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Changes in New Mexico Agriculture 1992

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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, a comparison between years does not allow a determination of the real changes that have occurred. *Changes in New Mexico Agriculture* remedies this problem. Each year a determination is made of the changes in cash receipts 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*.

CONTENTS

Changes in New Mexico Agriculture 1992

Wilmer M. Harper[1]

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.[2] 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 index[3] (CPI) (See 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 the identification of monetary values that have increased or decreased in real terms. Although conversion to a common base period does not take into account changes in production due to technology, a comparison 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 cost of production. In these cases, cost decreases could partially offset 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 value 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. 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 the impact of agriculture on the input and service industries associated with the production process, the processing industry that is a part of agriculture, and the impact of the multiplier effect upon cash receipts as they cycle through the economy. The value of the multiplier for New Mexico's agricultural sector is 2.4472. This means every $1.00 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

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

[3]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.

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 1991 to 1992, the nominal average per acre value of farm real estate increased from $230 to $239 (USDA-ERS, p. 5). This change represented a nominal increase of $9 per acre. The constant dollar average per acre value of farm real estate increased $8.33 when measured in 1990 dollars. The nominal average gross cash rent per acre increased from $70.40 in 1991 to $87.70 in 1992. The increase was $17.30 in nominal terms and $16.02 in constant dollar value (USDA-ERS, p. 10).

In 1992, New Mexico ranked 34th among the 50 states with respect to total farm marketings and produced 0.89% of total U.S. farm marketings. New Mexico ranked 36th with respect to total farm marketings from crops and produced 0.58% of total U.S. farm marketings from crops, and it ranked 29th with respect to total farm marketings from livestock and produced 1.20% of total U.S. farm marketings from livestock (USDA, Agricultural Statistics, p. 380). Farm income[4] was 1.96% of New Mexico's total personal income generated from all industries. Farm income increased from $363.5 million in 1991 to $478.7 million in 1992 (U.S. Dept. of Commerce, REIS). Cash receipts from all commodities were $1.54 billion in 1992, a nominal increase of 5.47% from 1991. In constant dollars, total cash receipts increased 2.13% from 1991 to 1992 (table 1).

From 1991 to 1992, the nominal value of cash receipts increased for 17 commodities, decreased for nine commodities, and remained constant for three commodities. However, the constant dollar value of cash receipts indicates that in real terms the situation was different. When valued in constant dollars, 15 commodities showed an increase in cash receipts and 14 commodities showed a decrease. The rank of the commodities also showed substantial change from 1991 to 1992. Of the 29 commodities reported, 12 commodities maintained the same rank, seven increased in rank, and 10 decreased in rank (table 1). When compared to the average 1989–91 constant dollar cash receipts, the 1992 value of cash receipts was greater than the 1989–91 average for 11 commodities and less for 18 commodities (table 2). Of the top 10 commodities in 1992, nine of the 10 were in the top 10 for the 1989–91 constant dollar average, and six of the top 10 commodities had 1992 constant dollar cash receipts that exceeded their 1989–91 constant dollar average. Wheat was in the 1992 top 10, but did not rank in the top 10 for the 1989–91 constant dollar average. Potatoes ranked in the top 10 for the 1989–91 constant dollar average, but did not rank in the top 10 in 1992.

Although constant dollar value of cash receipts increased 2.13% from 1991 to 1992, the balance sheet for New Mexico's farm sector (table 3) shows a real decrease in the value of assets. Farm debt also declined in real terms, but the debt to equity and debt to assets ratios increased from 1991 to 1992 due to the fact that the decline in assets was greater than the decline in debt. The value of farm assets decreased 0.05% in nominal terms, and 0.08% in real terms. This decline in asset value resulted primarily from the decrease in real estate which is the largest farm asset category. The decline in the total value of farm real estate reported by ERS in *Economic Indicators of the Farm Sector: State Financial Summary, 1993* is in spite of the increase in per acre value reported by ERS in *Agricultural Resources: Agricultural Land Values and Markets*. From 1991 to 1992, non-real estate debt and real estate debt declined 0.04% and 0.05% respectively.

THE MAJOR COMMODITIES

In 1992, the top 10 commodities accounted for 88.85% of the 1992 total value of cash receipts for New Mexico. These commodities were taken as the major commodities for New Mexico in 1992, and a more detailed analysis of the changes between 1991 and 1992 is presented. An important part of the detailed analysis is 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 difference in quantity.

With respect to cash receipts, the top 10 (of 33 total) counties account for 67.84% of total cash receipts in New Mexico (table 4). The top two counties, Chaves and Doña Ana, account for 26.37% of the total value of production in New Mexico and rank in the top five 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 (for example, 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 that the value of production estimated at the county level. The cash receipts value represents the final

[4]Farm income consists of proprietor's net farm income, the wages of hired farm labor, the pay-in-kind of hired farm labor, and the salaries of officers for corporate farms.

Table 1. Cash receipts, all commodities for New Mexico 1991–92.

Commodity	1992 Rank	1992 Cash receipts[a] ($1,000)	1992 Percent agricultural cash receipts	1992 Cumulative percent of agricultural cash receipts	1992 Cash receipts[b] ($1,000) (1990 = 100)	1991 Rank[c]	1991 Cash receipts[a] ($1,000)	1991 Cash receipts[b] ($1,000) (1990 = 100)	Percent change cash receipts 1991–1992 Nominal dollars	Percent change cash receipts 1991–1992 Constant dollars
Cattle and calves	1	723,160	47.10	47.10	669,687	1	710,374	679,376	1.80	-1.43
Milk—wholesale	2	258,884	16.86	63.96	239,741	2	213,180	203,878	21.44	17.59
Hay	3	103,694	6.75	70.72	96,026	3	114,065	109,088	-9.09	-11.97
Chile	4	67,379	4.39	75.11	62,397	4	59,219	56,635	13.78	10.17
Pecans	5	49,200	3.20	78.31	45,562	6	42,920	41,047	14.63	11.00
Greenhouse nursery	6	44,413	2.89	81.20	41,129	7	41,000	39,211	8.32	4.89
Onions	7	38,080	2.48	83.68	35,264	5	44,538	42,595	-14.50	-17.21
Wheat	8	33,681	2.19	85.88	31,191	9	20,686	19,783	62.82	57.66
Sorghum grain	9	23,338	1.52	87.40	21,612	13	16,769	16,037	39.17	34.76
Cotton lint	10	22,342	1.46	88.85	20,690	8	32,196	30,791	-30.61	-32.81
Corn	11	21,627	1.41	90.26	20,028	10	19,299	18,457	12.06	8.51
Potatoes	12	20,911	1.36	91.62	19,365	11	18,976	18,148	10.20	6.70
Peanuts	13	18,985	1.24	92.86	17,581	15	14,357	13,731	32.24	28.04
Misc. vegetables	14	16,250	1.06	93.92	15,048	14	16,539	15,817	-1.75	-4.86
Eggs	15	14,645	0.95	94.87	13,562	12	17,617	16,848	-16.87	-19.50
Other livestock	16	13,247	0.86	95.74	12,267	16	13,362	12,779	-0.86	-4.00
Milk—retail	17	10,670	0.69	96.43	9,881	20	7,814	7,473	36.55	32.22
Other field crops	18	10,583	0.69	97.12	9,800	18	10,478	10,021	1.00	-2.20
Sheep and lambs	19	10,390	0.68	97.80	9,622	19	8,135	7,780	27.72	23.67
Lettuce	20	8,711	0.57	98.36	8,067	17	12,083	11,556	-27.91	-30.19
Dry beans	21	5,875	0.38	98.75	5,441	21	5,233	5,005	12.27	8.71
Forest products	22	5,000	0.33	99.07	4,630	22	5,000	4,782	0.00	-3.17
Hogs and pigs	23	3,880	0.25	99.33	3,593	23	4,315	4,127	-10.08	-12.93
Wool and mohair	24	3,859	0.25	99.58	3,574	24	3,101	2,966	24.44	20.50
Apples	25	2,535	0.17	99.74	2,348	27	520	497	387.50	372.05
Cottonseed	26	2,348	0.15	99.90	2,174	25	2,256	2,158	4.08	0.78
Other fruits and nuts	27	1,540	0.10	100.00	1,426	26	1,540	1,473	0.00	-3.17
Other poultry	28	40	0.00	100.00	37	29	40	38	0.00	-3.17
Farm chickens	29	31	0.00	100.00	29	28	42	40	-26.19	-28.53
Total		1,535,298			1,421,772		1,455,654	1,392,135	5.47	2.13

[a]Source: *New Mexico Agricultural Statistics—1993*, p.16.

[b]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9848 for 1992 and 104.5627 for 1991.

[c]Light shaded ranks indicate a higher rank in 1992 than in 1991; dark shaded ranks indicated a lower rank in 1992 than in 1991; no shading indicates no change.

Table 2. Cash receipts, all commodities for New Mexico 1989–92.

