

Changes in New Mexico Agriculture 1994



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PREFACE

Changes in New Mexico Agriculture provides an annual accounting in constant units of changes that occurred in cash receipts and value of production between the preceding year and the title year. It is a companion for publications such as *New Mexico Agricultural Statistics* and *Agricultural Statistics*, which publish extensive statistics related to agriculture. However, the monetary values reported in those publications are measured in nominal dollars. As a consequence, comparing between years does not allow for determining the real changes that have occurred. *Changes in New Mexico Agriculture* remedies this problem. Changes in cash receipts are calculated from all commodities. In addition, a top-10 county disaggregation is made for the 10 commodities accounting for the highest percentage of cash receipts in New Mexico for the period covered in the report. Long-term trends and changes in cash receipts and value of production are reported in *Trends in New Mexico Agriculture*.

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Changes in New Mexico Agriculture, 1994

Wilmer M. Harper*

INTRODUCTION

This report is a baseline reference for New Mexico's agricultural sector with respect to cash receipts, value of production, and major commodities. Annual cash receipts and value of production are converted from nominal monetary values to constant-dollar values.¹ Inflation in the general price level produces nominal price changes that do not reflect changes in the real value of goods and services in the economy. To remove changes associated with inflation, the value of the commodities covered in this report are adjusted to a common base period (1990) using the Consumer Price Index² (CPI) (appendix A). Adjusting cash receipts to a common base period removes the variation in cash receipts between time periods that may be due to price differences associated with changes in the nominal value of the dollar. Adjusted values allow for the identifying of monetary values that have increased or decreased in real terms. Although converting to a common base period does not take into account changes in production due to technology, comparing of the constant-dollar values between the two periods provides a measure of whether producers' real incomes have increased or decreased. For commodities with decreases in production, there also may be a decrease in the production cost. In these cases, cost decreases could partially off-set decreases in profits associated with lower quantities.

The data should not be interpreted as measuring the impact of agriculture upon the state's economy; they are cash receipts and values of production. Cash receipts understate total value in some cases and overstate total value in other cases. However, cash receipts are the values used in publications such as *New Mexico Agricultural Statistics*. Cash receipts do not account for intra-farm transfers of commodities such as hay, pasture, livestock, and grain. In contrast, the value of production for final products such as calves and yearlings may include the values of hay and grain that were produced on the farm or ranch. In these cases, cash receipts and value of production for the final product do not record the production of intermediate goods used in the final product. The general result is that cash receipts data overstate the importance of livestock operations, where one animal may appear in cash receipts more than once in a given year. Also, the value of non-marketed feed is attributed to the animal not the crop. Value-added would be a preferable concept, but the data are not available. In addition, cash receipts and value of production leave unmeasured the multiplier effect that accompanies agricultural production. This unmeasured impact includes such important components as agriculture's impact on the input and service industries associated with the production process, agricultural product processing, and the multiplier impact effect upon cash receipts as they cycle through the economy. The value of the multiplier for New Mexico's agricul-

* Professor, Dept. of Agricultural Economics and Agricultural Business.

¹Throughout this report, changes between periods reported in 1990 constant-dollar values will be referred to as changes in real values measured in constant units.

² Adjustments to a constant value are most meaningful when the adjustment mechanism is familiar to those who will use the adjusted values. No single price index is appropriate for making adjustments to the values of all goods and services. However, the Consumer Price Index (CPI) is frequently used to measure inflationary changes in the economy. Because changes in the prices of goods and services are familiar to everyone, the CPI is used in this report to adjust the nominal dollar values.

tural sector is 2.4472. This means every \$1 change in output that occurs in the agricultural sector results in a \$2.4472 change in New Mexico's aggregate economy (U.S. Department of Commerce, 1992, p. 34).

AGRICULTURE IN NEW MEXICO

The 1992 Census of Agriculture classifies 60.33% of New Mexico's land area as farmland; the USDA definition does not distinguish between cropland and rangeland. There were 14,279 farms, 0.6% of the U.S. total. Units of 2,000 acres or more accounted for 19.31% of the total farm classification, and units in the 1–50 acre range constituted 18.29% of the total number of units. By sales class, 80.58% of the units had sales less than \$50,000 and 2.98% had sales greater than \$500,000. The average operator age was 55.3 years, and 52.8% of the operators reported farming as their principal occupation. With respect to tenure, individual or family operations were the predominant types, comprising 83.75% of total operators (1992 Census of Ag., State Data, NM, pp. 8–9, 47).

From 1993 to 1994, the nominal, average per-acre value of farm real estate increased from \$194 to \$208 (USDA-ERS, AREI). This change represented a nominal increase of \$14 per acre. The constant dollars, average per-acre value of farm real estate increased \$8.10 when measured in 1990 dollars. The nominal, average gross cash rent per acre increased from \$80.40 in 1993 to \$88.90 in 1994. The increase was \$8.50 in nominal terms and \$5.72 in constant-dollar value (USDA-ERS, AREI).

In 1994 New Mexico ranked 34th among the 50 states with respect to total farm marketings and produced 0.85% of total U.S. farm marketings. New Mexico ranked 37th in total farm marketings from crops, producing 0.46% of the U.S. total. The state ranked 28th in total farm marketings from livestock, producing 1.25% of the U.S. total (USDA, Agricultural Statistics, p. IX-35). Farm income³ was 1.50% of New Mexico's total personal income generated from all industries. Farm income decreased from \$589.3 million in 1993 to \$423.1 million in 1994 (U.S. Dept. of Commerce, REIS). Cash receipts from all commodities were \$1.53 billion in 1994, a nominal decrease of 0.87% from 1993. In constant dollars, total cash receipts decreased 3.59% from 1993 to 1994 (table 1).

From 1993 to 1994, the nominal value of cash receipts increased for 12 commodities, decreased for 13

commodities, and remained constant for three commodities. However, the constant-dollar value of cash receipts indicates that the situation was different in real terms. When valued in constant dollars, 10 commodities showed an increase in cash receipts and 18 commodities showed a decrease. The New Mexico Agricultural Statistics Service removed one commodity, forest products, from the accounting of cash receipts for agricultural commodities in 1994. Christmas trees were added as a commodity in 1994. Prior to 1994, Christmas trees were included in forest products. Ranking of the commodities also showed substantial change from 1993 to 1994. Of the 29 commodities reported, 10 maintained the same rank, 10 increased in rank, and six decreased in rank (table 1). When compared to the average, 1991–93 constant-dollar cash receipts, the 1994 value of constant-dollar cash receipts was greater than the 1991–93 average for 11 commodities and less for 17 commodities (table 2). Of the top 10 commodities in 1994, nine also were in the top 10 for the 1991–93 constant-dollar average. Only four of the top 10 commodities had 1994 constant-dollar cash receipts that exceeded their 1991–93 constant-dollar average. Potatoes were in the 1994 top 10, but did not rank in the top 10 for the 1991–93 constant-dollar average. Wheat ranked in the top 10 for the 1991–93 constant-dollar average, but did not rank in the top 10 in 1994.

Constant-dollar value of cash receipts decreased 3.59% from 1993 to 1994, and the balance sheet for New Mexico's farm sector (table 3) shows a real increase in the value of assets. Farm debt declined 0.01% in real terms. The debt-to-equity and debt-to-asset ratios decreased from 1993 to 1994 due to the increase in the value of assets and the decline in debt. The value of farm assets increased 0.06% in nominal terms, and 0.04% in real terms. This increase in asset value resulted primarily from the increase in real estate, which is the largest farm asset category and an increase in the value of purchased inputs.

THE MAJOR COMMODITIES

In 1994, the top 10 commodities accounted for 89.76% of the 1994 total value of cash receipts for New Mexico. These commodities were taken as the major commodities for New Mexico in 1994, and a more detailed analysis of the changes between 1993 and 1994 is presented. An important part of the detailed analysis is

³ Farm income consists of proprietor's net farm income, hired farm labor wages, hired farm labor payment-in-kind, and corporate farm officer salaries.

Table 1. Cash receipts, all commodities for New Mexico 1993-94.

Commodity	1994				1993		1993		Percent change 1993-1994	
	Rank	Cash receipts ^a (\$1000)	Percent agricultural cash receipts	Cumulative percent of agricultural cash receipts	Cash receipts ^b (\$1000)	Rank	Cash receipts ^a (\$1000)	Cash receipts ^b (\$1000)		
								(1990 = 100)		(1990 = 100)
Cattle and calves	1	664,389	43.48	43.48	598,405	1	763,886	707,401	-13.03	-15.41
Milk-wholesale	2	382,356	25.02	68.51	344,382	2	300,339	278,131	27.31	23.82
Hay	3	82,180	5.38	73.89	74,018	3	73,421	67,992	11.93	8.86
Chile	4	55,868	3.66	77.54	50,319	4	56,077	51,930	-0.37	-3.10
Greenhouse nursery	5 ^c	41,232	2.70	80.24	37,137	6	37,181	34,432	10.90	7.86
Cotton lint	6	33,239	2.18	82.42	29,938	7	33,014	30,573	0.68	-2.08
Onions	7	32,052	2.10	84.52	28,869	5	43,999	40,746	-27.15	-29.15
Pecans	8	30,960	2.03	86.54	27,885	10	21,600	20,003	43.33	39.41
Corn	9	26,679	1.75	88.29	24,029	8	23,462	21,727	13.71	10.60
Potatoes	10	22,491	1.47	89.76	20,257	12	19,010	17,604	18.31	15.07
Wheat	11	18,308	1.20	90.96	16,490	11	21,588	19,992	-15.19	-17.52
Sorghum grain	12	16,962	1.11	92.07	15,277	9	21,613	20,015	-21.52	-23.67
Peanuts	13	16,376	1.07	93.14	14,750	13	18,988	17,584	-13.76	-16.12
Misc. vegetables	14	16,250	1.06	94.20	14,636	15	16,250	15,048	0.00	-2.74
Eggs	15	15,000	0.98	95.19	13,510	14	16,693	15,459	-10.14	-12.60
Other livestock	16	12,572	0.82	96.01	11,323	16	13,533	12,532	-7.10	-9.65
Other field crops	17	11,698	0.77	96.77	10,536	18	10,976	10,164	6.58	3.66
Milk- retail	18	11,526	0.75	97.53	10,381	19	10,428	9,657	10.53	7.50
Sheep and lambs	19	8,493	0.56	98.08	7,650	17	11,017	10,202	-22.91	-25.02
Lettuce	20	7,182	0.47	98.55	6,469	20	7,088	6,564	1.33	-1.45
Dry beans	21	6,681	0.44	98.99	6,017	21	6,713	6,217	-0.48	-3.20
Hogs and pigs	22	3,727	0.24	99.24	3,357	23	4,894	4,532	-23.85	-25.93
Wool and mohair	23	3,354	0.22	99.45	3,021	25	2,463	2,281	36.18	32.44
Cotton seed	24	3,241	0.21	99.67	2,919	24	3,785	3,505	-14.37	-16.72
Apples	25	1,752	0.11	99.78	1,578	26	1,757	1,627	-0.28	-3.02
Christmas trees	26	1,674	0.11	99.89	1,508	25	(d)	(d)	(d)	(d)
Other fruits and nuts	27	1,540	0.10	99.99	1,387	27	1,540	1,426	0.00	-2.74
Farm chickens	28	87	0.01	100.00	78	29	36	33	141.67	135.05
Other poultry	29	40	0.00	100.00	36	28	40	37	0.00	-2.74
TOTAL		1,527,909			1,376,165		1,541,391	1,427,415	-0.87	-3.59

^aSource: New Mexico Agricultural Statistics, 1995, p. 16. Data for 1993 have been revised from those reported in 1994.

