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TRENDS IN PURCHASING POWER AND COST OF PRODUCTION OF FRUITS

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MICHIGAN STATE COLLEGE
Of Agriculture and Applied Science

SECTIONS OF HORTICULTURE AND ECONOMICS

East Lansing, Michigan

TRENDS IN PURCHASING POWER AND COST OF PRODUCTION OF FRUITS*

G. N. MOTTS

The orchard or vineyard owner faces the possibility of changes in the margin of unit profits as surely as any other producer, but, unlike most industrial and some types of agricultural producers, he is not able to make quick adjustments in either the volume or the kind of production in which he is engaged. It is all the more necessary, then, that those now engaged in this form of production, as well as those who may contemplate such an enterprise, have available information that may aid them to adjust their plans to the conditions of the present and the future, as far as the future may be anticipated.

An attempt to record the changes that have occurred in the margin of profit per unit requires the study of two factors: (1) the cost in terms of goods and services consumed or employed in production during the period of years studied and (2) the quantity of goods and services that can be obtained in exchange for a unit of the commodity from time to time. In order to record the changes in the prosperity of the grower more fully, the changes in the number of units produced and sold must also be considered, as the net income of the producer is the product of his unit margin of profit and the number of units sold.

Purpose

The purpose of this study is to record the changes that have occurred in the cost of production and purchasing power of some of the fruits of major importance in the United States. This purpose includes more specifically:

1. Assembling data on costs of production of different important fruits and noting changes in their trends from decade to decade;
2. Assembling data on prices of these several fruits and deriving their changes in purchasing power;
3. Comparing the changes in the purchasing power of the selected fruits with one another and, secondarily, with those of four agricultural commodities; butter, beef cattle, hogs, and wheat, and noting changes in trends;
4. Presenting some of the factors involved in the changes in costs of production and purchasing power of the fruits;
5. Sketching broadly the changes in the profitableness of growing some of the more important fruits.

Materials

The fruits included in this study are apples, pears, peaches, plums, cherries, grapes, oranges, and grapefruit. No attempt has been made to

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trace changes in the cost of production of the four agricultural staples and of some of the fruits, in the former case because it lay outside the field of the study, and in the latter case because of insufficient data. Most of the general material and specific fruit and agricultural commodity prices were drawn from files of the agricultural magazines, especially prior to 1914, as follows:

American Agriculturist.....	Vols. I-XCVII	1843-1897
American Farmer.....	" I-XII	1819-1830
	" XXXIX-XLII	1857-1861
	" LVIII-LX	1876-1878
Country Gentleman.....	" I-XCIX	1853-1929
Genesee Farmer.....	" III	1833
	" V-IX	1838-1839
(New Genesee Farmer).....	" I	1840
New Series.....	" 3	1842
	" 10	1849-1850
	" 18-20	1857-1859
	" 25-26	1864-1865
Michigan Farmer.....	" III	1845-1846
	" VII-XVI	1849-1858
Second Series.....	" 2	1863
Third Series.....	" I-II	1870-1871
	" VII-CLXXII	1876-1929
New England Farmer.....	" X-XIII	1831-1834
	" XVIII-XXII	1840-1842
	" IX-XV	1857-1863
New Jersey Farmer.....	" III-VI	1857-1861
Ohio Cultivator.....	" XIII-XVI	1857-1861
Prairie Farmer, New Series.....	" XIV-XXI	1854-1868
	" 39-58	1868-1886
Rural New Yorker.....	" II-LXXXVIII	1851-1929
Valley Farmer.....	" X-XIII	1857-1861
Wisconsin Farmer.....	" IX-XVIII	1857-1866

The publications of the United States Department of Agriculture, such as the Yearbooks, departmental bulletins, market reports, and similar source materials supplied additional data. A number of experiment station bulletins furnished further material. General horticultural books served as sources of information and aided in the interpretation of results.

Methods

Collection of Data—Because most of the prices quoted in the periodicals and other publications were wholesale, they have been used as the basis of the purchasing power studies, though in some instances prices paid to the producer have been used because the former were not available. Since the purchasing power is computed from price indices, the discrepancy between the two is for the most part negligible. The prices of the four agricultural staples have been widely recorded for considerable periods of years, but it was possible to extend some of these price series by the use of the same "Market" sections of the magazine files as were used for the fruit prices.

Grades—It was necessary to decide arbitrarily which of the particular grades of the respective commodities were to be used. Not only are more grades employed today for most of the commodities than in the past, but

different names have been applied to the same grade at different times and in different markets. Grades are now more accurately defined and, consequently, great care was necessary in compiling the prices that the same or equivalent grade be used throughout each price series. To illustrate the problem presented in varying degrees by each of the commodities, some of the classifications encountered in apple grades are mentioned. Apples were quoted as "Apples, \$— to \$— per barrel or per bushel," "Dessert and Cooking," "Best and Inferior," "Table and Common," "Good and Common," "Choice, Fall, and Common," "Sour, Sweet, and Common," "Choice, Good, Shipping, and Common," "Extra Dessert, Prime, Medium, and Common," and finally, either "Extra Fancy, Fancy, A, B, and Commercial" or "Fancy, U. S. No. 1, and U. S. No. 2." As time went on, individual varieties were named and the range of prices indicated several grades. If an average of all varieties could not be made from the price reports, or even of the few most important varieties, a grade was selected for the graded fruit and the price of that grade was used. An effort was made to select a grade that would represent the bulk of the sales of each commodity.

Specific grades were quoted for each of the four agricultural commodities throughout the study, and a few grades were generally mentioned for apples, pears, and peaches by 1880. Thus, for the last 50 years, these commodities have usually been recorded by comparable grades. The other fruits were not generally as well graded. It was possible, whenever a change in grade nomenclature occurred, to compare the prices of each of the grades in both classifications and thus to establish the particular grades in the new nomenclature comparable to those of the old. The background of information supplied by the source materials themselves aided considerably in making these evaluations or adjustments between grade classifications. Finally, while recognizing the limitations of the material and the methods employed in its collection, it seems that the price series are compiled with an accuracy comparable to the all-commodity index, especially prior to 1890. The particular grade or grades used for each of the commodities follow.

Apples, Pears, and Peaches: The purpose was to secure the prices paid for good, first-grade fruit. Such fruit would probably be graded today as U. S. No. 1 or as A grade in New York and Michigan or as Choice to Fancy in the box apple states. It is not a fancy or extra fancy grade as those grades are defined in the box apple states or in the New England states or Michigan. It is, however, distinctly better than the B grade or U. S. No. 2, which is essentially a cooking grade.

Sour cherries: As specific grades were rarely mentioned, the prices were averaged when only a single range was quoted. When two or three qualities were indicated, the better of the two or the middle one of the three was selected.

Plums: The prices of the domestic varieties were used and were collected in the same manner as the cherry prices.

Grapes: The prices are for Concord, except in the case of California data, and were compiled in the same way as the cherry prices.

Oranges and grapefruit: The prices were compiled by the Bureau of Statistical and Historical Research of the U. S. D. A. and are the average prices of all sales on the markets used in the study.

Butter: The quality called at various times "Tub," "Table," "Choice," or "Creamery 1sts" was used.

Beef cattle: The prices are for live weight per hundred pounds at the stockyards for "Good-Choice" or "Good-Prime" cattle. At times, only the

average of all sales was available and in these cases a slight amount was added to make them comparable to the rest of the series.

Hogs: The prices are for live weight per hundred pounds at the stockyards for "Good-Prime" at New York and "Heavy" at Chicago.

Wheat: The average for all kinds of wheat in New York and Virginia, and for "No. 1 Northern Spring" at Chicago from 1866 to 1893 and for "No. 2 Red Winter" from 1894 to 1929 was used.

Units of Sale—During the years covered by the magazine files from which the bulk of the fruit prices and costs were obtained, the fruits were handled in different sizes and types of containers. Apples have been quoted by the barrel, bushel, and box; pears by the barrel, bushel, and box; peaches by the bushel, carrier, and basket; plums by the bushel and basket; cherries by the bushel, crate, basket, quart, and pound; grapes by the ton, bushel, basket, and pound; oranges and grapefruit by the 1,000, barrel, half barrel, large box, small box, and box. Notes in the price and cost quotations or in articles in other parts of the magazines permitted the conversion of all these various units to the standard units now used, viz.: apples, pears, peaches, and plums by the bushel, cherries and grapes by the pound, and oranges and grapefruit by the box, using the legal or usual weights of the particular fruits in the respective containers.

Season of Price Data—The season or period of time over which the prices were averaged to secure a figure for each particular year was so far as possible the "home-grown" season in which the bulk of the crop of that region moved to market. The purpose was to eliminate as much as possible the shipments from considerable distances. The seasons used for the particular fruits on the New York and Detroit markets are as follows: The apple prices on both markets are for October and November; the peach prices for September in New York and for August and September in Detroit; the pear prices on both markets are for September and October; the plum prices are for the last half of August and the first half of September, varying somewhat with the years, on both markets; the July cherry prices are used on both markets; the grape prices are for October on both markets. The orange and grapefruit seasons in both California and Florida start in the fall and continue into the spring and the price of the 1890-1891 crop, for example, is listed in this study as the 1891 price.

Since the seasonal trends in the prices of the agricultural staples were rather uniform from year to year, the prices for the first of January, April, July, and October were averaged to secure the year's price.

Treatment of Data—The period 1910-1914, inclusive, has been selected as a base for comparison of prices, because most of the agricultural production and price indices have been made with this base.

The yearly price indices divided by the all-commodity wholesale price (indices) of the Bureau of Labor Statistics are used in this study in calculating the purchasing power of the commodities. Because the weighted index of wholesale prices has not been computed prior to 1890, the unweighted series furnished by the U. S. Bureau of Labor Statistics beginning with the year 1801 is included in the Appendix. Although 1926 is the base of the index at present, it is here converted to the 1910-1914 base, and is so given in the Appendix. A part of the letter of Mr. Charles E. Baldwin, Acting Commissioner of Labor Statistics, is quoted to show the computation of the index; it also indicates that the price series of the commodities compiled in this study are probably as accurate as the index itself, especially prior to 1890:

"The regular weighted series of index numbers of the Bureau of Labor Statistics begins with 1890.

"The index numbers from 1801 to 1840 are arithmetic averages of unweighted relative prices of commodities, as published in Appendix F, of Bulletin No. 367 of this bureau. They were originally compiled by Alvin H. Hansen of the University of Minnesota with 1825 as the base year, but are here converted to the 1926 base.

"The index numbers from 1841 to 1889 are from "Wholesale Prices, Wages, and Transportation" (Senate Report, No. 1394, Finance Committee, 2nd Session, 52nd Congress, Part 1, page 91). Originally these figures were computed with 1860 as 100, but are also converted to the 1926 base for the purpose of comparison.

"In using these index numbers it should be borne in mind that the figures here shown are not strictly comparable, since they are based on different lists of commodities in different markets and are, moreover, unweighted for the years prior to 1890. It is believed, however, that they reflect with fair degree of accuracy wholesale price changes in general over the whole period."

A retail index would have been preferable, as the growers buy most of their goods at retail prices, but the retail all-commodity index of the Bureau of Labor Statistics only goes back to 1890. It seemed more accurate to use the wholesale index than a hypothetical one based upon the difference between the wholesale and retail price indices since 1890. Although there is a spread between the wholesale and retail prices, the wholesale and retail indices are series of percentages rather than of absolute values. For this reason it appears that the wholesale price index series permits a purchasing power series which closely approximates the actual purchasing power conditions that have prevailed.

When the purchasing power series had been calculated, they were plotted on the semi-logarithmic scale and the trend lines were fitted to the plotted data by the method of least squares. The semi-logarithmic scale shows the absolute changes as well as the changes in the rate of change and thus is more likely than the arithmetic scale to imply that the future direction of the trend line is as likely to change as to remain as it is, and that if it does change its direction, the degree and duration of the change cannot be exactly predicted. In the series of charts that comprise the most essential part of the purchasing power study, there appears once for each commodity a broken line that indicates the purchasing power from year to year accompanied by the trend line of that series. Other charts compare the trends of purchasing power of two or more of the fruits. Because the formula used in fitting the trend line requires an unbroken sequence of numbers, the graphs extend back only to the years beginning an unbroken sequence. In a number of cases, data were available for scattered years prior to the year in which the graph was started. Those price indices and purchasing power numbers are included in the tables in the Appendix from which the graphs are constructed. The tables are intended also to afford a convenient reference to the index numbers for any one year, as the values can be read only approximately from the graphs.

Presentation of Data

A presentation of all the detailed data, even in tabular form, that were collected and computed on yields, grades, production costs, prices and purchasing power would make the text proper too bulky. Some of the more im-

portant and representative figures are included in the Appendix, and some are presented in the text in graphic form. What appears here in the main part of the text is more in the nature of a brief discussion or interpretation of the records in terms of present-day conditions.

Apples

Yields—A number of recent experiment station studies (4, 9, 30, 40, 41, 58, 82, 83) report yields which, when compared with the references on yields in the old magazines, indicate that there has been little or no change in yields per tree in orchards with comparable care. Trees in commercial orchards receive better care than in farm orchards. The increase in the percentage of trees in commercial orchards has made possible approximately the same size crop with a smaller total number of apple trees. In some of these studies a slight decline appears, probably due to increased age combined with close planting. There has not been a noticeable upward trend in the yield per tree in commercial orchards for the country as a whole.

Grades—Extremely little information is available on the percentages of apple crops sold in different grades in the earlier years of the study. Less attention was paid to grading and the specifications of a grade were more likely to change from season to season than the percentage sold in each grade. A number of recent studies (7, 9, 30, 34, 37, 40, 58, 59, 74, 82, 117) show that the portion of the crop sold above Grade B or U. S. No. 2 generally constitutes about 50 per cent of the crop. In the case of the better growers or better varieties or both this portion of the crop may rise some years to about 75 per cent. The proportion of cider apples, windfalls, and culls is usually given as from 10 to 20 per cent. The percentage of culls has been markedly reduced since the advent of spraying, but there are so few earlier references on this point that the exact change cannot be well determined. The B grade or U. S. No. 2 might be called a buffer grade, frequently combined with the A grade or U. S. No. 1 in years of small crops and with the culls in years of large crops.

Cost of Production—Any attempt to estimate the cost of production for the country at large must necessarily be in general terms. The costs of picking, grading, packing, and selling apples have increased in their proportion to the selling price and, taken together, they now constitute from one-third to one-half of the f. o. b. price (6, 9, 34, 42). The costs of production have also been markedly increased by larger fixed expenses, spray programs, fertilizer and cover crop treatments, higher prices and larger amounts of labor and materials, and the increasing necessity of offering a more carefully graded product in better packages.

Many fragmentary accounts, when pieced together and evaluated, indicate that the costs of production for the country at large have been substantially as follows: from 1850-1875, about \$1.00 per barrel; from 1875-1900, from \$1.00 to \$1.25 per barrel; from 1900-1914, increasing to a range of from \$1.25 to \$1.50 per barrel; and from 1914-1930, increasing to a range of from \$2.00 to over \$3.00 per barrel, although somewhat less now (1930) than in 1919-1920. In the 1914-1930 period the larger part of the supply was produced at a cost of from \$2.50 to \$2.75. As the amount of goods secured in exchange for a sales unit of a fruit in the base period of 1910-1914 is used in this study to measure the purchasing power of similar units in other years, so the 1910-1914 dollar must be used to express the com-

parable costs of production. When reduced to this basis, the above costs become as follows: from 1850 to 1875, about \$0.85 per barrel; from 1875 to 1900, from \$1.06 to \$1.33 per barrel; from 1900 to 1914, increasing to between \$1.33 and \$1.61 per barrel; from 1914 to 1930 between \$1.27 and \$1.91, with the larger part of the supply produced at a cost of \$1.50 to \$1.75. In terms of goods the cost of apples is at present from one and a half to two times as great as in the period from 1850 to 1875.

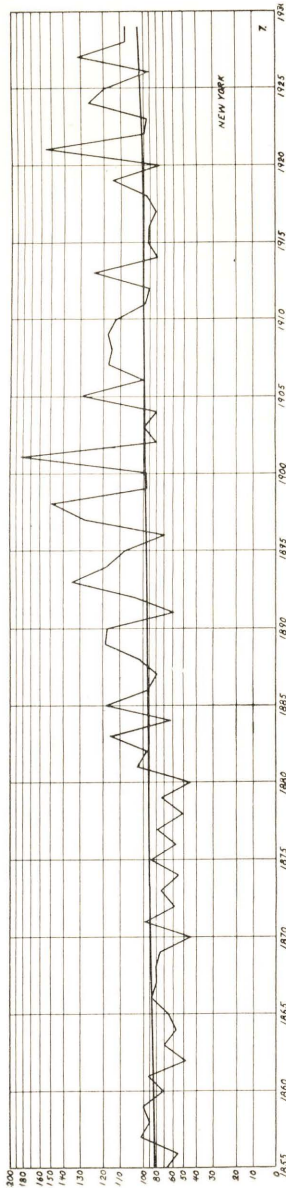


Fig. 1. Purchasing power of apples in New York City, 1855-1929. St. E. #25.40. See Table 16.

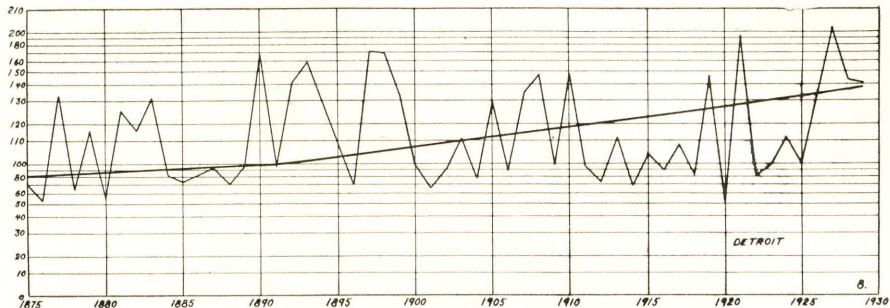


Fig. 2. Purchasing power of apples in Detroit, 1875-1929. St. E. \pm 53.84. See Table 16.

Purchasing Power—A record of the purchasing power of apples on several city markets and in Virginia is presented in Figures 1 to 5, inclusive. They are based on price data for New York (2, 35, 43, 77, 106, 109), Detroit (60, 94), Boston (67, 75, 88), Jonesboro, southern Illinois (69), and

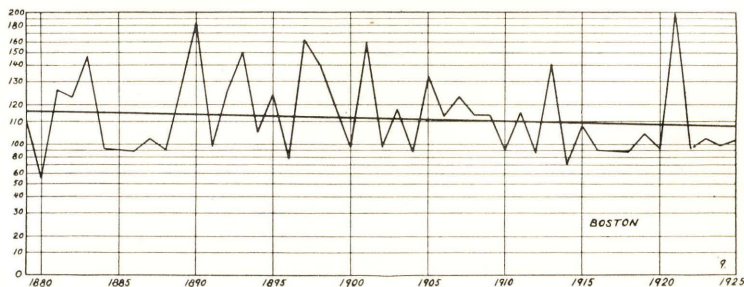


Fig. 3. Purchasing power of apples in Boston, 1879-1925. St. E. \pm 28.51. See Table 16.

Virginia (71). The trend of apple purchasing power has been downward in Boston, horizontal in Virginia, very slightly upward in New York and Jonesboro, and slightly upward in Detroit. The degree of slope of the trend lines of the graphs included in this study is described according to the scale of measurement indicated in the footnote below.*

*The value of "b", in the standard straight line trend formula, $y = a + bx$, is a measure of the slope of the trend line. If the trend is downward, "b" is negative, if the trend is upward, "b" is positive. As described in this study:

- If "b" equals 0, the trend is considered horizontal
- If "b" equals 0 to .5, the trend is considered very slight
- If "b" equals 1, the trend is considered slight
- If "b" equals 2, the trend is considered moderate
- If "b" equals 3, the trend is considered decided
- If "b" equals 4, the trend is considered very decided

Trends with values of "b" between these points are considered the type to which their "b" value is closest. Parabolic trends are considered as that one of the above types to which they are most closely comparable.

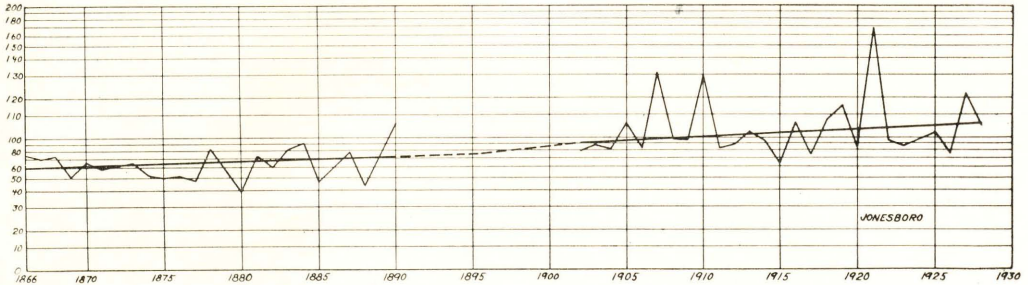


Fig. 4. Purchasing power of apples in Jonesboro, Ill., 1866-1890, 1902-1928. St. E. \approx 15.7, \approx 16.9. See Table 16.