Commodity	1992 Rank	1992 Cash receipts[a] ($1,000)	1992 Cash receipts[b] ($1,000) (1990 = 100)	1991 Rank[e]	1991 Cash receipts[a] ($1,000)	1991 Cash receipts[b] ($1,000) (1990 = 100)	1990 Rank	1990 Cash receipts[c] ($1,000)	1989 Rank	1989 Cash receipts[d] ($1,000)	1989 Cash receipts[b] ($1,000) (1990 = 100)	1989–91 Average Rank	1989–91 Average Cash receipts ($1,000)	1989–91 Average Cash receipts ($1,000) (1990 = 100)	Cash receipts 1992 > 1989–91 average (1990 = 100)
Cattle and calves	1	723,160	669,687	1	710,374	679,376	1	744,496	1	749,452	790,955	1	734,774	724,441	No
Milk—wholesale	2	258,884	239,741	2	213,180	203,878	2	198,454	2	160,265	169,140	2	190,633	187,532	Yes
Hay	3	103,694	96,026	3	114,065	109,088	3	114,224	3	109,641	115,713	3	112,643	110,984	No
Chile	4	67,379	62,397	4	59,219	56,635	4	53,564	6	41,953	44,276	4	51,579	50,717	Yes
Pecans	5	49,200	45,562	6	42,920	41,047	5	52,020	10	29,870	31,524	7	41,603	40,979	Yes
Greenhouse nursery	6	44,413	41,129	7	41,000	39,211	7	40,000	7	39,800	42,004	8	40,267	39,670	Yes
Onions	7	38,080	35,264	5	41,000	39,211	8	40,000	5	44,400	46,859	6	41,800	41,204	No
Wheat	8	33,681	31,191	9	20,686	19,783	11	19,603	12	18,941	19,990	11	19,743	19,442	Yes
Sorghum grain	9	23,338	21,612	13	16,769	16,037	17	9,871	8	35,122	37,067	10	20,587	20,343	Yes
Cotton lint	10	22,342	20,690	8	32,196	30,791	6	49,193	4	51,754	54,620	5	44,381	43,913	No
Corn	11	21,627	20,028	10	19,299	18,457	12	18,486	11	19,604	20,690	12	19,130	18,849	Yes
Potatoes	12	20,911	19,365	11	18,976	18,148	9	26,311	9	30,080	31,746	9	25,122	24,846	No
Peanuts	13	18,985	17,581	15	14,357	13,731	10	23,400	17	12,230	12,907	14	16,662	16,454	Yes
Misc. vegetables	14	16,250	15,048	14	16,539	15,817	14	16,250	14	16,389	17,297	15	16,393	16,152	No
Eggs	15	14,645	13,562	12	17,617	16,848	13	17,452	13	17,395	18,358	13	17,488	17,232	No
Other livestock	16	13,247	12,267	16	13,362	12,779	15	13,591	16	13,121	13,848	16	13,358	13,164	No
Milk—retail	17	10,670	9,881	20	7,814	7,473	18	9,535	20	9,535	10,063	19	8,961	8,848	Yes
Other field crops	18	10,583	9,800	18	10,478	10,021	16[f]	10,570	18	10,500	11,081	17	10,516	10,364	No
Sheep and lambs	19	10,390	9,622	19	8,135	7,780	19	8,544	15	13,405	14,147	18	10,028	9,910	No
Lettuce	20	8,711	8,067	17	12,083	11,556	24	4,319	22	6,251	6,597	21	7,551	7,375	Yes
Dry beans	21	5,875	5,441	21	5,233	5,005	20	7,833	19	10,361	10,935	20	7,809	7,733	No
Forest products	22	5,000	4,630	22	5,000	4,782	23	5,000	23	5,000	5,277	23	5,000	4,927	No
Hogs and pigs	23	3,880	3,593	23	4,315	4,127	25	4,059	25	3,469	3,661	24	3,948	3,885	No
Wool and mohair	24	3,859	3,574	24	3,101	2,966	21	5,170	21	7,424	7,835	22	5,232	5,187	No
Apples	25	2,535	2,348	27	520	497	27	1,217	27	1,060	1,119	27	932	925	Yes
Cottonseed	26	2,348	2,174	25	2,256	2,158	22	5,048	24	4,559	4,811	25	3,954	3,922	No
Other fruits and nuts	27	1,540	1,426	26	1,540	1,473	26	1,610	26	1,615	1,704	26	1,588	1,566	No
Other poultry	28	40	37	29	40	38	29	40	30	40	42	29	40	39	No
Farm chickens	29	31	29	28	42	40	28	58	29	105	111	28	68	68	No
Total		1,535,298	1,421,772		1,452,116	1,344,741		1,499,918		1,463,341	1,544,377				

[a]Source: *New Mexico Agricultural Statistics—1993*, p. 16.

[b]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9846 for 1992, 104.5627 for 1991, 94.7529 for 1989, and 90.4943 for 1988.

[c]Source: *New Mexico Agricultural Statistics—1992*, p. 17.

[d]Source: *New Mexico Agricultural Statistics—1991*, p. 17.

[e]Light shaded ranks indicate a higher rank in 1991 than in 1990; dark shaded ranks indicate a lower rank in 1991 than in 1990; no shading indicates no change.

[f]Barley is included in “Other field crops” after 1989. This reduces the number of reported crops from 30 to 29.

Table 3. Change in balance sheet of New Mexico farm sector, 1991–1992.[a]

	Number		Percent change
	1991	1992	1990–91
Farms	13,500	13,500	0.00

	1992		1991		Percent change 1991–1992	
	Millions dollars	Millions dollars[b] (1990 = 100)	Millions dollars	Millions dollars[b] (1990 = 100)	Nominal dollars	Constant dollars (1990 = 100)
Assets						
Total farm assets	11,186.70[c]	10,359.51	11,806.30[c]	11,291.12	-0.05	-0.08
Real estate	9,346.10	8,655.02	10,005.90	9,569.28	-0.07	-0.10
Livestock and poultry	921.90	853.73	908.20	868.57	0.02	-0.02
Machinery and motor vehicles	446.70	413.67	444.70	425.29	0.00	-0.03
Crops	64.20	59.45	75.00	71.73	-0.14	-0.17
Purchased inputs	21.00	19.45	16.50	15.78	0.27	0.23
Financial	386.80	358.20	356.00	340.47	0.09	0.05
Farm debt	1,047.50[c]	970.04	1,063.00[c]	1,016.61	-0.01	-0.05
Real estate	563.40	521.74	576.20	551.06	-0.02	-0.05
Non-real estate	484.10	448.30	486.80	465.56	-0.01	-0.04
Equity	10,139.20	9389.47	10,743.30	10,274.50	-0.06	-0.09
Ratios						
Debt/equity	10.33	9.89				
Debt/assets	9.36	9.00				

[a]Source: *USDA, Economic Research Service Publication, ECIFS 13-2*, January 1995. Data as of 31 December 1993. Data are for farms with annual sales of $1,000 or more and include operator households. 1991 data are preliminary.

[b]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9849 for 1992, and 104.5627 for 1991.

[c]Due to rounding, parts will not sum to total.

Table 4. Cash receipts for top ten counties of New Mexico and county rank for the top ten commodities, 1992.

County	Rank	Value[a] (1,000)	Percent of total value of N.M. production	Rank									
				Cattle and calves	Milk wholesale	Hay	Chile	Pecans	Greenhouse nursery	Onions	Wheat	Sorghum grain	Cotton lint
Chaves	1	203,133	13.23	3	1	1	4	2	NA[d]	NR	10	LR	2
Doña Ana	2	201,739	13.14	LR[b]	2	4	2	1	NA	1	8	LR	1
Curry	3	141,589	9.22	1	4	8	LR	NR[c]	NA	LR	1	2	9
Roosevelt	4	103,106	6.72	7	3	LR	LR	NR	NA	NR	2	1	7
Eddy	5	81,310	5.30	4	8	2	3	5	NA	NR	LR	7	3
Union	6	80,900	5.27	2	LR	LR	LR	NR	NA	LR	4	4	NR
Luna	7	72,978	4.75	10	LR	LR	1	3	NA	2	7	6	4
San Juan	8	60,843	3.96	LR	LR	3	LR	NR	NA	NR	5	NR	NR
Lea	9	50,916	3.32	9	5	9	9	6	NA	LR	6	5	5
Bernalillo	10	44,976	2.93	LR	7	LR	LR	NR	NA	LR	LR	NR	NR
Total		1,041,490	67.84										

[a]Source: *New Mexico Agricultural Statistics*, 1993, p. 18.

[b]LR indicates that the county did not rank in the top ten for the commodity.

[c]NR indicates that county-level data is not kept that would allow the determination of the rank for the listed county.

[d]NA indicates that county-level data are not available.

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 1992, with cash receipts of $723.2 million. Cash receipts from the top 10 counties in this sector comprised 54.23% of New Mexico's total cash receipts from cattle and calves (table 5). For the top 10 counties, nominal cash receipts increased 1.91% from 1991 to 1992. Constant dollar cash receipts decreased 1.32% in 1992. Only Chaves and Roosevelt Counties had increases in cash receipts valued in constant dollars. In 1992, average sale price was $62.40 per cwt for cattle and $90.10 per cwt for calves (NM Ag. Statistics, 1993, p. 34).

New Mexico cattle and calves totaled 1.40 million head as of January 1, 1992; this inventory represented a 4.48% increase over 1991. The top 10 counties had an 11.51% increase in the number of cattle and calves (table 5).

Milk

Wholesale milk ranked second with respect to cash receipts in 1992; however, 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 2,174 million pounds in 1992, and resulted in cash receipts totaling $269.6 million. Cash receipts for the top 10 milk-producing counties constituted 98.54% of New Mexico's total cash receipts from milk. Chaves County led the state in cash receipts from milk with 39.84% of the state's total. Within the top 10 milk-producing counties, Eddy County experienced the greatest change in constant dollar cash receipts with an increase from $4,157,000 in 1991 to $8,766,000 in 1992, an increase of 104.19%. Eddy County had an increase greater than 100% (1991 = 240%), for the second year in 1992. Three of the top 10 counties had a decrease in 1992. Percentage change in constant dollar cash receipts for the top 10 counties in the aggregate increased by 18.49% in 1992. The average nominal price received for milk in 1992 was $12.20 per cwt, a 7.02% increase from the 1991 price of $11.40 (table 6).

