Urban Influence and the U.S. Vegetable Industry

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Abstract: As the United States continues to urbanize, the conflict between agricultural and nonagricultural uses of land may intensify. Although the issues surrounding this conflict may be exemplified in the U.S. vegetable industry, it is not clear that urban expansion poses an immediate threat to the industry. Analysis of Census population and acreage data indicates that overall vegetable area has not diminished in metropolitan counties over the past several decades. Urbanization causes shifts in land use, but given its high production intensity/high net return characteristics, vegetable production may be one of the last agricultural enterprises to disappear from urbanizing areas.

Keywords: Vegetables, urbanization, economics, urban sprawl, farmland.

As the United States continues to urbanize in the coming century, the conflict between agricultural and nonagricultural uses of land may intensify. Today, the issues surrounding this conflict are exemplified in the U.S. vegetable industry. Many of the major national production centers for vegetables and melons are located in areas subject to intense pressure from urban development. Thus, a significant percentage of U.S. vegetable acreage (61 percent) is located in metropolitan areas.[2] Furthermore, strong economic growth, in combination with numerous other factors that influence land use, has pushed urban sprawl even further from city centers, consuming agricultural land in traditionally rural areas.

The bulk of vegetable and melon production tends to be geographically concentrated. A substantial portion (66 percent) of U.S. vegetable and melon production (excluding potatoes) is located in California, Florida, Texas, and Arizona.[3] But these States also rank high in population and projected population growth (table C-l). The level terrain, availability of water for irrigation, and extended periods of warm weather that make these areas advantageous for vegetable production also make these States attractive for population expansion. The Bureau of the Census projects a 55-percent increase in California's population between 1995 and 2025. Projected population growth in Florida, Texas, and Arizona is not far behind: for each State, population growth by 2025 is projected to exceed 45 percent.

As product prices, technology, consumer demand, and land prices change, the location of specific agricultural production also changes. These changes are particularly important for the vegetable industry, with its special soil and climatic requirements, which often interface with population growth and urbanization. With the accelerated shift of agricultural land to urban land that accompanies population growth, the vegetable industry may be especially impacted. In light of the complex relationship between population growth and vegetable production, does impending population growth pose a risk to domestic vegetable and melon production? This article attempts to address that issue by using historical Census data to examine the impact of urban influence on vegetable acreage.

Vegetable and Melon Production

Vegetables and melons (excluding potatoes and pulses) are important components of the U.S. crop production sector. In 1997, these crops accounted for 14 percent of all crop farm cash receipts. According to USDA, in 1997, the top five producing States accounted for 57 percent of all vegetable and melon harvested acreage, but had 7 1 percent of production.

In terms of total production, the top five vegetable and melon States are California (53 percent of U.S. output), Florida (6 percent), Arizona (4 percent), Washington (4 percent), and Wisconsin (4 percent). Fresh-market vegetables and melons are primarily produced in western and southern States, while the West (primarily California, Oregon, and Washington) and the upper Midwest account for most of the output of processing vegetables.

Vegetable and melon production has become more concentrated in western States (particularly California) over the past 60 years. California now produces about 60 percent of

[1]Agricultural economists with ERS, RED and ERS, MTED, respectively.
[2]Metropolitan status is that announced by OMB in 1993, based on results of the 1990 Census.
[3]This regionalization of production is even more acute during the winter months, with domestic production largely confined to a relatively few counties within these four States.

Table C-1 --Vegetable and melon acreage and population in leading States, 1992 1/

State	Acres harvested	Percent of United States	Population	Percent of United States	Population growth to 2025
	Acres	Percent	Millions	Percent	Percent
California	1,016,744	26.9	31.6	12.0	55.0
Wisconsin	347,581	9.2	5.1	1.9	15.0
Florida	299,867	7.9	14.2	5.4	47.0
Minnesota	234,416	6.2	4.6	1.7	20.0
Texas	189,997	5.0	18.7	7.1	45.0
Washington	172,057	4.5	5.4	2.1	44.0
Oregon	147,616	3.9	3.1	1.2	39.0
New York	139,841	3.7	18.1	6.9	--
Michigan	138,851	3.7	9.5	3.6	5.0
Arizona	118,125	3.1	4.2	1.6	52.0
Other	977,263	25.8	--	--	--
United States	3,782,358	100.0	262.8	100.0	27.0

1/ Based on the 1992 Census of Agriculture. Excludes potatoes, sweet potatoes, mushrooms, and pulses. Includes fresh-market and processing uses.
Source: Economic Research Service, USDA.

vegetables for processing and 49 percent of the fresh-market crop. This compares with 17 and 24 percent, respectively, in 1940. The relative contributions of eastern States to national vegetable production have declined during this time. Part of this decline is loss of market share to western States and a portion is due to increased winter vegetable output in warmer States like California and Arizona.