Fig. 5. Purchasing power of apples in Virginia, 1867-1927. St. E. \approx 34.94.

An inspection of the graphs shows that there are two cyclical trends, although no effort was made to fit such curves. There is a short cycle of about 4 years and a longer cycle of about 14 years. There may be deviations of a year or so one way or another from the lengths stated, but in the majority of cases the peaks or troughs of the cycles occur with considerable regularity.

Similar records of the changes in the purchasing power of apples since 1910 have been computed for six of the more important or representative apple states as follows: New York (47, 89), Michigan (46, 94), and Virginia (48, 97) in Figure 6 and Colorado (45, 101), Missouri (96), and

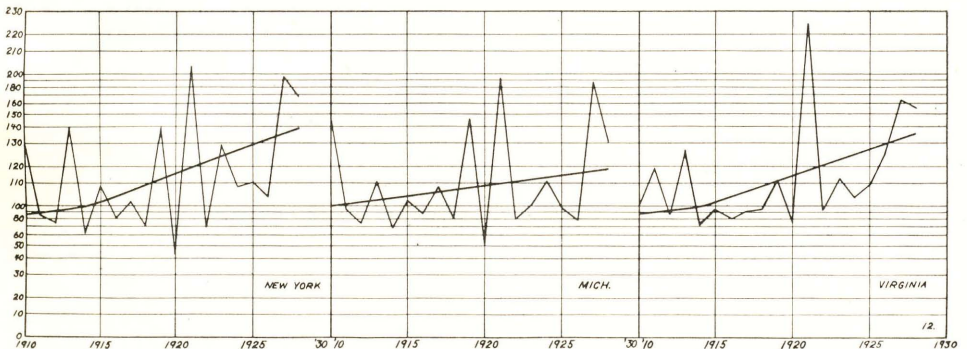


Fig. 6. Recent trends of apple purchasing power in New York, Michigan, and Virginia. St. E. \approx 38.95, \approx 32.40, \approx 32.40. See Table 17.

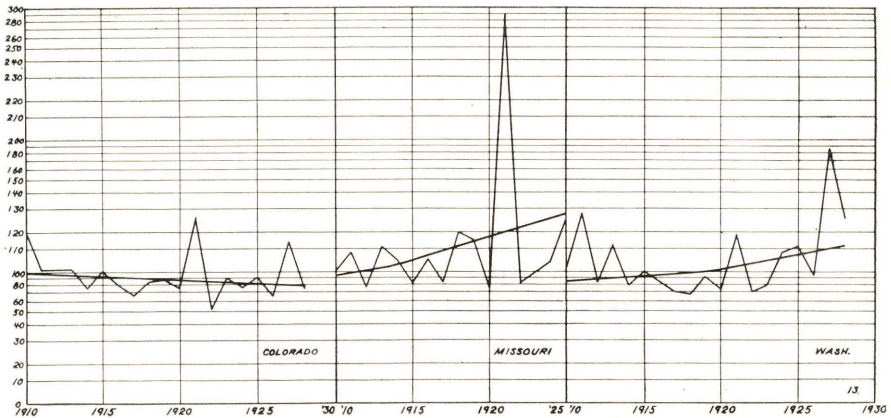


Fig. 7. Recent trends of apple purchasing power in Colorado, Missouri, and Washington. St. E. =18.16, =47.23, =26.55. See Table 17.

Washington (49, 102) in Figure 7. In these charts for recent trends the prices received by the growers, and not the wholesale prices, were used. The trend since 1910 has been slightly downward in Colorado, slightly upward in Michigan, moderately upward in Missouri and Washington and decidedly upward in New York and Virginia.

The change from month to month in the price of apples and consequently in their purchasing power is of interest, as it reflects the influence of apple storage. A comparison of the October and April price indices has been made by Scoville (82), beginning with 1889, but in order to show the monthly changes and to include a few years prior to the Civil War, Table 1 is presented. This table is computed from the wholesale prices per barrel of Rhode Island Greenings on the New York market (82). The index numbers are based on the five-year average prices for the respective months. The five-year averages of the all-commodity index numbers are included in the table to indicate the general price levels of the selected periods.

Table 1.—The average monthly wholesale price indices of Rhode Island Greening apples in New York City for selected years.

Month	1853-1858	1894-1899	1909-1914	1916-1921	1925-1930
September.....	67	65	69	80	85
October.....	74	63	73	72	84
November.....	80	77	86	93	94
December.....	100	94	95	96	101
January.....	101	103	99	106	106
February.....	108	112	101	114	109
March.....	126	122	107	114	111
April.....	118	141	118	113	94
May.....	111	124	128	131	115
June.....	114	.....	123	81	.....
All-Commodity Index Average.....	98.7	70.2	100.1	191.5	151.1

The data in Table 1 show that, relatively, the fall price has been rising toward the average season price and that the spring price has been declining slightly toward the average season price. This is what might be expected from an increase in storage facilities.

Pears

Purchasing Power—The changes in the purchasing power of pears on the New York (2, 77) and Detroit (60) markets are shown in Figures 8 and 9, respectively. The trend of purchasing power on the New York

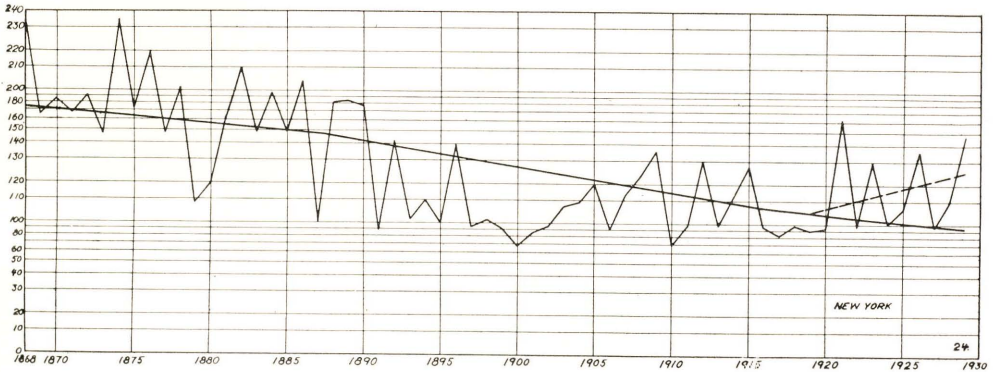


Fig. 8. Purchasing power of pears in New York City, 1868-1929. St. E. ± 34.81 . See Table 18.

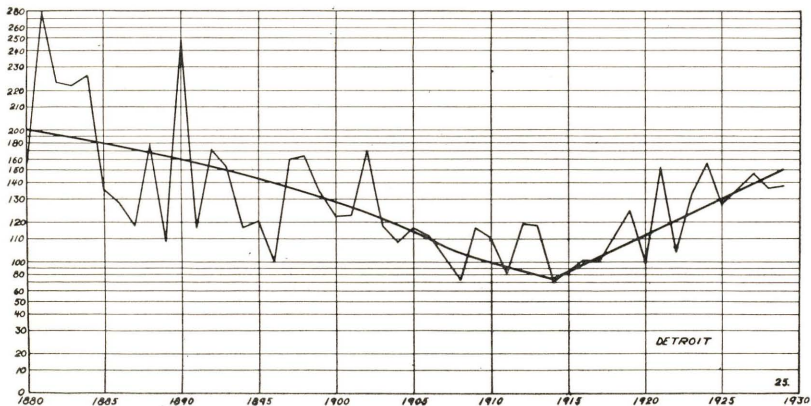


Fig. 9. Purchasing power of pears in Detroit, 1880-1929. St. E. ± 18.95 , ± 15.0 . See Table 18.

market might be considered to be more strongly downward than the trend line indicates until 1900 and slightly upward since then. The trend from 1919 to 1929 has been dotted as in some of the other charts.

The short cycle of purchasing power has been from 4 to 5 years on the New York market and from 3 to 4 years at Detroit. The longer cycles on these two markets have been about 13 and 10 years, respectively.

Figures 8 and 9 show that there has been a moderate downward trend in

purchasing power in New York and a decidedly downward trend in Detroit. Since 1914 the trend has been very decidedly upward in Detroit and since 1919 moderately upward in New York. The New York trend appears steeper than it really is mathematically, due to the fact that most of trend line lies within the zone of widely spaced lines on the scale, emphasizing the slope.

The recent changes in purchasing power of pears in three states are shown in Figure 10. The prices used are those received by the growers in New York (51, 90), Michigan (50, 95), and California (102). In New York the purchasing power has decidedly increased since 1910, while declining slightly in Michigan, and remaining practically unchanged in California.

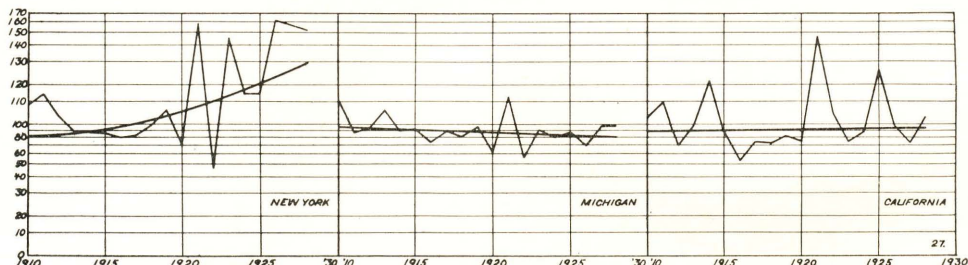


Fig. 10. Recent trends of pear purchasing power in New York, Michigan, and California. St. E. ± 38.55 , ± 14.42 , ± 22.82 . See Table 19.

Peaches

Yields—The accounts of peach yields have varied as widely as those of apple yields and it is equally difficult to say just what the averages have been. The evidence indicates, however, that between 1850 and the end of the century 200 to 250 bushels per acre was considered a “very good” yield, 125 to 150 bushels a “good” yield, and 90 to 100 bushels an “average” yield for commercial plantings. Since 1900, yields have been somewhat higher with “very good” yields of 250 to 300 bushels per acre, “good” yields of 175 to 200 bushels, and “average” yields of 125 to 150 bushels. The increase of 35 to 50 bushels per acre has been ascribed, among other factors, to more effective cultivation practices, lighter pruning, and the use of “P. D. B.” (5), but considerable increases are doubtless due to the more efficient management of larger orchards and the shift in locations with a larger number of trees in the better locations. The latter two factors apply particularly to commercial orchards. Since the life of a peach orchard is much shorter than that of an apple orchard, there can be a more rapid shift in plantings as the less favorable sites are discovered and then abandoned.

Cost of Production—The average costs of peach production per bushel for the various periods considered in this study lay for the most part within the following ranges: 1850-1875, from \$0.35 to \$0.40; 1875-1900, from \$0.40 to \$0.50; 1900-1914, from \$0.65 to \$0.75; 1914-1929, from \$0.85 to \$1.40, with the larger part of the crops produced within a range of from \$0.95 to \$1.05. When these costs are expressed in terms of the 1910-1914 dollar they become as follows: 1850-1875, from \$0.30 to \$0.34; 1875-1900, from \$0.42 to \$0.53; 1900-1914, from \$0.69 to \$0.80; 1914-1929, from

\$0.54 to \$0.89, with a narrower range of from \$0.60 to \$0.67 for the larger part of the crops. The cost of peach production at present is apparently twice or a little more than twice the cost from 1850 to 1875 when expressed in terms of goods. The increase in the cost per bushel would have continued after 1914, as in the case of apples, had there not been an apparent increase in the general average yield per acre.

Purchasing Power—The changes in the purchasing power of peaches on the New York (2, 77) and Detroit (60) markets are shown in Figures 11 and 12, respectively. Because an inspection of the New York graph sug-

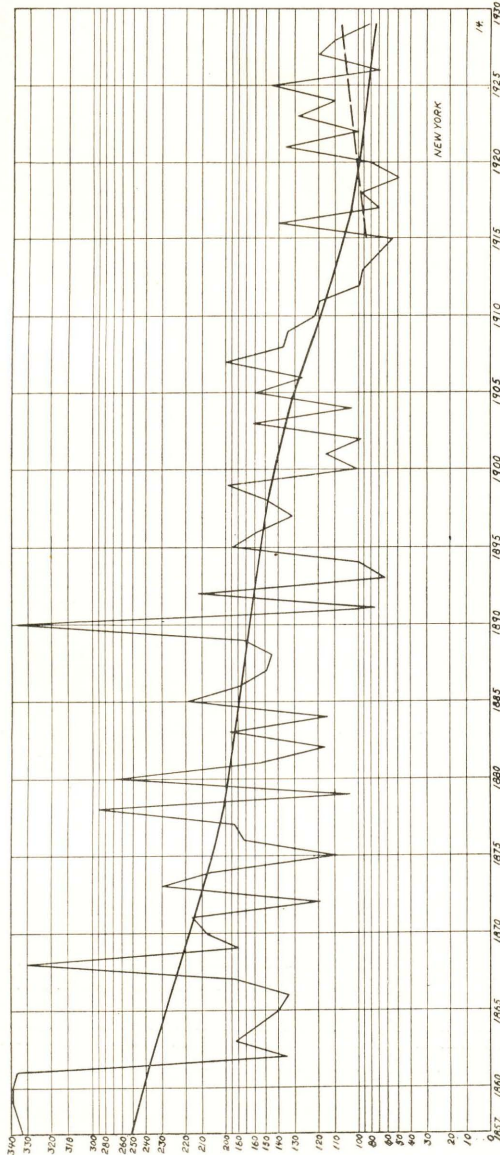


Fig. 11. Purchasing power of peaches in New York City, 1857-1929. St. E. = 60.02. See Table 20.

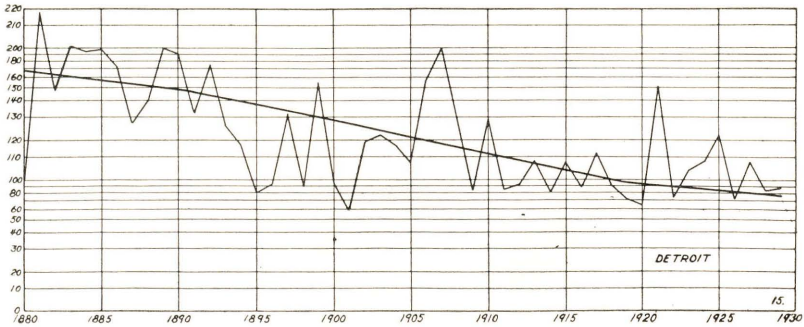


Fig. 12. Purchasing power of peaches in Detroit, 1880-1929. St. E. ± 31.98 . See Table 20.

gests that the purchasing power has been rising since 1915, the trend line since that date is added to Figure 11. The long time trend on the New York market has been decidedly downward, with a moderate rise since 1915, and the trend in Detroit has been moderately downward. The short cycle appears to be from four to five years on the New York market and about four years in Detroit. The longer cycle is about nine years long on both markets.

The trends of peach purchasing power since 1910 in some of the leading peach states, based on the prices to producers, are presented in Figures 13, 14, and 15. Figure 13 shows the trends in Georgia (52, 99) and North

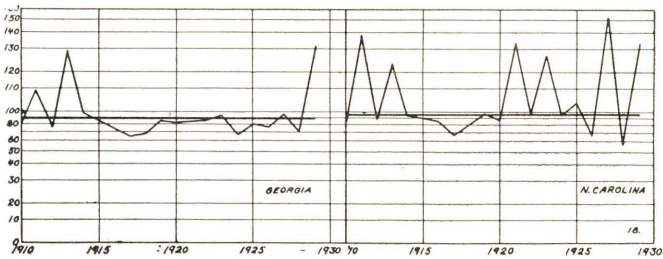


Fig. 13. Recent trends of peach purchasing power in Georgia and North Carolina. St. E. ± 27.48 , ± 26.30 . See Table 21.

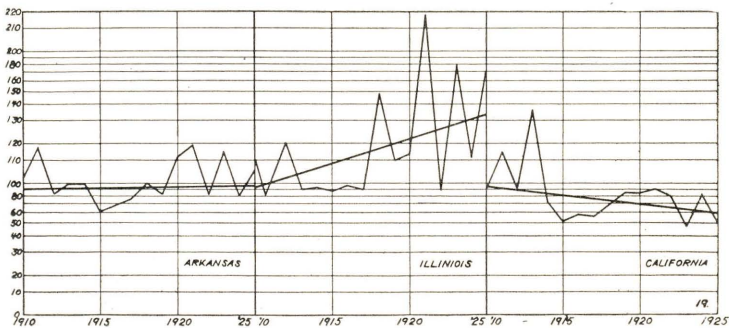


Fig. 14. Recent trends of peach purchasing power in Arkansas, Illinois, and California. St. E. ± 17.29 , ± 31.62 , ± 20.93 . See Table 21.

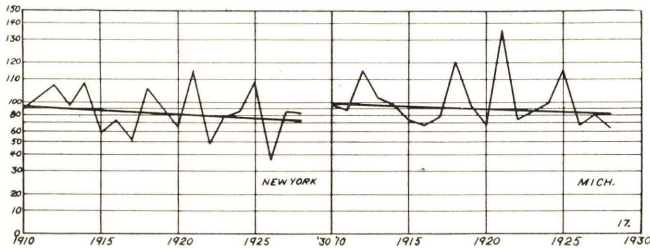


Fig. 15. Recent trends of peach purchasing power in Michigan and New York. St. E. ± 19.70 , ± 21.10 . See Table 21.

Carolina (54, 98); Figure 14, the trends in Arkansas (100), Illinois (93), and California (103), and Figure 15, those in Michigan (53, 94), and New York (55, 89). The recent trend of purchasing power has been moderately downward in California, slightly downward in New York, Michigan, and Georgia, very slightly upward in Arkansas and North Carolina, and moderately upward in Illinois.

Plums

Purchasing Power—The changes in the purchasing power of the Domestic varieties of plums (with some Japanese types probably included) on the New York (2, 77) and Detroit (60) markets are presented in Figures 16 and 17, respectively.

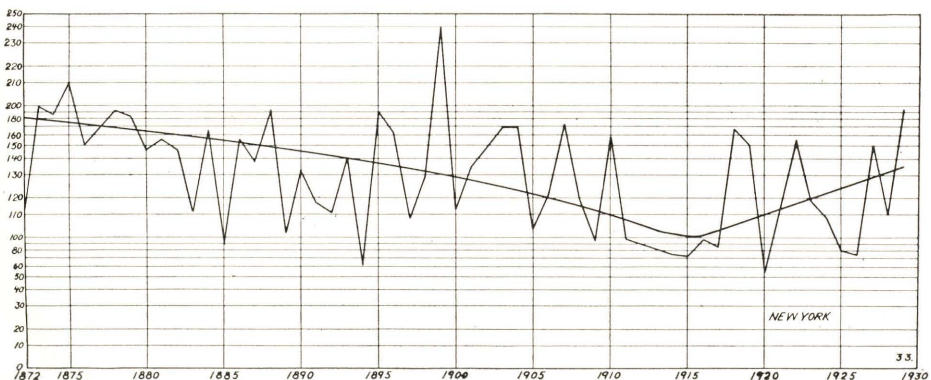


Fig. 16. Purchasing power of plums in New York City, 1872-1929. St. E. ± 42.63 , ± 37.66 . See Table 22.

The short cycle of purchasing power is about 5 years on both markets and the long cycle appears to be 12 and 11 years long on the New York and Detroit markets, respectively.

The purchasing power of plums has declined moderately in New York and very decidedly in Detroit, but since 1910 in Detroit and 1915 in New York the trend has been upward until in 1929 the level of 1895 was reached in New York and the level of 1890 was reached in Detroit.

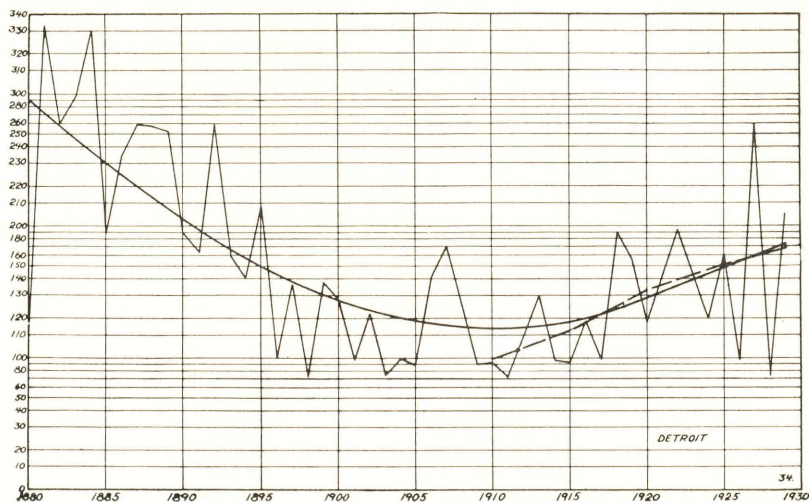


Fig. 17. Purchasing power of plums in Detroit, 1880-1929. St. E. ± 48.54 . See Table 22.