The number of dairy cows in New Mexico was reported at 101,000 animals in 1992, a 13.48% increase over 1991 and a record high for the state. Replacement heifers numbered 22,000 (NM Ag. Statistics, 1993, p. 33).

Hay

Hay ranked third with respect to 1992 cash receipts. Total production for all hay was 1,401,000 tons in 1992, with a value of production of $137.2 million. Harvested acreage for 1992 was reported at 320,000 acres, 10,000 acres less than in 1991. Chaves County led in value of production from hay with 23.95% of the state total. Value of production in the top 10 counties in this sector comprised 75.18% of the state's value of production for hay. Statewide average yield per acre was reported at 4.38 tons, with an average price of $97.50 per ton. This represented an increase of 0.03 tons per acre and a decrease of $9.50 per ton in price. All of the top 10 hay-producing counties reported declines in constant dollar value of production ranging from 2.43 to 24.04%. Lea County experienced the most change with a decrease of 24.04%. The overall value of production for the top 10 counties declined 16.22% in constant dollars (table 7).

Chile

Chile ranked fourth with respect to cash receipts in 1992. Total chile production in 1992 was 116,400 processed tons: 69,000 tons of green and 47,400 tons of red (N.M. Ag. Statistics, 1993, p. 69). The 1992 total production dry weight equivalent was 53,475, with a value of $67.38 million. The value of production in the top 10 counties comprised 97.39% of the state's total for chile. Luna County led in value of production for chile with 35.94% of the state's total. Constant dollar value of production declined for five of the top 10 counties, but increased 10.46% overall from 1991 to 1992. Within the top 10 chile-producing counties, Socorro County experienced the greatest change in constant dollar cash receipts with an increase of 89.69%. Price per processed ton of chile averaged $254 for green and $935 for red (table 8).

Production from 1992 was a record high of 53,475 dry equivalent tons with a dry weight yield of 1.55 tons per acre. Total harvested acreage in 1992 was 34,500 acres, a 16.16% increase over 1991.

Pecans

Although pecan production is limited to the state's southern counties, pecans ranked fifth with respect to cash receipts in 1992. Pecan production totaled 30 million pounds and generated $49.2 million in value of production in 1992. Doña Ana County reported the largest production, 20.89 million pounds, with a value of $34.25 million. Production in Doña Ana County was 69.62% of the total for New Mexico. The average price per pound for pecans in 1992 was $1.64, an increase of 10.81% from 1991. The $1.64 price per pound was a record high in nominal and constant dollar values. Constant dollar value of production increased for all but one county from 1991 to 1992. Within the top 10 pecan-producing counties, Luna County experienced the greatest change in constant dollar value of production with an

Table 5. Cash receipts for cattle and calves and number on farms in the top ten counties of New Mexico, 1992.

	Cash receipts								Animal numbers			
	1992				1991			Percent change in constant dollar value 1991–1992	1992		1991	
County	Rank	Value[a] ($1,000)	Percent of total cash cattle and calves receipts	Value[b] ($1,000) (1990 = 100)	Rank[e]	Value[a] ($1,000)	Value[b] ($1,000) (1990=100)		Number on farm	Rank	Number on farm	Rank
Curry	1	74,080	10.24	68,602	2	72,748	69,574	-1.40	102,000[c]	2	96,000[d]	2
Union	2	71,064	9.83	65,809	1	74,854	71,588	-8.07	115,000	1	111,000	1
Chaves	3	48,001	6.64	44,452	4	41,704	39,884	11.45	92,000	3	90,000	3
Eddy	4	42,922	5.94	39,748	3	42,623	40,763	-2.49	62,000	4	60,000	4
Colfax	5	28,236	3.90	26,148	5	27,652	26,445	-1.12	61,000	5	60,000	5
Quay	6	27,765	3.84	25,712	6	27,198	26,011	-1.15	60,000	6	59,000	6
Roosevelt	7	26,486	3.66	24,528	7	25,563	24,448	0.33	55,000	8	49,000	9
Grant	8	25,412	3.51	23,533	8	25,385	24,277	-3.07	56,000	7	55,000	7
Lea	9	24,471	3.38	22,662	9	23,799	22,760	-0.43	52,500	9	50,000	8
Luna	10	23,723	3.28	21,969					47,000	10		
Harding					10	23,297	22,280				47,000	10
Total		392,160	54.23	363,162		384,823	368,031	-1.32	702,500[f]		630,000[f]	

[a] Source: *New Mexico Agricultural Statistics*, 1993, p. 20.

[b] *The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9849 for 1992 and 104.5627 for 1991.

[c] Source: *New Mexico Agricultural Statistics*, 1992, p. 37.

[d] Source: *New Mexico Agricultural Statistics*, 1991, p. 37.

[e] Light shaded ranks indicate a higher rank in 1992 than in 1991; dark shaded ranks indicate a lower rank in 1992 than in 1991; no shading indicates no change.

[f] There were 1,340,000 cattle and calves on inventory as of 1 January 1991. Source: *New Mexico Agricultural Statistics*, 1991, p. 37.
There were 1,400,000 cattle and calves on inventory as of 1 January 1992. Source: *New Mexico Agricultural Statistics*, 1992, p. 37.

Table 6. Cash receipts for milk in the top ten counties of New Mexico, 1992.[a]

County	1992 Rank	1992 Value[b] ($1,000)	1992 Percent of total milk cash receipts	1992 Value[c] ($1,000) (1990 = 100)	1991 Rank[d]	1991 Value[b] ($1,000)	1991 Value[c] ($1,000) (1990 = 100)	Percent change in constant dollar value[b] 1991–1992
Chaves	1	107,384	39.84	99,444	1	86,429	82,658	20.31
Doña Ana	2	56,979	21.14	52,766	2	53,607	51,268	2.92
Roosevelt	3	35,064	13.01	32,471	3	24,069	23,019	41.06
Curry	4	15,340	5.69	14,206	6	9,846	9,416	50.86
Lea	5	12,053	4.47	11,162	5	10,284	9,835	13.49
Valencia	6	11,177	4.15	10,351	4	10,940	10,463	-1.07
Bernalillo	7	9,862	3.66	9,133	6	9,846	9,416	-3.01
Eddy	8	8,766	3.25	8,118	9	4,157	3,976	104.19
Socorro	9	5,479	2.03	5,074	8	4,376	4,185	21.24
Sandoval	10	3,506	1.30	3,247	10	3,501	3,348	-3.03
Total		265,610[e]	98.54	245,970[e]		217,055[d]	207,584	18.49

[a]County-level wholesale milk receipts are not reported; therefore, receipts for all milk is used for the country ranking.

[b]Source: *New Mexico Agricultural Statistics*, 1993, p. 20.

[c]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9849 for 1992 and 104.5627 for 1991.

[d]Light shaded ranks indicate a higher rank in 1992 than in 1991; dark shaded ranks indicate a lower rank in 1992 than in 1991; no shading indicates no change.

[e]Total milk production in New Mexico was 2,174 million pounds in 1992 and 1,917 million pounds in 1991. The wholesale price of milk was $12.20 per 100 pounds in 1992 and $11.40 per 100 pounds in 1991. Source: *New Mexico Agricultural Statistics*, 1993, p. 37.

Table 7. Value of production and production of hay in the top ten counties of New Mexico, 1992.

	1992					1991					
County	Rank	Production[a] tons	Value[b] ($1,000)	Percent of total value of N.M. production	Value[c] ($1,000) (1990 = 100)	Rank[d]	Production[a] tons	Value[b] ($1,000)	Value[c] ($1,000) (1990 = 100)	Percent change in production 1991–1992	Percent change in constant dollar value 1991–1992
Chaves	1	335,500	32,711	23.95	30,292	1	342,100	36,605	35,007	-1.93	-13.47
Eddy	2	184,800	18,018	13.19	16,686	3	189,000	20,223	19,341	-2.22	-13.73
San Juan	3	154,760	15,089	11.05	13,973	2	165,300	17,687	16,915	-6.38	-17.39
Doña Ana	4	95,550	9,316	6.82	8,627	4	93,100	9,962	9,527	2.63	-9.44
Socorro	5	59,400	5,792	4.24	5,363	5	61,200	6,548	6,263	-2.94	-14.36
Valencia	6	52,800	5,148	3.77	4,767	6	47,750	5,109	4,886	10.58	-2.43
Quay	7	49,500	4,826	3.53	4,469						
Curry	8	43,200	4,212	3.08	3,901	8	40,500	4,334	4,144	6.67	-5.88
Lea	9	40,420	3,941	2.89	3,650	7	46,950	5,024	4,804	-13.91	-24.04
Taos	10	37,400	3,646	2.67	3,377	9	39,000	4,173	3,991	-4.10	-15.39
Torrance						10	36,000	3,852	3,684		
Total		1,053,330	102,700	75.18	95,106[e]		1,060,900	113,516	108,563	-0.71	-16.22

[a]Source: *New Mexico Agricultural Statistics*, 1993, p. 50.

[b]Value = production x price per ton. Price per ton = $97.50 in 1992 and $107.00 in 1991; source *New Mexico Agricultural Statistics*, 1993, p. 50.

[c]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9849 for 1992 and 104.5627 for 1991.