^bThe Consumer Price Index with base year 1990 = 100 was calculated to be 113.7643 for 199 and 111.0266 for 1993.

^cLight shading indicates a higher nominal dollar rank in 1994 than in 1993; dark shading indicates a lower nominal dollar rank in 1994 than in 1993; no shading indicates no change in nominal dollar rank.

^dIn 1993, Christmas trees were included in forest products. In 1994, forest products were not included in the listing of agricultural commodities.

Table 2. Cash receipts, all commodities for New Mexico 1991-94.

Commodity	1994				1993				1992				1991				1991-93 Average				Cash receipts 1994 > 1991-93 average (1990 = 100)
	Rank	Cash receipts ^a (\$1000)	Cash receipts ^b (\$1000) (1990 = 100)	Rank	Cash receipts ^a (\$1000)	Cash receipts ^b (\$1000) (1990 = 100)	Rank	Cash receipts ^a (\$1000)	Cash receipts ^b (\$1000) (1990 = 100)	Rank	Cash receipts ^a (\$1000)	Cash receipts ^b (\$1000) (1990 = 100)	Rank	Cash receipts ^a (\$1000)	Cash receipts ^b (\$1000) (1990 = 100)	Rank	Cash receipts (\$1000) (1990 = 100)	Cash receipts (\$1000) (1990 = 100)			
																			Cash receipts (\$1000)	Cash receipts (\$1000)	
Cattle and calves	1	664,389	584,005	1	763,886	688,021	1	709,526	657,061	1	710,374	680,365	1	727,929	675,149	1	727,929	675,149	NO		
Milk-wholesale	2	382,356	336,095	2	300,339	270,511	2	258,884	239,741	2	213,180	204,175	2	257,468	238,142	2	257,468	238,142	YES		
Hay	3	82,180	72,237	3	73,421	66,129	3	64,331	59,574	3	114,065	109,247	3	83,939	78,317	3	83,939	78,317	NO		
Chile	4	55,868	49,109	4	56,077	50,508	4	67,379	62,397	4	59,219	56,717	4	60,892	56,541	4	60,892	56,541	NO		
Greenhouse nursery	5	41,232	36,243	6	37,181	33,488	6	43,413	40,203	6	41,000	39,268	6	40,531	37,653	6	40,531	37,653	NO		
Cotton lint	6	33,239	29,217	7	33,014	29,735	10	22,342	20,690	8	32,196	30,836	8	29,184	27,087	5	29,184	27,087	YES		
Onions	7	32,052	28,174	5	43,999	39,629	7	38,080	35,264	5	44,538	42,657	5	42,206	39,183	5	42,206	39,183	NO		
Pecans	8	30,960	27,214	10	21,600	19,455	5	49,200	45,562	6	42,920	41,107	7	37,907	35,375	7	37,907	35,375	NO		
Corn	9	26,679	23,451	8	23,462	21,132	11	19,718	18,260	10	19,299	18,484	10	20,826	19,292	10	20,826	19,292	YES		
Potatoes	10	22,491	19,770	12	19,010	17,122	12	20,897	19,352	11	18,976	18,174	12	19,628	18,216	12	19,628	18,216	YES		
Wheat	11	18,308	16,093	11	21,588	19,444	8	30,320	28,078	9	20,686	19,812	9	24,198	22,445	9	24,198	22,445	NO		
Sorghum grain	12	16,962	14,910	9	21,613	19,467	9	21,686	20,082	13	16,769	16,061	11	20,023	18,537	11	20,023	18,537	NO		
Peanuts	13	16,376	14,395	13	18,988	17,102	13	18,985	17,581	15	14,357	13,751	13	17,443	16,145	13	17,443	16,145	NO		
Misc. vegetables	14	16,250	14,284	15	16,250	14,636	14	16,250	15,048	14	16,539	15,840	14	16,346	15,175	14	16,346	15,175	NO		
Eggs	15	15,000	13,185	14	16,693	15,035	15	14,645	13,562	12	17,617	16,873	15	16,318	15,157	15	16,318	15,157	NO		
Other livestock	16	12,572	11,051	16	13,533	12,189	16	13,247	12,267	16	13,362	12,798	16	13,381	12,418	16	13,381	12,418	NO		
Other field crops	17	11,698	10,283	18	10,976	9,886	18	10,583	9,800	18	10,478	10,035	17	10,679	9,907	17	10,679	9,907	YES		
Milk retail	18	11,526	10,131	19	10,428	9,392	17	10,670	9,881	20	7,814	7,484	20	9,637	8,919	19	9,637	8,919	YES		
Sheep and lambs	19	8,493	7,465	17	11,017	9,923	19	10,390	9,622	19	8,135	7,791	18	9,847	9,112	18	9,847	9,112	NO		
Lettuce	20	7,182	6,313	20	7,088	6,384	20	8,711	8,067	17	12,083	11,573	20	9,294	8,675	20	9,294	8,675	NO		
Dry beans	21	6,681	5,873	21	6,713	6,046	21	5,818	5,388	21	5,233	5,012	21	5,921	5,482	21	5,921	5,482	YES		
Hogs and pigs	22	3,727	3,276	23	4,894	4,408	23	3,880	3,593	23	4,315	4,133	22	4,363	4,045	22	4,363	4,045	NO		
Wool and mohair	23	3,354	2,948	25	2,463	2,218	24	3,859	3,574	24	3,101	2,970	23	3,141	2,921	23	3,141	2,921	YES		
Cotton seed	24	3,241	2,849	24	3,785	3,409	26	2,348	2,174	25	2,256	2,161	24	2,796	2,581	24	2,796	2,581	YES		
Apples	25	1,752	1,540	26	1,757	1,583	25	2,535	2,348	27	520	498	25	1,604	1,476	25	1,604	1,476	YES		
Christmas trees	26	1,674	1,471	(f)			(f)			(f)			(f)			(f)			NO		
Other fruits and nuts	27	1,540	1,354	27	1,540	1,387	27	1,540	1,426	26	1,540	1,475	26	1,540	1,429	26	1,540	1,429	NO		
Farm chickens	28	87	76	29	36	32	29	31	29	28	42	40	28	36	34	28	36	34	YES		
Other poultry	29	40	35	28	40	36	28	40	37	29	40	38	29	40	37	29	40	37	NO		
TOTAL		1,527,909	1,343,048		1,541,391	1,427,415		1,360,662			1,541,391	1,427,415		1,360,662			1,541,391	1,427,415			

^aSource: New Mexico Agricultural Statistics, 1995, p. 16.

^bThe Consumer Price Index, with base year 1990 = 100, was calculated to be 113.7643 for 1993, 111.0266 for 1994, 107.9846 for 1992, and 104.5627 for 1991.

^cSource: New Mexico Agricultural Statistics, 1992, p. 17

^dLight shading indicates a higher nominal dollar rank in 1993 than in the respective year; dark shading indicate a lower nominal dollar rank in 1993 than in the respective year; no shading indicates no change in nominal dollar rank between 1993 and the respective year

^ePrior to 1994, Christmas trees were included in forest products. Forest products ranked 22 in 1991-93 with \$5 billion in cash receipts reported in each of these years.

Table 3. Change in balance sheet of New Mexico's farm sector, 1993-94.^a

	Number		Percent change 1993-94		1993		1994		Percent change 1993-1994	
	1994	1993	1993	1994	Millions dollars	Millions dollars ^b (1990=100)	Millions dollars	Millions dollars ^b (1990=100)	Nominal dollars	Constant dollars (1990=100)
Farms	13,500	13,500	0.00							
Assets										
Real estate		9,231.5	8,114.6		8,640.2	7,782.1		0.07	0.04	
Livestock and poultry	(c)	1,000.6	879.5		964.3	868.5		0.04	0.01	
Machinery and motor vehicles	(d)	455.0	399.9		448.0	403.5		0.02	-0.01	
Crops	(e)	74.3	65.3		76.3	68.7		-0.03	-0.05	
Purchased inputs		47.6	41.8		36.1	32.5		0.32	0.29	
Financial		435.4	382.7		423.2	381.2		0.03	0.00	
Total farm assets		11,244.4 (f)	9,883.9		10,588.1 (f)	9,536.5		0.06	0.04	
Farm Debt										
Real estate		595.9	523.8		588.6	530.1		0.01	-0.01	
Non-real estate	(g)	535.2	470.4		522.8	470.9		0.02	0.00	
Total farm debt		1,131.1 (f)	994.2		1,111.4 (f)	1,001.0		0.02	-0.01	
Equity		10,113.3	8,889.7		9,476.7	8,535.5		0.07	0.04	
Ratios										
Debt/Equity		11.18	11.73							
Debt/Assets		10.06	10.50							

^aSource: USDA, Economic Research Service: <http://USDA.MANNLIB.CORNELL.EDU/CGI-USDA/AGENCY.CGI.ERS>. Data are for farms with annual sales of \$1,000 or more and include operator households.

^bThe Consumer Price Index, with base year 1990 = 100, was calculated to be 113.7643 for 1994 and 111.0266 for 1993.