The majority of U.S. vegetable and melon production is clustered in areas which primarily enjoy climatic advantages (largely sunlight, temperature, and humidity) specific to the commodity being produced. For example, iceberg lettuce is a cool-season crop requiring moderate temperatures featuring cool nights. Cool nights and a dry climate where moisture can be controlled result in the highest quality heads. These conditions are found in the Salinas Valley of California from late spring through the fall and in the southern desert areas of California and western Arizona during the winter. As a result of this comparative advantage, more than 95 percent of the iceberg lettuce produced in the United States comes from these two States.

Given the increasing concentration of vegetable and melon production in California, it is not surprising that 7 of the top 10 vegetable-producing counties are in California. Also, the importance of winter vegetable production is manifest in the fact that the other three top counties are in Florida, Texas, and Arizona-States that produce primarily during the cooler months of the year. California's Monterey County is the nation's top vegetable area, with 6 percent of the harvested area (table C-2). The fertile Salinas Valley, which has been called the world's salad bowl because of the heavy production of green vegetables, is located in Monterey County.

The Impact of Urbanization on Land Used for Vegetable Production

Conversion of land from one use to another has been occurring since the beginning of civilization (USDA). Until about

Table C-2--U.S. harvested area for vegetables and melons: Top counties, 1992 1/

County and State	Area harvested	Percent of U.S.
	Acres	Percent
Monterey, CA	233,266	6.2
Fresno, CA	143,521	3.8
Palm Beach, FL	84,624	2.2
Imperial, CA	64,569	1.7
Yuma, AZ	76,892	2.0
Kern, CA	68,407	1.8
Yolo, CA	59,068	1.6
San Joaquin, CA	58,695	1.6
Hidalgo, TX	53,855	1.4
Santa Barbara, CA	50,673	1.3
Others	2,888,788	76.4
United States	3,782,358	100.0

1/ Harvested area includes land which is double cropped.
Source: 1992 Census of Agriculture, Bureau of the Census, U.S. Department of Commerce.

a century ago, the United States was largely an agrarian nation with the majority of people engaged in fulltime agriculture. As the country grew and agricultural technology advanced this century, fewer farmers and less acreage were required to feed an increasingly urban population. Today, 836 of the 3,141 counties in the United States are classified as metropolitan.

There are a large number of factors that influence current land use and changes in land use. Among these are agronomic (climatic, soil requirements, and source of moisture economic (including comparative advantage, changing prices, changing consumer demands, and competition for land from nonagricultural uses), technologic (including such things as the development of refrigerated trucks), and infrastructural (such as the completion of the U.S. interstate highway system.) For instance, refrigerated transportation, interstate highways, improved communication systems, an large-scale irrigation projects have made the production of vegetables and melons far from urban consumption points economically feasible. As a result, vegetable production

The Top Three Vegetable Counties—
A Short Profile

Monterey County, CA— is the leading vegetable-producing county in the nation, with a bit more than 6 percent of the harvested are (includes double-cropped land) in 1992. Approximately 11 percent of the county's total land area of 2.1 million acres is planted to vegetables during the year. Vegetable production, which peaks during the summer but occurs year round, was valued at $1.6 billion in 1996—72 percent of the county's agricultural receipts. Monterey County is the nation's top producer of several vegetables, led by lettuce with more than one-fifth of the county's vegetable receipts. About 72 percent of the population resides inside urbanized areas but, according to the Census Bureau, the population declined 5 percent between 1990 and 1996. Despite this drop, substantial urban development appears to have occurred around the city of Salinas during the past 10 years.

Fresno County, CA— is the leading agricultural county in the State and is the second largest source of vegetables in the country, with almost 4 percent of the harvested area. Despite being a rapidly growing metropolitan area, about 46 percent of the county's area is in farms, with 12 percent of the county's cropland devoted to vegetable production. Vegetable production occurs from the spring through the fall and peaks during the summer with a crop value of $681 million—20 percent of the county's gross agricultural receipts in 1996. Tomatoes (largely for processing) account for about one-third of the county's vegetable receipts. About 68 percent of the population resides inside urbanized areas. According to the Census Bureau, the county's population increased 13 percent between 1990 and 1996.

Palm Beach County, FL— is the third leading source of vegetables in the United States, with a little more that 2 percent of the harvested area in 1992. A popular tourist spot as well as major agricultural county, Palm Beach vegetable acreage accounts for about 7 percent of the county's total land area of 1.3 million acres. Land in farms account for 49 percent of the county's area. Most vegetable production in the county occurs in two major areas along a coastal strip called the Pompano area and in an inland area in the Everglades Agricultural Area. Vegetables are shipped primarily during the late fall through late spring, with little production during the hot summer months. Because of warm ocean breezes, hard freezes are rare in this area of Florida, which makes it ideal for warm-season vegetable crops like tomatoes and bell peppers. Population grew moderately from 1990 to 1996, with a 15-percent increase reported by the Census Bureau. About 92 percent of the population is clustered in urbanized areas. Development pressure is intense in this area of Florida, with some land currently protected from development in an agricultural reserve.

began to decline in places like New England and New York and increase in western States like California and Arizona. With the longer growing seasons in these latter areas, plus the importation of items, a wider variety of vegetables became available to consumers over a longer part of the year.