[d]Light shaded ranks indicate a higher rank in 1992 than in 1991; dark shaded ranks indicate a lower rank in 1992 than in 1991; no shading indicates no change.

[e]The 1992 production for all hay was 1,401,000 tons with a value of production of $137,139,000. The 1991 production was 1,400,000 with a value of production of $150,787.00. The harvested acreage was 320,000 in 1992 with an average yield per acre of 4.38 tons. In 1991, the harvested acreage was 330,000 with an average yield per acre of 4.24. Source: *New Mexico Agricultural Statistics*, 1992, p. 52, and *New Mexico Agricultural Statistics*, 1993, p. 50.

Table 8. Value of production and production of chile in the top ten counties of New Mexico, 1992.

	1992					1991					
County	Rank	Production[a] tons	Value[b] ($1,000)	Percent of total value of N.M. production	Value[c] ($1,000) (1990 = 100)	Rank[d]	Production[a] tons	Value[b] ($1000)	Value[c] ($1,000) (1990 = 100)	Percent change in production 1991–1992	Percent change in constant dollar value 1991–1992
Luna	1	19,220	24,217	35.94	22,426	1	18,997	24,126	23,073	1.17	-2.80
Doña Ana	2	13,795	17,382	25.80	16,096	2	12,874	16,350	15,637	7.15	2.94
Eddy	3	5,425	6,836	10.14	6,330	4	3,140	3,988	3,814	72.77	65.98
Chaves	4	5,115	6,445	9.57	5,968	3	3,297	4,187	4,004	55.14	49.04
Hidalgo	5	3,642	4,590	6.81	4,250	6	2,355	2,991	2,860	54.67	48.59
Sierra	6	2,325	2,930	4.35	2,713	4	3,140	3,988	3,814	-25.96	-28.87
Socorro	7	930	1,172	1.74	1,085	7	471	598	572	97.45	89.69
Lea	8	620	781	1.16	723	[e]					
Sandoval	9	388	488	0.72	452	8	392	498	477	-1.27	-5.16
Rio Arriba	10	310	391	0.58	362	9	314	399	381	-1.27	-5.16
Bernalillo	10	310	391	0.58	362	9	314	399	381	-1.27	-5.16
Total		52,080	65,621	97.39[f]	60,769		45,294	57,524	55,014	14.98	10.46

[a] Source: *New Mexico Agricultural Statistics*, 1993, p. 68-69. Production calculated as acreage x yield per acre dry weight equivalent.

[b] Value = production x price per ton. Price per ton = $1,260 in 1992 and $1,270 in 1991. Source: *New Mexico Agricultural Statistics*, 1993, p. 68.

[c] *The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9848 for 1992 and 104.5627 for 1991.

[d] Light shaded ranks indicate a higher rank in 1992 than in 1991; dark shaded ranks indicate a lower rank in 1992 than in 1991; no shading indicates no change.

[e] Prior to 1992, Lea County was not reported separately from an "Other counties" category.

[f] Total New Mexico production dry weight equivalent was 53,475 tons in 1992 and 46,629 tons in 1991. The state average yield per acre dry weight equivalent was 1.55 tons in 1992, and 1.57 tons in 1991. In 1992, the average price was $254 per ton for green and $935 for red. In 1991, the average price was $252 per ton for green and $1,030 per ton for red. Source: *New Mexico Agricultural Statistics*, 1993, p. 69.

increase of 56.20%. In constant value dollars, pecans had an 11.00% increase in value of production (table 9). The 30-million pound harvest was the largest pecan harvest reported in New Mexico to date.

Greenhouse Nursery

At $41 million, greenhouse nursery ranked sixth in 1992. In nominal dollars this represents an increase of 8.32%. In constant dollars the cash receipts for greenhouse nursery increased 4.89% (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.

Onions

In 1992, onions ranked seventh with respect to cash receipts. Total onion production was 3.2 million cwt[5] in 1992, and cash receipts for onions were $38.07 million. In nominal dollars, cash receipts decreased 14.53% from 1991 cash receipts. In constant value dollars, cash receipts decreased 17.24%. Doña Ana County accounted for 49.38% of the total value of production for onions. In constant value dollars value of production declined in Doña Ana County. Sierra County experienced the largest change in constant dollar cash receipts with a decrease of 55.08% (table 10).

Acreage planted in onions increased from 7,200 in 1991 to 8,200 in 1992. Acreage harvested increased from 7,100 in 1991 to 8,000 in 1992. The nominal price per hundredweight decreased from $15.30 in 1991 to $11.90 in 1992.

Wheat

Wheat ranked eighth in cash receipts in 1992 and generated $33.68 million of cash receipts. Value of production of wheat harvested for grain in the top 10 counties equaled 88.63% of total New Mexico cash receipts from wheat. Nominal value of production for the top 10 counties increased 37.71% from 1991 to 1992, and constant dollar value of production increased 33.35%. Three of the 10 counties experienced decreases in constant dollar value of production. Within the top 10 wheat-producing counties, Quay County experienced the greatest change in constant dollar value of production, with an increase of 243.77% (table 11).

The price per bushel of wheat increased from $2.85 in 1991 to $3.10 in 1992. Acreage planted to wheat remained constant at 550,000 acres from 1991 to 1992, while acreage harvested increased from 320,000 to 330,000 for a 3.13% increase in harvested acreage (NM Ag. Statistics, 1993, p. 48).

Sorghum Grain

Sorghum grain ranked ninth in cash receipts in 1992, with $23.34 million in cash receipts. Value of production for sorghum harvested for grain in the top 10 counties accounted for 94.70% of New Mexico's total. For the top 10 counties the nominal value of production decreased 2.49% from 1991 to 1992; constant dollar value of production decreased 5.58%. In constant dollar value, the value of production decreased for 3 counties. Within the top 10 sorghum-producing counties, Lea County experienced the greatest change in constant dollar value of production, with an increase of 331.68% (table 12).

The price per bushel[6] of sorghum decreased from $2.39 in 1991 to $1.92 in 1992. Sorghum acreage planted for all purposes increased from 180,000 in 1991 to 215,000 in 1992. Acreage harvested for grain increased from 170,000 to 205,000. These acreages represented an increase of 19.44% in planted acreage and 20.59% in acreage harvested for grain (NM Ag. Statistics, 1993, p. 52).

Cotton Lint

Cotton production in New Mexico is concentrated in the south and southeast areas of the state. Cotton lint ranked tenth with respect to cash receipts in 1992. In constant dollar value, cash receipts for cotton lint decreased 32.81% from 1991 to 1992. Cotton production in New Mexico is divided between Upland and American-Pima. Upland cotton accounted for 62.43% of the 1992 total value of production for cotton. Acreage planted to Upland was 69,000 in 1991 and 55,000 in 1992. Acreage harvested was 65,000 in 1991 and 53,500 in 1992. The price per pound for Upland was $0.587 ($281.76 per 480-pound bale) in 1992, an increase of $.04 per pound from 1991. American-Pima acreage decreased from 19,600 in 1991 to 13,000 in 1992; acreage harvested decreased from 19,400 to 12,800. The 1992 price-per-pound for American-Pima was $0.843 ($404.64 per 480-pound bale), a decrease of $0.132 from 1991.

In constant dollar value, only Doña Ana and Quay Counties had an increase in Upland value of production

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

[6]Production figures are in bushels, the reporting unit used by USDA. The industry reporting unit is cwt.

Table 9. Value of production and production of pecans in New Mexico, 1992.

	1992					1991					
County	Rank	Production[a] (1,000 lbs)	Value[b] ($1,000)	Percent of total value of N.M. production	Value[d] ($1,000) (1990 = 100)	Rank	Production[c] (pounds)	Value[b] ($1,000)	Value[d] ($1,000) (1990 = 100)	Percent change in production 1991–1992	Percent change in constant dollar value 1991–1992
Doña Ana	1	20,886	34,253	69.62	31,720	1	20,675	30,599	29,264	1.02	8.39
Chaves	2	3,300	5,412	11.00	5,012	2	3,200	4,736	4,529	3.12	10.65
Luna	3	1,827	2,996	6.09	2,775	3	1,255	1,857	1,776	45.58	56.20
Otero	4	1,377	2,258	4.59	2,091	4	1,220	1,806	1,727	12.87	21.11
Eddy	5	1,365	2,239	4.55	2,073	5	1,155	1,709	1,635	18.18	26.81
Lea	6	813	1,333	2.71	1,235	6	1,130	1,672	1,599	-28.05	-22.80
Sierra	7	219	359	0.73	333	7	180	266	255	21.67	30.55
Other counties	8	213	349	0.71	323	8	185	274	262	15.14	23.54
Total		30,000	49,200	100.00	45,562		29,000	42,920	41,047	3.45	11.00

[a]Source: *New Mexico Agricultural Statistics*, 1993, p. 63.

[b]Value = production x price per lb. Price per lb. = $1.64 in 1992 and $1.48 in 1991. Source: *New Mexico Agricultural Statistics*, 1993, p. 63.

[c]Source: *New Mexico Agricultural Statistics*, 1992, p. 65.

[d]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9848 for 1992 and 104.5627 for 1991.

Table 10. Value of production and production of onions in New Mexico, 1992.