Cherries

Purchasing Power—Until about 1900 most of the sour cherries were sold as fresh fruit, but since that time an increasing proportion of the crops has been sold to canneries, and the cannery prices do not parallel very closely the fresh fruit prices on the New York and Detroit markets. Nevertheless, the changes in the purchasing power of fresh sour cherries on the New York (2, 77) and Detroit (60) markets are presented in Figures 18 and 19 for what they may be worth. In general they indicate a slight but continued downward trend in purchasing power.

The short cycle of purchasing power is about four years on both markets and the long cycle is apparently about 10 years long in New York and 9 years in Detroit.

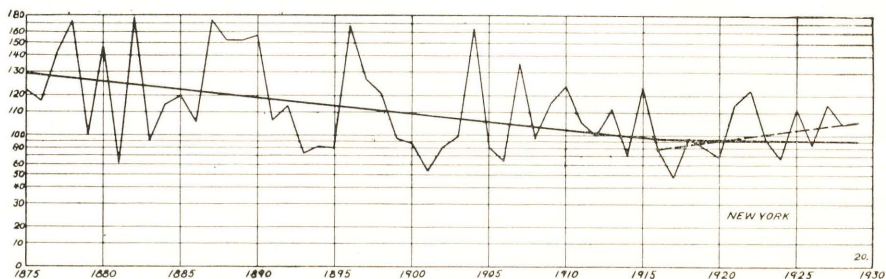


Fig. 18. Purchasing power of cherries in New York City, 1875-1929. St. E. ± 29.31 . See Table 23.

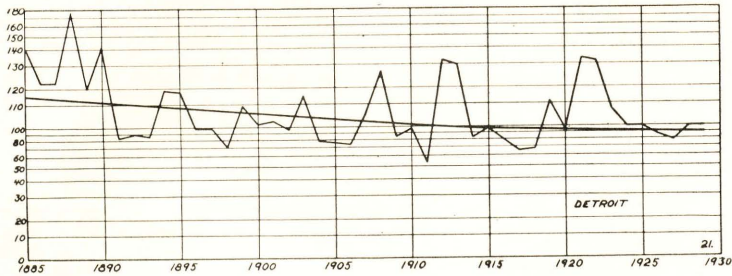


Fig. 19. Purchasing power of cherries in Detroit, 1885-1929. St. E. ± 23.02 . See Table 23.

Grapes

Yields—The available information when summarized indicates that there has been no material change in the yields per acre of the Eastern or Labrusca grapes. Only the Concord or similar Eastern varieties are used in this study with one exception, the recent trend of purchasing power of California grapes.

Purchasing Power—The changes in the purchasing power of Concord grapes in New York (2, 77, 107) and Detroit (60) are presented in Figures 20 and 21, respectively.

The decline in the purchasing power of the Concord grape on both the New York and Detroit markets has been more marked than that of any other of the deciduous fruits, being decidedly downward in New York and very decidedly downward in Detroit. In the latter city, however, there has been a moderate increase in the purchasing power since 1910, more particularly since 1920.

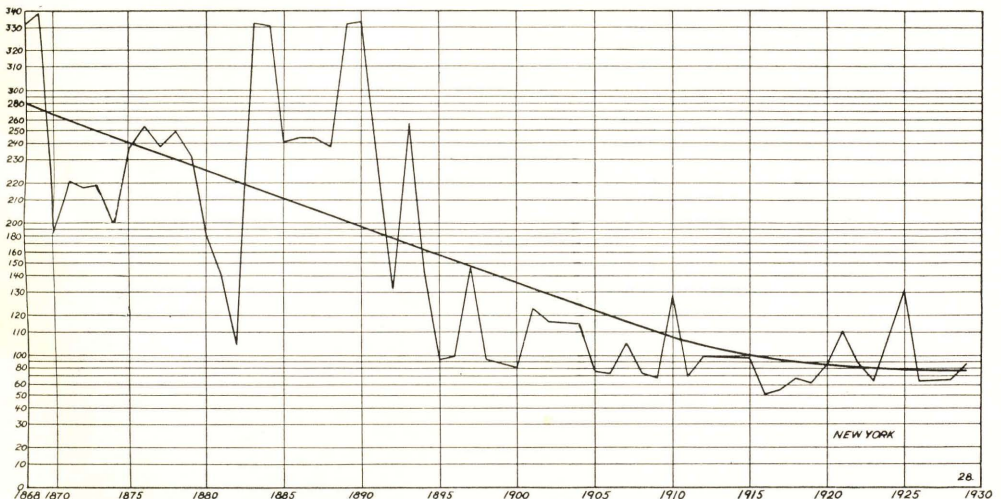


Fig. 20. Purchasing power of grapes in New York City, 1868-1929. St. E. ± 54.41 . See Table 24.

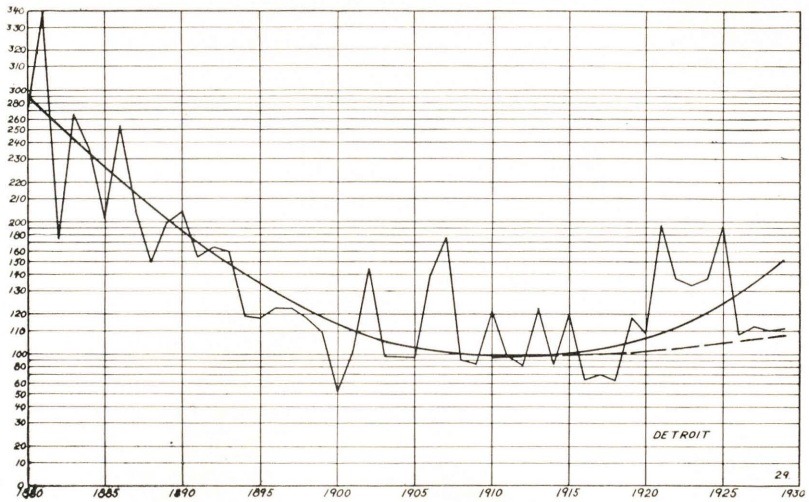


Fig. 21. Purchasing power of grapes in Detroit, 1880-1929. St. E. = 39.55. See Table 24.

The short cycle of purchasing power is from four to six years on the New York market and about five years at Detroit. The long cycle is about 13 and 10 years, respectively, for the two cities.

The more recent trends of the purchasing power of grapes in some of the more important grape states are presented in Figures 22 and 23, based on the prices to the producer. The California data are for the Vinifera varieties. Figure 22 shows the changes for Pennsylvania (92), Arkansas (100), and California (103), and Figure 23 shows the trends in New York (57, 90) and Michigan (56, 95). Although the Concord is the predominant variety in all these states, with the exception of California, the trends of purchasing power show considerable variation. The trend in California is the only one that has declined since 1910; the trend has been practically horizontal in Arkansas, slightly upward in Pennsylvania, and decidedly upward in New York and Michigan.

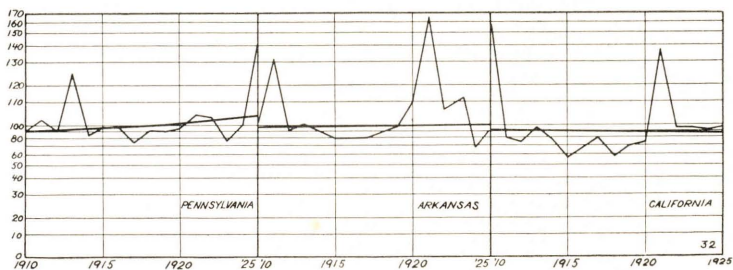


Fig. 22. Recent trends of grape purchasing power in Pennsylvania, Arkansas, and California. St. E. = 16.55, = 25.57, = 27.26. See Table 25.

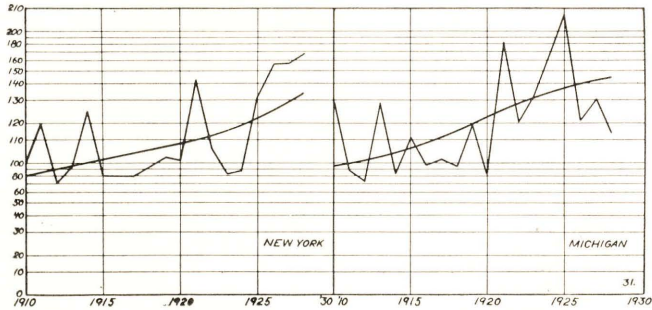


Fig. 23. Recent trends of grape purchasing power in New York and Michigan. St. E. = 25.55, = 29.88. See Table 25.

Oranges

Purchasing Power—The changes in the purchasing power of Florida oranges (84) on the New York market are shown in Figure 24 and that of California oranges (84) on the same market is shown in Figure 25. The trend of the purchasing power of Florida oranges in New York declined moderately from the years of the freezes in the late '90s until 1920 and

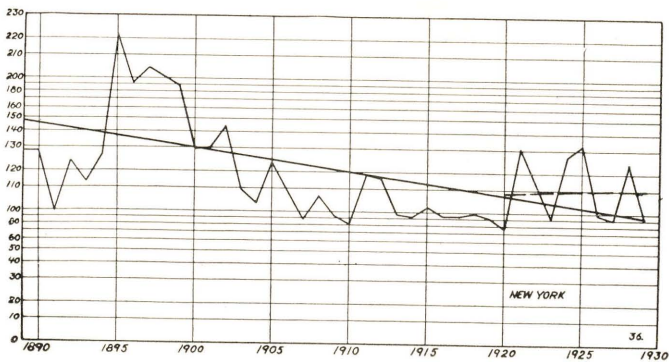


Fig. 24. Purchasing power of Florida oranges in New York City, 1889-1929. St. E. = 30.08. See Table 26.

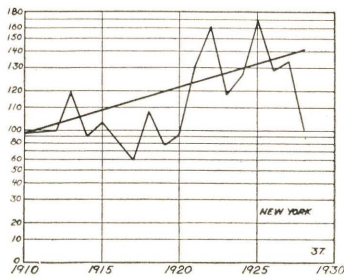


Fig. 25. Purchasing power of California oranges in New York City 1910-1928. St. E. = 15.80. See Table 26.

has been horizontal since that time, as shown by the dotted trend line. Although the California trend since 1910 has been decidedly upward, its trend since 1920 has been similar to that of the Florida oranges in the same period.

The short cycle of purchasing power of oranges from both states has been about four years, and the longer cycle about 10 years in the case of Florida.

Grapefruit

Purchasing Power—The changes in the purchasing power of Florida grapefruit in New York (84) are presented in Figure 26 and those for California grapefruit, based on f. o. b prices, (84) in Figure 27. As in the case of oranges, if the Florida data only extended back to 1910, the trend in both states would be fairly comparable. The effect of the freezes between 1895 and 1900 was more pronounced on the purchasing power of the Florida grapefruit than on that of Florida oranges, as there were fewer acres of grapefruit in proportion to oranges at that time than at present.

About the only short cycle that can be noted in the purchasing power of Florida grapefruit is a tendency to fluctuate from one year to the next be-

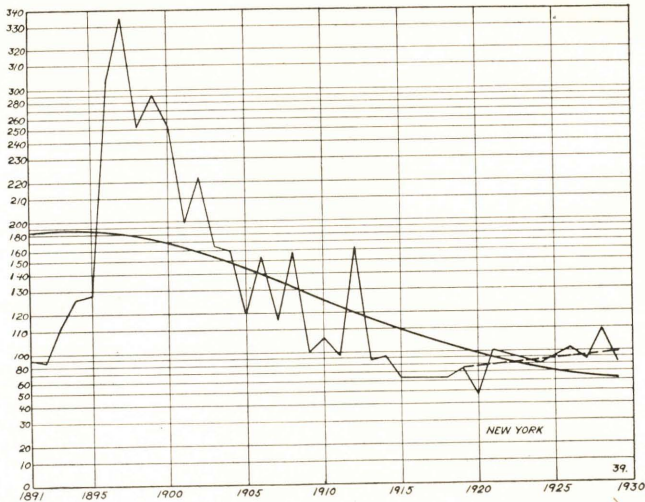


Fig. 26. Purchasing power of Florida grapefruit in New York City, 1891-1929. St. E. \pm 66.09. See Table 27.

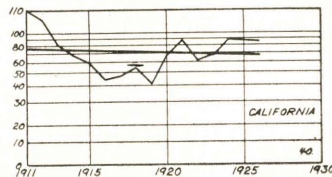


Fig. 27. Purchasing power of California grapefruit, f. o. b., 1911-1926. St. E. \pm 20.05. See Table 27.

tween relatively higher and lower purchasing power. Neither of the graphs covers a sufficient number of "normal" years to show a long cycle of purchasing power.

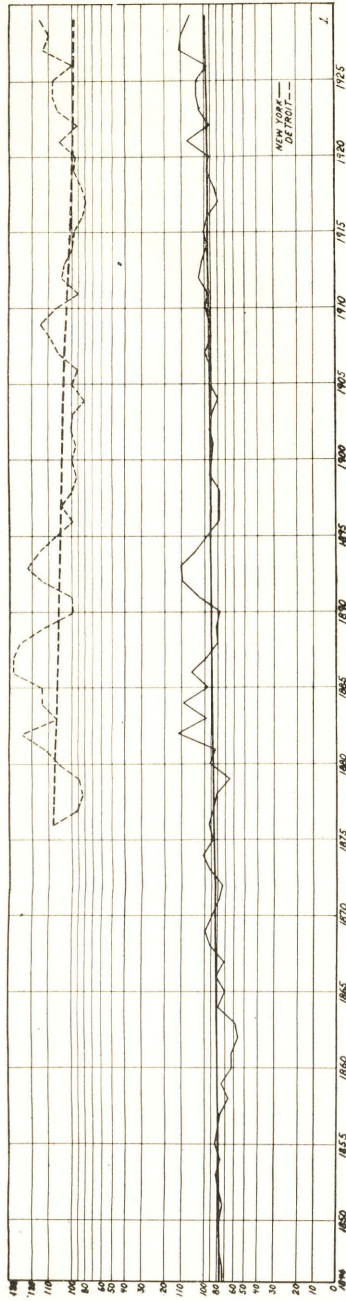


Fig. 28. Purchasing power of butter in New York City, Detroit, and Virginia. St. E. = 10.82, = 6.40, = 7.93. See Table 28.

Four Agricultural Commodities

In order to compare the trends of purchasing power of the several fruits studied with those of certain other staple agricultural products, similar data were obtained for butter, beef cattle, hogs, and wheat. The markets used are largely those employed in the study of the purchasing power of the fruits, though in some instances the Chicago prices are substituted for those in Detroit, as some of the prices in Detroit were not readily available.

Purchasing Power—The changes in the purchasing power of butter on the New York and Detroit markets and in Virginia are shown in Figure 28; those for beef cattle on the New York, Chicago, and Detroit markets and in Virginia in Figure 29; those for hogs on the New York and Chicago markets (combined in Table 2) and in Virginia in Figure 30; and those for wheat on the New York and Chicago markets and in Virginia in Figure 31. A summary of the changes in the purchasing power of these commodities on the selected markets appears in Table 2.

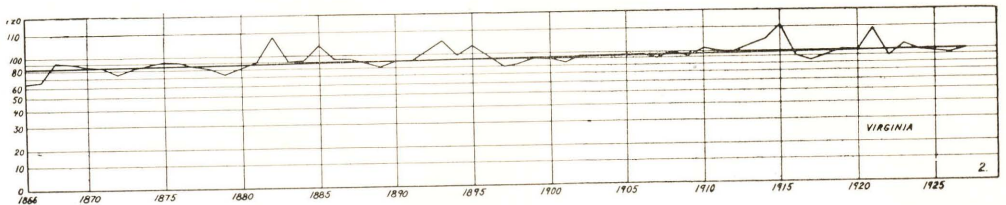


Fig. 28A. Purchasing power of butter in New York City, Detroit, and Virginia. St. E. ± 10.82 , ± 6.40 , ± 7.93 . See Table 28.

Table 2.—The purchasing power trends of butter, beef cattle, hogs, and wheat on selected markets.

Commodity	Market	Source	Years	Trend	St. E.
Butter	New York	(2, 77, 60)	1846-1929	V. s. up	± 10.82
	Detroit	(60)	1876-1929	V. s. down	± 6.40
	Virginia	(72)	1866-1927	V. s. up	± 7.94
Beef cattle	New York	(113)	1840-1891	V. s. up	± 10.10
	Chicago	(60, 73, 110, 113)	1866-1929	V. s. up	± 10.77
	Detroit	(60)	1876-1929	V. s. up	± 13.42
	Virginia	(71)	1867-1927	V. s. up	± 10.15
Hogs	New York-Chicago	(60, 111, 113)	1840-1929	V. s. up	± 8.54
	Virginia	(71)	1867-1927	S. up	± 12.04
Wheat	New York	(2, 3, 91, 105)	1840-1929	S. down	± 15.55
	Chicago	(104, 108)	1866-1929	V. s. up	± 17.23
	Virginia	(70)	1867-1927	S. down	± 13.04

Changes in Cost of Production

Fixed Expenses—A summary of reports in the source materials relating to the selling prices of improved farm land and bearing orchard and vineyard land appears in Table 3. The references included land in the more important fruit-growing states, although no data on California or Florida citrus groves are included. The limits of the values represent the range within which the majority of the sales seem to have been made. As the

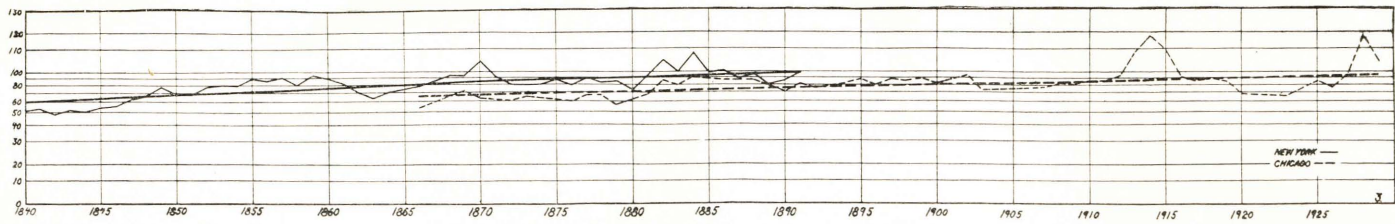


Fig. 29. Purchasing power of beef cattle in New York, Chicago, Detroit, and Virginia. St. E. = 10.10, = 10.77, = 13.42, = 10.15. See Table 29.

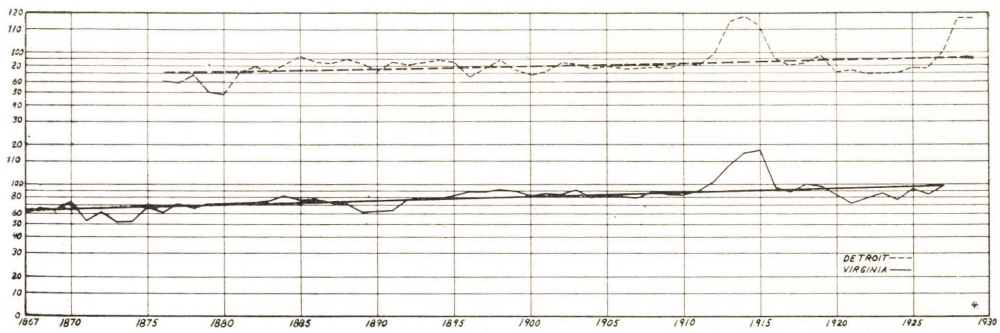


Fig. 29A. Purchasing power of beef cattle in New York, Chicago, Detroit, and Virginia. St. E. = 10.10, = 10.77, = 13.42, = 10.15. See Table 29.