Many of these trends continue today. Ever improving technology, such as hybrid seeds and the adoption of drip irrigation, continue to raise yields and limit the acreage expansion required to keep up with demand. With a large land base in places like California, the first choice is not always vegetables or houses, it is vegetables or alfalfa or some other alternative field crop. Land used for other crops dwarfs that needed for vegetables and melons: all vegetable production in the United States occurs on less than 1 percent of the total cropland. In 1992, the United States harvested 3,782,358 acres of vegetables, which is about 0.9 percent of total cropland.

The agronomic characteristics of land that are key for vegetable production (warm temperatures, especially in the winter; an adequate supply of water; and level, well-drained soils), are also characteristics that are highly valued for urban development. Thus, the interface between vegetable production and development in urban fringe counties sets up an economic competition for the use of farmland that has both negative and positive impacts on vegetable acreage. Urbanization is generally associated with a negative impact on agricultural land, involving direct conversion of some agricultural land to nonagricultural uses. Urban uses generate higher returns per acre than do agricultural uses, with the consequence that urban uses (and even anticipated urban uses) outbid agricultural uses and some farmland (including vegetable land) is directly converted.

But, as urbanization proceeds, changes in the local economic environment for agriculture act in a countervailing manner to increase the suitability of urban-influenced farmland for vegetable production. First, population growth in nearby urban areas creates increased demand for locally grown fresh vegetables. This effect implies that there is an economic advantage for production located close to concentrations of consumers. As noted earlier, however, the transportation and handling technologies in use today mean that while this effect is important to local supplies, it has become less important in terms of national supply. Secondly, and more importantly, relative to other agricultural products, many vegetables produce high returns per acre, creating a

comparative advantage for vegetable production in urbanizing areas. Thus, vegetable production may be some of the last agricultural production remaining before actual conversion to urban use takes place. The counter-intuitive result is that as urbanization proceeds, acres devoted to vegetable production may actually increase.[4] This phenomenon has also been documented by Hart and by Vesterby and Krupa.

This is not to say, however, that urbanization does not often have negative impacts upon agricultural production, including vegetable production (Heimlich and Barnard; Forero, Huntsinger, and Clawson; Handel). Continued strong economic growth during the past 10 to 20 years has pushed urban sprawl out into prime vegetable and melon producing lands in several areas. Along the urban/agricultural fringes, conflicts between growers and new suburban neighbors occur with respect to issues such as farm odors, early morning noise, and pesticide applications. Growers also face increased pressure from water and land use restrictions. Some farms on the urban fringe face crop-yield deterioration from urban smog, theft, and vandalism.

Data Available for Analysis

The many, and sometimes countervailing, forces that determine land use make it difficult to empirically isolate the effects of urbanization from changing consumer demands, technological change, and other economic factors that influence the use of land for vegetable production. The paucity of subcounty data also complicates the analysis. For instance, some counties classified as metropolitan are large enough physically to also contain large acreage devoted to agricultural production. In general, empirical analysis is limited to the examination of county-level data from the Census of Agriculture, which is available in 5-year intervals. In an attempt to compensate for data limitations, change in vegetable acreage is examined over an extended time period and for large aggregates of the data. Hart used similar data to examine the population and farmland changes that occurred as New York City developed from 1860 through 1987. Vesterby and Krupa also used county census data to examine the effects of urbanization on agricultural sales in 29 counties that they classified as fast-growth in each consecutive decade from 1950 to 1990.

Empirical Analysis of Change in Acreage Between 1959 and 1992

For this study, vegetable acreage from the Census of Agriculture for 1959 and 1992 were analyzed.[5] The census definition of vegetables is used, meaning that the data exclude potatoes, sweet potatoes, mushrooms, and pulses. The analysis focused on the top 100 counties as ranked by acres harvested in each of those 2 years. For 1992, the top-100 vegetable counties accounted for 2,367,125 acres, or 63 percent of total U.S. vegetable acres.

The resulting analysis covered 143 counties. Fifty-seven counties were listed in the top 100 for both 1959 and 1992. Another 43 counties were listed in the top 100 for 1959, but not for 1992. The remaining 43 counties were not among the top 100 listed for 1959, but had increases in harvested acreage large enough to place them on the list for 1992. In 1959, the top 100 counties constituted 54 percent of harvested vegetable acres, which compares with 62 percent in 1992. For 1959 and 1992, counties in the top 100 rankings were from at least 19 individual States. As a matter of interest, 12 of the 143 were counties that Vesterby and Krupa identified as fast-growth for four consecutive decades.

Table C-3 shows the distribution of vegetable acres between metropolitan and nonmetropolitan counties, as well as acres of land in farms, 1997 population, and value per acre of cropland (average for 1994-1996). For this set of 143 counties, 61 percent of the vegetable acres were harvested in metro counties, which also contained 49 percent of the land in farms. Average value per acre for cropland in these metro counties was 135 percent higher than for nonmetro counties. In addition, these metro counties contained over 53 million people (1997, estimated), which is 92 percent of the total population for the full set of 143 counties.