County	1992 Rank	1992 Production[a] cwt (1,000)	1992 Value[b] ($1,000)	1992 Percent of total value of N.M. production	1992 Value[c] ($1,000) (1990 = 100)	1991 Rank	1991 Production[d] cwt (1,000)	1991 Value[b] ($1,000)	1991 Value[c] ($1,000) (1990 = 100)	Percent change in production 1991–1992	Percent Change in constant dollar value 1991–1992
Doña Ana	1	1,580	18,802	49.38	17,412	1	1,281	19,599	18,744	23.34	-7.11
Luna	2	1,320	15,708	41.25	14,546	2	1,094	16,738	16,008	20.66	-9.13
Sierra	3	136	1,618	4.25	1,499	3	228	3,488	3,336	-40.35	-55.08
Other counties	4[e]	163	1,940	5.09	1,796	4	308	4,712	4,507	-47.08	-60.14
Total		3,199[f]	38,068	100.00[g]	35,253		2,911[f]	44,538	42,595	9.89	-17.24

[a]Source: *New Mexico Agricultural Statistics*, 1993, p. 67.

[b]Value = production x price per cwt. Price per cwt = $11.90 in 1992 and $15.30 in 1991. Source: *New Mexico Agricultural Statistics*, 1993, p. 67.

[c]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9848 for 1992 and 104.5627 for 1991.

[d]Source: *New Mexico Agricultural Statistics*, 1992, p. 68-69.

[e]Includes Chaves, Eddy, Socorro, Otero, Valencia, Curry, Roosevelt, and San Juan counties in 1992. Includes Chaves, Eddy, Lea, Hidalgo, Curry, Roosevelt, and San Juan counties in 1991.

[f]In 1991, 7,200 acres of onions were planted and 7,100 were harvested, with an average yield of 410 cwt per acre. In 1992, 8,200 acres of onions were planted and 8,000 were harvested, with an average yield of 400 cwt per acre. Source: *New Mexico Agricultural Statistics*, 1992, p. 69.

[g]May not sum due to rounding.

Table 11. Value of production and production of wheat harvested for grain in the top ten counties of New Mexico, 1992.

	1992					1991					
County	Rank	Production[a] bushels (1,000)	Value[b] ($1,000)	Percent of total value of N.M. production	Value[c] ($1,000) (1990 = 100)	Rank[e]	Production[d] bushels (1,000)	Value[b] ($1,000)	Value[c] ($1,000) (1990 = 100)	Percent change in production 1991–1992	Percent change in constant dollar value 1991–1992
Curry	1	5,711.00	17,704	50.90	16,395	1	4,571.00	13,027	12,459	24.94	31.59
Roosevelt	2	2,120.00	6,572	18.89	6,086	2	1,010.00	2,878	2,753	109.90	121.08
Quay	3	1,419.80	4,401	12.65	4,076	5	435.00	1,240	1,186	226.39	243.77
Union	4	694.00	2,151	6.19	1,992	3	692.50	1,974	1,888	0.22	5.55
San Juan	5	496.80	1,540	4.43	1,426	4	540.00	1,539	1,472	-8.00	-3.10
Lea	6	202.40	627	1.80	581	6	225.00	641	613	-10.04	-5.25
Luna	7	195.00	604	1.74	560	8	126.00	359	343	54.76	63.00
Doña Ana	8	113.20	351	1.01	325	7	180.00	513	491	-37.11	-33.76
Torrance	9	82.50	256	0.74	237	10	30.00	86	82	175.00	189.64
Chaves	10	51.00	158	0.45	146	9	45.50	130	124	12.09	18.06
Total		9,945.00[f]	30,829	88.63	28,549		6,708.50[f]	22,387	21,410	48.24	33.35

[a]Source: *New Mexico Agricultural Statistics*, 1993, p. 49.

[b]Value = production x price per bu. Price per bu. = $3.10 in 1992 and $2.85 in 1991. Source: *New Mexico Agricultural Statistics*, 1993, p. 48.

[c]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9848 for 1992 and 104.5627 for 1991.

[d]Source: *New Mexico Agricultural Statistics*, 1992, p. 51.

[e]Light shaded ranks indicate a higher rank in 1992 than in 1991; dark shaded ranks indicate a lower rank in 1992 than in 1991; no shading indicates no change.

[f]May not sum due to rounding.

Table 12. Value of production and production of sorghum grain in the top ten counties of New Mexico, 1992.

	1992					1991					
County	Rank	Production[a] bushels (1,000)	Value[b] ($1,000)	Percent of total value of N.M. production	Value[c] ($1,000) (1990 = 100)	Rank[e]	Production[d] bushels (1,000)	Value[b] ($1,000)	Value[c] ($1,000) (1990 = 100)	Percent change in production 1991–1992	Percent change in constant dollar value 1991–1992
Roosevelt	1	5,203	9,990	42.30	9,251	2	3,550	8,483	8,113	46.59	14.03
Curry	2	4,887	9,383	39.73	8,689	1	4,774	11,410	10,912	2.37	-20.37
Quay	3	880	1,690	7.16	1,565	3	1,100	2,628	2,513	-19.93	-37.71
Union	4	527	1,012	4.29	937	4	384	919	879	37.12	6.67
Lea	5	337	648	2.74	600	6	61	145	139	454.93	331.68
Luna	6	207	397	1.68	368	5	169	404	386	22.49	-4.72
Eddy	7	105	202	0.86	187	9	28	67	64	276.43	192.82
Hidalgo	8	66	126	0.53	117	8	45	107	102	47.31	14.59
De Baca	9	50	95	0.40	88	7	47				
Other counties[f]	10	37	72	0.30	66	10	24	57	55	55.42	20.90
Chaves											
Total		12,300	23,616	100.00	21,870		10,181	24,220	23,163	20.81	-5.58

[a]Source: *New Mexico Agricultural Statistics*, 1993, p. 53.

[b]Value = production x price per bu. Price per bu. = $1.92 in 1992 and $2.39 in 1991. Source: *New Mexico Agricultural Statistics*, 1993, p. 52.

[c]*The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9848 for 1992 and 104.5627 for 1991.

[d]Source: *New Mexico Agricultural Statistics*, 1992, p. 55.

[e]Light shaded ranks indicate a higher rank in 1992 than in 1991; dark shaded ranks indicate a lower rank in 1992 than in 1991; no shading indicates no change.

[f]Includes Doña Ana, Harding, San Miguel, and Socorro counties for 1991; and Chaves, Doña Ana, Harding, and San Miguel counties for 1992.

(table 13). The Upland average decrease in value of production in constant dollars was 25.68%. Doña Ana County accounted for 98.98% of New Mexico's value of production for American-Pima. Doña Ana's production increased 9.55%; however, the constant dollar value of production decreased 12.28%.

ANALYSIS

Rank Order

The rank order of four of the top 10 commodities (cattle and calves, milk-wholesale, hay, and chile) remained unchanged from 1991 to 1992. Of the remaining six commodities in the top 10, four (pecans, greenhouse nursery, wheat, and sorghum grain) moved up in rank, and two (onions and cotton lint) decreased in rank. One of the top 10, sorghum grain, was not in the top 10 in 1991. The top 10 commodities accounted for 88.85% of New Mexico's total cash receipts generated by agriculture. Cattle and calves ranked first and accounted for 47.10% of all agricultural cash receipts. Milk-wholesale ranked second and accounted for 16.86% of cash receipts (table 1).

Of New Mexico's top 10 commodities in 1992, only pecans ranked in the upper half of the states reporting for the respective commodities (table 14). New Mexico's pecan production ranked second out of 13. Cash receipts from pecans comprised 3.20% of New Mexico's total agricultural cash receipts. Although New Mexico ranked only eighth 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 1991 to 1992

New Mexico experienced a 2.13% increase in agricultural cash receipts from 1991 to 1992 in constant dollars. Of the 29 commodities reported, 15 had an increase in constant dollar cash receipts. The increases ranged from 372.05% (apples) to 0.78% (cottonseed). The decreases in constant dollar cash receipts ranged from 1.43% (cattle and calves) to 32.81% (cotton lint). 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 county level production of the commodity.

Corn ranked in the top 10 commodities in 1991, but was not in the top 10 in 1992. From 1991 to 1992, cash receipts for corn increased 12.06% in nominal dollars and 8.51% in constant dollars. However, corn's increase was not as great as the increase in sorghum grain which moved into the top 10.

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 (see 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 a determination 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 four of the nine commodities[7] 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 1991–92, market price had more impact on total cash receipts for the top 10 commodities than decisions and variables that influenced production and quantities marketed.

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 eight of the nine commodities. The price effect was positive for four of the nine commodities. The interaction effect was positive for two of the nine commodities. In three cases (wholesale milk, pecans, and wheat), price and quantity effects were both positive. In two cases (chile and sorghum grain), the positive change in VOP resulting from the quantity effect offsets all of the negative change in VOP resulting from the price effect. In one case (onions), the positive change from the quantity effect offsets 45% of the negative change in VOP resulting from the price effect. In the case of Upland cotton, where the price effect is positive and the quantity effect is negative, the positive change in VOP from the price effect offsets only 29.73% of the negative change

[7]Available price and quantity data did not permit this analysis for cattle and calves and greenhouse nursery. For this analysis cotton was divided into its Upland and Pima components. This results in 9 commodities for analysis.

Table 13. Value of production and production of cotton in New Mexico, 1992.