^cExcludes horses, mules, and broilers.

^dIncludes only farm share value of trucks and autos.

^eAll non-Commodity Credit Corporation crops held on farms plus the value above loan rate for crops held under Commodity Credit Corporation.

^fDue to rounding, parts will not sum to total.

^gExcludes debt for nonfarm purposes.

the disaggregation of the change in the value of production into its component parts: change due to difference in commodity price, change due to difference in the quantity of commodity produced, and the interaction of difference in price and the difference in quantity.

With respect to cash receipts, the top 10 (of 33 total) counties account for 72.37% of New Mexico's total cash receipts (table 4). The top two counties, Chaves and Doña Ana, account for 29.45% of New Mexico's total value of production. Chaves County ranks in the top 10 for seven of the top 10 commodities. Doña Ana County ranks in the top 10 for six of the top 10 commodities.

Where possible the county-level analysis uses cash receipts; however, this is not possible for all commodities. At the county level, some commodity data is reported only in value of production. Differences in cash receipts and value of production arise for various reasons. In the case of commodities used in the production of another commodity (i.e., feed for livestock), sales do not account for the product consumed on the farm. In other cases, marketing issues such as grading and product damage result in final cash receipts lower than the value of production estimated at the county level. The cash receipts value represents the final reporting of the actual monetary value received by the producer from the product's sale.

Cattle and Calves

Cattle and calves were the number one commodity in 1994, with cash receipts of \$664.4 million. Cash receipts from the top 10 counties in this sector comprised 58.73% of New Mexico's total cash receipts from cattle and calves (table 5). For the top 10 counties, nominal cash receipts decreased 13.76% from 1993 to 1994. Constant-dollar cash receipts decreased 8.30% in 1994. Only Union County had an increase in cash receipts valued in constant dollars. In 1994, average sale price was \$61.40 per cwt for cattle and \$84.90 per cwt for calves (NM Ag. Statistics, 1994, p. 34).

New Mexico cattle and calves totaled 1.41 million head as of January 1, 1994. This inventory represented a 2.92% increase from 1993. The top 10 counties had a 4.63% increase in the number of cattle and calves (table 5).

Milk

Wholesale milk ranked second with respect to cash receipts in 1994. County-level statistics include cash receipts from all milk sales. Therefore, comparison of county cash receipts for milk uses the receipts for all milk. Total milk production was 3,325 million pounds in 1994, resulting in cash receipts totaling \$393.9 million. Cash receipts for the top 10, milk-producing coun-

ties constituted 98.88% of New Mexico's total cash receipts from milk. Chaves County led the state in cash receipts from milk with 41.18% of the state's total. Within the top 10, milk-producing counties, Curry County experienced the greatest change in constant-dollar cash receipts with an increase from \$18.7 million in 1993 to \$26.5 million in 1994, an increase of 41.88%. Percentage change in constant-dollar cash receipts for the top 10 counties in the aggregate increased 24.05% in 1994. Average nominal price received for wholesale milk in 1994 was \$11.70 per cwt, unchanged from 1993 (table 6).

The number of dairy cows in New Mexico was reported at 150,000 animals in 1994, a 21.95% increase over 1993 and a record high for the state. Replacement heifers numbered 38,000 (NM Ag. Statistics, 1995, p. 33).

Hay

Hay cash receipts ranked third in 1994 cash receipts. Total production for all hay was 1.45 million tons in 1994, with a value of production of \$173.6 million. Harvested acreage for 1994 was reported at 329,000 acres, 5,000 acres less than in 1993. Chaves County led in value of production from hay with 20.97% of the state total. Hay production in the top 10 counties comprised 72.70% of New Mexico's total. Statewide average yield per acre was reported at 4.54 tons, with an average price of \$120.00 per ton. This represented an increase of 0.13 tons per acre and an increase of \$15.00 per ton in price. Only Chaves County reported a decline in constant-dollar value of production (2.93%). Valencia County experienced the greatest increase, 53.17%. The overall value of production for the top 10 counties increased 1.11% in constant dollars (table 7).

Chile

Chile ranked fourth in cash receipts during 1994. Total chile production in 1994 was 121,700 processed tons: 82,000 tons of green and 39,700 tons of red (N.M. Ag. Statistics, 1994, p. 69). The harvested acreage in the top 10 counties comprised 96.47% of the state's total for chile. Doña Ana County led in harvested acreage with 29.66% of the state's total. Harvested acreage declined for eight of the top 10 counties, and decreased 9.27% overall from 1993 to 1994. Eddy County experienced the greatest change in harvested acreage with a decrease of 30.77% (table 8).

Harvested acreage in 1994 was 27,900, down from 29,900 in 1993, a decrease of 6.69%. Harvested acreage was the lowest since 1989.

Table 4. Cash receipts for top 10 New Mexico counties and county rank for the top 10 commodities, 1994.

County	Rank		Value ^a (1000)	Percent of total value of NM production	Cattle and calves	Milk wholesale	Hay	Chile	Greenhouse nursery	Cotton lint	Onions	Pecans	Corn	Potatoes
	1994	1993												
Chaves	1	1	247,866	16.22	3	1	1	3	NA ^b	4	NR ^c	2	NA	NR
Doña Ana	2	2	202,170	13.23	14	2	4	1	NA	1	2	1	NA	NR
Curry	3	3	151,352	9.91	2	4	14	NR	NA	8	NR	NR	1	2
Roosevelt	4	4	102,036	6.68	10	3	12	NR	NA	6	NR	NR	3	3
Union	5 ^d	6	98,752	6.46	1	NR	10	NR	NA	NA	NA	NR	2	NR
Eddy	6	5	90,993	5.96	4	5	2	6	NA	3	NR	4	NA	NR
San Juan	7	9	61,072	4.00	11	12	3	NR	NA	NA	NA	NR	4	1
Luna	8	7	59,996	3.93	13	NR	24	2	NA	5	1	5	12	NR
Lea	9	8	58,895	3.85	6	6	8	7	NA	2	NA	6	16	NR
Socorro	10	10	32,585	2.13	16	9	5	9	NA	NA	NA	NR	9	NR
TOTAL			1,105,717	72.37										

^aSource: New Mexico Agricultural Statistics, 1994, p. 18.

^bN/A indicates that county-level data are not available.

^cNR indicates that county-level data is not kept that would allow the determination of the rank for the listed county.

^dLight shading indicates a higher nominal dollar rank in 1994 than in 1993; dark shading indicates a lower nominal dollar rank in 1994 than in 1993; and no shading indicates no change in nominal dollar rank.

Table 5. Cash receipts for cattle and calves and number on farms in the top 10 New Mexico counties, 1994.

County	Cash Receipts											
	1994					1993					Percent change in	
	Rank	Value ^a (\$1000)	Percent of total cash cattle and calves receipts	Value ^b (\$1000)	Rank	Value ^a (\$1000)	Value ^b (\$1000)	Value ^b (\$1000) (1990=100)	constant dollar value 1993-1994	Rank	Number on farm	Rank
Union	1	84,818	12.77	74,556	2 ^c	67,302	60,618	22.99	3	103,000 ^e	2	101,000 ^d
Curry	2	79,388	11.95	69,783	1	77,938	70,198	-0.59	2	105,000	2	101,000
Chaves	3	50,449	7.59	44,345	3	56,874	51,226	-13.43	1	111,000	1	102,000
Eddy	4	44,380	6.68	39,010	4	46,693	42,056	-7.24	4	68,000	4	63,000
Colfax	5	23,417	3.52	20,584	6	29,513	26,582	-22.56	5	60,000	7	55,000
Lea	6	23,056	3.47	20,266	8	27,054	24,367	-16.83	8	55,000	5	60,000
Quay	7	23,056	3.47	20,266	7	29,022	26,140	-22.47	6	59,000	6	59,000
San Miguel	8	20,895	3.14	18,367	11	24,595	22,152	-17.09	11	50,000	9	52,000
Grant	9	20,535	3.09	18,050	9	26,562	23,924	-24.55	9	54,000	8	54,000
Roosevelt	10	20,174	3.04	17,733	5	29,713	26,762	-33.74	7	58,000	15	44,000
TOTAL	(g)	390,168	58.73	342,962		415,266	374,024	-8.30		723,000^f		691,000 (f)

^a Source: New Mexico Agricultural Statistics, 1995, p. 20.

^bThe Consumer Price Index, with base year 1990 = 100, was calculated to be 113.7643 for 1994 and 111.0266 for 1993.

^c Source: New Mexico Agricultural Statistics, 1994, p. 35.

^dSource: New Mexico Agricultural Statistics, 1993, p. 37.

^eLight shading indicates a higher nominal dollar rank in 1994 than in 1993; dark shading indicates a lower nominal dollar rank in 1994 than in 1993; and no shading indicates no change in the nominal dollar rank.

^fThere were 1.41 million cattle and calves on inventory as of January 1, 1994. Source: New Mexico Agricultural Statistics, 1995, p. 35.

There were 1.37 million cattle and calves on inventory as of January 1, 1993. Source: New Mexico Agricultural Statistics, 1994, p. 35.

^gDue to rounding, some columns may not sum to the total.

Table 6. Cash receipts for milk in the top 10 New Mexico counties, 1994.^a

County	1994			1993			Percent change in constant dollar value 1993-1994
	Rank	Value ^b (\$1000)	Percent of total milk cash receipts	Value ^c (\$1000) (1990 = 100)	Rank	Value ^b (\$1000)	
Chaves	1	162,187	41.18	142,564	1	117,056	105,431
Doña Ana	2	71,826	18.24	63,136	2	64,225	57,846
Roosevelt	3	47,266	12.00	41,547	3	37,292	33,588
Curry	4	30,120	7.65	26,476	4	20,718	18,660
Eddy	5	23,170	5.88	20,367	5	18,853	16,981
Lea	6	17,377	4.41	15,275	6	14,917	13,436
Valencia	7	12,048	3.06	10,590	7	10,773	9,703
Bernalillo	8	11,585	2.94	10,183	8	10,566	9,517
Socorro	9	9,731	2.47	8,554	9	8,287	7,464
Sandoval	10	4,171	1.06	3,666	10	3,729	3,359
TOTAL	(e)	389,481 ^d	98.88	342,358 ^d		306,416 ^d	275,984

^aCounty-level wholesale milk receipts are not reported; receipts for all milk are used for the country ranking.