An indication of the change in land used for vegetable production can be obtained by examining the change in vegetable acreage between 1959 and 1992 for three mutually exclusive subsets of the 143 that were in the top 100 for either 1959 or 1992. Each of those three groups can be further divided into metro and nonmetro categories in order to highlight the relationship between population growth and change in vegetable acreage. The relationship between population, population growth, vegetable acreage, and land in farms for each of these groups is summarized in table C-4. Corresponding statistics for individual counties in each group are provided in table C-5.

The first set contains the 57 counties that were in the top 100 list for 1959 and were still in the top-100 list in 1992. A large number of the top-ranked vegetable counties are in this group, which we have labeled *CONTINUOUS TOP 100*. Vegetable acreage increased in 38 of these counties, amounting to a 29-percent increase. Of the top 25 counties in 1959, all but one remained ranked within the top 100 in 1992. Vegetable acres in Cameron County, Texas fell from 33,000 acres in 1959 (ranked 12th) to 6,100 acres in 1992, dropping it from the list of the 100 top-ranked counties. In 1992, the 25 counties that ranked highest in 1959 accounted for 31 percent of the total U.S. vegetable acres harvested in 1992 (compared with 29 percent in 1959) and 50 percent of the 1992 top 100 acres harvested.

[4]Note, however, that the type of vegetables grown, and perhaps even the production and marketing techniques used could change.

[5]Data from the 1997 Census of Agriculture should be available in early 1999.

Table C-3--Vegetables harvested for sale, 1992: Set of 143 counties from lists of 100 leading counties, 1959 and 1992

Urban Influence	Number of counties	Acres of vegetables harvested	Land In farms	Cropland value per acre 1/	1997 Population
		Acres	Acres	$/acre	
Metro	75	1,541,190	27,357,087	3,170	53,480,034
Nonmetro	68	998,949	28,005,371	1,344	4,585,955
Total	143	2,540,139	55,362,458	2,229	58,065,989

1/ Average for 1994-96

Source: Economic Research Service, USDA.

The second group, which we have labeled *DECLINING, are* those that were on the top-100 list for 1959, but did not appear among the top-ranked counties in 1992. Vegetable acreage decreased by 65 percent for this set of counties, and the set now only accounts for 7 percent of the acreage in the full set of 143 counties.

The INCREASING group consists of those counties in the top-100 list for 1992, but not for 1959. This group experienced increased vegetable acreage of 265 percent and now accounts for 23 percent of the acreage in the 143 counties.

The percentage change in acreage for these three groups, and for their metro/nornnetro subgroups, can be seen in table C-4, which also displays the percentage change in land in farms, and population, plus the value per acre of cropland in each category. Table C-4 appears to indicate that increasing urbanization over the 33-year period has not reduced vegetable production. For the full set of 143 counties examined, vegetable acres increased 25 percent from 1959 to 1992. This increase in vegetable acreage occurred even while land in farms decreased 35 percent overall and 48 percent in metro counties. Further, the increased vegetable acres occurred despite an overall population increase of 83 percent. The rate of change in vegetable acres harvested was much greater in nonmetro counties (61 percent), but metro counties did increase acreage by 8 percent.

Much of the increased acreage occurred in counties that were not in the top 100 in 1959 *(INCREASING),* with the largest rate (308 percent versus 111 percent) occurring in nonmetro counties. For the *INCREASING* group, the absolute increase in acreage was largest for nonmetro counties also, given that nonmetro counties account for 87 percent of the group acres. But, metro county vegetable acreage increased 111 percent, while land in farms decreased 15 percent and population increased 172 percent.

Counties in the *CONTINUOUS TOP-100* group experienced a 29-percent increase in vegetable acreage over the period, even while land in farms declined 22 percent and population increased 57 percent. The metro rate of increase in vegetable acres was slightly greater than the nonmetro rate (30 versus 25 percent). For the *CONTINUOUS* group, the rate of decrease in land in farms was larger for metro counties, and the rate of population growth in the metro counties was nearly three times larger.

The *DECLINING* group accounts for only about 7 percent of vegetable acres, with the rate of decrease in vegetable acres about even for metro and nonmetro counties. For the *DECLINING* group, land in farms decreased at a more rapid rate than for the other two groups. Further, the rate of decrease in land in farms was higher for the nonmetro counties than for the metro counties. Population growth was

Table C-4--Percent change from 1959 to 1992 for vegetable acres harvested, land in farms, and population, by group and metro status

Urban Influence	Number of counties	Acres of vegetables harvested	Land in farms (acres)	Cropland value/acre (Ave. 1994-96)	1997 Population
	Number	--Percent change--		$/acre	Percent change
CONTINUOUS TOP 100	57	29	-22	2,510	57
Metro	39	30	-25	2,960	156
Nonmetro	18	25	-14	1,550	58
DECLINING	43	-85	-85	2,595	56
Metro	29	-85	-14	4,015	57
Nonmetro	14	-82	-78	4,015	30
INCREASING	43	265	-13	1,470	101
Metro	7	111	-15	2,820	172
Nonmetro	36	308	-13	1,325	74
Total	143	25	-35	2,230	83
All Metro	75	8	-48	3,170	85
Nonmetro	68	61	-12	1,345	62

Source: Economic Research Service, USDA.

actually less for this group than for the CONTINUOUS or *INCREASING* group. These facts may indicate that the *counties* in the *DECLINING* group are part of mature urban areas. Many of the counties in this group had fewer than 100,000 acres of land in farms remaining and many had fewer than 5,000 acres of harvested vegetables.