County	1992 Rank	1992 Production[a] 480 lb net bales	1992 Value[b] ($1,000)	1992 Percent of total value of N.M. production	1992 Value[c] ($1,000) (1990 = 100)	1991 Rank[e]	1991 Production[d] 480 lb net bales	1991 Value[b] ($1,000)	1991 Value[c] ($1,000) (1990 = 100)	Percent change in production 1991–1992	Percent change in constant dollar value 1991–1992
Upland											
Doña Ana	1	13,800	3,888	29.05	3,601	3	12,400	3,256	3,114	11.29	10.60
Chaves	2	12,450	3,508	26.21	3,249	2	13,700	3,597	3,440	-9.12	-9.69
Eddy	3	12,050	3,395	25.37	3,144	1	14,050	3,689	3,528	-14.23	-14.77
Luna	4	3,850	1,085	8.11	1,005	5	6,100	1,602	1,532	-36.89	-37.28
Lea	5	2,600	733	5.47	678	4	9,700	2,547	2,436	-73.20	-73.36
Hidalgo	6	900	254	1.89	235	7	2,100	551	527	-57.14	-57.41
Roosevelt	7	700	197	1.47	183	6	2,850	748	716	-75.44	-75.59
Quay	8	450	127	0.95	117	9	100	26	25	350.00	347.20
Curry	9	200	56	0.42	52	8	1,850	486	465	-89.19	-89.26
Other counties[f]	10	500	141	1.05	130	10	150	39	38	233.33	
Total Upland		47,500	13,243	100.00	12,264		63,000	16,502	15,782	-24.60	-25.68
Pima											
Doña Ana	1	19,500	7,890	98.98	7,307	1	17,800	8,330	7,967	9.55	-12.28
Other counties[g]	2	200	81	1.02	75	3	650	304	291	-69.23	-75.36
Luna						2	550	257	246		
Total Pima		19,700	7,971	100.00	7,382		19,000	8,892	8,504	3.68	-16.98
Total all cotton		67,200[h]	21,214		19,645		82,000[h]	25,394	24,286	-18.05	-22.64

[a] Source: *New Mexico Agricultural Statistics*, 1993, p. 56 (for Upland cotton) and p. 58 (for Pima cotton).

[b] Value = production x price per pound. Price per pound = $0.587 in 1992 and $0.547 in 1991 for Upland cotton. Source: *New Mexico Agricultural Statistics*, 1993, p. 56. Price per pound = $0.843 in 1992 and $.975 in 1991 for Pima cotton. Source: *New Mexico Agricultural Statistics*, 1993, p. 58.

[c] *The Consumer Price Index* with base year 1990 = 100 was calculated to be 107.9848 for 1992 and 104.5627 for 1991.

[d] Source: *New Mexico Agricultural Statistics*, 1992, p. 58 (for Upland cotton) and p. 60 (for Pima cotton).

[e] Light shaded ranks indicate a higher rank in 1992 than in 1991; dark shaded ranks indicate a lower rank in 1992 than in 1991; no shading indicates no change.

[f] Includes Otero, and Sierra counties for 1992. Otero and Sierra counties reported independently in 1991.

[g] Includes Eddy, Hidalgo, and Sierra counties. In 1992 Luna county was included in "Other counties."

[h] In 1992, 55,000 acres of Upland cotton were planted and 53,500 acres were harvested, with an average yield of 616 lb. per acre.
In 1991, 69,000 acres of Upland cotton were planted and 65,000 acres were harvested, with an average yield of 465 lb. per acre.
In 1992, 13,000 acres of Pima cotton were planted and 12,800 acres were harvested, with an average yield of 739 lb. per acre.
In 1991, 19,600 acres of Pima cotton were planted and 19,400 acres were harvested, with an average yield of 470 lb. per acre.
Source: *New Mexico Agricultural Statistics*, 1992, pp. 58–60.

Table 14. Production of top ten New Mexico agricultural commodities by cash receipts in relation to total U.S. production, 1992.

Rank	Commodity	Dollars[a] (1,000)	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]
1	Cattle & calves	723,160	47.10	99,559,000	head	1.41	28/50
2	Milk—wholesale	258,884	16.86	151,746,700,000[d]	pounds	1.43	18/50
3	Hay	103,694	6.75	149,140,000	tons	0.94	32/48
4	Chile	67,379	4.39	N/A		—	—
5	Pecans	49,200	3.20	166,000,000	pounds	18.07	2/13
6	Greenhouse nursery	44,413	2.89	N/A		—	—
7	Onions	38,080	2.48	43,900,000	cwt	7.18	8/15
8	Wheat	33,681	2.19	2,458,830,000	bushels	0.46	27/42
9	Sorghum grain	23,338	1.52	884,010,000	bushels	1.39	10/18
10	Cotton lint	22,342	1.46	16,260,200	bales	0.00	15/17
	Total	1,364,171	88.85				

[a]Source: *New Mexico Agricultural Statistics*—1992, p. 17.

[b]Source: *Agricultural Statistics*, USDA 1993.

1. Table 372. All cattle and calves: Number and value by states, Jan. 1, 1991–93, p. 230.
2. Table 467. Milk and milk fat production: Number of milk cows, yield per cow, and total qualitity produced by states, 1992 (preliminary), p. 300.
3. Table 351. Hay, all: Area, yield, and production by states, 1990–92, p. 219.
4. N/A. USDA does not report chile production as a separate commodity.
5. Table 332. Pecans (in the shell basis): Production and marketing year average price per pound by states, 1990–92, p. 209.
6. N/A. USDA does not report “Greenhouse nursery” as a separate category.
7. Table 216. Onions, commercial crop: Area, production, shrinkage and loss, and value per hundredweight by states, 1990–92, p. 149.
8. Table 7. Wheat: Area, yield, and production by states 1990–92, p. 5.
9. Table 64. Sorghum: Area, yield, and production by states, 1990–92, p. 48.
10. Table 78. Cotton: Area, yield, and production by states, 1990–92. p. 58.

[c]Numbers indicates New Mexico’s rank in the total number of states reported.

[d]USDA figure reported is for milk production.

Table 15. Relative impacts of price and quantity changes on value of production for New Mexico's top ten commodities in nominal dollars, 1991–1992.

Crop (unit)	1992 Price[a] per unit	1992 Quantity[a]	1992 Value of production ($1,000)	1991 Price[a] per unit	1991 Quantity[a]	1991 Value of production ($1,000)	Δ Price[d] 1991–1992	Δ Quantity 1991–1992	Δ VOP 1991–1992 ($1,000)	Δ Quantity* price ($1,000)	Δ Price* quantity ($1,000)	Δ Quantity* Δ price ($1,000)
Cattle and calves[b]												
Milk—wholesale (cwt)	$12.20	21,590,000	$263,398	$11.40	19,000,000	$216,600	$0.80	2,590,000	$46,798	$29,526	15,200	$2,072
Hay (ton)	$97.50	1,401,000	$136,598	$107.00	1,400,000	$149,800	($9.50)	1,000	($13,202)	$107	(13,300)	($10)
Chile (ton)	$1,260.00	53,475	$67,378	$1,270.00	46,629	$59,219	($10.00)	6,846	$8,160	$8,694	(466)	($68)
Pecans (pound)	$1.64	30,000,000	$49,200	$1.48	29,000,000	$42,920	$0.16	1,000,000	$6,280	$1,480	4,640	$160
Greenhouse nursery[c]												
Onions (cwt)	$11.90	3,200,000	$38,080	$15.30	2,911,000	$44,538	($3.40)	289,000	($6,458)	$4,422	(9,897)	($983)
Wheat (bushel)	$3.10	11,200,000	$34,720	$2.85	8,000,000	$22,800	$0.25	3,200,000	$11,920	$9,120	2,000	$800
Sorghum (bushel)	$1.92	12,300,000	$23,616	$2.39	10,200,000	$24,378	($0.47)	2,100,000	($762)	$5,019	(4,794)	($987)
Cotton lint												
Upland (480 lb bale)	$281.76	47,500	$13,384	$262.56	63,000	$16,541	$19.20	(15,500)	($3,158)	($4,070)	1,210	($298)
Pima (480 lb bale)	$404.64	19,700	$7,971	$468.00	19,000	$8,892	($63.36)	700	($921)	$328	(1,204)	($44)

[a]Sources for price and quantity data:
Milk—wholesale, *New Mexico Agricultural Statistics*, 1993, p. 37.
Hay, *New Mexico Agricultural Statistics*, 1993, p. 50.
Chile, *New Mexico Agricultural Statistics*, 1993, p. 68.
Pecans, *New Mexico Agricultural Statistics*, 1993, p. 63.
Onions, *New Mexico Agricultural Statistics*, 1993, p. 67.
Wheat, *New Mexico Agricultural Statistics*, 1993, p. 48.
Sorghum, *New Mexico Agricultural Statistics*, 1993, p. 52.
Cotton, *New Mexico Agricultural Statistics*, 1993, pp. 56–58.