^bSource: New Mexico Agricultural Statistics, 1995, p. 20.

^cThe Consumer Price Index, with base year 1990 = 100, was calculated as 113.7643 for 1994 and 111.0266 for 1993.

^dTotal milk production in New Mexico was 3,325 million pounds in 1994 and 2,621 million pounds in 1993. The wholesale price of milk was \$11.70 per 100 pounds in 1994 and \$11.70 per 100 pounds in 1993. Source: New Mexico Agricultural Statistics, 1995, p. 37.

^eDue to rounding, some columns may not sum to the total.

Table 7. Value of production and production of hay in the top 10 New Mexico counties, 1994.

County	1994				1993				Percent change in constant dollar value 1993-1994
	Rank	Production ^a tons	Value ^b (\$1000)	Percent of total value of NM production	Value ^c (\$1000) (1990 = 100)	Rank	Production ^d tons	Value ^e (\$1000) (1990 = 100)	
Chaves	1	303,400	36,408	20.97	32,003	1	348,610	36,604	-12.97
Eddy	2	204,240	24,509	14.11	21,543	2	200,560	21,059	1.83
San Juan	3	138,450	16,614	9.57	14,604	3	136,140	14,295	1.70
Doña Ana	4	106,430	12,772	7.36	11,226	4	88,690	9,312	20.00
Socorro	5	66,980	8,038	4.63	7,065	5	60,030	6,303	11.58
Valencia	6 ^c	54,010	6,481	3.73	5,697	9 ^d	39,330	4,130	37.33
Quay	7	50,130	6,016	3.46	5,288	6	50,860	5,340	-1.44
Lea	8	49,150	5,898	3.40	5,184	7	46,470	4,879	5.77
Taos	9	40,250	4,830	2.78	4,246	10	38,280	4,019	5.15
Union	10	38,860	4,663	2.69	4,099	12	36,150	3,796	7.50
TOTAL ^f	(g)	1,051,900	126,228	72.70	110,956		1,045,120	109,738	0.65
								98,839	1.11

^aSource: New Mexico Agricultural Statistics, 1995, p. 51.

^bValue = production x price per ton. Price per ton = \$120.00 in 1994 and \$105.00 in 1993. Source: New Mexico Agricultural Statistics, 1995, p. 51.

^cThe Consumer Price Index with base year 1990 = 100 was calculated to be 113.7643 for 1994 and 111.0266 for 1993.

^dSource: New Mexico Agricultural Statistics, 1994, p. 51.

^eLight shaded ranks indicate a higher nominal dollar rank in 1994 than in 1993; dark shaded ranks indicate a lower nominal dollar rank in 1994 than in 1993; and no shading indicates no change in nominal dollar rank.

^fDue to rounding, some columns may not sum to the total.

^gThe 1994 production for all hay was 1,447,000 tons with a value of production of \$173.6 million. The 1993 production was 1,434,000 tons with a value of production of \$150.6 million. The harvested acreage was 320,000 in 1994 with an average yield per acre of 4.54 tons. In 1993, the harvested acreage was 325,000 with an average yield per acre of 4.41. Source: New Mexico Agricultural Statistics, 1995, p. 51

Greenhouse Nursery

At \$41 million, greenhouse nursery cash receipts ranked fifth in 1994. In nominal dollars, this represents an increase of 10.90%. In constant dollars, the cash receipts for greenhouse nursery decreased 16.70% (table 1). Records of county-level cash receipts for greenhouse nursery products are not available from the New Mexico Crop and Livestock Reporting Service. Cash receipts include sales of plants grown and finished entirely in New Mexico, sales of plants imported into New Mexico and finished in New Mexico, and sales of plants imported into New Mexico as finished products.

Cotton Lint

Cotton production in New Mexico is concentrated in the state's southern and southeastern areas. Cotton lint ranked sixth with respect to cash receipts in 1994. In constant-dollar value, cash receipts for cotton lint decreased 2.08% from 1993. Cotton production in New Mexico is divided between Upland and American-Pima. Upland cotton accounted for 72.97% of the 1994 total value of production for cotton. Acreage planted to Upland was 55,000 in 1994 and 53,500 in 1993. Acreage harvested was 50,000 in 1994 and 48,700 in 1993. The price per pound for Upland was \$0.723 (\$347.04 per 480-pound bale) in 1994, an increase of \$.0114 per pound from 1993. American-Pima planted acreage was 11,000, unchanged from 1993; acreage harvested decreased from 11,000 to 10,700. The 1994 price-per-pound for American-Pima was \$1.03 (\$494.40 per 480-pound bale), an increase of \$0.12 from 1993 (table 9).

In constant-dollar value, Quay County had the largest (108.71%) increase in Upland value of production. The Upland average increase in value of production was 0.34% in constant-dollars. Doña Ana County accounted for 98.72% of New Mexico's value of production for American-Pima. Doña Ana's production increased 3.25%, and New Mexico's constant-dollar value of production increased 3.75%.

Onions

In 1994, onions ranked seventh with respect to cash receipts. Total onion production was 3.3 million cwt⁴ in 1994, and cash receipts for onions were \$32.1 million. Production declined 18.45% from 1993. In constant-value dollars, cash receipts decreased 28.81%. Luna and Doña Ana counties accounted for 88.08% of New

Mexico's total value of production for onions. Doña Ana County experienced the largest change in constant-dollar cash receipts with a decrease of 30.33% (table 10).

Acreage planted in onions decreased from 9,900 in 1993 to 8,500 in 1994. Acreage harvested decreased from 9,700 in 1993 to 7,900 in 1994. The nominal price per hundredweight decreased from \$10.80 in 1993 to \$9.66 in 1994.

Pecans

Although pecan production is limited to the state's southern counties, pecans ranked eighth with respect to cash receipts in 1994. Pecan production totaled 24 million pounds and generated \$30.96 million in value of production in 1994. Doña Ana County reported the largest production, 17.1 million pounds, with a value of \$22.1 million. Production in Doña Ana County was 71.25% of New Mexico's total. Sierra County experienced the greatest change in production with a decrease of 45.82%. Due to the extra low price received in 1993, constant-dollar value of production increased for all counties from 1993 to 1994, in spite of the production decreases in all counties. In constant value dollars, pecans had a 39.88% increase in value of production (table 11).

Corn

Corn ranked ninth in cash receipts in 1994 with \$26.7 million. Cash receipts for corn harvested for grain in the top 10 counties accounted for 98.97% of New Mexico's total. For the top 10 counties, production decreased 8.85% from 1992 to 1993, and constant-dollar cash receipts decreased 16.07%. Three counties (Union, Quay, and Santa Fe) experienced an increase in production and constant-dollar cash receipts. Quay County experienced the largest change in constant-dollar cash receipts with an increase of 66.24% (table 12).

The price per bushel of corn decreased 5.66 from \$2.65 in 1993 to \$2.65 in 1994. Corn acreage planted to all purposes increased from 118,000 in 1993 to 133,000 in 1994. Acreage harvested for grain was 85,000, unchanged from 1993. The increase in planted acreage was harvested for silage (NM Ag. Statistics, 1995, p. 55).

⁴ Production figures are in cwt, the reporting unit used by USDA. The industry reporting unit is the 50-pound sack.

Table 8. Chile acreage in New Mexico's top 10 counties, 1994.

County	1994			1993			Percent change in harvested acreage 1993-1994
	Rank	Harvested ^a acreage	Percent of NM harvested acreage	Rank	Harvested ^b acreage	Percent of NM harvested acreage	
Doña Ana	1 ^c	8,200	29.66	2	7,900	26.20	3.80
Luna	2	8,000	28.93	1	9,200	30.51	-13.04
Chaves	3	2,500	9.04	3	2,900	9.62	-13.79
Hidalgo	4	2,300	8.32	5	2,050	6.80	12.20
Sierra	5	2,000	7.23	6	1,750	5.80	14.29
Eddy	6	1,800	6.51	4	2,600	8.62	-30.77
Lea	7	1,200	4.34	8	1,200	3.98	0.00
Socorro	8	400	1.45	9	550	1.82	-27.27
Valencia	9	275	0.99	(e)			
All Other ^d	10	335	1.21	7	1,250	4.15	-73.20
TOTAL^f		26,675	96.47		29,400	97.51	-9.27

^aSource: New Mexico Agricultural Statistics, 1995, p. 70

^bSource: New Mexico Agricultural Statistics, 1994, p. 70.

^cLight shading indicates a higher rank in 1994 than in 1993; dark shading indicates a lower rank in 1993; and no shading indicates no change in rank.

^dAll Other includes: Curry, De Baca, Lincoln, Otero, Quay, Roosevelt, San Juan, San Miguel, and Santa Fe counties.

^eIncluded in Other Counties.

^fDue to rounding, some columns may not sum to the total.

Table 9. Value of production and production of cotton in New Mexico, 1994.

County	1994				1993				Percent change in constant dollar value 1993-1994
	Production ^a 480 lb net bales	Value ^b (\$1000)	Percent of total value of NM production	Rank	Production ^d 480 lb net bales	Value ^b (\$1000)	Rank	Value ^c (\$1000) (1990 = 100)	
Upland									
Doña Ana	19,600	6,802	26.13	1 ^e	15,000	4,385	3	3,949	30.67
Lea	12,850	4,459	17.13	2	10,100	2,952	4	2,659	32.77
Eddy	12,400	4,303	16.53	3	15,300	4,472	2	4,028	-15.42
Chaves	12,200	4,234	16.27	4	21,500	6,285	1	5,661	-43.26
Luna	7,900	2,742	10.53	5	6,100	1,783	5	1,606	35.15
Roosevelt	3,600	1,249	4.80	6	3,600	1,052	6	948	0.00
Hidalgo	3,200	1,111	4.27	7	2,800	818	8	737	14.29
Curry	2,050	711	2.73	8	2,900	848	7	764	-29.31
Quay	1,200	416	1.60	9	600	175	9	158	100.00
Other counties	(f)				100	29		26	
TOTAL^g	75,000	26,028	100.00		78,000	22,801		20,536	-3.85
Pima									
Doña Ana	19,250	9,517	98.72	1	18,550	8,103	1	7,298	3.77
Other counties	250	124	1.28	2 ^h	150	66	2	59	66.67
TOTAL^g	19,500	9,641	100.00		18,700	8,168		7,357	4.28
TOTAL ALL COTTON^g	94,800ⁱ	35,669			96,700ⁱ	30,969		27,893	-2.28

^aSource: New Mexico Agricultural Statistics, 1995, p. 57 for Upland cotton and p. 59 for Pima cotton

^bValue = production x price per pound. Price per pound = \$0.723 in 1994 and \$0.609 in 1993 for Upland cotton. Source: New Mexico Agricultural Statistics, 1995, p. 57

^cPrice per pound = \$1.030 in 1994 and \$0.910 in 1993 for Pima cotton. Source: New Mexico Agricultural Statistics, 1995, p. 59.