In general, vegetable acres increased in the CONTINUOUS *TOP-100* group and the *INCREASING* group, which together account for 93 percent of the 1992 vegetable acreage for the 143 counties. This increase occurred despite population increases of 57 to 101 percent. Given the increased vegetable acreage, it does not appear that the additional land needed to accommodate substantial increases in population came at the expense of vegetable production. Given that land in farms in the *CONTINUOUS* and *INCREASING* groups actually decreased substantially, it appears that vegetable production replaced production of less intensive crops, both in metro and nonmetro counties.

Conclusion

Based on the 1959 to 1992 trends, it does not appear that urbanization poses an immediate threat to the overall U.S. vegetable industry. Urbanization causes shifts in land use, but given its high production intensity/high net return characteristics, vegetable production may be one of the last remaining agricultural enterprises in urbanizing areas. Substitution of vegetable production for other less intensive enterprises may cause vegetable production to (at least temporarily) increase in many urbanizing areas. This finding is consistent with research reported elsewhere (see Lopez, Adelaja, and Andrews; Heimlich and Barnard; Hart; Vesterby and Krupa). In any case, it does not appear that urbanization is poised to cause a wholesale geographic dislocation of vegetable production in a manner analogous to shifts seen previously in the citrus and dairy industries.

There is a wide geographic dispersion of the top vegetable counties, indicating that many areas of the United States can produce vegetables on a commercial scale-although only a select few can do so year-round. The top 100 counties, which are dispersed across 20 States, account for only 62 percent of vegetable acres. In addition, since 1959, more than 40 counties have moved into the top-100 list.

References

Forero, L., L. Huntsinger, and W.J. Clawson. "Land Use Change in Three San Francisco Bay Area Counties: Implications for Ranching at the Urban Fringe." *Journal of Soil and Water Conservation* 47(1992):475-480.

Ghelfi, Linda M. and Timothy S. Parker. "A County-Level Measure of Urban Influence." ERS Staff Paper Number 9702. February 1997.

Handel, Mary E. "Conflicts Arise on the Urban Fringe." *California Agriculture* 52 (MayJune 1998): 11-13.

Hart, J.F. "The Perimetropolitan Bow Wave." *Geographical Review.* 81(1991): 37-51.

Heimlich, Ralph E. and Charles H. Barnard. "Agricultural Adaptation to Urbanization: Farm Types and Agricultural Sustainability in U.S. Metropolitan Areas", in Audriac, I. (Ed.), *Rural Sustainable Development in America.* John Wiley and Sons, 1997.

Lopez, Rigoberto A., Adesoji O. Adelaja, and Margaret S. Andrews. "The Effects of Suburbanization on Agriculture." *American Journal of Agricultural Economics.* 70(1988): 346-358.

U.S. Department of Agriculture, Soil Conservation Service. *Conquest of the Land Through 7,000 years.* AIB No. 99, 1953.

Vesterby, Marlow and Kenneth S. Krupa. "Effects of Urban Land Conversion on Agriculture", in Thunberg, Eric M. And John E. Reynolds *(eds.). Urbanization and Development Effects on the Use of Natural Resources: Proceedings of a Regional Workshop.* Southern Regional Development Center. SRDC No. 169. July 1993.