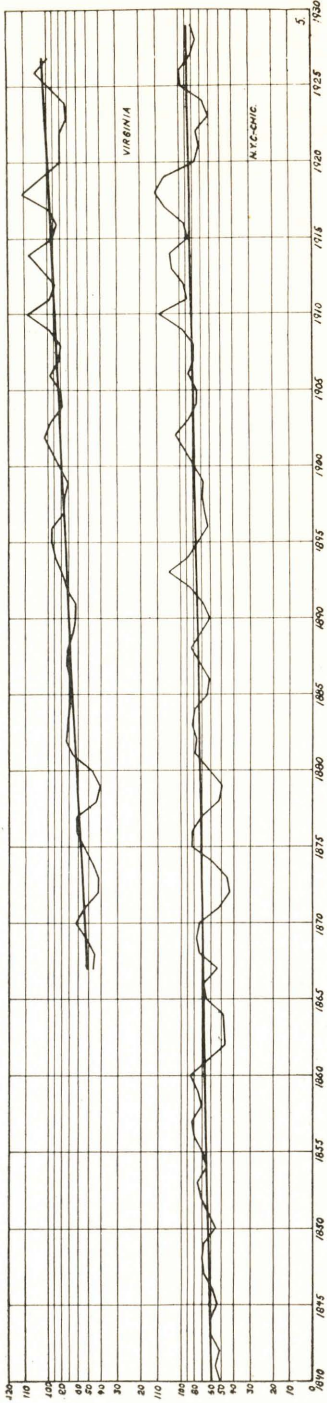


Fig. 30. Purchasing power of hogs in New York City—Chicago and Virginia. St. E. = 8.54, =12.04. See Table 30.

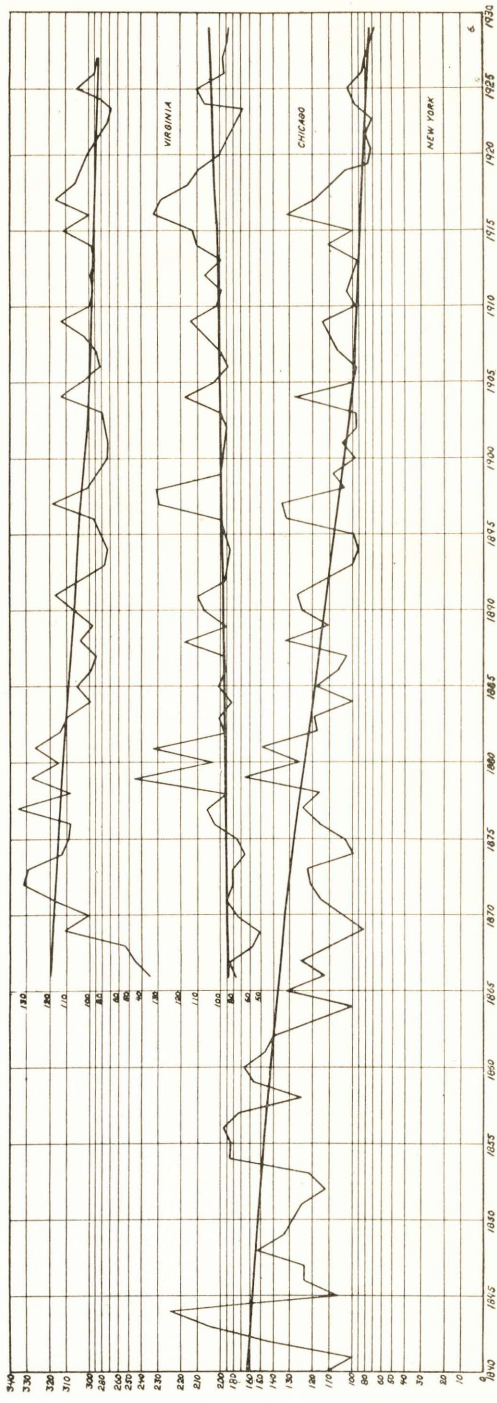


Fig. 31. Purchasing power of wheat in New York City, Chicago, and Virginia. St. E. = 15.56, =17.23, =13.04. See Table 31.

relationship between the two types of land is the important consideration, rather than the actual prices, the data in the table are not reduced to the 1910-1914 base. The values for the fruit lands are for orchards and vineyards in full bearing.

Table 3.—Selling prices of improved farm land and bearing orchards and vineyards per acre since 1850.

Years	Improved farm land	Orchards and vineyards	Value of trees
1850-1876.....	\$10-\$150 (30-50)*	\$150-\$300	\$120-\$250
1875-1900.....	\$25-\$175 (50-75)	\$150-\$400	\$100-\$325
1900-1914.....	\$50-\$200 (75-125)	\$200-\$400	\$125-\$275
1914-date.....	\$75-\$250 (100-150)	\$250-\$500	\$150-\$350

*A narrower range, closer to the "average" of most sales.

Even with a slightly lower rate of interest at the present time the data in Table 3 confirm the well known fact that the interest on the investment constitutes a larger fixed expense today than in 1850. The rate of increase in the value of improved farm land has been greater than that of bearing orchards and vineyards. The present selling price of improved farm land, using the narrower ranges, is about 300 per cent of the 1850 price, while that of the orchards and vineyards is about 166 per cent of the 1850 price.

If the capital invested in the trees is to be conserved, an amount equal to their depreciation must be set aside from year to year. This amount would probably vary from two to eight per cent of the value of the trees, according to the kind of fruit and the length of profitable life assumed for each particular region under the varying cultivation and growing conditions. Using the difference between the value of improved farm land and the value of bearing orchards or vineyards as a measure of the value of the trees or vines, Table 3 indicates that the value of the trees and vines today is from 125 to 140 per cent of their 1850 value. The depreciation item has thus increased correspondingly for this second part of the investment.

With the increase in the size or number of buildings used for orchard or vineyard purposes, such as packing sheds, tool and equipment shelters, and storage houses this third part of the investment has increased. The investment in equipment has been increased by the addition of sprayers, some spray mixing equipment, dusting machines, graders, sizers, and other packing house machinery, and such other tools and equipment as the greater mechanization of fruit growing has demanded. The interest charges on these two parts of the investment have likewise increased considerably.

A charge of perhaps 3 per cent on the buildings and 10 per cent on the equipment must be made to cover the depreciation, another fixed charge that has increased in proportion to the investment in both.

Taxes paid by the fruit grower, like those of other people, have increased several fold since 1850, but because of the wide variation among the levies

of different states, it is difficult to determine the extent of the increase in this item of the fixed expenses.

In so far as the buildings and equipment are insured against various forms of loss or damage, this item has also increased. The insurance of crops from year to year has been growing in popularity in some fruit areas, and though it might be considered a fluctuating cost, it can be mentioned here.

Water fees, rents, or taxes must be added to the fixed costs of fruit growers in many of the western areas.

Variable Expenses—Labor, materials, and marketing expenses constitute the bulk of the variable expenses requiring a cash outlay each year. The changes in the labor item include an increase in both the cost of man and team (or tractor) labor per hour and the number of hours of labor employed per acre in production.

The changes in the cost of team (or tractor) labor per hour during the years included here are difficult to determine, but the cost is probably more than in 1850.

The changes in the level of farm wages since 1866, as shown in Table 4, are perhaps as close a measure as is available of the changes in the cost of orchard and vineyard labor, especially as it is in terms of price indices, rather than money. It appears from Table 4 that the level of farm wages is now approximately 300 per cent of the 1866 level in terms of money, although in terms of goods the increase is slightly less than 100 per cent.

Table 4.—Index numbers of farm wages, 1866-1929. (112). 1910-1914 equals 100.

Year	Index	Year	Index
1866	55	1902	76
1869	54	1906	92
1874-1875	59	1909	96
		1910	97
1877-1879	56	1911	97
1879-1880	59	1912	101
1880-1881	62	1913	104
1881-1882	65	1914	101
		1915	102
1884-1885	65	1916	112
		1917	140
1887-1888	66	1918	176
		1919	206
1889-1890	66	1920	239
		1921	150
1891-1892	67	1922	146
		1923	166
1893	67	1924	166
1894	61	1925	168
1895	62	1926	171
		1927	170
1898	65	1928	169
1899	68	1929	169

Because production methods vary considerably in different regions, it is only possible to say that the number of man hours used in production has increased appreciably since 1850 and that this increase when multiplied by the increases in wages per hour makes a considerable increase in the variable cost of production.

The material item of the variable expenses includes such items as fertilizer, spray materials, barrels or other containers, and miscellaneous supplies. When reported fertilizer prices are summarized and reduced to the basis of the 1910-1914 dollar, it appears that in terms of goods fertilizer

prices have declined from about \$45 per ton in eastern markets in 1850 to \$30 in 1925. The increase in the amount of fertilizer used per acre would at least partially offset the decline in the cost per unit. The cost changes of the spray materials, containers, and supplies are rather hard to determine. About as satisfactory a method as any, perhaps, is to consider that their changes have been comparable to those of the general price level, and thus in terms of goods to assume that they have been rather stable in value per unit.

The quantity of materials and labor now used in spraying has increased until, together, they now constitute the largest single item of the variable expenses, probably increasing those costs by 30 to 50 per cent over the time before spraying was practiced. The tendency of the spraying program to increase in cost has continued to the present time.

Changes in marketing costs since 1850 have been of various kinds. The greater distances fruit is now shipped, the more complex channels through which it reaches the consumer, the more exacting requirements of size and grade, and other factors are involved. In spite of increased efficiency in the marketing process there seems to be more evidence that the cost of marketing, at least in proportion to the price received by the grower, has increased during the past several decades than there is to the contrary.

Briefly then, there has been an increase in the cost of production of the fruits included in this study, when considered as a group. The cost of apples per bushel has increased, on the basis of this study, from 50 to 100 per cent since the years from 1850 to 1875, and the cost of peaches per bushel has increased about 100 per cent. Sufficient data were not obtained in this study to permit a satisfactory estimate of the changes in the costs of production per sales unit (see Methods section) of the other selected fruits, although it is reasonable to conclude from the definite increases that have occurred in the size of a number of the cost items that the total production costs of these fruits have also appreciably increased since 1850. To the extent that commercial orchards have replaced farm orchards and improved production methods have been adopted there has been an improvement in the technical efficiency of production, yet measured by the increased costs per bushel there has been a decline in the economic efficiency, if such efficiency be measured by cost of production.

Changes in Purchasing Power

Changes in Fruit Supply—The purchasing power of a fruit depends upon its selling price and the prices of the goods for which it is exchanged. The causes of the changes in the general price level are manifold and do not lie within the province of this study. Some of the changes that have occurred in the two underlying factors which determine the selling prices of the fruits, the other side of the purchasing power equation, may be mentioned.

The changes in the per capita production of apples, pears, peaches, oranges, strawberries, cantaloupes, watermelons, and imports of bananas for a varying number of years are presented graphically in Figure 32 a, b, c. The data for all of these fruits are for the commercial production, with the exception of apples, pears, and peaches, which are for total production. The sources of the data are shown in the footnote to Table 15 in the Appendix. The total production of nine important fruits, taken from the Census Reports, is presented in Table 5. It must be noted that single years are frequently not representative of usual crops, as for example, the

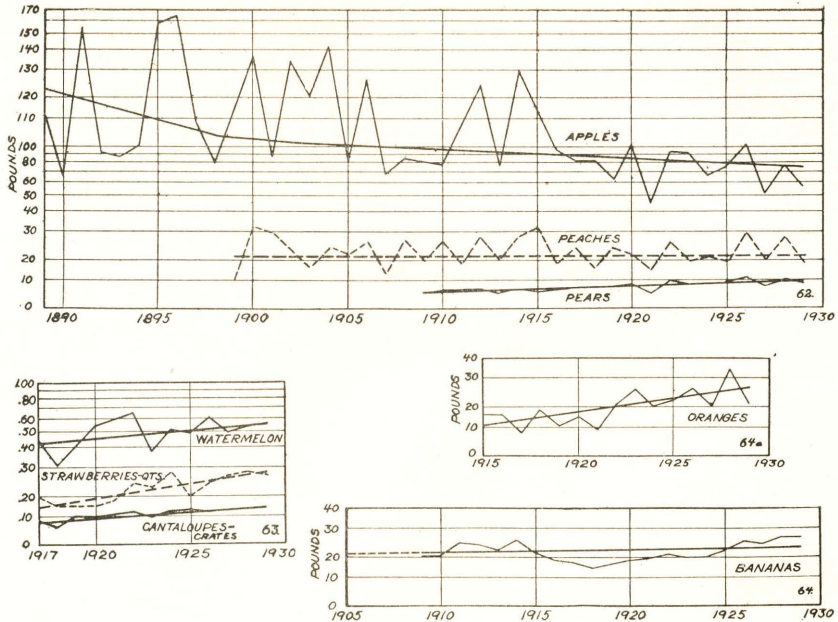


Fig. 32a, b, c. Per capita production of apples, peaches, pears, oranges, strawberries, cantaloupes, watermelons, and imports of bananas. St. E. = 25.50, ±13.27 ±10.14, ±4.84, ±1.90, ±5.47, ±8.62, ±2.54. See Table 15.

peach crop of 1900, but Table 5 will show in a general way the increase in production that has occurred and the decline in the per capita production of the nine fruits as a group.

Table 5.—The total production of nine fruits in the United States for certain years, expressed in terms of 50 pound bushels.

Year	Apples	Peaches	Pears	Grapes
1890	143,105,689	36,367,747	3,064,375	20,955,480
1900	175,397,600	15,432,603	6,625,417	26,019,880
1910	145,412,318	35,470,276	8,840,733	45,301,320
1920	136,560,997	50,686,082	14,204,265	70,336,800
1930	139,754,000	45,990,000	20,903,000	80,896,680
	Plums	Cherries	Apricots	Oranges
1890	2,554,392	1,476,719	1,001,482	6,588,000
1900	8,764,032	2,873,499	2,643,128	9,250,500
1910	15,480,170	4,126,099	4,150,263	33,795,000
1920	19,983,942	3,945,749	6,130,086	35,085,000
1930		2,470,760	7,800,000	50,608,500
	Grapefruit	Total	Total lbs. per capita of the nine fruits	
1890	15,000	216,128,884	172	
1900	46,500	247,052,659	162	
1910	1,783,500	294,359,679	160	
1920	8,692,500	344,725,421	164	
1930	13,978,500	381,493,382	155	

A comparison of the changes in the per capita production of the fruits included in Figure 32 a, b, c with those in the purchasing power of the same fruits on the New York market confirms the fact that their prices are lower in the years of larger yields, and that the purchasing power is likely to be lower in those years. As crops vary somewhat in the extent to which changes in production in one area affect prices in another region, there is not always an exact relationship between the production and the price of a single fruit for a particular area in any given year. Not only are the prices per sales unit generally lower in a year of a heavy crop, but Warren, Pearson, and others (115, 116) have found that the spread between the price received by the grower and the price paid by the consumer is wider in years of greater production and lower prices. This increase in the share of the consumer's dollar absorbed in the marketing process means a correspondingly lower price for the producer. The same authors also found that "The spread between the Georgia and New York prices of Georgia peaches for seven large and seven small crops were respectively 79 and 61 cents." (114.) They also found the same thing to be true of apples (115), grapes (85), and other agricultural commodities (115). They further discovered (115) that this greater proportional cost of marketing was more pronounced in the surplus producing states than in the deficit states, making it of particular importance to the majority of commercial growers. The same investigators have also determined to what extent changes in the size of crop produce changes in prices for certain crops. Some of their data are presented in Table 6.

Table 6.—Changes in price of three fruits due to changes in production. (After Warren, Pearson, et al)

Fruit	Source	Production area	Per cent change in production	Per cent change in price
Apples.....	(115).....	U. S. 1889-1915	-20	+17
Apples.....	(115).....	U. S. 1889-1915	+20	-12
Grapes.....	(85).....	W. N. Y. 1900-1926	-40	+36
Grapes.....	(85).....	W. N. Y. 1900-1926	+40	-20
Peaches.....	(114).....	U. S. 1915-1925	-20	+ 7
Peaches.....	(114).....	U. S. 1915-1925	+20	- 5
Peaches.....	(114).....	Ga. 1915-1925	-20	+ 9
Peaches.....	(114).....	Ga. 1915-1925	+20	- 7

The fact that increases in the crops do not depress the price to the same degree that proportional decreases raise the price gives added weight to the statement by Hauck (35) in an Ohio study that "The number of bushels sold exerted more influence than the price in determining the gross income. Gross income was not always proportional to profits." Rogers (76) in a Michigan study emphasizes the same point. Apparently then, within rather broad limits it is more desirable to have somewhat larger yields selling at a lower price than correspondingly lower yields selling at a higher price. For example, using the previously mentioned grape data:

A normal crop of 100 bushels at \$2.00 = \$200.00.

A 40 per cent increased yield and a 20 per cent lower price, 140 bu.
at \$1.60 = \$224.00.

A 40 per cent decreased yield and a 36 per cent higher price, 60 bu.
at \$2.72 = \$163.20.

Scoville (81), in 1923, concluded, from a study on the changes in the month to month prices of apples, that "The size of the apple crop has little or no effect on the course that apple prices take throughout the season. April's price has averaged (for nine different U. S. crops) 43 per cent more than October's. There may be a slightly greater risk than usual in storing apples in very short crop years when the price is high in the fall." At the present time it is believed by some that in years of short crops, prices generally start lower than the size of crop warrants.

The production of competing fruits (or their importation) as well as the production of a particular fruit also affects the price and thus the purchasing power of the fruit. Strawberries have virtually replaced fresh sour cherries in the last 100 years, and peaches have in a large degree replaced plums within more recent times. The competition is not only between the fruits during the fresh season of both, or of one another, but also between the fresh fruit of one and the canned, dried, or otherwise processed form of the other, or between processed forms of both. The exact degree of such competition is difficult to determine, and the only statement that can be made here is that a large crop of a competing fruit is likely also to affect the price of the fruit with which it competes. Peaches, early apples, cantaloupes, and watermelons may be mentioned as examples of this type of competition.

Competition not only exists between fruits (including melons in this sense as fruits) but also between fruits and certain vegetables to a lesser extent. To the extent that salad vegetables are used instead of the relatively more expensive fruits for salad purposes they add, in effect, to the supply of the fruits used for salads and so affect fruit prices.

The changes in the purchasing power of fruits whose per capita production are presented in Figure 32 a, b, c correspond fairly closely to what might be expected with the changes in production shown there, with the exception of peaches. Despite the horizontal per capita trend of peach production since 1889, the purchasing power of peaches on the New York and Detroit markets has continued to decline since that time. It appears that peaches suffer keener competition during their fresh season from other fruits than do apples, pears, and oranges.

The short and long cycles in apple production, 4 and 14 years respectively, described by Davis and others (28), agree very closely with the short and long cycles of apple purchasing power shown in Figures 1 to 5 inclusive. The fact that there are both surplus and deficit production areas, and that different fruits as well as the same fruit in different areas do not respond in price changes exactly with changes in production for the country at large, is responsible for the differences in the degree of correlation of price and production noted in a comparison of the variations in the purchasing power (price) of a fruit on different markets during the same year.

Changes in Fruit Demand—The factors influencing the demand for a fruit or for fruits in any one year (27, 32, 38) are merely the status at that time of all the factors influencing demand over a longer period of time. With the growth of cities, the increased number of apartment dwellers, and the nearly continuous supplies of some kinds of fruits the number of pounds of fruit bought by the housewife at any time has declined considerably since 1850. Along with the smaller sized purchases has developed an increasing demand for higher and more uniform quality, both within any one purchase and from season to season, a reflection, perhaps, of the growing preference for uniform, trademarked, nationally advertised staple groceries. Then,

too, the percentage of home canned fruits consumed in proportion to the commercially canned fruits is declining.

The longer season during which a fruit is now found on the city markets in the fresh state, due to the progress in perishable freight service, intensifies the competition between fruits. The flow of fruits from distant areas tends to hold down the price of the locally produced fruits at the start of the local season, and the latter part of the local fruit to reach the market faces the competition of another distant area then reaching the full height of its own season. The demand thus becomes more elastic for any one of the competing fruits or for the locally produced fruit.

Purchasing Power Cycles

Although no effort was made to fit mathematically cyclical trend lines to the purchasing power graphs of the fruits on the New York, Detroit, and other markets shown in Figures 1 to 27, inspection shows that they are in general characterized by both long and shorter cycles. Perhaps the term "cycle" has been used and abused so frequently in recent years that it is not wholly satisfactory in this instance, as it connotes to some an inevitableness or excessive determinism in itself, regardless of causes or circumstances. Such a concept is not intended here. If there are causes which, operating together and varying in their expression from year to year, produce rather regular recurrences of peaks and troughs of purchasing power, as appear in the fruit purchasing power graphs of this study; or if these recurrences are the results of the operation of the laws of chance in the range of their possibilities, the result is the same; peaks and troughs of purchasing power have occurred with fair regularity in the purchasing power of the fruits in this study as a group. This is the sense in which the term "cycle" is used in this study: only a descriptive term for these recurrences.

Although changes in demand influence price, and thus purchasing power, as well as changes in supply, a comparison of the changes in the purchasing power of the fruits on the markets included in this study with recorded changes in the production of the particular fruits from year to year creates the distinct impression that changes in supply exert a greater influence upon the purchasing power of fruits from year to year than changes in demand. It seems, therefore, more reasonable to believe that cycles of purchasing power are strongly influenced by changes in production than that they are only due to the operations of chance. As there are both internal and environmental factors which influence fruitfulness from year to year (31, 87), the joint operation of these factors affects the size of the crops from year to year and thus to a considerable degree is responsible for the short cycles or recurrences of fruit purchasing power.