^dThe Consumer Price Index, with base year 1990 = 100, was calculated to be 113.7643 for 1994 and 111.0266 for 1993.

^eSource: New Mexico Agricultural Statistics, 1994, p. 57 for Upland cotton and p. 59 for Pima cotton.

^fLight shading indicates a higher nominal dollar rank in 1994 than in 1993; dark shading indicates a lower nominal dollar rank in 1994 than in 1993 and no shading indicates no change in nominal dollar rank.

^gUpland cotton: Includes Otero, and Sierra counties

^hDue to rounding, some columns may not sum to the total.

ⁱPima cotton: Includes Eddy, Hidalgo, and Luna counties.

In 1994, 55,000 acres of Upland cotton were planted and 50,000 acres were harvested, with an average yield of 720 lb per acre.

In 1994, 11,000 acres of Pima cotton were planted and 10,700 acres were harvested, with an average yield of 875 lb per acre.

In 1993, 11,000 acres of Pima cotton were planted and 11,000 acres were harvested, with an average yield of 816 lb per acre.

Source: New Mexico Agricultural Statistics, 1995, pp. 57-59.

Table 10. Value of production and production of onions in New Mexico, 1994.

County	1994			1993			Percent change in constant dollar value 1993-1994
	Production ^a CWT (1000)	Value ^b (\$1000)	Percentage total value of NM production	Rank	Production ^d CWT (1000)	Value ^c (\$1000) (1990 = 100)	
Luna	1,569	15,155	47.23	1 ^e	1,785	19,278	-12.11
Doña Ana	1,357	13,107	40.85	2	1,700	18,360	-20.19
Sierra	156	1,507	4.70	3	189	2,041	-17.46
Other counties	240	2,318	7.23	4 ^f	399	4,309	-39.85
TOTAL ^g	3,322 ^h	32,087	100		4,073 ^h	43,988	-18.45

^aSource: New Mexico Agricultural Statistics, 1995, p. 68.

^bValue = production x price per CWT. Price per CWT = \$9.66 in 1994 and \$10.80 in 1993. Source: New Mexico Agricultural Statistics, 1995, p. 68.

^cThe Consumer Price Index, with base year 1990 = 100, was calculated to be 113.7643 for 1994 and 111.0266 for 1993.

^dSource: New Mexico Agricultural Statistics, 1993, p. 67

^eLight shading indicates a higher nominal dollar rank in 1994 than in 1993; dark shading indicates a lower nominal dollar rank in 1994 than in 1993; and no shading indicates no change in the nominal dollar rank

^fIn 1994, includes Chaves, Curry, Eddy, Hidalgo, Lea, Roosevelt, and San Juan counties. In 1993, includes Chaves, Eddy, Socorro, Otero, Valencia, Curry, Roosevelt, and San Juan counties.

^gMay not sum due to rounding.

^hIn 1994, 8,500 acres of onions were planted and 7,900 were harvested, with an average yield of 450 cwt per acre.

In 1993, 9,900 acres of onions were planted and 9,700 were harvested, with an average yield of 420 cwt per acre.

Source: New Mexico Agricultural Statistics, 1995, p. 68.

Table 11. Value of production and production of pecans in New Mexico, 1994.

County	1994				1993				Percent change in constant dollar value 1993-1994		
	Rank	Production ^a (1000 lbs)	Value ^b (\$1000)	Percent of total value of NM production	Value ^d (\$1000)	Rank	Production ^c (Pounds)	Value ^b (\$1000)		Value ^d (\$1000)	
Doña Ana	1	17,100	22,059	71.25	19,390	1	25,100	15,060	13,564	-31.87	42.95
Chaves	2	2,140	2,761	8.92	2,427	2	3,950	2,370	2,135	-45.82	13.68
Otero	3	1,470	1,896	6.13	1,667	3	2,200	1,320	1,189	-33.18	40.20
Eddy	4 ^e	1,200	1,548	5.00	1,361	5	1,620	972	875	-25.93	55.43
Luna	5	1,100	1,419	4.58	1,247	4	1,660	996	897	-33.73	39.04
Lea	6	650	839	2.71	737	6	970	582	524	-32.99	40.61
Sierra	7	170	219	0.71	193	7	250	150	135	-32.00	42.68
Other counties	8	170	219	0.71	193	8	250	150	135	-32.00	42.68
TOTAL ^f		24,000	30,960	100.00	27,214		36,000	21,600	19,455	-33.33	39.88

^aSource: New Mexico Agricultural Statistics, 1995, p. 64

^bValue = production x price per lb. Price per lb. = \$1.29 in 1994 and \$0.60 in 1993. Source: New Mexico Agricultural Statistics, 1995, p. 64.

^cSource: New Mexico Agricultural Statistics, 1994, p. 63

^dThe Consumer Price Index, with base year 1990 = 100, was calculated as 113.7643 for 1994 and 111.0266 for 1993.

^eLight shading indicates a higher nominal dollar rank in 1994 than in 1993; dark shading indicates a lower nominal dollar rank in 1994 than in 1993; and no shading indicates no change in nominal dollar rank

^fDue to rounding, some columns may not sum to the total.

Table 12. Value of production and production of corn harvested for grain in the 10 New Mexico counties, 1994.

County	1994			1993			Percent change in value constant dollars 1993-1994
	Production ^a bushels (1000)	Value ^b (\$1000)	Percent to total value of NM production	Production ^d bushels (1000)	Value ^b (\$1000)	Value ^c (\$1000) (1990 = 100)	
	Rank			Rank			
Curry	1	11,305,000	35.47	1	14,299,268	12,879,135	-16.20
Union	2 ^e	7,840,000	24.60	3	6,741,600	6,072,058	23.27
Roosevelt	3	5,512,500	17.29	2	7,716,800	6,950,405	-24.28
San Juan	4	4,810,000	15.09	4	5,753,150	5,181,776	-11.38
Quay	5	747,500	2.35	7	438,840	395,257	80.56
Torrance	6	169,200	1.33	5	589,360	530,828	-23.92
Santa Fe	7	400,000	1.25	8	286,200	257,776	48.15
Hidalgo	8	123,500	0.97	6	553,320	498,367	-40.85
Socorro	9	54,000	0.42	9	184,175	165,884	-22.30
McKinley	10	26,000	0.20	12	121,900	109,793	-43.48
TOTAL ^f		12,618,700	98.97		36,684,613	33,041,278	-8.85
							-16.07

^aSource: New Mexico Agricultural Statistics, 1995, p. 56.

^bValue = production x price per bu. Price per bu. = \$2.50 in 1994 and \$2.65 in 1993; source New Mexico Agricultural Statistics, 1995, p. 55.

^cThe Consumer Price Index, with the base year 1990 = 100, was calculated as 113.7643 for 1994, and 111.0266 for 1993

^dSource: New Mexico Agricultural Statistics, 1994, p. 55.

^eLight shading indicates a higher nominal dollar rank in 1994 than in 1993; dark shading indicates a lower nominal dollar rank in 1994 than in 1993; and no shading indicates no change in nominal dollar rank.

^fDue to rounding, some columns may not sum to the total.

Potatoes

Potatoes ranked 10th in cash receipts in 1994, and generated \$23.82 million in cash receipts. Total production was 3,937 cwt. Three counties produced 98.96% of New Mexico's total production of potatoes. Total production for the state decreased 0.33%, and the constant-dollar value of production decreased 5.08% (table 13).

Acreage planted to potatoes decreased from 10,500 in 1993 to 10,100 in 1994, and the acreage harvested decreased from 9,900 to 9,500. The nominal price per cwt decreased from \$6.20 to \$6.05.

ANALYSIS

Rank Order

The rank order of the top four commodities (cattle and calves, milk-wholesale, hay, and chile) remained unchanged from 1993 to 1994. Of the remaining six commodities in the top 10, four (greenhouse nursery, cotton lint, pecans, and potatoes) moved up in rank, and two (onions and corn) decreased. One of the top 10, potatoes, was not in the top 10 in 1993. Grain sorghum was in the top 10 in 1993, but dropped to 12 in 1994. The top 10 commodities accounted for 89.76% of New Mexico's total cash receipts generated by agriculture. Cattle and calves ranked first and accounted for 43.48% of all agricultural cash receipts. Milk-wholesale ranked second and accounted for 25.02% of cash receipts (table 1).

Of New Mexico's top 10 commodities in 1994, pecans, onions, and sorghum ranked in the upper half of the states reporting for the respective commodities (table 14). New Mexico's pecan production ranked third out of 14. Cash receipts from pecans comprised 1.40% of New Mexico's total agricultural cash receipts. Although New Mexico ranked only sixth out of 15 in total national onion production, New Mexico is the largest U.S. producer of summer, non-storage onions. New Mexico's chile production ranks high at the national level, but national production statistics for chile are not reported separately from all peppers.

Changes 1993 to 1994

New Mexico experienced a 3.59% increase in agricultural cash receipts from 1993 to 1994 in constant dollars. Of the 29 commodities reported, 10 had an

increase in constant-dollar cash receipts. The increases ranged from 135.05% (farm chickens) to 3.66% (other field crops). The decreases in constant-dollar cash receipts ranged from 29.15% (onions) to 1.45% (lettuce). Cash receipts were used to determine the top 10 commodities. However, where the data were not available, value of production figures were used to estimate the commodity's county-level production.

Potatoes ranked in the top 10 commodities in 1994, but were not in the top 10 in 1993. From 1993 to 1994, cash receipts for corn increased 18.31% in nominal dollars and 15.07% in constant dollars. Sorghum grain ranked in the top 10 commodities in 1993, but was not in the top 10 in 1994. From 1993 to 1994, cash receipts for sorghum grain decreased 21.52% in nominal terms and 23.67% in constant dollars.