Table C-5--Statistics for top-100 acreage-ranked counties, 1959 and 1992

County	state	1992 Vegetables harvested	1959 Vegetables harvested	1992 Land in farms	1959 Land in farms	1997 County population	1960 County population	Urban Influence Code 1/
		Acres	Acres	Acres	Acres	Number	Number	Number
Continuous top 100 group 2/								
Metro: 3/								
Monterey	CA	233,286	92,984	1,372,778	1,612,991	361,907	198,850	2
Fresno	CA	143,521	28,092	1,774,664	2,286,381	754,396	366,212	2
Palm Beach	FL	84,624	89,988	637,934	372,408	1,018,524	228,369	2
Yuma	AZ	76,892	31,091	229,365	518,722	130,016	46,269	2
San Joaquin	CA	59,088	112,287	783,715	924,893	542,504	250,002	2
Yolo	CA	56,695	33,322	518,907	566,199	152,797	65,861	1
Hidalgo	TX	53,855	95,429	660,412	810,422	510,922	181,178	2
Santa Barbara	CA	50,873	19,459	836,989	937,523	390,199	169,652	2
venture	CA	48,021	39,622	320,597	449,265	725,968	199,442	1
Marion	OR	40,037	10,753	302,462	351,397	265,123	121,061	2
Dade	FL	37,170	35,842	83,681	128,550	2,044,600	937,890	
Stanislaus	CA	36,857	29,996	759,649	847,395	421,818	157,395	2
Riverside	CA	29,828	31,258	423,602	801,430	1,447,791	306,735	1
Maricopa	AZ	26,751	40,692	729,947	2,533,790	2,696,198	664,088	
Merced	CA	25,448	16,188	978,831	989,504	196,123	90,798	2
Orange	FL	24,892	13,793	138,418	349,007	783,974	263,540	1
San Luis Obispo	CA	23,761	9,152	1,324,403	1,687,216	233,291	81,286	2
Sutter	CA	22,829	8,501	318,156	406,563	77,754	33,515	2
Genesee	NY	21,389	12,636	171,722	239,333	61,808	54,218	1
Yakima	WA	19,356	23,223	1,639,965	1,884,694	216,318	145,112	2
Dane	WI	16,934	9,795	538,582	682,962	397,511	22,095	2
Sheboygan	WI	16,844	12,100	207,128	275,649	109,896	86,484	2
Kent	DE	16,744	14,658	197,375	251,934	122,709	65,651	2
Weld	c o	16,113	7,289	2,086,292	2,157,885	155,582	72,344	2
Orleans	NY	15,332	13,727	133,854	175,732	44,734	34,159	1
Cumberland	NJ	15,064	38,655	68,627	118,261	140,907	107,563	2
Solano	CA	14,821	14,016	340,328	477,975	371,020	134,916	1
Hillsborough	FL	14,396	10,486	265,443	773,468	909,444	397,788	1
Van Buren	MI	13,734	7,163	206,781	265,471	75,686	48,395	2
Santa Cruz	CA	12,294	14,752	52,905	108,984	240,488	84,382	
Salem	NJ	11,458	20,072	98,256	121,039	66,040	58,964	1
Outagamie	WI	11,322	8,448	263,514	345,935	154,175	101,794	2
Ontario	NY	9,346	7,694	181,624	283,839	99,976	68,070	1
Gloucester	NJ	9,298	23,897	61,748	91,531	246,070	135,203	1
Orange	NY	8,984	9,723	102,733	235,153	327,160	183,798	2
Dakota	MN	8,778	8,357	221,193	298,074	334,585	78,303	1
Santa Clara	CA	8,490	21,854	342,653	529,489	1,609,037	643,615	1
Monroe	NY	8,486	11,740	110,150	215,900	717,780	586,387	1
De Kalb	IL	8,318	13,465	377,512	408,946	83,602	51,714	1
Sum of metro continuous		1,353,929	1,042,199	19,862,895	26,495,910	19,240,433	7,523,095	
Percent change		29.9		-25.0		155.8		
Nonmetro:								
Imperial	CA	84,569	59,353	532,866	497,302	143,706	72,214	3
Kern	CA	68,407	13,178	2,839,531	3,566,553	628,605	292,374	6
Umatilla	OR	33,744	56,549	1,466,580	1,499,226	64,754	44,352	5
Fond du Lac	WI	31,199	21,958	351,633	409,776	94,329	75,463	5
Dodge	WI	29,556	28,563	414,240	501,945	82,422	63,170	3
Sussex	DE	24,566	23,197	304,680	380,942	134,034	73,243	6
Waushara	WI	21,280	8,315	167,191	272,880	21,507	13,497	6
Walla Walla	WA	19,490	21,027	710,546	822,729	53,501	42,195	5
Faribault	MN	18,653	11,890	414,710	446,588	16,432	23,685	8
Skagit	WA	18,068	16,565	92,047	141,770	97,705	51,350	3
Goodhue	MN	17,448	8,264	379,603	436,198	42,706	33,035	5
Columbia	WI	16,763	23,766	327,185	411,128	50,362	36,708	6
Sibley	MN	14,627	11,222	311,849	361,317	14,575	16,228	4
Wascea	MN	10,208	8,314	237,239	262,595	18,168	16,041	8
Green Lake	WI	9,190	7,521	163,145	188,643	19,452	15,418	6
Lee	IL	8,949	7,225	414,442	436,999	35,777	38,749	7
La Salle	IL	8,049	7,205	612,112	666,951	109,543	110,800	3
Northhampton	VA	7,926	20,141	52,469	67,066	12,790	16,966	9
Sum of nonmetro continuous		442,692	354,253	9,792,068	11,370,608	1,640,368	1,035,488	
Percent change		25.0		-13.9		58.4		
Sum of all continuous		1,796,621	1,396,452	29,654,963	37,866,518	20,880,801	8,558,583	
Percent change		28.7		-21.7		144.0		

See footnotes et the end of the table.