The long cycles are generally assumed to be due to the fact that a period of good purchasing power for several years results in increased plantings. The length of the cycle then becomes the length of time necessary for these trees to come into bearing sufficiently to cause a decline in prices to start again. The acreage pulled up or abandoned in the comparable series of years of declining prices is not usually as great as the acreage of new plantings made in a series of years of rising prices. This may be accounted for by the assumption that there may be an increase in the demand with passing years, or the more vital one that the grower naturally hesitates to discard the investment in time and money that a young bearing orchard or vineyard represents. Consequently, there is a net increase in acreage until the

total production reaches a volume that depresses the price sufficiently to bring about a more vigorous culling out of the least profitable plantings.

The lengths of the short and longer cycles of purchasing power of the fruits and markets included in the study are shown in Table 7.

Table 7.—The short and long cycles of fruit purchasing power of certain fruits on selected markets.

Fruit	Market	Cycles	
		Short	Long
Apples.....	New York.....	4± years	14± years
	Detroit.....	4± “	14± “
	Boston.....	4± “	— “
	Jonesboro.....	3± “	14± “
	Virginia.....	4± “	14± “
Pears.....	New York.....	4—5 years	13± years
	Detroit.....	3—4 “	10± “
Peaches.....	New York.....	4—5 years	9± years
	Detroit.....	4± “	9± “
Plums.....	New York.....	5± years	12± years
	Detroit.....	5± “	11± “
Cherries.....	New York.....	4± years	10± years
	Detroit.....	4± “	9± “
Grapes.....	New York.....	4—6 years	13 years
	Detroit.....	5 “	10 “
Oranges—Florida.....	New York.....	4— years	10 years
	California.....	4— “	? “
Grapefruit—Florida.....	New York.....	Alternates	?
	California.....	f. o. b.	?

The plus and minus marks indicate that, although a fitted cyclical trend would show a definite cycle in both instances, many of the cycles are not perfectly uniform and vary from the stated figure by a year or so one way or the other. The majority of the cycles are as stated. The question marks in the case of the citrus fruits are due to the fact that the period of years included is too short to establish the length of the long cycles; the same mark is used in the case of apples in Boston to show that there did not seem to be a more or less regular cycle.

Two questions arise from an inspection of Table 7. Do the peaks of purchasing power of a particular fruit usually occur in the same year in the different production areas of that fruit, and do the peaks of purchasing power of the different fruits usually occur in the same year in any given area?

Table 8 shows the frequency with which the purchasing power peaks of some of the fruits occurred simultaneously on both the New York and Detroit markets since 1880.

Table 8.—The number of times that peaks of purchasing power of certain fruits occurred simultaneously on the New York and Detroit markets since 1880.

Fruit	Number of peaks on both markets	Total number of peaks	Percentage
Apples.....	4	16	25
Pears.....	3	19	15.6
Peaches.....	6	16	37.5
Plums.....	7	16	43.7
Cherries.....	0	10	0
Grapes.....	6	16	37.5

The years in which the purchasing power of at least two of the fruits listed in Table 8 were at a peak at the same time on either the New York or Detroit markets since 1880 are shown in Table 9.

Table 9.—The years in which the purchasing power of at least two fruits was at a peak simultaneously on either the New York or Detroit markets.

Year	New York Fruits at a peak	Year	Detroit Fruits at a peak
1881.....	Apples, plums, grapes	1881.....	Apples, pears, peaches, plums
1885.....	Apples, peaches	1884.....	Pears, plums
1886.....	Pears, plums, grapes	1885.....	Peaches, cherries
1888.....	Pears, plums		
1889.....	Apples, grapes	1890.....	Apples, pears, grapes
1890.....	Peaches, plums		
1893.....	Apples, grapes	1897.....	Apples, grapes
1895.....	Peaches, plums	1902.....	Pears, plums, grapes
1896.....	Pears, cherries	1903.....	Peaches, cherries
1899.....	Peaches, plums	1905.....	Apples, pears
1903.....	Peaches, plums	1907.....	Peaches, plums
1904.....	Cherries, grapes	1910.....	Apples, peaches, grapes
1905.....	Apples, pears	1912.....	Plums, cherries
1907.....	Peaches, plums	1913.....	Pears, peaches, grapes
1909.....	Apples, pears	1919.....	Apples, pears
1910.....	Plums, grapes	1921.....	Pears, cherries, peaches, grapes
1915.....	Pears, cherries, grapes	1925.....	Peaches, grapes
1921.....	Apples, pears, peaches, grapes	1927.....	Apples, pears, plums
1925.....	Peaches, cherries, grapes		
1927.....	Apples, plums		

It appears from Table 9 that a grower of the six kinds of fruit mentioned in the table and located in either the middle Atlantic or the north central states would have had shorter cycles in his income than a grower of only one fruit, as there were 20 years in this period of 50 in which the purchasing power of two or more fruits was at a peak together on the New York market and 16 on the Detroit market. There would have been about 12 cycles in the 50 years for any one of the fruits on either market.

Diversification

An inspection of Tables 8 and 9 suggests the desirability of diversification. There are many fruit areas in the United States so preeminently adapted to only one or two fruits that such specialization is the only practical production plan, but there are other areas of the country suitable to more kinds of fruit. In those areas the possibilities of diversified fruit growing are worthy of some attention. Of course, the different fruits have varying soil and climatic preferences, but as far as the soil is concerned, a block of a hundred acres or more is more likely to be variable than uniform. Such diversification also involves a more complex orchard management problem. When the kinds of fruit that will grow in a particular locality have been determined, there remain two other problems: (1) the estimation of the smallest acreage of each of the fruits that can be operated economically as a unit and (2) the relative acreage to be devoted to each of the fruits. Considering these two factors and the amount of capital available it should be possible to combine such multiples of the minimum acreages of each of the fruits as would provide the desired ratios with the amount of capital fixing the total size of the enterprise. Although, over a sufficiently long period of years, the average income of the grower of a single fruit might be the same as that of the grower of several fruits, the more frequent recurrence of years in which the profitableness of two or more fruits were especially high would reduce the risk of crop failures for any given year and contribute considerably to a greater uniformity of income from year to year.

Purchasing Power Trends

It has been mentioned that the production of a particular fruit seemed to be the most influential single factor in the determination of the selling price, and the selling price in turn is one of the two factors in the determination of the purchasing power. As the production of competing fruits and vegetables is another factor influencing the selling prices, it also influences the purchasing power, although to a lesser extent in both of these instances. As the fruits were not essential war materials, their prices rose more slowly during the war years than the general price level with the consequent fall in their purchasing power.

Figures 33 and 34 show the changes in the purchasing power of the non-citrus fruits on the New York market, Figures 35 and 36 show the changes in the purchasing power for the same fruits on the Detroit market, and Figures 37 and 38 show the changes in the purchasing power of the Florida and California citrus fruits. In order to compare the changes in the purchasing power of apples, pears, peaches, and grapes since 1910 in some of the leading production states, a descriptive summary is presented in Table 10.

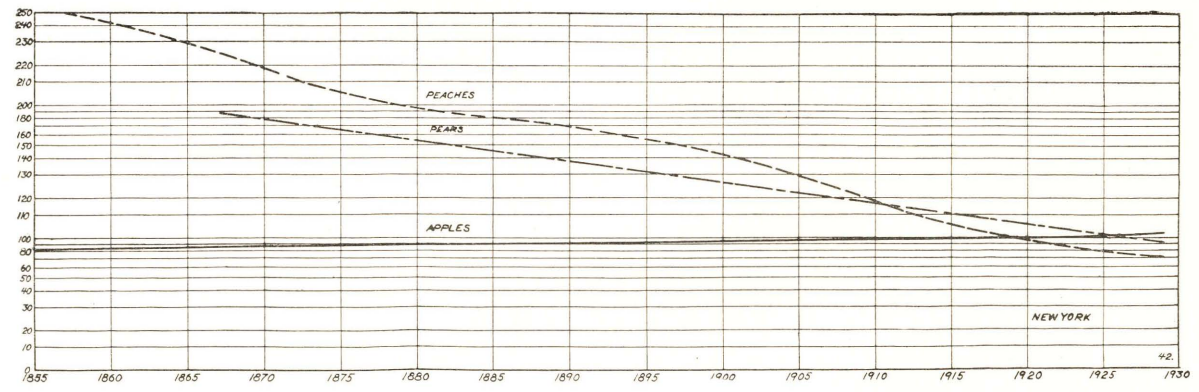


Fig. 33. Trends of purchasing power of apples, pears, and peaches in New York City. See Tables 16, 18, and 20.

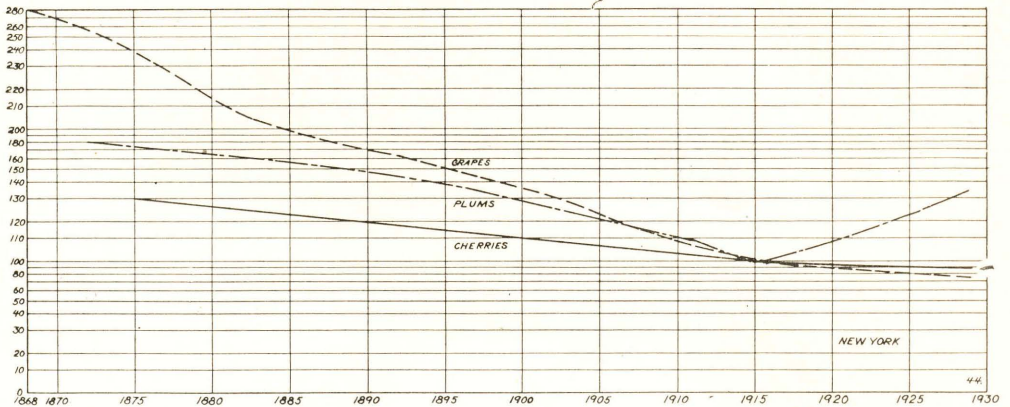


Fig. 34. Trends of purchasing power of plums, cherries, and grapes in New York City. See Tables 22, 23, and 24.

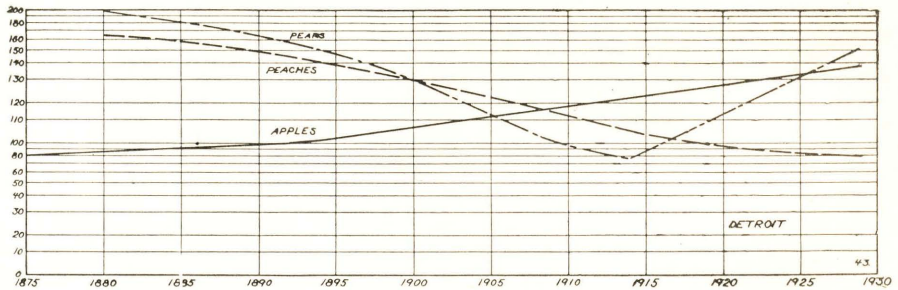


Fig. 35. Trends of purchasing power of apples, pears, and peaches in Detroit. See Tables 16, 18, and 20.

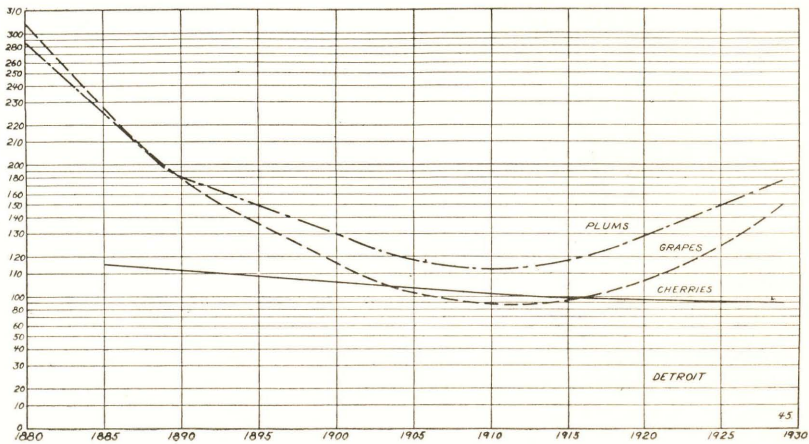


Fig. 36. Trends of purchasing power of plums, cherries, and grapes in Detroit. See Tables 22, 23, and 24.

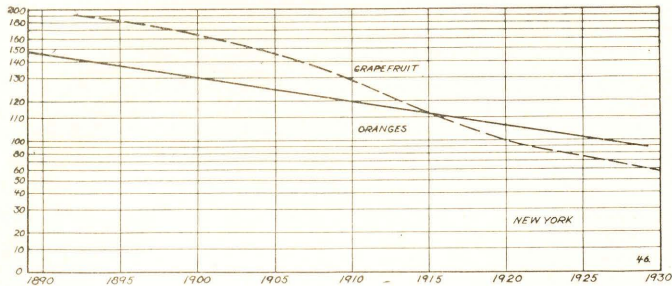


Fig. 37. Trends of purchasing power of Florida oranges and grapefruit in New York City. See Tables 26 and 27.

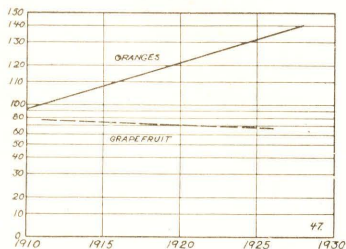


Fig. 38. Trends of purchasing power of California oranges in New York City and grapefruit f. o. b. See Tables 26 and 27.

Table 10.—The trends of purchasing power of apples, pears, peaches, and grapes in certain states since 1910.

Fruit	State	Years	Trend
Apples	New York	1910-1928	Decidedly up
	Michigan	1910-1928	Slightly up
	Virginia	1910-1928	Decidedly up
	Colorado	1910-1928	Slightly down
	Missouri	1910-1925	Moderately up
	Washington	1910-1928	Moderately up
Pears	New York	1910-1928	Decidedly up
	Michigan	1910-1928	Slightly down
	California	1910-1925	Horizontal
Peaches	Georgia	1910-1929	Horizontal
	North Carolina	1910-1929	Very slightly up
	Arkansas	1910-1925	Horizontal
	Illinois	1910-1925	Moderately up
	California	1910-1925	Moderately down
	New York	1910-1928	Slightly down
	Michigan	1910-1928	Slightly down
Grapes	Pennsylvania	1910-1925	Slightly up
	Arkansas	1910-1925	Horizontal
	California	1910-1925	Horizontal
	New York	1910-1928	Decidedly up
	Michigan	1910-1928	Very decidedly up

Although the trend lines of the non-citrus fruits on the New York market begin prior to 1880, a comparison of the changes in fruit purchasing power on the New York and Detroit markets must be on the 1880 to 1929 basis to be more comparable. Table 11 shows the purchasing power index of the non-citrus fruits on the New York market compared with similar data on the Detroit market in 1880 and 1929. The purchasing power index of the fruits on the New York market are also given for the year in which the respective trend lines start. The purchasing power indices are read from the trend lines rather than from the tables for the three specific years.

Table 11.—The purchasing power indices of certain fruits on the New York and Detroit markets in selected years.

Fruit	Market	Year	Index	1880	1929	1929 Per cent of 1880
Apples.....	New York.....	1855.....	82	89	102	114
	Detroit.....			86	138	160
Pears.....	New York.....	1867.....	187	154	92	60
	Detroit.....			198 (*14)	150 78	76
Peaches.....	New York.....	1857.....	250	195	70	36
	Detroit.....			165	80	48
Plums.....	New York.....	1872.....	180	148	134	90
	Detroit.....			285 (*10)	100 175 113	61
Cherries.....	New York.....	1875.....	130	126	89	71
	Detroit.....	(1885).....		116	90	77
Grapes.....	New York.....	1868.....	280	197	75	33
	Detroit.....			304 (*11)	150 88	49

Although the graphs of purchasing power of the four agricultural staples begin prior to 1880 on both markets (in some cases the Chicago market is substituted for the Detroit market), the data in Table 12 include only the 50-year period from 1880 to 1929 in order that the changes may be compared more exactly with the changes in the fruits listed in Table 11. The values of the indices are likewise read from the trend lines rather than from the tables from which the graphs are constructed.

Generally speaking, the purchasing power of apples in 1929 was about 135 per cent of the 1880 value, pears about 65 per cent of the 1880 value, peaches about 40 per cent of the 1880 value, plums and cherries about 75 per cent of the 1880 value, and grapes about 40 per cent of the 1880 value of purchasing power. On the same basis the purchasing power of butter in 1929 was about the same as in 1880, beef cattle about 150 per cent of the 1880 value, hogs about 140 per cent of the 1880 value, and wheat about 80 per cent of the 1880 value or purchasing power.

Table 12.—The purchasing power indices of four agricultural commodities on two city markets and in Virginia in 1880 and 1929.

Commodity	Market	1880	1929	1929 Per cent of 1880
Butter.....	New York.....	87	98	113
	Detroit.....	108	98	91
	Virginia.....	97	100('27)	103
Beef cattle.....	(New York)—Chicago*.....	70	95	136
	Detroit.....	72	90	125
	Virginia.....	70	98	140
Hogs.....	New York—Chicago.....	73	88	119
	Virginia.....	62	102('27)	164
Wheat.....	New York.....	123	75	61
	Chicago.....	92	105	114
	Virginia.....	112	84('27)	75

*The Chicago trend used, but the slope is the same as that for New York, and the percentage change on the New York market is very close to that on the Chicago market.

Unit Margin of Profit

With the changes in the cost of production and purchasing power of the selected fruits presented to the extent that the source materials used in the study permit, attention may be directed to the changes in the margin of profit per sales unit of the fruits as stated in the Units of Sale paragraph of the Methods section. An increasing cost per unit in terms of goods and a decreasing purchasing power per unit means a decrease in the unit margin of profit. The margin of profit per unit also decreases when the cost of production increases at a greater rate than the purchasing power or when the purchasing power declines at a more rapid rate than the cost of production. Conversely, the margin of profit per unit increases when the opposite relationships prevail. Because there were data available in sufficient quantity only in the case of apples and peaches to estimate the changes in the cost of production, it is possible to compare the changes in the margin of profit per unit of only these two fruits in a specific way. In so far as the New York market may be representative of the conditions of the middle Atlantic states and Detroit representative of the north central states, the comparison may be valid for those areas. Table 13 shows the changes in the cost of production and purchasing power in these areas and markets, using the two period of 1850 to 1875 and 1914 to 1929 for the comparisons.

The margin of profit per unit of apples has declined somewhat during the years included in Table 13, as the present cost of production is now from 150 to 225 per cent of the 1850-1875 cost while its purchasing power has increased to a value from about 125 to 175 per cent of its earlier value. The unit margin of profit of peaches has declined very much more than that of apples, as the present cost of production ranges from 180 to 230 per cent of its 1850-1875 cost while its purchasing power has declined to a value of about 25 to 50 per cent of its value in the earlier period. In the case of both fruits, these data are to be considered as reflecting general conditions and of course not applying exactly to any specific section or orchard. As far as

Table 13.—Changes in the cost of production and purchasing power of apples and peaches.

COST OF PRODUCTION						
Fruit	Area	1850-1875	1914-1929		Percentage	
Apples.....	U. S.....	\$0.85 bbl.	\$1.27 to \$1.91		150-225	
Peaches.....	U. S.....	0.30-34 bu.	.54 to .89		180-232	
PURCHASING POWER						
Fruit	Market	Year	Index*	Year	Index*	Percentage
Apples.....	N. Y. C.....	1855	82	1929	102	124
	Detroit.....	1875	80	1929	138	171
Peaches.....	N. Y. C.....	1857	250	1929	70	28
	Detroit.....	1880	165	1929	80	48

*Index value read from the trend lines in Figures 33 and 35.

the other fruits included in the study are concerned, only the general impression gained from looking through the source materials can be given here. There is much more evidence of a decline in the unit margin of profit of the other fruits than of an increase, though it is impossible to say here which fruit has suffered the greatest decline, and which the next greatest. This does not mean that there is now no margin of profit per unit of fruit for the fruits individually or collectively in the country at large over a period of years, but only that the margin of unit profits is not as wide as it was 50 and more years ago.

Discussion

A discussion of the changes that have occurred in the profitableness of growing some of the more commercially important fruits of the United States during the period of years included in this study must necessarily be in general terms. It involves some factors that can be traced with considerable accuracy and some that can only be roughly estimated, and it depends upon the source materials used. Changes in the total production of the fruits as well as of industry must be considered as well as the unit margins of profits. The selling price of an acre of fruit is calculated on the same basis as that of any other competitive enterprise—its capacity to yield a profit over a period of years. The changes that have occurred in the selling prices of an acre of bearing orchard or vineyard have been presented in Table 3.

