,151	2,129,316
2008	27,308	121,055	79,434	227,797	416,035	1,982,575	2,210,372

2010	32,387	157,824	96,267	286,478	701,760	1,823,818	2,110,296

3. All Forms of CT (2004 – 2010)

When all forms of CT are combined (no-till, strip-till, ridge-till, mulch till and minimum till), there is a trend toward increased CT from 2004 to 2010. Together, the classic forms of CT combined with minimum tillage approaches accounted for about 47% of total annual crop acreage in 2010.

Table 3. "Classic" forms of CT combined with minimum tillage, 2004 – 2010

	CT + Min. Till	**Conventional Tillage**	**Total Acreage**
2004	121,718	2,509,917	2,567,022
2006	387,171	2,060,151	2,129,316
2008	643,832	1,982,575	2,210,372
2010	988,238	1,823,818	2,110,296

4. CT Commodity Trends

In 2010, silage corn accounted for the greatest acreage when the classic CT categories are considered, followed by small grains. Silage corn, small grains, and tomatoes were highest in the minimum tillage category.

Table 4. CT acreage by commodity in 2010

	> 30% Residue Cover after Planting				>40% reduction in total passes	< 30% Residue Cover after Planting	**Total Acreage**	**CT %**
Total	**No Till**	**RT/ST**	**Mulch Till**	**CT Total**	**Minimum Tillage**	**Conventional Tillage**		
Tomatoes	-	1,280	10,045	11,325	150,287	246,503	257,828	4%
Cotton	-	10,000	10,975	20,975	48,718	275,259	296,234	7%
Dry edible beans	-	-	1,362	1,362	4,552	23,146	24,508	6%
Corn Silage*	-	103,278	17,984	121,262	158,296	381,400	502,662	24%
Corn for grain*	61	-	2,696	2,757	53,054	117,115	119,872	2%
Small Grains for grain*	18,731	15,868	23,446	58,045	94,795	317,105	375,150	15%
Small Grains, hay or ensiled*	13,595	27,398	28,170	69,163	181,291	419,842	489,005	14%
Melons	-	-	1,589	1,589	10,767	43,448	45,037	4%
Total							**2,110,296**	

5. County Trends

Kings, Tulare, Merced and Yolo counties were highest in classic CT categories in 2010.

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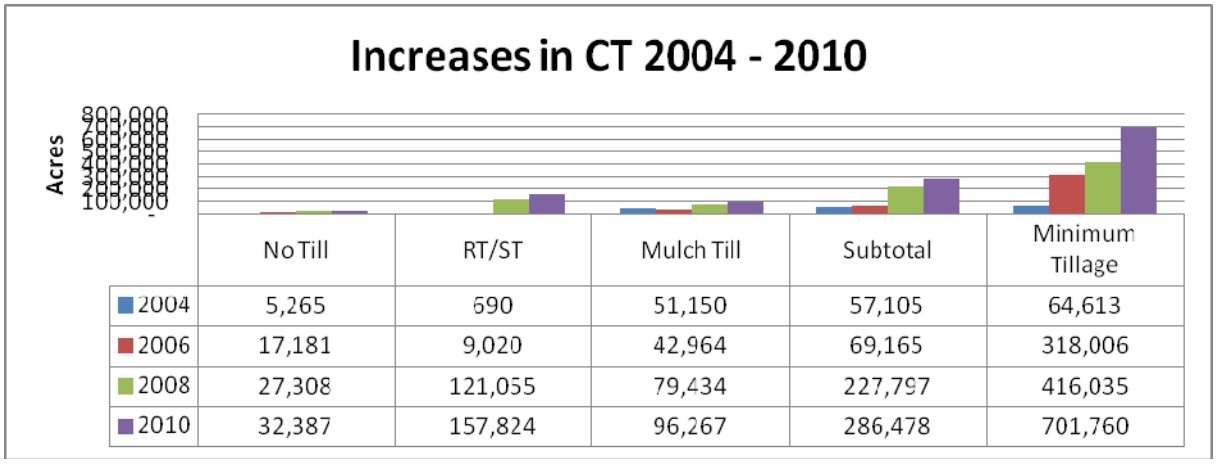
Total	**32,387**	**157,824**	**96,267**	**286,478**	**701,760**	**1,823,818**	**2,110,296**	

6. Increases in CT 2004 – 2010



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For additional information and photos of various forms of conservation tillage, please contact Jeff Mitchell at (559) 303-9689 or mitchell@uckac.edu .