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Table C-5--Statistics for top-100 acreage-ranked counties, 1959 and 1992--continued

County	State	1992 Vegetables harvested	1959 Vegetables harvested	1992 Land in farms	1959 Land in farms	1997 County population	1960 County population	Urban Influence Code 1/
		Acres	Acres	Acres	Acres	Number	Number	Number
Decreasing group:								
Metro: 3/								
Baltimore	MD	3,136	7,579	83,232	149,856	1,377,918	1,431,470	1
Lancaster	PA	4,583	7,244	388,368	482,579	454,063	278,359	2
Los Angeles	CA	3,342	15,567	183,569	479,011	9,145,219	6,038,771	1
Marion	FL	2,041	15,065	296,242	538,857	237,308	51,616	2
San Patricio	TX	0	7,696	358,211	549,114	69,626	45,021	2
Winnebago	WI	7,128	9,288	169,876	236,821	149,934	107,928	2
Charleston	SC	3,764	10,257	32,392	116,385	284,815	216,382	2
Ogle	IL	6,945	17,156	392,639	460,208	50,199	38,106	2
Wayne	NY	4,648	11,701	174,627	275,357	95,293	67,989	1
Alachua	FL	7,958	9,434	191,140	373,774	198,326	74,074	2
Cameron	TX	6,144	33,027	329,288	486,198	320,801	151,098	2
York	PA	1,844	9,963	252,052	408,200	370,518	238,336	2
Berrien	MI	6,420	10,588	166,886	263,926	160,713	149,865	2
Sacramento	CA	6,250	12,705	379,044	546,988	1,125,976	502,778	1
Orange	CA	4,673	18,395	60,740	345,689	2,674,091	703,925	1
Bucks	PA	3,175	10,381	78,790	189,503	582,633	308,567	1
Wilson	TX	1,592	7,020	476,493	394,546	30,194	13,267	1
Erie	NY	4,669	16,877	145,679	289,889	944,472	1,064,688	1
Cook	IL	1,233	7,715	40,917	130,937	5,076,786	5,129,725	1
Monmouth	NJ	4,467	7,173	58,758	105,548	598,250	334,401	1
Broward	FL	1,623	7,442	23,735	80,821	1,470,758	333,946	1
San Diego	CA	4,661	10,910	517,860	833,778	2,722,650	1,033,011	1
Alameda	CA	339	14,137	286,288	311,139	1,371,067	908,209	1
Burlington	NJ	4,644	12,879	97,186	184,727	417,930	224,694	1
Conta Costa	CA	6,331	11,607	163,036	287,927	899,258	409,030	1
Seminole	FL	1,456	10,512	59,642	210,908	344,789	54,947	1
Willacy	TX	2,342	12,937	260,892	373,751	19,662	20,084	1
Suffolk	NY	6,895	9,476	35,353	89,776	1,362,616	666,784	1
Oneida	NY	2,528	10,974	242,637	408,853	233,187	264,401	2
Sum of metro decreasing		114,831	345,705	5,943,572	9,604,866	32,787,052	20,861,472	
Percent change		-66.8		-38.1		57.2		
Nonmetro:								
Caroline	MD	6,283	9,097	126,981	156,771	29,527	19,462	4
Wicomico	MD	2,802	7,796	91,254	131,363	79,318	49,050	7
Accomack	VA	6,942	9,934	91,568	112,191	32,096	30,635	8
Zavala	TX	5,249	10,647	723,018	581,863	11,995	12,696	8
Martin	MN	6,703	16,674	412,660	452,344	22,243	28,986	7
Nez Perce	ID	3,573	7,512	477,839	464,640	38,819	27,066	7
Starr	TX	5,728	7,071	632,622	480,436	55,560	17,137	6
Dorchester	MD	5,837	10,815	123,762	157,050	29,893	29,666	7
Sumter	FL	3,384	7,231	253,330	197,513	39,428	11,869	4
Barnwell	SC	2,180	7,822	74,733	151,838	21,830	17,659	6
Vermilion	IL	1,735	11,790	488,215	501,713	85,097	98,176	5
Thomas	GA	2,025	7,408	174,020	309,237	42,560	34,319	5
Kent	MD	1,028	7,665	131,283	149,968	19,067	15,481	4
Columbia	WA	0	19,669	304,928	359,134	4,277	4,596	9
Sum of nonmetro decreasing		53,469	141,131	4,106,213	4,206,061	509,710	392,798	
Percent change		-62.1		-2.4		29.8		
Sum of all decreasing		168,300	486,836	10,049,785	13,810,927	33,296,782	21,254,270	
Percent change		-65.4		-27.2		56.7		

See footnotes at the end of the table.