It appears that while the selling price of improved farm land and bearing fruit land have increased since the period from 1850 to 1875, the price of improved farm land has increased more rapidly than that of bearing fruit land. The increase in the selling price of the fruit land shows that the enlarging demand of the country for greater amounts of fruit has been great enough to extend the production into more marginal areas, thus raising the cost of

the marginal part of the supply and increasing the economic rent enjoyed by the producers in the more favored areas. The increase in the economic rent is a prime factor in the increase in the selling price of bearing fruit land. The improvements in transportation have made it possible to produce the fruits at greater and greater distances from the markets and have thus extended the area of effective competition with the growers nearer the markets, thus reducing the rate of increase in the value of the plantings nearer to the markets. The decline of the prices of bearing fruit land since 1914, when estimated on the basis of 1910-1914 dollars, shows that the supply of fruits has apparently caught up with the demand at the general price level prevailing since 1914.

Although the margin of profit per unit has apparently declined for the fruits as a whole, the continued expansion of fruit growing is of itself evidence that a margin of profit still exists and that the margin of profit or the possibilities of making a profit are considered by the fruit growers to be equal at least to those in general farming and are probably somewhat greater. The solution of the problem of narrower margins of unit profits lies only in so limiting the number of growers and the fruit acreage in relation to the demand that the increased production of the remaining growers resulting from increased efficiency will not increase the flow of fruit to the markets beyond the quantity which permits the desired degree of profitability.

With the margins of profit per unit decreasing because of the trends of costs of production and purchasing power, for the fruits as a group, there is no occasion for any wide-scale expansion of fruit acreage. Indeed such expansion would simply invite financial ruin. The only plantings that can be encouraged at this time are those that can be made under the exceptionally favorable circumstances where both the growing and marketing costs are sure to be low. The individual grower now possessing an orchard or vineyard will find the most feasible method of securing a wider margin of profit per unit to lie in reducing costs per unit through more skillful management.

Summary

Cost of Production—The cost of production of apples in terms of goods has increased until it is at present from 150 to 200 per cent of the cost in the period from 1850 to 1875. The cost of production of peaches on the same basis is now approximately 200 per cent of the 1850 to 1875 cost. There are not sufficient data for the other fruits included in the study to permit statements similar to those already made, but the general impression gained from the source materials is that there has been a substantial increase in the costs of production of pears, plums, cherries, grapes, oranges and grapefruit, considering the country at large.

Purchasing Power—The purchasing power of apples in the middle Atlantic and north central states has increased until it is at present from about 125 to 175 per cent of its value in the period from 1850 to 1875. The purchasing power of pears in the same area is now from about 60 to 75 per cent of its 1880 value. The purchasing power of peaches is at present from about 25 to 50 per cent of its value from 1850 to 1875. The purchasing power of plums is now from about 60 to 90 per cent of its 1880 value, and that of fresh sour cherries from about 70 to 80 per cent of its 1880 value, and that of grapes from about 30 to 50 per cent of its 1880 value. The present purchasing power of Florida oranges in New York is

about 60 per cent of its 1889 value, and the purchasing power of Florida grapefruit on the same market is at present about 60 per cent of its 1891 value, reading the values from the trend lines as for the other fruits. The trend in 1891 is, however, considerably above the actual value for that year. The reason is the extraordinary rise of purchasing power of grapefruit (as of oranges) in the period between 1895 and 1900 due to the freezes within that period, and the trend line is thus pulled sharply upward, resulting in the wide margin between the actual and the trend of purchasing power in 1891.

Unit Margin of Profit—The only possible result of the generally increased costs of production and the decreased purchasing power of the fruits as a group is a narrower unit margin of profit.

Profitableness of Fruit Growing—The available evidence seems to indicate that though the margin of profit is not as wide as it formerly was in fruit growing, either absolutely or in relation to some other types of production, there is still a margin of profit sufficiently wide to cause expansion of fruit growing to some extent. Any further expansion at present, however, should be made only under exceptionally favorable circumstances, i. e., where both the growing and marketing costs are sure to be low.

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Many helpful suggestions and comments by the members of the staff of the department of Horticulture deserve acknowledgement here. The writer wishes to acknowledge particularly the counsel of Professors V. R. Gardner and R. E. Marshall in the general development of the work, the aid of Professor F. C. Bradford in the suggestion of a number of sources of data, and the assistance of Dr. J. W. Crist in regard to some of the statistical methods involved in the presentation of the data in graphic form.

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APPENDIX

Notes on Apples

Yields—There is much more information in the files of the agricultural and horticultural magazines on apple yields than on the costs of production; but, due to the news nature of the yield reports, the majority of them are above the general average of the commercial orchard yields of the time. It is possible, however, to discard references to single trees, small groups of trees, and the less authentic reports and to make an estimate from the remainder of the usual yields of reasonably well located and well-cared-for orchards.

An average for five crops of 151 barrels per acre for a well-cared-for New Hampshire orchard in the years 1848-1852 has been recorded (11), though the general average for that area was estimated to be 60 barrels per acre. In 1856 a 20-acre Connecticut orchard was reported to produce approximately 30 to 40 barrels per acre per year (12). The 1859 average sales per acre in Orleans, Monroe, and Niagara counties of western New York indicate a yield comparable to that of the Connecticut orchard for most of the growers (13) although the best orchards in Orleans county in 1863 averaged 100 barrels per acre (13). Other reports from the same area in 1864 (15) and 1867 (14) state that the average yield was from 50 to 100 barrels per acre with a few orchards attaining up to 150 and more. A six-acre orchard in good soil in Genesee county, N. Y., 20 years old in 1867, produced an average of 100 barrels per acre for the six crops of 1862-1867, ranging from 25 to 135 barrels per acre for those years (16, 79). A report in 1867 (79) stated that the majority of western New York growers estimated the annual average at one barrel per tree plus culls (about 40 to 50 barrels of saleable fruit per acre) and that this yield could be doubled with

good care. A three-acre orchard near Starkville, N. Y., 40 to 50 years old, with excellent care produced from 111 to 133 barrels per year during the period 1857-1868 (18). In 1875 the average yield of Michigan orchards was placed as low as 30 bushels per acre (19). In 1884 it was reported that the usual crop of a 275-acre orchard near Hudson, N. Y., was slightly over 70 barrels per acre (23). An orchard survey of Niagara county, New York, in 1909 (26) showed a 10-year average of 93 barrels per acre in the better cultivated orchards and an average of 65 barrels in sod orchards. A block of fine Baldwin trees in New York, 27 years old in 1904, produced an average of 118.4 barrels per acre for the years 1904-1923 (36). In Frederick county, Virginia, it was found that the average yield per acre for orchards of less than 50 acres ranged from 31 to 57 barrels per acre and in larger orchards, from 35 to 53 barrels (86). Another study in Niagara county, N. Y., in 1926 (83) showed that the yield on Dunkirk sandy loam averaged 46 barrels per acre, and on Clyde fine sandy loam, 36 barrels per acre. The 1915-1920 average in the Bitter Root valley of Montana was 143 boxes per acre (about 45 barrels) and 119 boxes (about 40 barrels) for the period 1921-1926 (40). The 1919-1925 average per acre in the Pajaro valley of California was from 400-450 boxes (133-150 barrels) in orchards with good care and generally about 250 boxes in Sonoma county (about 80 barrels) (1). The approximate average of certain areas on a barrel basis per acre for the years 1919-1926 have been reported (83) as follows: state of Washington, 86, Niagara county, N. Y., 52, New York state, 35, Virginia 20, and Missouri, 19.

In 1902, a record of the crops of a block of Baldwin and Russet trees in Massachusetts (number and acreage not given) for 40 years was reported (25), covering the years 1860-1901. It is of interest as a record of fluctuations in yield and is presented here:

	Baldwin	Russet		Baldwin	Russet
1860.....	173	172	1881.....	70	60
1861.....	35		1882.....	151	106
1862.....	225	167	1883.....	25	6
1863.....	108	40	1884.....	125	50
1864.....	47	9	1885.....	300	70
1865.....	2	6	1886.....	100	25
1866.....	3	3	1887.....	130	80
1867.....	7	8	1888.....	250	15
1868.....	125	65	1889.....	200	125
1869.....	10	5	1890.....	14(frost)	5
1870.....	105	18	1891.....	100	278
1871.....		14	1892.....	500	46
1872.....	150	40	1893.....	16	147
1873.....	40	4	1894.....	600	30
1874.....			1895.....	20	30
1875.....	62	103	1896.....	500	140
1876.....	150	40	1897.....	30	60
1877.....	15	12	1898.....	500	130
1878.....	300	140	1899.....	100	
1879.....	20	25	1900.....	800	90
1880.....	300	130	1901.....	50	50

Cost of Production—Complete or definite reports of the costs of apple production with clearly apparent authenticity are extremely few in the source materials prior to about 1910. Cost estimates prior to that time have to be made for the most part from recorded yields per acre, operating costs, cash expense accounts, total sales, net returns, and statements of the comparative costs and profits of orcharding and general farming. Most of

the reports confined to the costs of production were very brief and were necessarily limited to a single orchard or neighborhood, and prior to the establishment of Horticultural columns or sections in the periodicals were generally scattered with other miscellaneous items through the publication. The general summary of these costs is presented in the Presentation of Data section, but three of the more detailed accounts of apple production costs are presented here for comparison with present practices and costs. In 1857, a report, probably of Michigan conditions, was made (61) of the costs, exclusive of land, for the first seven years of a 200 tree apple orchard as follows:

200 trees on 4 acres.....	\$36.00	Returns:	
Staking and setting.....	10.00	4th year—25 bu.....	\$12.50
Washing trees once each year.....	7.00	5th year—50 bu.....	25.00
Pruning, manure, and staking.....	12.00	6th year—150 bu.....	72.00
Resetting of 5 trees.....	1.25	7th year—30 bu.....	15.00
Damage to crop in 1st 7 years.....	20.00	Trees worth \$5 each.....	1,000.00
Interest.....	43.12		
	\$129.37		\$1,127.50
			—129.37
		Net.....	\$998.13

In 1871, another report (62) of orchard costs in the fruit belt of Michigan for the first and second 10-year periods of this life was as follows:

First 10 year period:		Second 10 year period:	
1 acre, cleared.....	\$250.00	Cost at 10 years.....	\$570.00
40 trees at \$0.25.....	10.00	Interest on same.....	620.00
Tillage per year, \$10.....	100.00	Tillage for 10 years at \$10.....	100.00
Interest at 10%.....	260.00		
	\$620.00		\$1,290.00
Apple sales in 1st 10 years.....	—50.00	Apple sales in 2nd 10 years.....	—600.00
Net cost.....	\$570.00	Net cost.....	\$740.00

In 1872, a report of the costs of the first 10 years for one acre, again in Michigan, was made (63) as follows:

	Costs	Returns
Land.....	\$125	
Manure and mulch.....	75	
Cultivation of corn.....	35	\$75 (70 bu.)
Cultivation of oats or wheat.....	15	25
Grass cutting for 8 years.....	28	240 (10 tons)
40 trees.....	12	
Setting.....	3	
Pruning.....	8	
Borer control.....	10	
Mice control.....	5	
Codling moth control.....	7	
Others (controls).....	12	
Straightening and staking.....	5	
Scraping and washing.....	4	
Mulching.....	6	
Cultivating.....	8	
Management.....	5	
Harvesting 50 bushels.....	5	25
10 year total.....	\$360	\$360

Notes On Peaches

Yields—As in the case of apples, the majority of the reports of peach yields found in the magazines were there because of their news value and were thus likely to be representative of the more unusual yields, but there are, however, a number of reports which appear to describe the yields of the general average of the commercial orchards. Such reports as those of a 400-acre Maryland orchard which in the years 1854-1856, inclusive, bore an average of 62, 105, and 30 baskets per acre (68); of a 16-acre Pennsylvania orchard set in 1869 which bore in the years 1874-1878 an average of 100, 181, 268, 19, and 75 baskets per acre (21); of a 1,400-tree New Jersey orchard that averaged 65, 143, 230, 107, 80, and 36 baskets per acre for its third to eighth crops (24); of a 15-acre Michigan orchard that bore in the years 1886-1893, inclusive, average crops of 18, 42, 50, 74, 6, 145, 70, and 106 bushels, respectively (65), are probably more representative of commercial production. The yields of Elbertas at the Delaware station (33) per acre for 1912 to 1915 were 148, 189, 664, 778 baskets and the yields of Belles were 246, 1, 716, and 768 baskets. The first eight crops of a 12-acre Michigan orchard averaged 2, 181, 150, 259, 189, 251, 93, and 51 bushels per acre (29). The 1913-1925 average per acre production of peaches in Niagara county, N. Y., on Dunkirk sandy loam was 80 bushels and only 46 on Clyde fine sandy loam (83). The yields in bushels per acre for several peach areas in the South are given as follows as the estimate of the normal crops at the present time (39): McBee, S. C., 140, Greenville, S. C., 155, Sand Hills, N. C., 175, Fort Valley, Ga., 100, Kingston, Tenn., 150, and Highland, Ark., 125.

Cost of Production—As in the case of apples, references to costs of production of peaches were few and scattered widely through the source materials, but a summary of the reports representative of what was believed to be general commercial costs are presented in the Presentation of Data section. Some of the itemized cost accounts are presented here for comparison with present conditions. A record of the first eight years (1869-1876) of a 60-acre peach orchard in Huron county, northern Ohio, is presented below (20):

5,000 trees at 3 years.....	\$3,000	Part crop 1871, net.....	\$1,600
60 acres of land.....	7,000	Full crop 1874, net.....	8,000
Interest at 10%, 8 years.....	8,000	Interest on above.....	1,440
Replant 6 acres.....	600	Cost of land.....	7,000
	\$18,600		\$18,040

This leaves a net loss of \$560, though the trees are now (1876) worth \$2,000.

A 14-acre orchard at Holt, Mo., 12 years old in 1882, averaged a little over \$50 per acre (net) through the 12th year (22). The cost statement is presented below:

Land, per acre.....	\$50
Trees.....	50
Plowing and planting.....	7
Cultivation.....	43
	\$150

Interest at 10 per cent plus handling costs total \$1,088 for the 12 years. Receipts of \$2,150 minus the costs equals a net of \$1,062 in 12 years.

J. H. Hale submitted the following estimate of the cost per 100 acres of a Georgia peach orchard through the first five years. The date of the report was 1899 (80). He estimated the costs for a similar orchard in Connecticut to be somewhat more than the Georgia figures. The cost of the land and other fixed costs are not included:

First year:		Next four years:	
Trees, 16,000	\$1,000	Cultivation	\$500
Plowing and planting	500	Pruning	100
Fertilizer	500	Fertilizer	500
Tools	500	Tools and repairs	100
Cultivation	250		
	<u>\$2,750</u>	Per year	<u>\$1,200</u>
			4
		Four years	<u>\$4,800</u>
		First year	2,750
		Total	<u>\$7,550</u>

The Georgia Experiment Station in 1899 (80) also estimated the cost of establishing and carrying a 100-acre orchard through the first five years, to which the fixed costs must be added, as follows: (No cultivation was indicated in the items after the first year, though perhaps it was presumed to be the same as for the first year.)

Preparation of land	\$150	Pruning 2nd year	\$25
Planting trees	300	Pruning 3rd year	40
Cultivation	200	Pruning 4th year	100
		Pruning 5th year	125
1st year	<u>\$650</u>		
			<u>\$290</u>
			650
		5 year total of	<u>\$940</u>

The 1907 cost of a bushel of peaches in Michigan based on the costs at that time are reported (66), though the costs of the 5th year are not itemized. The costs of the next five years are also included.

First year:	
Land at \$100 per acre, 6% interest	\$6.00
Fitting	3.00
104 trees at \$0.07, 20 ft. x 20 ft.	7.28
Setting	3.00
Harrowing 5 times	1.50
1.5 bu. oats .....	.45
	<u>\$21.23</u>

	Second year	Third year	Fourth year	Fifth year	
Interest.....	\$6.00	\$6.00	\$6.00		
Spraying.....	1.50	3.00	4.50		
Pruning.....	1.50	3.00	4.50		
Plowing and harrowing.....	4.50	4.50	4.50		
Cover crop.....	.75	.75	.75		
50 bushels ashes.....			2.50		
Totals.....	\$14.25	\$17.25	\$22.50	\$28.00	
Next 5 years at \$40.....					\$200.00
First 5 years.....					103.48
10 years cost.....					\$303.48

The average per tree production in the whole 10-year period is 10 bushels, making the cost on the trees equal to \$0.29 per bushel, or \$0.45 leaving the orchard.

A balance sheet for a 15-acre, 12-year-old peach orchard in Michigan has been reported as follows (29):

Expenses:		Returns:	
Total cost for orchard.....	\$7,831.37	Total returns.....	\$19,094.42
Average cost per year.....	652.61	Average returns yearly.....	1,591.20
Average cost per acre, per year.....	43.50	Average per acre, per year.....	106.08

Net profit per acre per year.....	\$62.57
Net profit per bushel.....	.66
Overhead to be added to expenses equivalent of.....	\$424.30

The cost of development through the first three years in the Ozark foothills of Arkansas and in the Highland district of that state in 1925 is reported (8) as \$62 and \$71, respectively including interest. The cost in the McBee area of South Carolina for the first three years is given as \$68.10 or \$128.10 with the land included, and \$260 per acre in the Greenville area of the state, including the land (39).

Notes On Grapes

Yields—The average of the six crops of 1851-1856 of an acre of vineyard in Ontario county, N. Y., was 5,583 pounds (78). Vines on Kelley's Island, Ohio, in 1868 in fair condition bore 2 tons per acre (17). The average yield for Michigan for the years 1873-1874 was 1.5 tons per acre, the average yield per acre of a vineyard near Paw Paw, Michigan, in the years 1882-1890 was 3,990 pounds (64) and the reported yields of a number of vineyards in western Iowa in 1920 (44) ranged from 3,672 to 5,916 pounds per acre. References similar to the above, when added to these samples, were the basis of the summary in the Presentation of Data section, under Grapes.

Table 14.—Trend of wholesale prices in the United States, 1801-1929. Bureau of Labor Statistics. Adjusted to 1910-1914 base.

1801.....	163	1844.....	91	1887.....	82
1802.....	134	1845.....	91	1888.....	84
1803.....	137	1846.....	95	1889.....	84
1804.....	148	1847.....	95	1890.....	82
1805.....	152	1848.....	90	1891.....	81
1806.....	149	1849.....	88	1892.....	76
1807.....	140	1850.....	91	1893.....	78
1808.....	137	1851.....	94	1894.....	70
1809.....	144	1852.....	91	1895.....	71
1810.....	157	1853.....	97	1896.....	68
1811.....	153	1854.....	100	1897.....	68
1812.....	155	1855.....	100	1898.....	71
1813.....	180	1856.....	100	1899.....	76
1814.....	226	1857.....	100	1900.....	82
1815.....	177	1858.....	90	1901.....	81
1816.....	151	1859.....	89	1902.....	86
1817.....	152	1860.....	89	1903.....	87
1818.....	149	1861.....	89	1904.....	87
1819.....	131	1862.....	105	1905.....	88
1820.....	112	1863.....	132	1906.....	90
1821.....	107	1864.....	169	1907.....	95
1822.....	110	1865.....	193	1908.....	92
1823.....	105	1866.....	170	1909.....	99
1824.....	104	1867.....	153	1910.....	103
1825.....	105	1868.....	143	1911.....	95
1826.....	104	1869.....	136	1912.....	101
1827.....	105	1870.....	126	1913.....	102
1828.....	100	1871.....	121	1914.....	100
1829.....	99	1872.....	123	1915.....	103
1830.....	96	1873.....	122	1916.....	129
1831.....	103	1874.....	118	1917.....	180
1832.....	104	1875.....	113	1918.....	198
1833.....	103	1876.....	105	1919.....	210
1834.....	96	1877.....	98	1920.....	230
1835.....	109	1878.....	90	1921.....	150
1836.....	122	1879.....	86	1922.....	152
1837.....	121	1880.....	95	1923.....	156
1838.....	116	1881.....	94	1924.....	152
1839.....	122	1882.....	96	1925.....	152
1840.....	104	1883.....	94	1926.....	154
1841.....	103	1884.....	88	1927.....	149
1842.....	96	1885.....	83	1928.....	151
1843.....	90	1886.....	82	1929.....	150

Data supplied in a letter from Mr. Chas. E. Baldwin, Acting Commissioner of Labor Statistics, dated Feb. 10, 1930. The data in the letter were based on 1926 as 100 and are here converted to the 1910-1914 base.

Table 15.—The per capita production and importation of certain fruits.