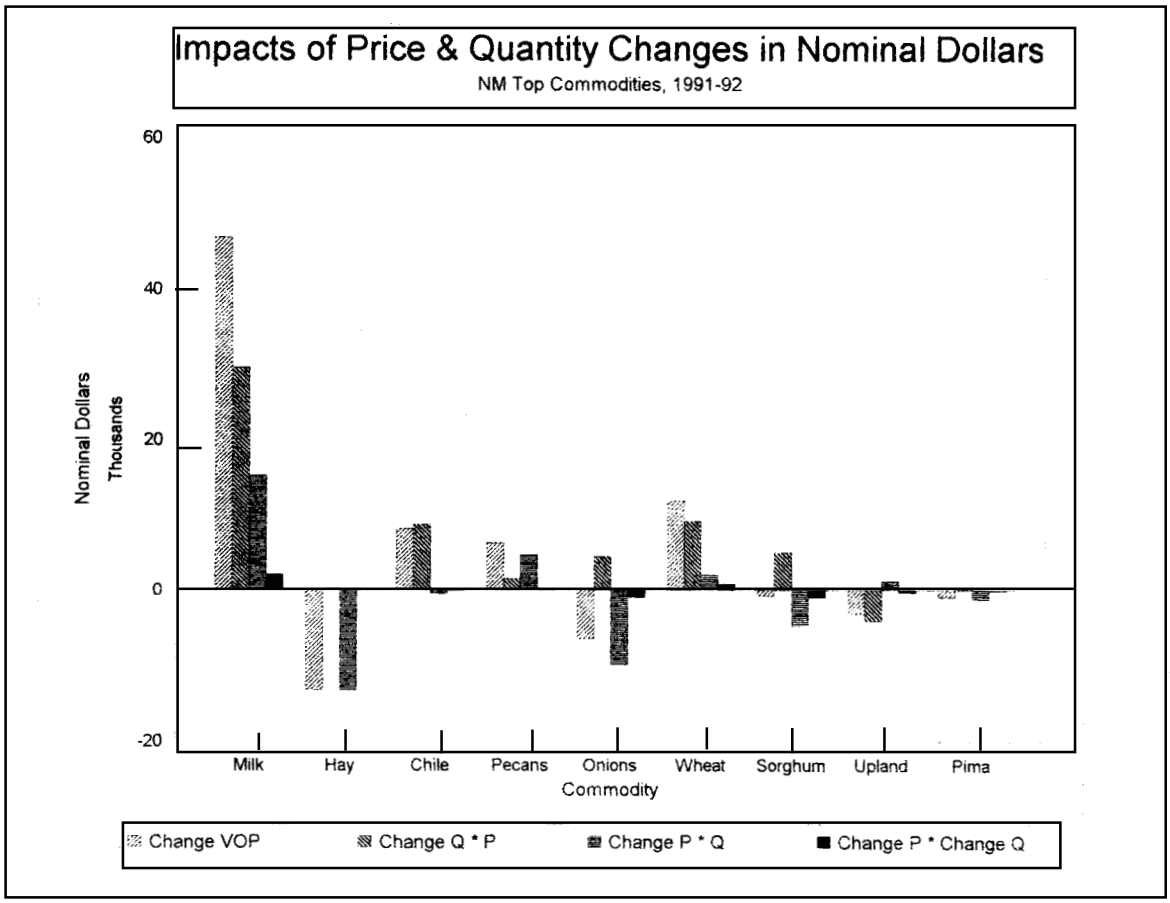
[b]The category includes different prices for different types of cattle. The different prices and price movements preclude the determination of consistent values.

[c]Data are not reported for units; therefore, these calculations are not possible.

[d]Numbers in parentheses are negative numbers.

CROP (Unit)	Δ Price 1991-1992	Δ QUANTITY 1991-1992	Δ VOP 1991-1992 ($1000)	Δ QUANTITY * PRICE ($1000)	PRICE * Δ QUANTITY ($1000)	Δ QUANTITY * PRICE ($1000)
Milk - Wholesale (CWT)	$0.80 (a)	2,590,000	$46,798	$29,526	$15,200	$2,072
Hay (ton)	($9.50)	1,000	($13,203)	$107	($13,300)	($10)
Chile (ton)	($10.00)	6,846	$8,160	$8,694	($466)	($68)
Pecans (pound)	$0.16	1,000,000	$6,280	$1,480	$4,640	$160
Onions (CWT)	($3.40)	289,000	($6,458)	$4,422	(9,897)	($983)
Wheat (bushel)	$0.25	3,200,000	$11,920	$9,120	$2,000	$800
Sorghum (bushel)	($0.47)	2,100,000	($762)	$5,019	($4,794)	($987)
Cotton Lint - Upland (480 lb bale)	$19.20	(15,500)	($3,158)	($4,070)	1,210	($298)
Cotton Lint - Pima (480 lb bale)	($63.36)	700	($921)	$328	($1,204)	($44)

(a) numbers in parentheses are negative numbers



* Data and graphical presentation are for eight of the top ten commodities. The category cattle includes prices for different types of cattle; different prices and price movements preclude the determination of consistent values. Although greenhouse nursery ranks in the top 10, greenhouse nursery is a category, not a commodity; therefore, meaningful price and quantity data are not available.

Fig. 1. Data and graphical presentation of price and quantity changes in nominal dollars, NM top commodities, 1991–92.

in VOP resulting from the quantity effect. None of the nine commodities had negative results for both the price and quantity effects. For all commodities, the change in VOP resulting from the interaction effect is the smallest of the three change components. The interaction effect is positive in three cases (wholesale milk, pecans, and wheat) and negative in six cases (hay, chile, onions, sorghum grain, Upland cotton, and Pima cotton).

Constant Dollar Comparisons

The relative impacts of price and quantity changes on VOP in constant dollars are shown in table 16. For four of the nine commodities analyzed, ΔVOP in constant dollars is positive. For four of the nine commodities, the change in VOP produced by the quantity effect was greater in absolute terms than the change resulting from the price effect. The change to constant dollar values did not change the importance of market price over production and quantity marketed in the determination 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 eight of the nine commodities. The price effect was positive for four of the nine commodities. The interaction effect was positive for two of the nine commodities. In three cases (wholesale milk, pecans, and wheat), the price and quantity effects were both positive. In one case (chile), the positive change in VOP from the quantity effect offsets all the negative change in VOP from the price effect. In two cases, (onions and sorghum grain), the positive change in VOP from the quantity effects offsets at least 40% of the negative change in VOP from the price effects. In one case (Upland cotton) where price effect is positive and quantity effect is negative, the positive change in VOP from the price effect offsets only 15.90% of the negative change in VOP from the quantity effect. In constant value terms, none of the nine commodities had negative values for both the quantity and price effects. For all commodities, the interaction effect is the smallest of the three change components. The interaction effect is positive in three cases (wholesale milk, pecans, and wheat) and negative in six cases (hay, chile, onions, sorghum grain, Upland cotton, and Pima cotton).

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Table 16. Relative impacts of price and quantity changes on value of production for New Mexico's top ten commodities in constant dollars (1990 = 100), 1991–1992.

Crop (unit)	1992 Price[a] per unit (1990 = 100)	1992 Quantity[a]	1992 Value of production ($1,000) (1990 = 100)	1991 Price[a] per unit (1990 = 100)	1991 Quantity[a]	1991 Value of production ($1,000) (1990 = 100)	Δ Price[d] 1991–1992 (1990 = 100)	Δ Quantity 1991–1992	Δ VOP 1991–1992 ($1,000) (1990 = 100)	Δ Quantity price ($1,000) (1990 = 100)	Δ Price quantity ($1,000) (1990 = 100)	Δ Quantity Δ price ($1,000) (1990 = 100)
Cattle and calves[b]												
Milk—wholesale (cwt)	$11.30	21,590,000	$243,921	$10.90	19,000,000	$207,148	$0.40(d)	2,590,000	$36,773	$28,238	7,511	$1,024
Hay (ton)	$90.29	1,401,000	$126,497	$102.33	1,400,000	$143,263	($12.04)	1,000	($16,766)	$102	(16,857)	($12)
Chile (ton)	$1,166.83	53,475	$62,396	$1,214.58	46,629	$56,635	($47.75)	6,846	$5,762	$8,315	(2,227)	($327)
Pecans (pound)	$1.52	30,000,000	$45,562	$1.42	29,000,000	$41,047	$0.10	1,000,000	$4,515	$1,415	2,996	$103
Greenhouse nursery[c]												
Onions (cwt)	$11.02	3,200,000	$35,264	$14.63	2,911,000	$42,595	($3.61)	289,000	($7,331)	$4,229	(10,515)	($1,044)
Wheat (bushel)	$2.87	11,200,000	$32,153	$2.73	8,000,000	$21,805	$0.15	3,200,000	$10,348	$8,722	1,161	$464
Sorghum (bushel)	$1.78	12,300,000	$21,870	$2.29	10,200,000	$23,314	($0.51)	2,100,000	($1,444)	$4,800	(5,178)	($1,066)
Cotton lint												
Upland (480 lb bale)	$260.93	47,500	$12,394	$251.10	63,000	$15,819	$9.82	(15,500)	($3,426)	($3,892)	619	($152)
Pima (480 lb bale)	$374.72	19,700	$7,382	$447.58	19,000	$8,504	($72.86)	700	($1,122)	$313	(1,384)	($51)

[a]Sources for price and quantity data:
Milk—wholesale, *New Mexico Agricultural Statistics*, 1993, p. 37.
Hay, *New Mexico Agricultural Statistics*, 1993, p. 50.
Chile, *New Mexico Agricultural Statistics*, 1993, p. 68.
Pecans, *New Mexico Agricultural Statistics*, 1993, p. 63.
Onions, *New Mexico Agricultural Statistics*, 1993, p. 67.
Wheat, *New Mexico Agricultural Statistics*, 1993, p. 48.
Sorghum, *New Mexico Agricultural Statistics*, 1993, p. 52.
Cotton, *New Mexico Agricultural Statistics*, 1993, pp. 56–58.