Components of Change in Value of Production

The analysis of changes in the value of production (VOP) requires that the change be separated into its components (appendix B). From an economic point of view, the change in VOP (ΔVOP) has three components. The first change, a quantity effect ($\Delta Q * P$), results from the change in quantity (ΔQ) multiplied by the original price (P). The second change, a price effect ($\Delta P * Q$), results from the change in price (ΔP) multiplied by the original quantity (Q). The third change, an interaction effect ($\Delta Q * \Delta P$), results from the change in quantity (ΔQ) multiplied by the change in price (ΔP). Without determining of these components, the relative impacts of the changes upon VOP cannot be determined, as it is possible for changes in price or quantity to partially offset or cancel one another.

Nominal Dollar Comparisons

The relative impacts of price and quantity changes in nominal dollars are shown in table 15. For five of the eight commodities⁵ analyzed, ΔVOP in nominal dollars is positive. For five of the nine commodities, the change in VOP produced by the price effect was greater in absolute terms than the change resulting from the quantity effect. Based upon the relative dominance of the price effect for the individual producer during the period 1993-94, market price had more impact on total cash receipts for the top 10 commodities than decisions and variables that influenced production and quantities marketed.

⁵ Available price and quantity data did not permit this analysis for cattle and calves, chile, and greenhouse nursery. For this analysis, cotton was divided into Upland and Pima. This results in nine commodities for analysis.

Table 13. Value of production and production of Irish potatoes in New Mexico, 1994.

County	1994			1993			Percent change in value constant dollars 1993-1994				
	Rank ^d	Production ^a Cwt (1000)	Value ^b (\$1000)	Percent of total value of NM production	Value ^c (\$1000) (1990 = 100)	Rank		Production ^a Cwt (1000)	Value ^b (\$1000)	Value ^c (\$1000) (1990 = 100)	Percent change in production 1993-1994
San Juan	1	3,000	18,150	76.20	15,954	1	2,660	16,492	14,854	12.78	7.41
Curry	2	459	2,777	11.66	2,441	2	715	4,433	3,993	-35.80	-38.86
Roosevelt	3	437	2,644	11.10	2,324	3	509	3,156	2,843	-14.15	-18.24
Other counties	4	41	248	1.04	218	4	66	409	368	-37.88	-40.81
Total		3,937	23,819	100.00	20,937		3,950	24,490	22,058	-0.33	-5.08

^aSource: New Mexico Agricultural Statistics, 1995, p. 60.

^bValue = production x price per cwt Price per cwt = \$6.05 in 1994, and \$6.20 in 1993; Source: New Mexico Agricultural Statistics, 1995, p. 60.

^cThe Consumer Price Index, with base year 1990 = 100, was calculated as 113.7643 for 1994, and 111.0266 for 1993.

^dSan Juan County fall potatoes; remaining counties summer potatoes.

Table 14. Production of top 10 New Mexico agricultural commodities by cash receipts in relation to total U.S. production, 1994.

Rank	Commodity	Dollars ^a (1000)	Percent of N.M. ag cash receipts	Total U.S. production ^b	Units	New Mexico production as percent of U.S. total		New Mexico rank in total U.S. production ^c	
						1994	1993	1994	1993
1	Cattle and calves	664,389	43.48	100,988,000	Head	1.40	26/50	25/50	
2	Milk-wholesale	382,356	25.02	153,621,600,000 ^d	Pounds	2.16	12/50	13/50	
3	Hay	82,180	5.38	150,060,000	Tons	1.31	32/50	31/48	
4	Chile	55,868	3.66	N/A		-----	-----	-----	
5	Greenhouse nursery	41,232	2.70	N/A		-----	-----	-----	
6	Cotton lint	33,239	2.18	19,662,000	Bales	0.48	15/17	14/17	
7	Onions	32,052	2.10	63,621,000	CWT	5.22	8/16	6/15	
8	Pecans	30,960	2.03	199,000,000	Pounds	12.06	3/13	3/14	
9	Corn	26,679	1.75	10,102,735,000	Bushels	0.13	31/41	28/41	
10	Potatoes	22,491	1.47	467,924,000	CWT	0.92	13/33	13/33	
	TOTAL	1,371,446	89.76						

^aSource: New Mexico Agricultural Statistics, 1995, p. 16.

^bSource: Agricultural Statistics, USDA 1994.

Table 372. All cattle and calves: Number and value, by states, Jan. 1, 1994-96, p. VII-2.

Table 466. Milk and milk fat production: Number of milk cows, yield per cow, and total quantity produced, by states, 1994 (preliminary), p. VIII-8

Table 351. Hay, all: Area, yield, and production, by states, 1993-95, p. VI-4.

N/A. USDA does not report chile production as a separate commodity.

N/A. USDA does not report greenhouse nursery as a separate category.

Table 78. Cotton: Area, yield, and production, by states, 1993-95, p. II-2.

Table 216. Onions, commercial crop: Area, production, shrinkage and loss, and value per hundredweight, by states, 1993-95, p. IV-14

Table 332. Pecans (in the shell basis): Production and marketing year average price per pound, by states, 1993-95, p. V-40.

Table 40. Corn: Area, yield, and production, by states, 1993-95, p. I-27.

Table 222. Potatoes: Area, production, and marketing year price per hundredweight received by farmers, by states, 1993-95, pp. IV-16-17.

^cNumber indicates New Mexico's rank in the total number of states reported.

^dUSDA figure reported is for milk production.

Table 15. Relative impacts of price and quantity changes on value of production for New Mexico's top 10 commodities in nominal dollars, 1993-1994.

Crop (unit)	1994		1993		Value of production (\$1000)	Price per unit ^a (dollars)	Quantity ^a	Value of production (\$1000)	Price 1993-1994 (dollars)	Quantity 1993-1994	Δ VOP 1993-1994 (\$1000)	Quantity * Price (\$1000)	Δ Price* Quantity (\$1000)	Quantity * Δ Price (\$1000)
	Price per unit ^a (dollars)	Quantity ^a	Value of production (\$1000)	Price per unit ^a (dollars)										
Cattle and calves														
Milk-wholesale (CWT)	^b 11.70	32,680,000	382,356	11.70	25,670,000	0.00	7,010,000	82,017	82,017	82,017	0	0	0	0
Hay (ton)	120.00	1,447,000	173,640	105.00	1,434,000	15.00	13,000	23,070	23,070	23,070	21,510	21,510	21,510	195
Chile (ton)														
Greenhouse nursery	^c													
Cotton lint	^d													
Upland (480 lb bale)	347.04	75,000	26,028	292.32	78,000	54.72	22,801	3,227	54.72	-3,000 ^e	3,227	-877	4,268	-164
Prima (480 lb bale)	494.40	19,500	9,641	436.80	18,700	57.60	8,168	1,473	57.60	800	1,473	349	1,077	46
Onions (CWT)	9.66	3,318,000	32,052	10.80	4,074,000	-1.14	43,999	-11,947	-1.14	-756,000	-11,947	-8,165	-4,644	862
Pecans (pound)	1.29	24,000,000	30,960	0.60	36,000,000	0.69	21,600	9,360	0.69	-12,000,000	9,360	-7,200	24,840	-8,280
Corn (bushel)	2.50	12,750,000	31,875	2.65	14,025,000	-0.15	37,166	-5,291	-0.15	-1,275,000	-5,291	-3,379	-2,104	191
Potatoes (CWT)	6.05	3,933,000	23,795	6.20	3,950,000	-0.15	24,490	-695	-0.15	-17,000	-695	-105	-593	3

^aSources for price and quantity data:

Milk - Wholesale, New Mexico Agricultural Statistics, 1995, p. 37.

Hay, New Mexico Agricultural Statistics, 1995, p. 51.

Cotton, New Mexico Agricultural Statistics, 1995, pp. 57-59.

Onions, New Mexico Agricultural Statistics, 1995, p. 68.

Pecans, New Mexico Agricultural Statistics, 1995, p. 64.

Corn, New Mexico Agricultural Statistics, 1995, p. 55.

Potatoes, New Mexico Agricultural Statistics, 1995, p. 60.

^bThe category includes different prices for different types of cattle. The different prices and price movements preclude determining one value for the category.

^cChile includes six different types. The different prices and price movements preclude determining one value for the category.

^dGreenhouse nursery data are not reported for units; therefore, these calculations are not possible.

^eNumbers in parentheses are negative numbers.

Table 16. Relative impacts of price and quantity changes on value of production for New Mexico's top 10 commodities in constant dollars (1990 = 100), 1993-1994.^a

	1994		1993		Value of production (\$1000) (1990 = 100)	Price per unit ^b (dollars) (1990 = 100)	Quantity ^b (1990 = 100)	Value of production (\$1000) (1990 = 100)	Price 1993-1994 (dollars) (1990 = 100)	Δ Price (1990 = 100)	Quantity 1993-1994 (\$1000) (1990 = 100)	Δ Quantity price (\$1000) (1990 = 100)	Price* quantity (\$1000) (1990 = 100)	Δ Price* quantity (\$1000) (1990 = 100)	Quantity* price (\$1000) (1990 = 100)	Δ Quantity* price (\$1000) (1990 = 100)
	Price per Unit ^b (dollars) (1990 = 100)	Quantity ^b (1990 = 100)	Value of production (\$1000) (1990 = 100)	Quantity ^b (1990 = 100)												
Cattle and Calves ^c	10.28	32,680,000	336,095	25,670,000	270,511	10.54	25,670,000	270,511	-0.25 (e)	-0.25 (e)	7,010,000	73,871	-6,510	-1,778		
Milk - Wholesale (CWT)	105.48	1,447,000	152,631	1,434,000	139,436	97.24	1,434,000	139,436	8.25	8.25	13,000	1,264	11,824	107		
Hay (ton)																
Chile (ton)																
Greenhouse Nursery ^d																
Cotton Lint ^e																
Upland (480 lb bale)	305.05	75,000	22,879	78,000	20,536	263.29	78,000	20,536	41.76	41.76	-3,000	-790	3,258	-125		
Pima (480 lb bale)	434.58	19,500	8,474	18,700	7,357	393.42	18,700	7,357	41.16	41.16	800	31.5	770	33		
Onions (CWT)	8.49	3,318,000	28,174	4,074,000	39,629	9.73	4,074,000	39,629	-1.24	-1.24	-756,000	-7,354	-5,036	935		
Pecans (pound)	1.13	24,000,000	27,214	36,000,000	19,455	0.54	36,000,000	19,455	0.59	0.59	-12,000,000	-6,485	21,366	-7,122		
Corn (bushel)	2.20	12,750,000	28,018	14,025,000	33,475	2.39	14,025,000	33,475	-0.19	-0.19	-1,275,000	-3,043	-2,655	241		
Potatoes (CWT)	5.32	3,933,000	20,916	3,950,000	22,058	5.58	3,950,000	22,058	-0.27	-0.27	-17,000	-95	-1,052	5		

^aThe Consumer Price Index, with base year 1990 = 100, was calculated to be 111.7643 for 1994 and 111.0266 for 1993.