Date	Pounds Apples	Pounds Bananas	Crates Cantaloupes	Fruits Grapefruit	Fruits Oranges
1889.....	116			Less than 1	12
1890.....	64				
1891.....	155				
1892.....	92				
1893.....	86				
1894.....	99				
1895.....	158				
1896.....	164				
1897.....	114				
1898.....	80				
1899.....	118			Less than 1	14
1900.....	136				
1901.....	87				
1902.....	134				
1903.....	121				
1904.....	142				
1905.....	81				
1906.....	126	Ave. 1905-			
1907.....	68	1909 is			
1908.....	4	21.2			
1909.....	80	20.4		Less than 1	44
1910.....	77	20.7			
1911.....	114	23.9			
1912.....	124	23.5			
1913.....	76	22.0			
1914.....	130	25.0			
1915.....	116	20.7			32
1916.....	96	18.3			32
1917.....	82	17.0	.078		16
1918.....	82	16.7	.056		36
1919.....	64	16.9	.097	4	40
1920.....	106	17.4	.099	3	51
1921.....	46	13.9	.107	4	35
1922.....	93	21.1	.117	5	51
1923.....	92	20.0	.105	5	58
1924.....	68	20.0	.122	5	46
1925.....	76	22.1	.127	3	46
1926.....	106	25.2	.124		52
1927.....	52	24.2	.127		40
1928.....	78	26.8	.129		68
1929.....	58	26.2	.138		42

Table 15.—(Con't)—The per capita production and importation of certain fruits.

Date	Pounds Peaches	Pounds Pears	Quarts Strawberries	Melons Watermelons
1899.....	10			
1900.....	32			
1901.....	30			
1902.....	24			
1903.....	18			
1904.....	24			
1905.....	22			
1906.....	26			
1907.....	13			
1908.....	27			
1909.....	20	4.9		
1910.....	26	5.7		
1911.....	18	6.2		
1912.....	28	6.2		
1913.....	20	5.2		
1914.....	28	6.2		
1915.....	32	5.6		
1916.....	18	5.9		
1917.....	24	6.6	1.88	.44
1918.....	16	6.5	1.48	.31
1919.....	24	6.8	1.49	.40
1920.....	22	8.0	1.47	.54
1921.....	15	5.2	1.77	.58
1922.....	26	9.5	2.37	.65
1923.....	20	8.0	2.31	.38
1924.....	21	8.4	2.83	.51
1925.....	20	9.0	2.00	.49
1926.....	30	10.9	2.38	.60
1927.....	20	7.8	2.73	.49
1928.....	28	10.2	2.80	.53
1929.....	19	8.6	2.74	.56

The population figures used are from the 14th Census through 1920, the 1930 figures from the Census Bureau quoted in the Literary Digest of Aug. 23, 1930. One-tenth of the difference between the figures for each ten years is added to the first, second, and following years of each decade to secure the population of those respective years.

The data for the fruits are from the following Year-books of the U. S. D. A. and Ohio Agr. Exp. Sta. Bul. 418, p. 34-35. Mch. 1928.

Apples, 1928, 1930.

Bananas, 1930. Estimated on basis of 50 pounds per bunch, net.

Cantaloupes, 1920, 1925, 1930.

Grapefruit, Ohio, Bul. 418, Table 8, p. 34-35. 1928.

Oranges, Ibid., and 1930, 1930.

Peaches, 1920, 1925, 1928, 1930.

Pears, 1925, 1928, 1930.

Strawberries, 1920, 1922, 1930.

Watermelons, 1920, 1922, 1925, 1930.

All except apples, peaches, and pears are commercial production.

Table 16.—The price and purchasing power indices of apples.

Date	New York		Boston		Detroit	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1829			81	82		
1830			78	81		
1831			90	87		
1832			90	86		
1833			70	68		
1834			90	94		
1839			90	74		
1840			75	72		
1847	55	58				
1849					100	114
1850	59	65			40	44
1851					67	71
1852					40	44
1853	115	126			83	86
1855	67	67			67	67
1856	55	55			75	75
1857	101	101			83	83
1858	82	91				
1859	89	100				
1860	64	72				
1861	82	92				
1862	50	48				
1863	91	69			120	91
1864	96	57				
1865	123	64				
1866	146	86				
1867	123	80				
1868	114	80				
1869	103	76				
1870	55	44				
1871	116	96				
1872	71	58				
1873	89	73				
1874	64	54				
1875	98	87			89	70
1876	59	56			56	53
1877	76	78			131	134
1878	46	51			57	63
1879	62	72	96	112	100	116
1880	43	45	52	55	50	53
1881	96	102	119	126	119	126
1882	91	95	118	123	111	116
1883	108	115	138	147	123	131
1884	55	62	82	93	72	82
1885	99	119	75	90	61	73
1886	74	90	72	88	67	82
1887	65	79	84	102	77	94
1888	85	101	76	90	59	70
1889	99	118	108	128	80	95
1890	96	117	153	186	141	172
1891	47	58	77	95	77	95
1892	78	103	95	125	108	142
1893	105	135	118	151	125	160
1894	82	117	73	194	92	131
1895	76	107	88	124	75	106
1896	46	68	51	75	47	69
1897	87	128	111	163	116	170
1898	105	148	100	141	119	168
1899	70	92	90	118	100	132
1900	77	94	75	91	75	91
1901	150	185	129	159	57	65
1902	69	80	80	93	77	90
1903	85	98	102	117	97	111
1904	69	79	73	84	67	77
1905	114	130	117	133	116	132
1906	87	97	101	112	79	88
1907	110	116	117	123	128	135
1908	105	114	104	113	136	148
1909	115	116	112	113	97	96
1910	115	112	91	88	153	148
1911	90	95	109	115	92	97
1912	91	90	85	84	74	73
1913	127	124	144	141	113	111
1914	78	78	69	68	68	68

Table 16.—(Con't)—The price and purchasing power indices of apples.

Date	New York		Boston		Detroit	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1915	94	91	111	108	106	103
1916	118	91	115	89	114	88
1917	146	81	159	88	194	108
1918	187	94	170	86	158	80
1919	239	114	218	104	306	146
1920	169	73	214	93	116	50
1921	232	155	299	199	290	193
1922	148	97	138	91	121	80
1923	146	94	160	102	155	99
1924	192	126	149	98	169	111
1925	180	118	154	101	148	97
1926	138	90			216	140
1927	197	132			300	201
1928	161	107			216	143
1929	161	107			211	141

Date	Virginia		Jonesboro, Ill.		Date	Virginia		Jonesboro, Ill.	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.		P. Ind.	P. Pow.	P. Ind.	P. Pow.
1866			125	74	1897	67	99		
1867	102	67	107	70	1898	125	176		
1868	167	117	105	73	1899	65	86		
1869	122	90	70	51	1900	67	82		
1870	110	87	83	66	1901	68	84		
1871	138	114	70	58	1902	90	105	70	81
1872	95	77	74	60	1903	71	82	77	88
1873	100	82	79	65	1904	86	99	73	84
1874	114	97	61	52	1905	75	85	93	106
1875	117	104	57	50	1907	113	119	125	132
1876	76	72	55	52	1908	78	85	91	99
1877	125	128	47	48	1909	97	98	87	97
1878	92	102	75	83	1910	103	100	135	131
1879	75	87	52	60	1911	111	117	79	83
1880	100	105	37	39	1912	86	85	89	88
1881	92	98	69	73	1913	114	112	103	101
1882	144	150	59	61	1914	82	82	95	95
1883	95	101	78	83	1915	87	84	65	63
1884	71	81	80	91	1916	102	79	137	106
1885	71	86	39	47	1917	148	82	135	75
1886	57	70	49	60	1918	159	80	214	108
1887	79	96	65	79	1919	216	103	244	116
1888	68	81	37	44	1920	173	75	197	86
1889	69	82	64	76	1921	286	191	256	171
1890	144	176	87	106	1922	173	114	146	96
1891	77	95			1923	165	106	136	87
1892	73	96			1924	141	93	153	100
1893	75	96			1925	154	101	155	102
1894	97	138			1926	105	68	119	77
1895	63	89			1927	186	125	182	122
1896	63	93			1928			159	105

The prices in New York, Boston, and Detroit are wholesale prices, the prices in Virginia and Jonesboro, Illinois are based on the prices to the producer. The data are from the following sources:

- New York: 1847-1880 American Agriculturist.
1881-1892 Rural New Yorker.
1893-1912 Cornell Circ. 22, Table 4, p. 17. 1914.
1913-1925 Ohio Bul. 418, Table 32, p. 67.
1926-1928 U. S. D. A. Yearbook, p. 902, 1926; p. 768, 1928.
- Boston: 1829-1840 New England Farmer.
1879-1914 Cornell Ext. Bul. 28, Table 4, p. 155, 1918.
1915-1925 U. S. D. A. Stat. Bul. 14, p. 45, 1927.
- Detroit: 1849-1914 Michigan Farmer.
1915-1925 U. S. D. A. Stat. Bul. 15, p. 60, 1927.
1926-1929 Michigan Farmer.
- Jonesboro, Ill.: 1866-1890 Ill. Agr. Exp. Sta. Bul. 351, p. 520, 1930.
1902-1928 Ibid.
- Virginia: 1867-1927 Va. Agr. Exp. Sta. Tech. Bul. 37, p. 177, 1929.

Table 17.—The price and purchasing power indices of apples, based on the price to the producer.

Date	New York		Michigan		Virginia	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1910.....	135	131	155	150	100	97
1911.....	82	86	92	97	113	119
1912.....	76	75	74	73	87	86
1913.....	143	140	113	111	130	127
1914.....	62	62	68	68	72	72
1915.....	111	108	105	102	96	93
1916.....	105	81	114	88	102	79
1917.....	183	102	194	108	162	90
1918.....	160	81	158	80	185	93
1919.....	294	140	306	146	236	112
1920.....	102	44	116	50	170	74
1921.....	305	203	290	193	336	224
1922.....	105	69	121	80	142	93
1923.....	202	129	155	99	174	112
1924.....	165	108	169	111	157	103
1925.....	167	110	148	97	166	109
1926.....	159	103	121	78	192	125
1927.....	290	195	282	189	245	164
1928.....	254	168	198	131	236	156

Date	Missouri		Colorado		Washington	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1910.....	103	100	124	120	104	101
1911.....	103	108	96	101	122	128
1912.....	77	76	102	101	84	83
1913.....	113	111	103	101	114	112
1914.....	105	105	76	76	78	78
1915.....	85	82	103	100	102	99
1916.....	135	105	100	78	107	83
1917.....	147	82	117	65	126	70
1918.....	237	120	167	84	133	67
1919.....	242	115	183	87	191	91
1920.....	170	74	172	75	167	73
1921.....	433	289	189	126	179	119
1922.....	125	82	78	51	107	70
1923.....	150	96	139	89	121	78
1924.....	158	104	116	76	165	108
1925.....	190	125	137	90	169	111
1926.....	.....	.....	100	65	144	94
1927.....	.....	.....	170	114	278	186
1928.....	.....	.....	111	74	189	125

Data from the following sources for 1910-1925:

New York: U. S. D. A. Sta. Bul. 14, p. 81, 1927.

Michigan: U. S. D. A. Sta. Bul. 15, p. 60, 1927. Mo., Ibid., p. 126, 1927.

Virginia: U. S. D. A. Sta. Bul. 16, p. 36, 1927.

Colorado: U. S. D. A. Sta. Bul. 17, p. 48, 1927. Wash., Ibid., 17, p. 113, 1927.

All beyond 1925 from U. S. D. A. Mkt. News Service on F. O. B. prices.

Table 21.—(Con't)—The price and purchasing power indices of peaches, based on the price to the producer.

Date	Illinois		Michigan		New York	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1910.....	115	112	98	95	92	89
1911.....	76	80	84	88	96	101
1912.....	122	121	116	115	108	107
1913.....	92	90	104	102	94	92
1914.....	94	94	98	98	108	108
1915.....	90	87	76	74	61	59
1916.....	124	96	87	67	94	73
1917.....	162	90	141	78	94	52
1918.....	297	150	239	121	209	106
1919.....	230	110	201	96	182	87
1920.....	261	113	155	67	152	66
1921.....	328	219	204	136	172	115
1922.....	133	88	113	74	73	48
1923.....	218	140	134	86	122	78
1924.....	169	111	151	99	130	86
1925.....	215	141	177	116	166	109
1926.....	.....	.....	104	68	56	36
1927.....	.....	.....	120	81	127	85
1928.....	.....	.....	98	65	127	84

Data from the following sources, 1910-1925:

- Georgia: U. S. D. A. Sta. Bul. 16, p. 97, 1927.
- N. Carolina: U. S. D. A. Sta. Bul. 16, p. 67, 1927.
- Arkansas: U. S. D. A. Sta. Bul. 16, p. 185, 1927.
- Illinois: U. S. D. A. Sta. Bul. 15, p. 43, 1927.
- Michigan: U. S. D. A. Sta. Bul. 15, p. 60, 1927.
- New York: U. S. D. A. Sta. Bul. 14, p. 81, 1927.
- California: U. S. D. A. Sta. Bul. 17, p. 140, 1927.

Data for 1926-1929 for the states and years concerned are from the U. S. D. A. Market News Service on F. O. B. prices.

Table 22.—The price and purchasing power indices of plums.

Date	New York		Detroit		Date	New York		Detroit	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.		P. Ind.	P. Pow.	P. Ind.	P. Pow.
1848.....	245	272	.....	.....	1896.....	109	160	68	100
1853.....	219	226	.....	.....	1897.....	73	107	93	137
1854.....	237	237	.....	.....	1898.....	91	128	52	73
1857.....	310	310	.....	.....	1899.....	182	239	105	138
1858.....	201	223	.....	.....	1900.....	91	111	105	128
1859.....	329	368	.....	.....	1901.....	109	134	77	95
1860.....	320	360	.....	.....	1902.....	128	149	105	122
1862.....	128	122	.....	.....	1903.....	146	168	65	75
1863.....	310	235	.....	.....	1904.....	146	168	86	99
1870.....	169	134	.....	.....	1905.....	91	103	77	88
1872.....	137	111	.....	.....	1906.....	109	121	128	142
1873.....	365	299	.....	.....	1907.....	164	173	163	172
1874.....	219	186	.....	.....	1908.....	109	118	115	125
1875.....	237	210	.....	.....	1909.....	91	92	88	89
1876.....	158	150	.....	.....	1910.....	164	159	96	93
1877.....	164	167	.....	.....	1911.....	91	96	68	72
1878.....	173	192	.....	.....	1912.....	91	90	112	111
1879.....	158	184	.....	.....	1913.....	82	80	128	125
1880.....	140	147	96	101	1914.....	73	73	96	96
1881.....	146	155	308	328	1915.....	73	71	96	93
1882.....	140	146	250	260	1916.....	123	95	154	119
1883.....	104	111	278	296	1917.....	149	83	177	98
1884.....	146	166	269	306	1918.....	328	166	385	194
1885.....	71	85	154	186	1919.....	314	150	327	156
1886.....	128	156	193	234	1920.....	140	61	269	117
1887.....	113	138	212	258	1921.....	162	108	208	139
1888.....	160	190	216	257	1922.....	237	156	298	196
1889.....	85	101	212	252	1923.....	182	117	219	140
1890.....	109	133	145	177	1924.....	164	108	133	120
1891.....	94	116	132	163	1925.....	117	77	250	164
1892.....	84	110	197	259	1926.....	128	83	148	96
1893.....	109	140	125	160	1927.....	226	151	138	261
1894.....	42	60	98	140	1928.....	164	109	111	74
1895.....	134	189	149	210	1929.....	292	195	308	205

Data from the following sources:

New York: 1848-1880 American Agriculturist.
1881-1925 Rural New Yorker,
1926-1929 Chicago Packer.

Detroit: 1880-1929 Michigan Farmer.

Table 23.—The price and purchasing power indices of cherries.

Date	New York		Detroit		Date	New York		Detroit	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.		P. Ind.	P. Pow.	P. Ind.	P. Pow.
1847.....	86	90			1897.....	86	126	67	98
1848.....	143	159			1898.....	86	121	50	70
1854.....	100	100			1899.....	71	93	83	109
1857.....	186	186			1900.....	71	86	83	101
1858.....	143	159			1901.....	43	53	83	102
1860.....	128	144			1902.....	71	82	83	96
1862.....	100	105			1903.....	86	99	100	115
1863.....	171	130			1904.....	143	164	67	77
1869.....	186	137			1905.....	71	81	67	76
1870.....	214	170			1906.....	57	63	67	74
1872.....	143	116			1907.....	128	135	100	105
1873.....	157	133			1908.....	86	93	117	127
1875.....	128	122			1909.....	114	115	83	84
1876.....	114	116			1910.....	128	124	100	97
1877.....	128	142			1911.....	100	105	50	53
1878.....	157	174			1912.....	100	99	133	132
1879.....	86	100			1913.....	114	112	133	130
1880.....	143	150			1914.....	71	71	83	83
1881.....	57	61			1915.....	128	124	100	97
1882.....	171	178			1916.....	100	78	100	78
1883.....	86	91			1917.....	86	48	117	65
1884.....	100	114			1918.....	186	95	133	67
1885.....	100	120	117	141	1919.....	171	81	233	111
1886.....	86	105	100	122	1920.....	157	68	217	94
1887.....	143	174	100	122	1921.....	171	114	200	133
1888.....	128	152	150	178	1922.....	186	122	200	132
1889.....	128	152	100	119	1923.....	143	93	167	107
1890.....	128	156	117	143	1924.....	100	66	150	99
1891.....	86	106	67	83	1925.....	171	112	150	99
1892.....	86	113	67	88	1926.....	128	83	133	86
1893.....	57	83	67	86	1927.....	171	114	117	78
1894.....	57	81	83	118	1928.....	157	104	150	99
1895.....	57	80	83	117	1929.....	157	105	150	100
1896.....	114	168	67	98					

Data from the following sources:

New York: 1847–1880 American Agriculturist.
1881–1929 Rural New Yorker.

Detroit: 1885–1929 Michigan Farmer.

Table 24.—The price and purchasing power indices of grapes.

Date	New York		Detroit		Date	New York		Detroit	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.		P. Ind.	P. Pow.	P. Ind.	P. Pow.
1848.....	400	444			1895.....	67	94	83	117
1853.....	400	412			1896.....	67	98	83	122
1855.....	267	267			1897.....	100	147	83	122
1859.....	400	449			1898.....	67	94	83	117
1860.....	233	262			1899.....	67	88	83	109
1861.....	267	300			1900.....	67	82	42	51
1862.....	167	159			1901.....	100	123	83	102
1863.....	333	252			1902.....	100	116	125	145
1868.....	467	326			1903.....	100	115	83	95
1869.....	533	392			1904.....	100	115	83	95
1870.....	233	185			1905.....	67	76	83	94
1871.....	267	221			1906.....	67	74	125	139
1872.....	267	217			1907.....	100	105	167	176
1873.....	267	219			1908.....	67	73	83	90
1874.....	233	197			1909.....	67	68	83	84
1875.....	267	236			1910.....	133	129	125	121
1876.....	267	254			1911.....	67	70	83	87
1877.....	233	238			1912.....	100	99	83	82
1878.....	267	297			1913.....	100	98	125	122
1879.....	200	232			1914.....	100	100	83	85
1880.....	167	176	250	263	1915.....	100	97	125	121
1881.....	133	141	375	399	1916.....	67	52	83	64
1882.....	100	104	167	174	1917.....	100	56	125	69
1883.....	300	319	250	266	1918.....	133	67	125	63
1884.....	267	303	208	236	1919.....	133	63	250	119
1885.....	200	241	167	201	1920.....	200	87	250	109
1886.....	200	244	208	254	1921.....	167	111	292	195
1887.....	200	244	167	204	1922.....	133	88	208	137
1888.....	200	238	125	149	1923.....	100	64	208	133
1889.....	267	318	167	199	1924.....	167	110	208	137
1890.....	267	326	167	204	1925.....	200	132	292	192
1891.....	167	206	125	154	1926.....	100	65	167	108
1892.....	100	132	125	164	1927.....	100	67	167	112
1893.....	200	256	125	160	1928.....	100	66	167	110
1894.....	100	143	83	118	1929.....	133	87	167	111

Data from the following sources:

New York: 1848-1880 American Agriculturist.
1881-1925 Rural New Yorker.
1926-1928 U. S. D. A. Yearbook, 1928.
1929 Rural New Yorker.

Detroit: 1880-1929 Michigan Farmer.

Table 25.—The price and purchasing power indices of grapes, based on the price to the producer.