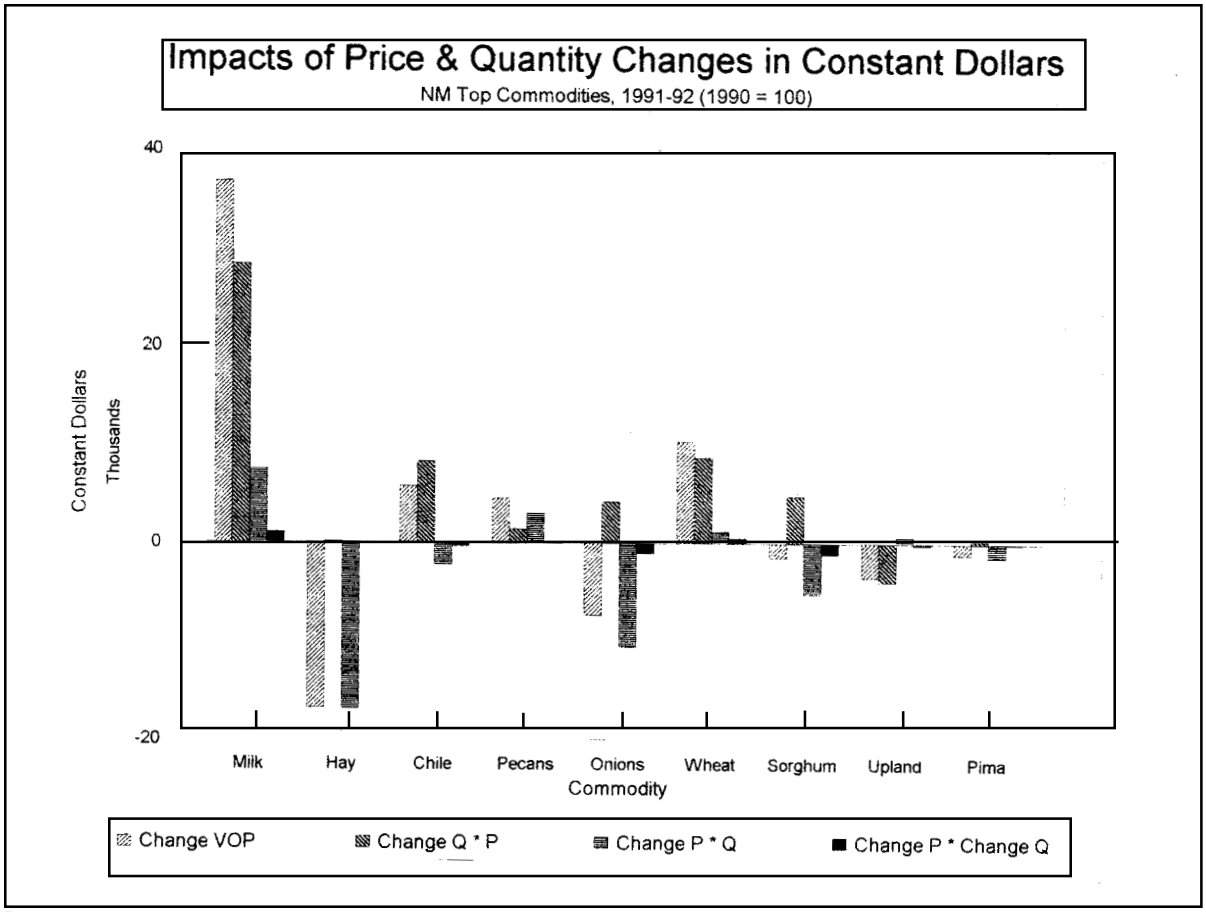
[b]The category includes different prices for different types of cattle. The different prices and price movements preclude the determination of consistent values.

[c]Data are not reported for units; therefore, these calculations are not possible.

[d]Numbers in parentheses are negative numbers.

CROP (Unit)	Δ Price 1991-1992 (1990 = 100)	Δ QUANTITY 1991-1992	Δ VOP 1991-1992 ($1000) (1990 = 100)	Δ QUANTITY * PRICE ($1000) (1990 = 100)	Δ PRICE * QUANTITY ($1000) (1990 = 100)	Δ QUANTITY * Δ PRICE ($1000) (1990 = 100)
Milk - Wholesale (CWT)	$0.40 (a)	2,590,000	$36,773	$28,238	7,511	$1,024
Hay (ton)	($12.04)	1,000	($16,766)	$102	(16,857)	($12)
Chile (ton)	($47.75)	6,846	$5,762	$8,315	(2,227)	($327)
Pecans (pound)	$0.10	1,000,000	$4,515	$1,415	2,996	$103
Onions (CWT)	($3.61)	289,000	($7,331)	$4,229	(10,515)	($1,044)
Wheat (bushel)	$0.15	3,200,000	$10,348	$8,722	1,161	$464
Sorghum (bushel)	($0.51)	2,100,000	($1,444)	$4,800	(5,178)	($1,066)
Cotton Lint - Upland (480 lb bale	$9.82	(15,500)	($3,426)	($3,892)	619	($152)
Cotton Lint - Pima (480 lb bale)	($72.86)	700	($1,122)	$313	(1,384)	($51)

(a) numbers in parentheses are negative numbers.



* Data and graphical presentation are for eight of the top ten commodities. The category cattle includes prices for different types of cattle; different prices and price movements preclude the determination of consistent values. Although greenhouse nursery ranks in the top 10, greenhouse nursery is a category, not a commodity; therefore, meaningful price and quantity data are not available.

Fig. 2. Data and graphical presentation of price and quantity changes in constant dollars (1990 = 100), NM top commodities, 1991–92.

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 by the amount of the change in the CPI, 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 purchasing power of the New Mexico farm and ranch community. 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 income of the farm and ranch community 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[8]	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

Using the adjusted index number, conversion of the 1991 nominal dollar values use the following equation:

$$_{92}D_{1990} = (D_{1992} * 100)/107.9848$$

where: $_{92}D_{1990}$ = the 1992 dollar value expressed in 1990 dollars,and

D_{1992} = the 1992 nominal dollar value.

For example, total farm assets in 1992 were valued at $11,183.9 million in 1992 nominal dollars. To obtain the value in 1990 dollars:

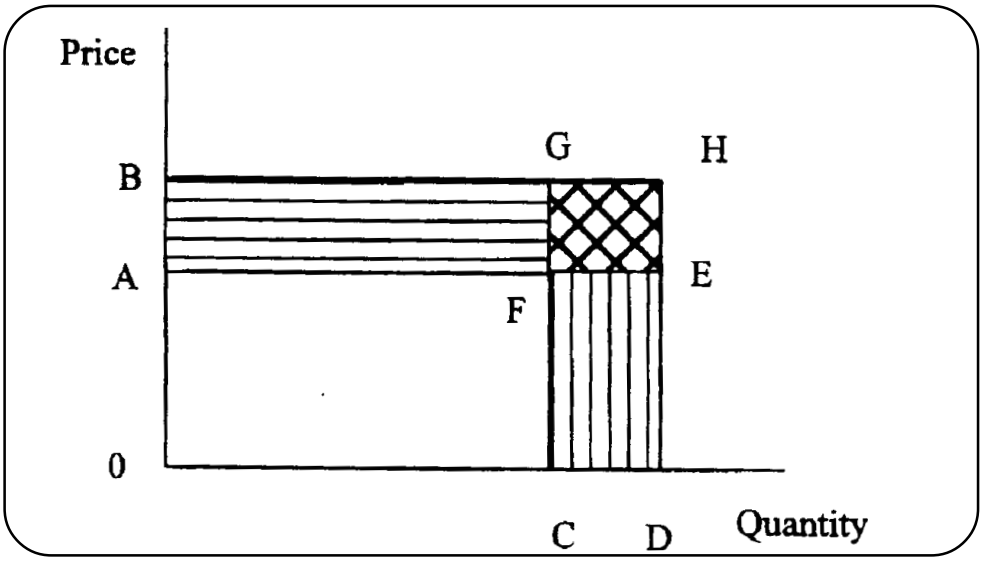
$$_{92}D_{1990} = (D_{1992} * 100)/107.9848$$
$$_{92}D_{1990} = (\$11,183.9 * 100)/107.9848$$
$$_{92}D_{1990} = \$10,356.9$$

Therefore, the total value of farm assets in 1992, when valued in 1990 dollars, is $10,356.9 million. This method is used to calculate the adjustments in 1991 and 1992 values throughout the report.

[8]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.D., 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)[9]. Four possible combinations of changes[10] are considered:

1. *Case 1*—an increase in price (↑P) * an increase in quantity (↑Q);
2. *Case 2*—(↑P) * a decrease in quantity (↓Q);
3. *Case 3*—a decrease in price (↓P) * (↑Q); and
4. *Case 4*—(↓P) * (↓Q).

The impacts of price and quantity changes on VOP can be illustrated using the figure shown above. The change in VOP (ΔVOP) is represented by three rectangles: ABGF, CFED, and FGHE. Area ABGF represents the part of ΔVOP that results from selling the original quantity at a new price[11]. Area CFED represents the part of ΔVOP that results from selling a new quantity at the original price[12]. Area FGHE represents the part of ΔVOP that results from selling the new quantity and the new price[13]. 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[14]. The three areas may be thought of as a price effect, a quantity effect, and an 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 slight misspecifications of the price and quantity effect. The interaction term represents the adjustment that is necessary to arrive at the true value of ΔVOP.

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 OAFC. In the current year, price increases to OB, quantity increases to OD, and VOP is represented by OBHD. In Case 1, all three ΔVOP components (ABGF, CFED , and FGHE) are positive.

[9]Throughout this appendix value of production will be used in the discussion rather than the phrase cash receipts and value of production.

[10]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 with 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.

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

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

[13]FGHE 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.

[14]In some analyses the value of FGHE is omitted due to the small impact on the total value of ΔVOP.

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 ΔVOP 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 OAFC. 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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