^bSources for price and quantity data:

- Milk - Wholesale, New Mexico Agricultural Statistics, 1995, p. 37.
- Hay, New Mexico Agricultural Statistics, 1995, p. 51.
- Cotton, New Mexico Agricultural Statistics, 1995, pp. 57-59.
- Onions, New Mexico Agricultural Statistics, 1995, p. 68.
- Pecans, New Mexico Agricultural Statistics, 1995, p. 64.
- Corn, New Mexico Agricultural Statistics, 1995, p. 55.
- Potatoes, New Mexico Agricultural Statistics, 1995, p. 60.

^cThe category includes different prices for different cattle types. The different prices and price movements preclude determining one value for the category.

^dChile includes six different types. The different prices and price movements preclude determining one value for the category.

(e) Greenhouse nursery data are not reported for units, therefore, these calculations are not possible.

The relative changes and signs for ΔVOP and its components in nominal dollars are shown in fig. 1. In nominal terms, the quantity effect was positive for three of the eight commodities. The price effect also was positive for three of the eight commodities. The nominal dollar price effect was zero for wholesale milk. The interaction effect was positive for five of the eight commodities. The nominal dollar interaction effect was zero for wholesale milk. In two cases (hay and Pima cotton), price and quantity effects were both positive. In three cases (onions, corn, and potatoes), price and quantity effects were both negative. In two cases (Upland cotton and pecans), the positive change in VOP, resulting from the price effect, offsets all of the negative change in VOP, resulting from the quantity effect. For seven of the eight commodities, the change in VOP, resulting from the interaction effect, is the smallest of the three change components. The interaction effect is positive in five cases (hay, Pima cotton, onions, corn, and potatoes), negative in two cases (Upland cotton and pecans), and zero for wholesale milk.

Constant-Dollar Comparisons

The relative impacts of price and quantity changes on VOP in constant dollars are shown in table 16. For five of the eight commodities analyzed, ΔVOP in constant dollars is positive. For five of the eight commodities, the change in VOP produced by the price effect was greater in absolute terms than the change resulting from the quantity effect. The change to constant-dollar values did not change the importance of price relative to production and quantity marketed in determining of ΔVOP .

The relative changes and signs for ΔVOP and its components in constant dollars are shown in fig. 2. In constant value terms, the quantity effect was positive for three of the eight commodities. The price effect was positive for four of the eight commodities. The interaction effect was positive for five of the eight commodities. In two cases (hay and Pima cotton), the price and quantity effects were both positive. In two cases (Upland cotton and pecans), the positive change in VOP from the price effect offsets all the negative change in VOP from the quantity effect. In one case (wholesale milk), the positive change in VOP from the quantity

effect offsets the negative change in VOP from the price effect. In constant-value terms, three commodities (onions, corn, and potatoes) had negative values for both the quantity and price effects. For all but one commodity (pecans), the interaction effect is the smallest of the three change components. The interaction effect is positive in five cases (hay, Pima cotton, onions, corn, and potatoes) and negative in three cases (milk-wholesale, Upland cotton, and pecans).

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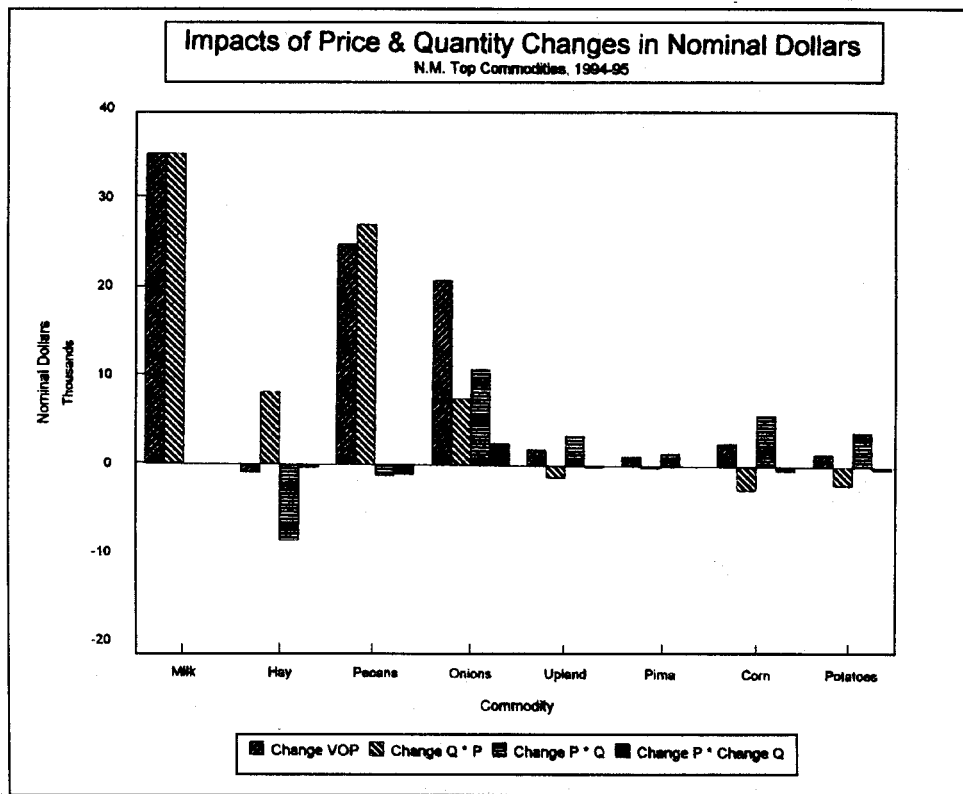
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Figure 1

Data and graphical presentation of price and quantity changes in nominal dollars, NM top commodities, 1993-94.*

Crop (Unit)	Δ Price 1993-1994 (dollars)	Δ Quantity 1993-1994	Δ VOP 1993-1994 (\$1000)	Δ Quantity* Price (\$1000)	Δ Price * Quantity (\$1000)	Δ Quantity* Δ Price (\$1000)
Milk-wholesale (CWT)	0.00	7,010,000	82,017	82,017	0	0
Hay (ton)	15.00	13,000	23,070	1,365	21,510	195
Cotton lint-Upland (480 lb bale)	54.72	-3,000	3,227	-877	4,268	-164
Cotton lint-Pima (480 lb bale)	57.60	800	1,473	349	1,077	46
Onions (CWT)	-1.14	-756,000	-11,947	-8,165	-4,644	862
Pecans (pound)	0.69	-12,000,000	9,360	-7,200	24,840	-8,280
Corn (bushel)	-0.15	-1,275,000	-5,291	-3,379	-2,104	191
Potatoes (CWT)	-0.15	-17,000	-695	-105	-593	3

Impacts of Price and Quantity Changes in Nominal Dollars NM Top Commodities, 1993-94



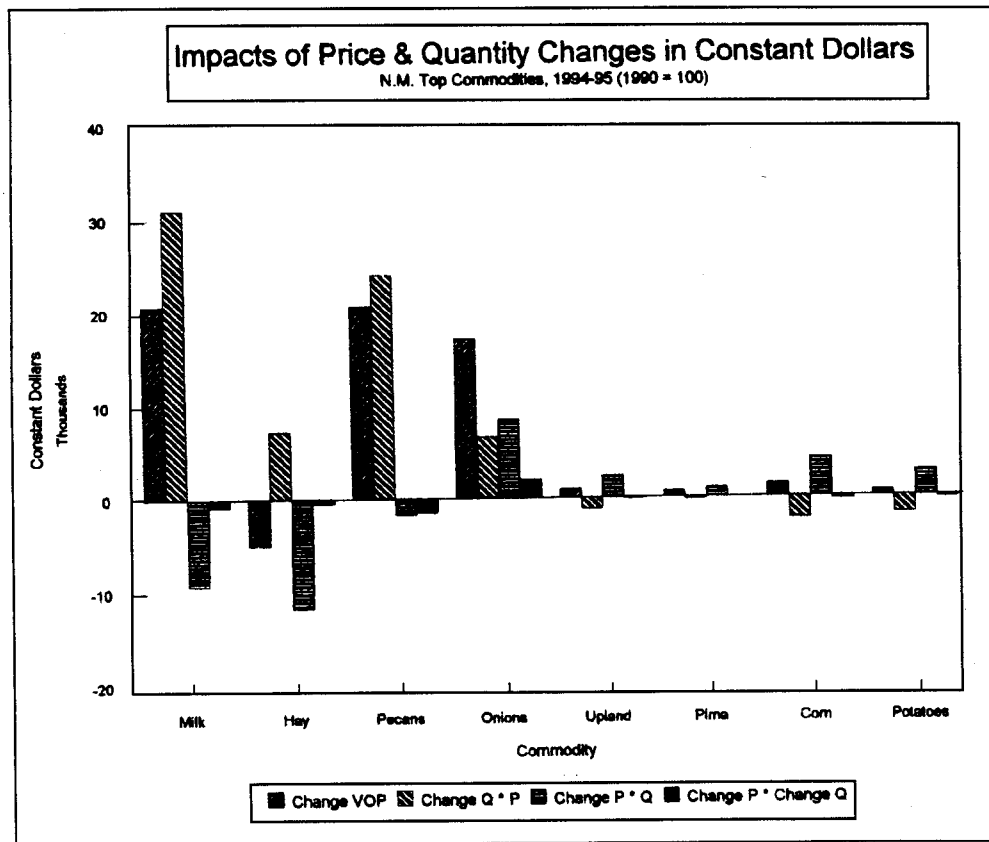
*Data and graphical presentation are for seven of the top 10 commodities. The category cattle includes prices for different types of cattle; different prices and price movements preclude determining one value for the category. Chile includes six different types. The different prices and price movements preclude determining one value for the category. Although greenhouse nursery ranks in the top 10, it is a category, not a commodity, and meaningful price and quantity data are not available.