Date	New York		Pennsylvania		Michigan	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1910.....	100	97	94	91	132	128
1911.....	114	120	97	102	82	86
1912.....	71	70	91	90	73	72
1913.....	96	94	128	125	132	129
1914.....	125	125	84	84	82	82
1915.....	82	80	100	97	114	111
1916.....	100	78	125	97	123	95
1917.....	143	79	134	74	182	101
1918.....	189	95	181	91	186	94
1919.....	214	102	188	90	250	119
1920.....	232	101	219	95	182	79
1921.....	214	143	156	104	273	182
1922.....	161	106	156	103	182	120
1923.....	128	82	119	76	209	134
1924.....	132	87	150	99	250	164
1925.....	200	132	222	146	318	209
1926.....	239	155	.....	.....	186	121
1927.....	232	156	.....	.....	195	131
1928.....	250	166	.....	.....	173	114

Date	Arkansas		California	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1910.....	92	80	171	166
1911.....	125	132	76	80
1912.....	90	80	76	75
1913.....	100	98	98	96
1914.....	88	88	78	78
1915.....	80	78	58	56
1916.....	100	78	90	70
1917.....	140	78	102	79
1918.....	175	88	115	58
1919.....	200	95	146	70
1920.....	250	109	171	74
1921.....	250	167	207	138
1922.....	162	106	146	96
1923.....	175	112	149	96
1924.....	100	66	141	93
1925.....	138	91	146	96

Data from the following sources, 1910–1925:

New York: U. S. D. A. Sta. Bul. 14, p. 82, 1927.

Pennsylvania: U. S. D. A. Sta. Bul. 14, p. 110, 1927.

Michigan: U. S. D. A. Sta. Bul. 15, p. 61, 1927.

Arkansas: U. S. D. A. Sta. Bul. 16, p. 185, 1927.

California: U. S. D. A. Sta. Bul. 17, p. 140, 1927.

New York and Michigan 1926–1928 from the U. S. D. A. Market News Service on those years and states, F. O. B. prices.

Table 26.—The price and purchasing power indices of oranges.

Date	Florida		California		Date	Florida		California	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.		P. Ind.	P. Pow.	P. Ind.	P. Pow.
1889.....	108	128			1910.....	83	80	97	94
1890.....	105	128			1911.....	112	118	92	97
1891.....	82	101			1912.....	117	116	100	99
1892.....	94	124			1913.....	98	96	121	119
1893.....	88	113			1914.....	92	92	90	90
1894.....	88	126			1915.....	105	102	106	103
1895.....	158	222	127	179	1916.....	122	94	112	87
1896.....	130	191	121	178	1917.....	169	94	106	59
1897.....	139	204	107	157	1918.....	194	98	215	108
1898.....	143	201	87	122	1919.....	191	91	164	78
1899.....	143	188			1920.....	175	76	216	94
1900.....	106	129			1921.....	196	131	199	133
1901.....	105	130			1922.....	173	114	246	162
1902.....	124	144			1923.....	140	90	182	117
1903.....	95	109	96	110	1924.....	194	127	193	127
1904.....	90	103	87	100	1925.....	202	133	260	171
1905.....	109	124	93	106	1926.....	151	98	196	127
1906.....	100	111	99	110	1927.....	134	90	199	134
1907.....	82	86	96	101	1928.....	188	124	150	100
1908.....	98	106			1929.....	137	92		
1909.....	94	93							

The prices used were the wholesale prices in New York for both states, as given in Mr. O. C. Stine's letter of May 3, 1930. As in the case of grapefruit, the prices were compiled from the New York Producers Price Current, quotations for one day a week. Mr. Stine is chief of the Division of Statistical and Historical Research, Bureau of Agr. Ecs., U.S.D.A.

Table 27.—The price and purchasing power indices of grapefruit.

Date	Florida		California		Date	Florida		California	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.		P. Ind.	P. Pow.	P. Ind.	P. Pow.
1891.....	73	90			1911.....	90	94		
1892.....	65	86			1912.....	164	162	111	110
1893.....	87	112			1913.....	88	86	108	106
1894.....	88	126			1914.....	93	93	82	82
1895.....	90	127			1915.....	65	63	70	68
1896.....	203	298			1916.....	83	54	77	60
1897.....	241	354			1917.....	112	62	80	44
1898.....	178	251			1918.....	125	63	93	47
1899.....	222	292			1919.....	156	74	116	55
1900.....	208	254			1920.....	105	46	94	41
1901.....	160	198			1921.....	149	100	100	67
1902.....	191	222			1922.....	143	94	134	88
1903.....	143	164			1923.....	135	86	97	62
1904.....	139	160			1924.....	121	80	104	68
1905.....	105	119			1925.....	138	91	136	89
1906.....	139	154			1926.....	156	101	133	86
1907.....	109	115			1927.....	129	86	129	86
1908.....	145	158			1928.....	164	109		
1909.....	98	99			1929.....	121	81		
1910.....	109	106							

Florida grapefruit prices are the wholesale prices at New York, furnished by Mr. O. C. Stine in charge of the Division of Statistical and Historical Research, Bureau of Agr. Ecs., U. S. D. A. in a letter dated May 3, 1930.

California prices are the weighed F. O. B. prices in California, from Calif. Agr. Exp. Sta. Bul. 463, p. 33, 1928.

Table 28.—The price and purchasing power indices of butter.

Date	New York		Detroit		Virginia	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1846	69	73			64	67
1847	69	73			68	72
1848	69	77			68	76
1849	69	78	57	65	68	77
1850	69	76	57	63	64	70
1851	69	73	52	55	68	72
1852	72	79	67	74	77	85
1853	79	81	76	78	77	79
1854	76	76	86	86	73	73
1855	83	83	95	95	82	82
1856	79	79	100	100	82	82
1857	76	76	110	110	95	95
1858	59	66	71	79	82	91
1859	66	74			77	86
1860	55	62			73	82
1861	55	62			91	102
1862	59	56				
1863	76	58	90	68		
1864	131	78	119	70		
1865	134	69				
1866	138	81			109	64
1867	107	70			100	65
1868	128	90			132	92
1869	134	98			123	90
1870	110	87	133	106	109	86
1871	93	77	114	94	100	83
1872	90	73			91	74
1873	110	90			100	82
1874	117	100	119	100	104	88
1875	96	85			104	92
1876	96	91	114	108	95	90
1877	83	85	90	92	82	84
1878	72	80	76	84	73	81
1879	55	64	76	88	64	74
1880	86	90	100	105	77	81
1881	76	81	105	112	86	91
1882	107	111	119	124	104	108
1883	90	96	100	106	86	91
1884	96	109	100	114	82	93
1885	76	92	95	114	86	104
1886	86	105	105	128	77	94
1887	79	96	105	128	77	94
1888	76	90	105	125	73	87
1889	69	82	95	113	68	81
1890	62	76	81	99	73	89
1891	83	102	81	100	73	90
1892	83	109	86	113	77	101
1893	86	110	95	122	82	105
1894	72	103	81	116	68	97
1895	66	93	76	107	73	103
1896	59	87	67	98	64	94
1897	59	87	71	104	54	79
1898	62	87	71	100	59	83
1899	69	91	71	93	64	90
1900	72	88	81	99	73	89
1901	69	85	75	94	68	84
1902	79	92	86	100	82	95
1903	76	87	86	99	82	94
1904	69	79	71	82	82	94
1905	79	90	86	98	82	93
1906	79	88	81	90	86	96
1907	93	98	100	105	86	90
1908	83	90	100	109	91	99
1909	90	91	114	115	91	92
1910	100	97	110	107	104	101
1911	90	95	86	90	95	100
1912	103	102	105	104	100	99
1913	103	101	105	103	104	102
1914	96	96	100	100	104	104
1915	103	100	100	97	114	111
1916	107	83	108	84	118	91
1917	140	78	142	79	150	83
1918	167	84	169	85	182	92
1919	200	95	204	97	209	100
1920	213	93	219	95	227	99
1921	160	107	158	105	164	109
1922	140	92	138	91	136	89

Table 28.—(Con't)—The price and purchasing power indices of butter.

Date	New York		Detroit		Virginia	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1923.....	160	102	165	106	159	102
1924.....	157	103	165	108	150	99
1925.....	157	103	165	108	145	95
1926.....	148	96	154	100	145	94
1927.....	166	111	169	113	150	100
1928.....	166	110	169	112	.....	.....
1929.....	159	106	173	115	.....	.....

Data from the following sources:

New York: 1846-1880 American Agriculturist.
1881-1926 Rural New Yorker.
1927-1929 Michigan Farmer.

Detroit: 1848-1929 Michigan Farmer.

Virginia: 1846-1927 Va. Agr. Exp. Sta. Tech. Bul. 37, Table 85c, p. 179-180, 1929.

Table 29.—The price and purchasing power indices of beef cattle.

Date	New York		Chicago		Detroit	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1840.....	53	51	.....	.....	.....	.....
1841.....	55	53	.....	.....	.....	.....
1842.....	46	48	.....	.....	.....	.....
1843.....	47	52	.....	.....	.....	.....
1844.....	46	50	.....	.....	.....	.....
1845.....	49	54	.....	.....	.....	.....
1846.....	52	55	.....	.....	.....	.....
1847.....	59	62	.....	.....	.....	.....
1848.....	59	66	.....	.....	.....	.....
1849.....	68	77	.....	.....	.....	.....
1850.....	63	69	.....	.....	.....	.....
1851.....	64	68	.....	.....	.....	.....
1852.....	70	77	.....	.....	.....	.....
1853.....	78	80	.....	.....	.....	.....
1854.....	78	78	.....	.....	.....	.....
1855.....	88	88	.....	.....	.....	.....
1856.....	85	85	.....	.....	.....	.....
1857.....	90	90	.....	.....	.....	.....
1858.....	72	80	.....	.....	.....	.....
1859.....	83	93	.....	.....	.....	.....
1860.....	78	88	.....	.....	.....	.....
1861.....	73	82	.....	.....	.....	.....
1862.....	73	70	.....	.....	.....	.....
1863.....	84	64	.....	.....	73	55
1864.....	118	70	.....	.....	73	43
1865.....	143	74	.....	.....	120	62
1866.....	132	78	92	54	.....	.....
1867.....	130	85	92	60	.....	.....
1868.....	135	94	96	67	.....	.....
1869.....	128	94	98	72	.....	.....
1870.....	131	104	80	63	99	78
1871.....	110	91	75	62	84	69
1872.....	99	80	75	61	.....	.....
1873.....	95	78	79	65	.....	.....
1874.....	94	80	75	64	79	67
1875.....	98	87	70	62	.....	.....
1876.....	83	79	63	60	64	61
1877.....	87	89	66	67	58	59
1878.....	75	83	60	67	60	67
1879.....	73	85	49	57	43	50
1880.....	70	74	60	63	46	48
1881.....	89	95	64	68	67	71
1882.....	103	107	84	88	75	78
1883.....	94	100	76	81	67	71
1884.....	95	108	81	92	73	83
1885.....	83	100	75	90	78	94
1886.....	83	101	72	88	70	85
1887.....	74	90	72	88	69	84
1888.....	81	96	74	88	75	89

Table 29.—(Con't)—The price and purchasing power indices of beef cattle.

Date	New York		Chicago		Detroit	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1889	67	80	68	81	70	83
1890	71	86	59	72	60	73
1891	80	99	67	83	69	85
1892			58	76	62	82
1893			62	79	67	86
1894			58	83	62	88
1895			63	89	61	86
1896			55	81	45	66
1897			61	90	51	75
1898			62	87	63	89
1899			69	91	56	74
1900			69	84	56	68
1901			72	89	58	72
1902			84	98	72	84
1903			65	75	72	83
1904			66	75	66	76
1905			67	76	69	78
1906			69	77	68	76
1907			74	78	71	75
1908			77	84	72	78
1909			82	83	75	76
1910			90	87	88	85
1911			86	90	78	82
1912			108	107	100	99
1913			106	104	117	115
1914			111	111	118	118
1915			108	105	115	112
1916			122	94	116	90
1917			148	82	144	80
1918			188	95	166	84
1919			198	94	178	85
1920			170	74	164	71
1921			105	70	111	74
1922			111	73	105	69
1923			120	77	110	70
1924			118	78	107	70
1925			130	86	116	76
1926			121	78	119	77
1927			145	97	150	100
1928			178	118	177	117
1929			156	104	176	117

Date	Virginia		Date	Virginia		Date	Virginia	
	P. Ind.	P. Pow.		P. Ind.	P. Pow.		P. Ind.	P. Pow.
1867	94	61	1888	60	71	1909	83	84
1868	94	66	1889	51	61	1910	87	84
1869	88	65	1890	52	63	1911	86	90
1870	92	73	1891	52	64	1912	102	101
1871	64	53	1892	58	76	1913	110	108
1872	75	61	1893	61	78	1914	114	114
1873	64	52	1894	55	78	1915	119	116
1874	62	52	1895	58	82	1916	121	94
1875	75	66	1896	59	87	1917	156	87
1876	64	61	1897	59	87	1918	199	100
1877	70	71	1898	64	90	1919	201	96
1878	59	66	1899	67	88	1920	188	82
1879	61	71	1900	67	82	1921	108	72
1880	65	68	1901	69	85	1922	120	79
1881	66	70	1902	72	84	1923	135	86
1882	80	83	1903	78	90	1924	116	76
1883	79	84	1904	70	80	1925	139	91
1884	81	92	1905	72	82	1926	127	84
1885	62	75	1906	72	80	1927	144	97
1886	62	76	1907	75	79			
1887	59	72	1908	81	88			

Data from the following sources:

New York: 1840-1891 Cornell Agr. Exp. Sta. Bul. 341, Table 8, p. 196-197, 1914.

Chicago: 1866-1886 Prairie Farmer.

1887-1891 Michigan Farmer.

1892-1899 Cornell Agr. Exp. Sta. Bul. 341, Table 8, p. 196-197, 1914.

1900-1928 U. S. D. A. Yearbook 1928, p. 913.

1929 Michigan Farmer.

Detroit: 1863-1929 Michigan Farmer.

Virginia: 1867-1927 Va. Agr. Exp. Sta. Tech. Bul. 37, Table 85b, p. 177-178, 1929.

Prices are for live weight at the yards per hundred, except for Virginia which are the weighted prices to the producer.

Table 30.—The price and purchasing power indices of hogs.

Date	New York—Chicago		Virginia		Date	New York—Chicago		Virginia	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.		P. Ind.	P. Pow.	P. Ind.	P. Pow.
1840.....	54	52			1885.....	70	84	56	67
1841.....	58	56			1886.....	59	72	55	67
1842.....	51	52			1887.....	62	76	60	73
1843.....	53	59			1888.....	69	82	60	71
1844.....	55	60			1889.....	80	95	55	65
1845.....	49	54			1890.....	68	83	51	62
1846.....	55	58			1891.....	58	72	51	62
1847.....	65	68			1892.....	64	84	55	72
1848.....	63	70			1893.....	89	114	61	78
1849.....	60	68			1894.....	83	118	61	87
1850.....	50	55			1895.....	69	97	66	93
1851.....	59	63			1896.....	60	88	63	93
1852.....	66	72			1897.....	57	84	52	76
1853.....	73	75			1898.....	61	86	53	75
1854.....	65	65			1899.....	61	80	54	71
1855.....	69	69			1900.....	76	93	68	83
1856.....	80	80			1901.....	86	106	76	94
1857.....	84	84			1902.....	97	113	87	101
1858.....	64	71			1903.....	108	124	83	95
1859.....	68	76			1904.....	85	98	68	78
1860.....	77	86			1905.....	83	94	70	80
1861.....	57	64			1906.....	86	96	86	96
1862.....	49	47			1907.....	106	112	78	82
1863.....	63	48			1908.....	84	91	73	79
1864.....	117	69			1909.....	91	92	94	95
1865.....	155	80			1910.....	112	109	110	107
1866.....	129	76			1911.....	88	93	90	95
1867.....	56	37	70	46	1912.....	92	91	88	87
1868.....	46	32	64	45	1913.....	103	101	104	102
1869.....	64	47	70	51	1914.....	104	104	108	108
1870.....	78	62	78	62	1915.....	91	88	97	94
1871.....	78	64	65	54	1916.....	113	88	111	86
1872.....	56	46	52	42	1917.....	187	104	174	97
1873.....	51	42	51	42	1918.....	220	111	219	111
1874.....	55	47	54	46	1919.....	223	106	217	103
1875.....	67	59	61	54	1920.....	179	78	186	81
1876.....	83	79	64	61	1921.....	108	72	121	81
1877.....	79	81	60	61	1922.....	111	73	121	80
1878.....	67	74	48	53	1923.....	99	63	113	72
1879.....	44	51	44	51	1924.....	104	68	113	74
1880.....	62	65	53	56	1925.....	151	99	150	99
1881.....	65	69	61	65	1926.....	163	106	162	105
1882.....	83	86	71	74	1927.....	134	90	147	99
1883.....	94	100	68	72	1928.....	119	79		
1884.....	77	88	61	69					

Data from the following sources:

New York—Chicago:

New York: 1840–1870 Cornell A. E. S. Bul. 341, Table 8, p. 196–197, 1914.

Chicago: 1871–1909 Ibid.

1910–1928 U. S. D. A. Yearbook 1928, p. 930.

1929 Michigan Farmer.

Virginia: 1867–1927 Va. A. E. S. Tech. Bul. 37, Table 85b, p. 177–178, 1929.

Table 31.—The price and purchasing power indices of wheat.

Date	New York		Chicago		Virginia	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1840	117	112				
1841	102	99				
1842	138	144				
1843	184	204				
1844	204	224				
1845	96	105				
1846	117	123				
1847	117	123				
1848	138	153				
1849	117	133				
1850	117	128				
1851	117	124				
1852	102	112				
1853	117	121				
1854	184	184				
1855	184	184				
1856	194	194				
1857	173	173				
1858	112	124				
1859	138	155				
1860	148	166				
1861	130	146				
1862	147	140				
1863	153	116				
1864	168	99				
1865	255	132				
1866	190	112	128	75		
1867	190	124	129	84	224	146
1868	158	110	82	57	220	154
1869	111	82	68	50	151	111
1870	130	103	91	72	127	100
1871	139	115	106	88	143	118
1872	149	121	99	80	162	132
1873	149	122	98	80	158	130
1874	116	98	77	65	133	113
1875	116	103	83	73	123	109
1876	122	116	107	102	114	108
1877	122	124	103	105	133	136
1878	104	116	79	88	97	108
1879	143	166	124	144	110	128
1880	119	125	99	104	109	115
1881	140	149	123	131	118	126
1882	112	117	90	94	109	114
1883	112	119	94	100	103	110
1884	87	99	71	81	88	100
1885	98	118	82	99	87	105
1886	87	106	75	91	81	99
1887	84	102	75	91	74	90
1888	112	133	98	117	87	104
1889	92	110	75	89	81	96
1890	102	124	87	106	89	108
1891	102	126	88	109	95	117
1892	87	114	69	91	79	104
1893	78	100	60	77	61	78
1894	63	90	58	83	52	74
1895	69	97	63	89	60	84
1896	90	132	68	100	64	94
1897	92	135	88	129	81	119
1898	73	103	92	130	72	101
1899	82	108	83	96	65	86
1900	78	95	77	94	68	83
1901	84	104	73	90	68	83
1902	81	94	76	88	76	88
1903	83	95	85	98	79	91
1904	111	128	102	117	99	114
1905	88	100	90	102	90	102
1906	84	93	78	87	77	86
1907	101	106	92	97	86	90
1908	101	110	98	106	94	102
1909	113	114	112	113	112	113
1910	98	95	104	101	103	100
1911	97	102	92	97	91	96
1912	101	100	105	106	100	99
1913	95	93	90	97	95	93

Table 31.—(Con't)—The price and purchasing power indices of wheat.

Date	New York		Chicago		Virginia	
	P. Ind.	P. Pow.	P. Ind.	P. Pow.	P. Ind.	P. Pow.
1914.....	111	111	110	110	98	98
1915.....	103	100	115	112	116	113
1916.....	171	132	171	132	129	100
1917.....	214	119	230	128	210	117
1918.....	219	111	227	115	211	106
1919.....	219	104	229	109	216	103
1920.....	178	77	228	99	233	101
1921.....	110	73	128	85	133	89
1922.....	120	80	116	76	114	75
1923.....	112	72	104	67	110	70
1924.....	147	97	161	106	126	83
1925.....	155	102	167	110	160	105
1926.....	133	86	141	92	143	93
1927.....	123	82	143	96	131	88
1928.....	115	76	133	88	.....	.....
1929.....	104	69	127	85	.....	.....

Data from the following sources:

- New York: 1840-1854 Prices to the producer at Albany, N. Y., from the American Agriculturist of August, 1854.
 1855-1865 Prices of white wheat at N. Y. C., almost exactly the same as at Albany.
 American Agriculturist.
 1840-1865 prices on Jan. 1st.
 1866-1929 prices on Dec. 1st.
- 1866-1925 Farm price of wheat in N. Y. state from U. S. D. A. Stat. Bul. 14, Table 44, p. 90-91, 1927.
- 1926-1929 Farm price of wheat from the respective U. S. D. A. Yearbooks for N. Y. state.
- Chicago: 1866-1893 No. 1 N. Spring wheat. U. S. D. A. Yearbook 1920, p. 550.
 1894-1928 No. 2 Red Winter wheat. U. S. D. A. Yearbook 1928, p. 670.
 All Chicago prices are the Dec. averages.
- Virginia: 1867-1927 Va. Agr. Exp. Sta. Tech. Bul. 37, Table 85a, p. 175-176, 1929.