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Table C-5--Statistics for top-100 acreage-ranked counties, 1959 and 1992--continued

County	State	1992 Vegetables harvested	1959 Vegetables harvested	1992 Land in farms	1959 Land in farms	1997 County population	1960 County population	Urban Influence Code 1/
		Acres	Acres	Acres	Acres	Number	Number	Number
Increasing group:								
Metro: 3/								
Manatee	FL	21,896	3,860	299,699	252,812	237,139	69,168	2
Canyon	ID	9,553	5,937	391,050	352,382	116,675	57,662	2
McHenery	IL	9,012	3,829	249,240	316,645	236,952	84,210	1
Lee	FL	8,751	3,625	106,721	142,509	387,901	54,539	2
Cayuga	NY	8,228	6,760	254,002	328,052	82,314	73,942	2
Yamhil	OR	7,611	4,625	179,787	260,673	80,212	32,478	1
Lane	OR	7,379	5,622	242,121	365,310	311,356	162,890	2
Sum of metro increasing		72,430	34,258	1,722,620	2,018,383	1,452,549	534,889	
Percent change		111.4		-14.7		171.6		
Nonmetro:								
Grant	WA	44,651	2,831	1,086,045	1,075,642	69,719	46,477	7
Collier	FL	31,648	5,553	301,977	316,424	195,731	15,759	3
Portage	WI	31,224	4,525	265,731	399,278	64,748	36,999	4
Renville	MN	28,313	6,681	600,114	606,071	17,066	23,249	7
Franklin	WA	24,584	304	670,149	590,027	47,027	23,342	3
Colusa	CA	20,706	894	450,236	491,128	18,783	18,838	4
San Benito	CA	19,436	6,289	600,073	750,447	47,546	47,754	3
Adams	WI	18,953	1,010	119,354	171,812	18,158	7,566	9
Oceana	MI	16,468	2,523	129,083	170,963	24,599	16,547	8
Dona Ana	NM	16,329	4,125	526,407	490,168	168,470	59,948	3
Luna	NM	15,361	1,787	797,117	954,720	23,922	9,839	6
Steele	MN	14,672	3,726	231,610	285,040	31,531	25,029	7
Brown	MN	14,654	5,317	347,420	375,610	272,222	27,676	7
Malheur	OR	11,669	5,416	1,318,447	1,523,214	28,504	22,764	8
Sampson	NC	11,048	6,101	266,067	379,782	51,793	48,013	6
Twin' Falls	ID	10,884	4,094	489,993	562,719	61,298	41,842	5
Rock	WI	10,772	4,977	343,115	417,586	150,332	113,913	3
Walworth	WI	9,815	2,436	226,096	306,290	84,404	52,368	4
Colquitt	GA	9,784	2,565	198,184	287,351	39,616	34,048	7
Mittchell	GA	9,619	1,742	205,573	273,878	21,082	19,652	6
Linn	OR	9,518	4,391	380,464	490,060	103,440	58,867	4
Freeborn	MN	9,451	3,897	366,534	431,991	31,562	37,891	7
Gooding	ID	9,063	339	227,114	275,217	13,566	9,544	7
Mower	MN	8,983	5,650	392,615	431,685	37,132	48,498	4
Benton	OR	8,842	1,489	118,818	205,340	76,544	39,165	4
Kings	CA	8,597	3,914	775,829	678,005	115,489	49,995	4
Olmstead	MN	8,620	2,822	305,831	375,880	114,619	65,532	3
Redwood	MN	8,489	792	491,726	538,168	16,656	21,718	7
Dunklin	MO	8,163	4,648	288,810	309,990	32,806	39,139	7
Oconto	WI	7,734	4,494	208,888	325,224	33,384	24,849	6
Racine	WI	7,700	3,513	133,197	149,391	185,393	141,781	3
Jefferson	WI	7,493	4,238	232,591	310,500	73,375	50,094	4
Barron	WI	7,489	2,990	350,866	466,724	43,684	34,270	7
Dyer	TN	7,473	5,017	230,906	262,412	36,451	29,537	7
St. Joseph	MI	7,376	738	234,823	255,655	61,234	42,332	6
Juneau	WI	7,207	1,439	195,287	219,103	23,991	17,490	7
Sum of nonmetro increasing		502,788	123,267	14,107,090	16,133,495	2,435,877	1,402,325	
Percent change		307.9		-12.6		73.7		
Sum of all increasing		575,218	157,525	15,829,710	18,151,878	3,888,426	1,937,214	
Percent change		265.2		-12.8		100.7		
Sum of all 143 counties		2,540,139	2,040,813	55,362,458	84,692,070	58,065,989	31,750,068	
Percent change		24.5		-34.6		82.9		

1/ Codes 1 and 2 designate metropolitan counties; codes 3-9 indicate decreasing levels of urban influence, with 3 designating the higher level of urban influence and 9 indicating rural counties. 2/ Continuous means that these counties appear in the top 100 vegetable counties for both 1959 and 1992. 3/ Metro means counties classified as metropolitan as defined by the Office of Management and Budget. A Metropolitan Statistical Area is a county or a group of contiguous counties that contain at least one city with a population of 50,000 or more or includes a Census Bureau defined urbanized area of at feast 50,000 with a total metro population of at least 100,000

Source: Bureau of the Census, U.S. Department of Commerce, 1959 and 1992 Census of Agriculture, 1960 Census of Population (web site, www.census.gov)