Figure 2

Data and graphical presentation of price and quantity changes in constant dollars (1990 = 100), NM top commodities, 1993-94.*

CROP (Unit)	Δ	Δ		Δ	Δ	Δ
	Price			VOP	Quantity*	Price*
	1993-1994 (dollars) (1990 = 100)	Δ	Quantity	1993-1994 (\$1000) (1990 = 100)	Price (\$1000) (1990 = 100)	Quantity (\$1000) (1990 = 100)
Milk-wholesale (CWT)	-0.25	7,010,000	65,584	73,871	-6,510	-1,778
Hay (ton)	8.25	13,000	13,195	1,264	11,824	107
Cotton lint-Upland (480 lb bale)	41.76	-3,000	2,342	-790	3,258	-125
Cotton Lint-Pima (480 lb bale)	41.16	800	1,117	315	770	33
Onions (CWT)	-1.24	-756,000	-11,455	-7,354	-5,036	935
Pecans (pound)	0.59	-12,000,000	7,759	-6,485	21,366	-7,122
Corn (bushel)	-0.19	-1,275,000	-5,457	-3,043	-2,655	241
Potatoes (CWT)	-0.27	-17,000	-1,142	-95	-1,052	5

Impacts of Price and Quantity Changes in Constant Dollars NM Top Commodities, 1993-94 (1990=100)



*Data and graphical presentation are for seven of the 10 commodities. The category cattle includes prices for different types of cattle; different prices and price movements preclude determining one value for the category. Chile includes six different types. The different prices and price movements preclude determining one value for the category. Although greenhouse nursery ranks in the top 10, greenhouse nursery is a category, not a commodity, and meaningful price and quantity data are not available.

APPENDIX A

Index Numbers and the Conversion of Nominal Dollar Values

Most economic and financial statistics recorded in the U.S. are reported in nominal dollars. These statistics measure value in the monetary value of the dollar of the given year. When these figures are used, comparisons between years include changes in the value of the dollar. To obtain meaningful comparisons between years, the values must have the effects of inflationary or deflationary price changes removed. One method of removing inflationary effects is to divide a given year's values by a price index. This procedure expresses product value in the given year as the dollar amount it would be if the value of the dollar had remained the same as in the base year.

No single price index is appropriate for making adjustments to the values of all goods and services. However, the Consumer Price Index (CPI) is frequently used to measure inflationary changes in the economy. Changes in the CPI indicate that consumer prices have changed and these changes are taken to mean that the purchasing power of a dollar had changed by an equivalent amount. Cash receipts and value of production represent New Mexico farm and ranch community purchasing power. While other indices could be used to adjust the value of production or cash receipts, the CPI adjustment is an accepted method of adjusting nominal dollar values to arrive at a value in constant terms. The adjusted values provide a more accurate measure of real changes in the farm and ranch community income than do nominal dollars. This study will use the CPI to adjust nominal (yearly) values to constant-dollar values.

The current CPI statistics maintained by the U.S. Department of Commerce take the period 1982–84 as the base year (1982–84 = 100). This study will use 1990 as the base year (1990 = 100). As a consequence, the Department of Commerce CPI figures have been adjusted as follows:

1982–84 = 100 ⁶	1990 = 100
1983 = 99.0	1983 = 75.2825
1984 = 104.6	1984 = 78.7833
1985 = 108.0	1985 = 82.1293
1986 = 110.5	1986 = 84.0304
1987 = 114.3	1987 = 86.9202
1988 = 119.0	1988 = 90.4943
1989 = 124.6	1989 = 94.7529
1990 = 131.5	1990 = 100.0000
1991 = 137.5	1991 = 104.5627
1992 = 142.0	1992 = 107.9848
1993 = 146.0	1993 = 111.0266
1994 = 149.6	1994 = 113.7643

Using the adjusted index number, converting of the 1994 nominal dollar values uses the following equation:

$${}_{94}D_{1990} = (D_{1994} * 100) / 113.7643$$

where:

${}_{94}D_{1990}$ = the 1994 dollar value expressed in 1990 dollars, and

D_{1994} = the 1994 nominal dollar value.

For example, total farm assets in 1994 were valued at \$11,244.4 million in 1994 nominal dollars. To obtain the value in 1990 dollars:

$${}_{94}D_{1990} = (D_{1994} * 100) / 113.7643$$

$${}_{94}D_{1990} = (\$11,244.4 * 100) / 113.7643$$

$${}_{94}D_{1990} = \$9883.4$$

Therefore, the total value of farm assets in 1994, when valued in 1990 dollars, is \$9.88 million. This method is used to calculate the adjustments in 1993 and 1994 values throughout the report.

⁶ CPI figures used in this report are for all items, Western region of the U.S. Source: Statistical Abstract of the United States, 1993, U.S. Department of Commerce, Bureau of the Census, U.S. Government Printing Office, Washington, D.C., p.486.

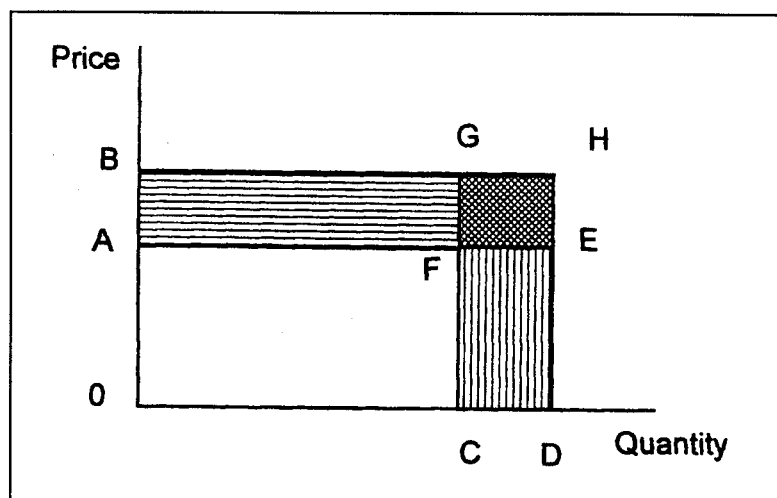
APPENDIX B

Impacts of Price and Quantity Changes on Cash Receipts and Value of Production

Changes in price (P) and quantity (Q) have direct impacts on the cash receipts received by producers and the value of production (VOP).⁷ Four possible combinations of changes⁸ are considered:

1. Case 1 - an increase in price ($\uparrow P$) * an increase in quantity ($\uparrow Q$);
2. Case 2 - ($\uparrow P$) * a decrease in quantity ($\downarrow Q$);
3. Case 3 - a decrease in price ($\downarrow P$) * ($\uparrow Q$); and
4. Case 4 - ($\downarrow P$) * ($\downarrow Q$).

The impacts of price and quantity changes on VOP can be illustrated using the figure shown above. The change in VOP (DVOP) is represented by three rectangles: ABGF, CFED, and FGHE. Area ABGF represents the part of DVOP that results from selling the original quantity at a new price.⁹ Area CFED represents the part of DVOP that results from selling a new quantity at the original price.¹⁰ Area FGHE represents the part of DVOP that results from selling the new quantity and the new price.¹¹ The relative sizes of ABGF and CFED will depend upon the relative sizes of the changes in price and quantity. In all cases, FGHE will be the smallest of the three areas.¹² The three areas may be thought of as a price effect, a quantity effect, and an



⁷Throughout this appendix, value of production will be used in the discussion rather than the phrase cash receipts and value of production.

⁸ Four other combinations of change are possible: an increase or decrease in P, when Q remains constant; and an increase or decrease in Q, when P remains constant. The situation when P or Q for the individual is exactly the same as the previous year, results in two portions of the change in VOP being zero. When P does not change, there is no increase or decrease associated with P and no interaction of P and Q. If the change in Q is zero, the only change in VOP is represented by the rectangle ABGF. When Q does not change, there is no increase or decrease associated with Q and no interaction of Q with P. If the change in P is zero, the only change in VOP is represented by the rectangle CFED. Because these cases of no change from the previous year are less likely to occur for the individual producer, they are not considered in the discussion.

⁹When P increases, ABGF is positive (represents an addition to VOP). When P decreases, ABGF is negative (represents a reduction in VOP).

¹⁰When Q increases, CFED is positive (represents an addition to VOP). When Q decreases, CFED is negative (represents a reduction in VOP).

¹¹FGHE depends upon the direction of change in both P and Q. When P and Q both increase or decrease, the change in VOP represented by FGHE is positive. When the change in either P or Q is a decrease, the change in VOP represented by FGHE is negative.

¹²In some analyses, the value of FGHE is omitted due to the small impact on the total value of DVOP.

interaction effect, respectively. The use of discrete values (the original price and quantity values), rather than incremental changes in price and quantity in the calculations of the price and quantity effect, result in an imprecise specification of the price and quantity effect. The interaction term represents the adjustment that is necessary to arrive at the true value of DVOP.

Case 1

In Case 1, the price for the previous year is represented by OA and quantity for the previous year is OC. The previous year's VOP is represented by OAFD. In the current year, price increases to OB, quantity increases to OD and VOP is represented by OBHD. In Case 1, all three Δ VOP components (ABGF, CFED, and FGHE) are positive.

Case 2

In Case 2, the price for the previous year is represented by OA, and the quantity for the previous year is OD. The previous year's VOP is represented by OAFD. In the current year, price increases to OB, quantity decreases to OC, and VOP is represented by OBGC. In Case 2, the price effect component (ABGF) of Δ VOP is positive, and the quantity (CFED) and interaction effect (FGHE) components are negative.

Case 3

In Case 3, the price for the previous year is represented by OB and the quantity for the previous year is OC. The previous year's VOP is represented by OBGC. In the current year, price decreases to OA, quantity increases to OD, and VOP is represented by OAED. In Case 3, the price effect (ABGF) and interaction effect (FGHE) components are negative, and the quantity effect component (CFED) is positive.

Case 4

In Case 4, the price for the previous year is represented by OB and the quantity for the previous year is OD. The previous year's VOP is represented by OBHD. In the current year, price decreases to OA, quantity decreases to OC, and VOP is represented by OAFD. In Case 4, the price (ABGF) and quantity (CFED) effect components are negative, but the interaction effect component (FGHE) is positive.

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